

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

MULLEN INDUSTRIES LLC,
Patent Owner.

IPR2025-00737
Patent 8,585,476 B2

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

SMITH, *Administrative Patent Judge*.

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

I. INTRODUCTION

Petitioner filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1, 2, 4–7, 13, and 17 of U.S. Patent No. 8,585,476 B2 (Ex. 1001, “the ’476 patent”) pursuant to 35 U.S.C. § 311(a). Patent Owner filed a Preliminary Response (Paper 9, “Prelim. Resp.”) pursuant to 35 U.S.C. § 313. Petitioner also filed, pursuant to our authorization in an email sent August 6, 2025, a Preliminary Reply to Patent Owner’s proposed construction of “physical playfield” (Paper 10) and Patent Owner filed a Preliminary Sur-Reply (Paper 11).

Institution of an *inter partes* review may not be authorized by statute “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon consideration of the Petition and the Preliminary Response, we determine Petitioner has demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability of at least one of claims 1, 2, 4–7, 13, and 17 of the ’476 patent. Accordingly, we institute the requested *inter partes* review.

A. *Real-Parties-in-Interest*

Petitioner identifies itself as the real-party-in-interest. Pet. 1. Patent Owner identifies itself as the real-party-in-interest. Paper 9, 1.

B. *Related Matters*

The parties state that the ’476 patent is 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 '476 Patent

The '476 patent “relates to location-based game systems.” Ex. 1001, 1:15. An augmented reality (AR) system overlays video game indicia onto a user’s physical environment. *Id.* at code (57). A landscape detector obtains information about the user’s landscape and location in order to provide overlaying information to an AR head-mounted display. *Id.*

D. Illustrative Claim

Challenged claim 1 of the '476 patent is reproduced below along with Petitioner’s labels for the limitations.

1. [1pre] An augmented reality game system comprising:
 - [1a] a head-mounted display that overlays virtual indicia onto a physical playfield;
 - [1b] memory comprising video game logic that provides a video game;
 - [1c] a wearable processor that utilizes said video game logic to provide video game indicia to said head-mounted display based on said video game logic, wherein said processor is coupled to said memory and said head-mounted display;
 - [1d] a detector that determines landscape characteristics of said physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game; and
 - [1e] a locating device that determines the physical location of said locating device on the physical playfield, wherein said video game logic utilizes the physical location of said locating device in providing said video game.

E. Asserted Grounds

Petitioner asserts that claims 1, 2, 4–7, 13, and 17 of the '476 patent are unpatentable on the following grounds (Pet. 3):

Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1, 4, 5, 13	103(a)	Jaszlics, ² Piekarski ³
2	103(a)	Jaszlics, Piekarski, Morihira ⁴
4	103(a)	Jaszlics, Piekarski, Ohshima ⁵
6, 7	103(a)	Jaszlics, Piekarski, Roberts ⁶
17	103(a)	Jaszlics, Piekarski, Muendel ⁷

II. 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

¹ The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112–29, 125 Stat. 284 (Sept. 16, 2011), includes revisions to Section 103 that became effective on March 16, 2013. Because the challenged claims issued from an application claiming priority to an application filed before March 16, 2013, we apply pre-AIA law.

² US Patent No. 6,166,744 issued Dec. 26, 2000 (Ex. 1003).

³ Wayne Piekarski et al., "Integrating Virtual and Augmented Realities in an Outdoor Application," Proceedings of the 2nd IEEE and ACM International Workshop on Augmented Reality (1999) (Ex. 1004).

⁴ US Patent No. 6,361,438 B1 issued Mar. 26, 2002 (Ex. 1006).

⁵ US Patent No. 6,951,515 B2 issued Oct. 4, 2005 (Ex. 1005).

⁶ US Publ. No. 2004/0002843 A1 published Jan. 1, 2004 (Ex. 1007).

⁷ WO 01/42809 A2 published June 14, 2001 (Ex. 1008).

and/or developing computer systems/software involving graphical virtual and/or augmented reality. A person could also have qualified as a 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. (EX1002, ¶¶21-25.)

Pet. 5–6. Patent Owner, at this stage, does not challenge Petitioner's definition of the level of ordinary skill. *See generally*, Prelim. Resp. As Petitioner's definition 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 Construction

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 submits that “express constructions are not required.”

Pet. 8. However, Patent Owner proposes construing the claim term “physical playfield” recited in independent claims 1 and 13 as “a bounded physical playspace.” Prelim. Resp. 15; 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. Prelim. Resp. 17; 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)” (Ex. 1001, 1:51–55), 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. Prelim Resp. at 16–21 (citing Ex. 1001, Figs. 1, 13, 2:32–36, 2:55–61, 3:14–16, 5:63–65, 6:30–32, 8:31–45, 9:4–9, 19:60–20:22, 22:5–6); Paper 11, 2. Patent Owner contends that claim 1 is not limited by the preamble phrase “augmented reality,” and that the claims do not require a transparent screen. Paper 11, 2–3. Patent Owner also cites to dictionary definitions of playfield that support its proposed construction. Prelim. Resp. 18; 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.” Ex. 1001, 21:6–7; 22:26–27. The Specification’s discussions of “playfield” cited by Patent Owner use non-limiting language such as “for example” and “may” in describing the playfield. *Id.* at 2:32–36, 2:55–61, 3:14–16, 5:63–65, 6:30–32, 8:30–44, 9:4–9, 19:60–20:22, 22:5–6. The disclosed examples of “a physical playfield” include “the physical world, a physical environment, or a defined physical playfield” (Ex. 1001, 1:51–53), 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).” Ex. 1001, 10:58–61. 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 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. 7–13. As Petitioner notes, and we agree, none of these features are recited in the independent claims. 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. We further highlight that although the parties have not explicitly construed any other claim terms, the contentions of the parties indicate that additional claim terms such as “wearable processor,” “provide video game indicia,” “memory,” and “handheld controller” may need to be construed. We have provided initial constructions of these terms as discussed in our patentability analysis below.

C. Analysis of Ground 1

For ground 1, Petitioner contends that claims 1, 4, 5, and 13 would have been obvious over the combination of Jaszlics and Piekarski. Pet. 12–49. In doing so, Petitioner explains how the combination satisfies each claim limitation and provides supporting testimony from its expert. *See id.* Patent Owner challenges ground 1 by contending that Jaszlics and Piekarski do not teach certain limitations of independent claims 1 and 13 and that a person of ordinary skill in the art would not have combined the teachings of Jaszlics and Piekarski. Prelim. Resp. 30–57.

Claim 1

Patent Owner contends that the Petition has not shown that the combination teaches “a physical playfield” and “a wearable processor . . . to provide video game indicia” as claimed. Prelim. Resp. 30, 32–37. Patent Owner contends that the Petition has not shown that the combination shows that the hardware requirements of Jaszlics would have been met by the wearable laptop of Piekarski. *Id.* at 38–41. Patent Owner contends that the system of Jaszlics, which uses a camera-based head-mounted display, would have been incompatible with Piekarski’s cameraless head-mounted display. *Id.* at 43–46. Patent Owner contends that the Petition has not shown a reason to modify the system of Jaszlics using the teachings of Piekarski. *Id.* at 48–50.

Patent Owner’s assertion that the combination does not teach “a physical playfield”

Patent Owner contends that the combination does not teach a “physical playfield” as properly construed. Prelim. Resp. 30. 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. However, even under the Patent Owner’s proposed narrower construction, we are sufficiently persuaded that the combination teaches a bounded physical play space.

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 a skilled artisan would have envisioned that such training occurs on a military 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 a military 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 the combined system of Jaszlics and Piekarski in a bounded physical play space such as a theme park or a military base.

Patent Owner’s assertion that Piekarski’s wearable processor does not generate AR images

Claim 1 recites “a wearable processor that . . . provide[s] video game indicia to said head-mounted display.” Ex. 1001, 21:10–12. Patent Owner contends that Piekarski discloses an AR laptop worn outdoors, and a stationary virtual reality (VR) workstation located indoors. Prelim. Resp. 32–33. Patent Owner contends that the stationary VR workstation provides virtual simulation information, and that the AR laptop does nothing to generate virtual simulation information. *Id.* at 33–34. Patent Owner contends that Piekarski’s AR laptop system merely relays the simulation information from the VR workstation to the user, but does not provide the head-mounted display with any aspect of the simulation such as a virtual object to be overlaid onto the physical playfield within the meaning of claim 1. *Id.* at 37.

⁸ Compare with Ex. 1001, 5:10–14 (describing utilizing the game in a military base).

We disagree with Patent Owner. The combination of Jaszlics, which discloses a processor that provides video game indicia to a head-mounted display, and Piekarski, which discloses a wearable processor, teaches this limitation. Patent Owner's arguments against Piekarski alone do not address the combined teachings of Jaszlics and Piekarski.

Further, Patent Owner's contention that Piekarski's AR laptop does not generate augmented objects and indicia is inconsistent with the disclosure of Piekarski. Although Piekarski does disclose that some simulated objects are generated by the VR workstation, Piekarski also discloses that the AR laptop generates simulated objects. For example, Piekarski discloses that "users in the field . . . see overlaid on their view of the physical battlefield iconic representations of both real and simulated entities." Ex. 1004, 8. Piekarski also discloses that the head-mounted display "features a 3D immersive display superimposed on the wearer's field of view." *Id.* at 9. Both parties cite to a subsequent article written by Piekarski (Ex. 1009 ("Piekarski II")) as evidence of how a person of ordinary skill would have understood the teachings of Piekarski. Pet. 29; Prelim. Resp. 47. Piekarski II shows that the wearable laptop generates and provides video game indicia to the head-mounted display. For example, in section 3.6, Piekarski II describes using the AR wearable laptop to show a user images of simulated monsters as part of a video game. Ex. 1009, 7; *see id.* at 5–7 (Section 3 Outdoor Augmented Reality).

We also highlight that the claim recites "a wearable processor that utilizes said video game logic to provide video game indicia to said head-mounted display." Ex. 1001, 21:10–12. This claim phrase does not require the wearable processor to generate virtual objects as asserted by Patent

Owner. Patent Owner's contention seems to imply that the claim term "to provide" means "to generate" and excludes other meanings such as "to relay." We disagree. The claim term, on this record, seems to be satisfied by a wearable laptop that relays video game indicia to a head-mounted display, even if the indicia was generated somewhere else. Even assuming without deciding that Patent Owner is correct in stating that Piekarski's VR workstation generates all video game indicia, and that the wearable AR laptop relays the indicia from the VR workstation to the head-mounted display, we are sufficiently persuaded that the scope of the claim term "a wearable processor that utilizes said video game logic to provide video game indicia to said head-mounted display" encompasses Piekarski's wearable processor relaying video game indicia from the VR workstation to the head-mounted display.

Patent Owner's assertion that Jaszlics's hardware requirements are not met by wearable equipment

Patent Owner contends that Jaszlics requires a scanner to determine the shape and distance of real-world objects and a personal workstation running two Pentium II processors to combine the real-world objects with virtual objects. Prelim. Resp. 38–39. Patent Owner contends that Jaszlics's applications, such as tank simulation and aircraft simulation, require such high-end hardware, which is not suitable to be worn. *Id.* at 39–40. Patent Owner contends that Piekarski's hardware, in contrast, is minimalist, designed to operate without cameras or range scanners, and optimized for portability and low computational overhead in order to enable mobile AR applications outdoors. *Id.* at 40–41. Patent Owner contends that Petitioner has not explained why Jaszlics's two processor computer would be suitable to be carried in a laptop. *Id.* at 41.

We disagree on this record with Patent Owner's contention that the wearable processor of Piekarski does not have sufficient computing power to work with the camera and scanner of Jaszlics. Petitioner provides evidence showing sufficiently that Piekarski's wearable processor would function in a system that uses an optical head-mounted display that requires a camera and a scanner. Pet. 22 (citing Ex. 1013, 7); Ex. 1002 ¶ 99 (quoting Ex. 1013, 7 ("This see-through capability can be accomplished using either an optical or video see-through HMD.")). Further, Piekarski II suggests that its augmented reality system can use a video head-mounted display. Ex. 1009, 2; *see* PO Resp. 47 (citing Ex. 1009, 2).

We disagree on this record with Patent Owner's contention that Jaszlics's system requires two Pentium II processors to run all of its applications. We also disagree with Patent Owner's contention that the processor of Piekarski is not powerful enough to run any of the applications of Jaszlics. These contentions are attorney argument that are factually unsupported. Further, Piekarski discloses that a conventional laptop, such as a Toshiba 320CDS, includes a wearable processor. Ex. 1004, 9. Although Piekarski does not disclose the name of the processor used in the Toshiba 320CDS laptop, Piekarski II discloses that "we initially used a Toshiba 320CDS (P-200), although now we use a Gateway solo (PII-450)" and that "[a]ny kind of laptop can be used for a wearable, depending on your personal taste, needs, and financial resources." Ex. 1009, 2. We are sufficiently persuaded, at this juncture, that a person of ordinary skill would have understood that the types of wearable processors that existed at the

time of the invention included processors found in “any kind of laptop” such as Pentium and Pentium II processors.⁹

Turning to applications, Jaszlics discloses that its system runs a laser tag game that includes virtual players. Ex. 1003, 1:65. Piekarski II discloses that its wearable processor has enough power to run a video game called “Quake” that includes virtual monsters and seems similar to Jaszlics’s laser tag game that includes virtual players. Ex. 1009, 7. We are sufficiently persuaded that a person of ordinary skill, in implementing a wearable processor as taught by Piekarski, would have used a processor that provided enough power to perform an augmented reality application such as a laser tag game that includes virtual players as taught by Jaszlics.

Further, even were we to agree that the processor of Piekarski alone is not powerful enough to run augmented reality applications, the scope of the claim on this record does not exclude the wearable processor communicating with an indoor workstation to provide additional computing power as taught by Piekarski. Ex. 1004, 7. We highlight that the open-ended transitional phrase “comprising” does not limit the claim to a single “wearable processor.” Rather, the claim requires that the system has at least one processor, and that this processor is wearable. But the scope of the claim also encompasses a system that includes additional processors, either wearable or not, such as the processors in the workstation of Piekarski. The scope of the claim also encompasses a laptop that has multiple wearable processors. Further, the claim does not recite that the “memory comprising video game logic” is limited to wearable memory, but rather, encompasses

⁹ Indeed, Piekarski II states that “most Pentium-based laptops work quite nicely.” Ex. 1009, 2.

the memory of Piekarski's virtual workstation. In addition, Figure 14 of the challenged patent discloses portable device 1460 communicating with remote facility 1480 and stationary device 1470. Patent Owner's contentions regarding the interaction between Piekarski's wearable processor and the VR workstation are not commensurate with the scope of the claim, as read in light of the Specification. We are sufficiently persuaded that the wearable processor of Piekarski provides enough power to operate at least some of the video games of Jaszlics.

Patent Owner's assertion that Jaszlics's system is incompatible with Piekarski's optically transparent display

Patent Owner contends that Jaszlics's system, which includes a camera-based head-mounted display, relies on a real world video feed to provide its functionality, but Piekarski's head-mounted display is entirely cameraless. Prelim. Resp. 43. Patent Owner contends that the Petition does not explain how the system of Jaszlics would work without a camera to provide a video feed, and that a person of ordinary skill in the art would not have replaced Jaszlics's video-based head-mounted display, which is opaque, with the optical head-mounted display of Jaszlics, which is transparent. *Id.* at 43–46.

We disagree with Patent Owner's contention that these different types of head-mounted displays means that the teachings of Jaszlics and Piekarski are incompatible. Petitioner and Dr. Cooperstock provide sufficient evidence to show that a person of ordinary skill in the art would have considered optical and video head-mounted displays as interchangeable in the context of an augmented reality system. Pet. 22 (citing Ex. 1013, 7); Ex. 1002 ¶ 99 (quoting Ex. 1013, 7 (“This see-through capability can be accomplished using either an optical or video see-through HMD.”)). Dr.

Cooperstock's testimony is consistent with Jaszlics's disclosure that "[i]n cases when the observer would normally observe the external world through an optical or other instrument, virtual images can be injected into this instrument." Ex. 1003, 9:51–54; *see id.* at 9:9–24. Further, Piekarski II suggests that the Tinmuth-II augmented reality system can use either an optical or video head-mounted display. Ex. 1009, 2; *see* PO Resp. 47 (citing Ex. 1009, 2). In addition, even assuming Patent Owner is correct in stating that a person of ordinary skill would not have replaced Jaszlics's video head-mounted display with Piekarski's optical head-mounted display, the Petition sufficiently shows that Jaszlics's video head-mounted display teaches "a head-mounted display that overlays virtual indicia onto a physical playfield." Pet. 16–20. We are sufficiently persuaded that the camera-based system of Jaszlics, modified to include the wearable processor of Piekarski, would have been able to operate augmented reality applications for the reasons discussed above.

Patent Owner's contention that there is no reason to modify Jaszlics

Patent Owner contends that Petitioner's asserted benefit of adding the wearable processor of Piekarski to the system of Jaszlics, which is mobility, already exists in Jaszlics. Prelim. Rep. 48. Therefore, according to Patent Owner, there is no benefit in combining Piekarski with Jaszlics. *Id.* at 49. Patent Owner then argues that modifying the system of Jaszlics to include a wearable processor based on the teachings of Jaszlics alone "is nothing more than impermissible hindsight." *Id.* at 50.

We disagree. Jaszlics explicitly discloses a mobile system located in a vehicle such as a tank (*see* Ex. 1003, 4:12–30), and suggests that its mobile system may be used by an individual (*id.* at 1:64–67). However, Jaszlics

does not explicitly describe how its system would have been worn by an individual. Piekarski explicitly discloses a mobile system worn by an individual. Ex. 1004, 6. On this record we are sufficiently persuaded that Piekarski explicitly teaches what Jaszlics implicitly suggests, that a person of ordinary skill in the art would have included a wearable processor in an augmented reality system to provide the benefit of augmented reality in an outdoor application. We are sufficiently persuaded that Piekarski teaches that a benefit of modifying Jaszlics to include its wearable AR processor is “ma[king] augmented reality applications feasible outdoors.” *Id.* We are sufficiently persuaded that modifying Jaszlics to include a wearable computer was within the level of ordinary skill because Piekarski teaches the modifications needed to implement a wearable processor in Jaszlics’s augmented reality system.

Claim 13

Independent claim 13 is similar to independent claim 1, but does not recite a wearable processor. Petitioner contends that because claim 13 does not recite a wearable processor, “claim 13 would have also been obvious over Jaszlics alone, without Piekarski’s teachings.” Pet. 48 n.7.

Also, claim 13, unlike claim 1, recites “a handheld controller for providing at least one control signal to said video game.” Petitioner contends that Jaszlics discloses handheld controllers such as a mouse, joysticks, and pushbuttons. Pet. 48. Petitioner contends that a person of ordinary skill, in applying Jaszlics’s system to a game such as laser tag, would have used a controller having a form factor that resembles a handheld gun. *Id.* at 49.

Patent Owner presents several arguments contending that Jaszlics does not teach or suggest “a handheld controller” as claimed. Prelim. Resp. 51–57. We address each of Patent Owner’s arguments in turn.

Patent Owner’s assertion that a mouse is not a handheld controller

Patent Owner contends that the challenged patent uses the term handheld controller to refer to controllers that are movable in three-dimensional space. *Id.* at 51–52 (citing Ex. 1001, 8:1–4, 8:7–14). Patent Owner contends that a mouse control device is not designed to be held in the hand, but rather lies on a flat surface where the user rests its hand on top of it. *Id.*

We disagree. Dr. Cooperstock testifies that a person of ordinary skill would have recognized that a mouse is a type of handheld controller. Ex. 1002 ¶ 138 (citing Ex. 1015, 7). The New Penguin Dictionary of Computing defines a mouse as a “computer input device consisting of a small box or puck held in the hand.” Ex. 1015, 7. Although the Specification discloses handheld controllers that are movable in three-dimensional space, the Specification describes these controllers as non-limiting examples rather than limiting embodiments. We are sufficiently persuaded that the scope of “a handheld controller” encompasses a handheld controller movable in two-dimensional space such as a mouse.

Patent Owner’s assertion that the joystick of Jaszlics is not handheld

Patent Owner contends that the joystick of Jaszlics is not handheld, but rather, is incorporated into a vehicle such as a tank. Prelim. Resp. 52. We disagree. The New Penguin Dictionary of Computing defines a joystick as an “input device that consists of a handheld stick.” Ex. 1015, 6. We are sufficiently persuaded that a joystick is a handheld controller.

Patent Owner's assertion that there is no reason to include a handheld joystick in Jaszlics

Patent Owner contends that replacing the joystick of Jaszlics with a joystick provided by Atari or Nintendo would undermine the realism and training value of the simulation of operating a tank. Prelim. Resp. 54–55. We disagree. First, even if the joystick is incorporated into a tank, on this record we are persuaded that a person of ordinary skill would have recognized the joystick as handheld for the reasons given above. Second, Patent Owner's contention is based on the assumption that the only application provided by the augmented reality system of Jaszlics is simulating a tank. Jaszlics also discloses, however, that its augmented reality system can be used to play simpler video games, and Dr. Cooperstock testifies that such video games would benefit from a handheld joystick, such as one provided by Atari or Nintendo. Ex. 1003, 1:65; Ex. 1002 ¶ 138 (citing Ex. 1015, 6).

Patent Owner's assertion that Laser Tag is not a video game

Patent Owner contends that laser tag is a physical activity in which users wear vests equipped with sensors and run around and fire light-based guns at one another. Prelim. Resp. 56–57. Patent Owner contends that there is no video aspect and no video game aspect to laser tag. *Id.* at 57.

Patent Owner's contention is inconsistent with Jaszlics's disclosure of a laser tag game that includes virtual players. We are sufficiently persuaded that the laser tag game of Jaszlics, which includes virtual players, teaches a video game as claimed. We are also sufficiently persuaded that the laser tag video game would have included a controller having the form factor of a handheld gun.

Conclusion for ground 1

We determine that Petitioner demonstrates a reasonable likelihood of showing that independent claims 1 and 13 are unpatentable over the combination of Jaszlics and Piekarski. Patent Owner does not dispute Petitioner's showing that the combination of Jaszlics and Piekarski teaches the limitations of dependent claims 4 and 5.

D. Analysis of Grounds 2–5

Petitioner contends that claims 2, 4, 6, 7, and 17 would have been obvious over several combinations of prior art, where each combination includes Jaszlics and Piekarski. Pet. 49–76. In doing so, Petitioner explains how the combinations satisfy each claim limitation and provides supporting testimony from its expert. *See id.* In disputing these grounds, Patent Owner relies on the same arguments it made in disputing ground 1, which we find unpersuasive. In reviewing the preliminary record, we find that Petitioner sufficiently shows that the combinations teach the limitations of claims 2, 4, 6, 7, and 17, and demonstrates a reasonable likelihood of showing that these claims are unpatentable over the prior art.

III. CONCLUSION

Based on the arguments presented in the Petition, we conclude that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the '476 patent challenged in the Petition. Accordingly, we institute a trial on all claims and all grounds asserted in the Petition. The Board has not made a final determination under 35 U.S.C. § 318(a) with respect to the patentability of the challenged claims.

IV. 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, 2, 4–7, 13, and 17 of the '476 patent is instituted with respect to all grounds set forth in the Petition; 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 '476 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

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