

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

MULLEN INDUSTRIES LLC,
Patent Owner.

IPR2025-00702
Patent 10,967,270 B2

Before KEN B. BARRETT, JEFFREY S. SMITH, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Meta Platforms, Inc. (“Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 10,967,270 B2 (“the ’270 patent,” Ex. 1001). Paper 1 (“Pet.”). The Petition challenges the patentability of claims 4, 5, 16, 17, and 19 of the ’270 patent. Mullen Industries LLC (“Patent Owner”)² filed a Preliminary Response to the Petition. Paper 10 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . 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) (2023). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’270 patent. Accordingly, we institute an *inter partes* review as to all the challenged claims of the ’270 patent on all the grounds of unpatentability set forth in the Petition.

B. *Related Proceedings*

Both parties identify, as a matter involving or related to the ’821 patent, *Mullen Industries LLC v. Meta Platforms, Inc.*, No. 1:24-cv-00354 (W.D. Tex.). Pet. 84; Paper 3, 1; Paper 8, 1.

¹ Petitioner identifies Meta Platforms, Inc. as the real party in interest. Pet. 84.

² Patent Owner identifies Mullen Industries LLC as the real party in interest. Paper 3, 1; Paper 8, 1.

Petitioner states that it “will file petitions for *inter partes* review against U.S. Patent No. 11,033,821, U.S. Patent No. 8,585,476, U.S. Patent No. 9,744,448, U.S. Patent No. 10,179,277, U.S. Patent No. 10,828,559, U.S. Patent No. 11,376,493, U.S. Patent No. 11,904,243, U.S. Patent No. 11,947,716, U.S. Patent No. 12,019,791, U.S. Patent No. 9,662,582, and U.S. Patent No. 10,974,151.” Pet. 84

C. The '270 Patent

The '270 patent is titled “Systems and Methods for Location Based Games and Employment of the Same on Location Enabled Devices.”

Ex. 1001, code (54). According to the '270 patent:

The present invention provides an actual, reality-based video game in which a user's physical (actual) location on a playfield, reflects a virtual game character's virtual location in a video game environment. In this manner, an actual-reality (hereinafter “actuality”) video game system may be provided. Generally, an actuality game is a location-based game where a user's location on a physical playfield corresponds to a video game character's location on a virtual video game playfield.

Id. at 2:28–36.

The Specification explains that, if a game or gaming system needs a manual origin setting, then the user may be prompted to position a device at a desired origin, which may be, for example, the physical location for the start of the game. *See id.* at 8:66–9:3.

The Specification also discusses the selection of a direction for gameplay.

In FROGGER, for example, the origin may be near the boundary of the virtual playfield. Accordingly, the user may be prompted to select a direction for gameplay. Such a direction may be determined by the device prompting the user to point the device in a particular direction (where the direction the

device is pointed in may be displayed to the user) and recording this direction. The origin and/or the direction the user is pointing in may be utilized to calibrate system 700. Such directional information may also be utilized to calibrate an opponent[']s gaming system, or signals sent to an opponent[']s gaming system representative of a user's location on a virtual playfield.

Id. at 15:67–16:13.

D. Illustrative Claim

Of the challenged claims of the '270 patent, claim 4 is an independent claim. The remaining challenged claims depend directly from claim 4. Claim 4, reproduced below with bracketed annotations³ inserted, is illustrative.

4. [4Pre] A system comprising:
 - [4.a] a device having a display, wherein a graphical user interface is provided on said display to receive [4.a.1] a first manual input for setting a[n] origin location setting for a location reference for gameplay and [4.a.2] a second manual input for setting a directional reference for a direction of gameplay for a virtual character of a location-based game provided on said device based on the direction of said device and said location-based game is provided on said device with respect to said directional reference and said directional reference is operable to be updated during said gameplay.

Ex. 1001, 24:42–53.

³ We utilize, for claim 4, annotations similar to those used by Petitioner but have retained the paragraph formatting from the issued patent.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit No.
Cheok	A.D. Cheok et al., <i>Human Pacman: A Sensing-based Mobile Entertainment System with Ubiquitous Computing and Tangible Interaction</i> (May 2003)	1006
Nakamura	JP 2001070658A, published Mar. 21, 2001	1007, 1038 ⁴
Foxlin077	US 5,645,077, issued July 8, 1997	1008
Benini	L. Benini et al., <i>Palmtop Computer for Managing Interaction with Immersive Virtual Heritage</i> (2002)	1009
Foxlin068	US 6,757,068 B2, issued June 29, 2004	1010

Petitioner also relies on the declaration of Gregory Welch, Ph.D. (Ex. 1003, “Welch Decl.”) in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. § ⁵	Reference(s)/Basis
4, 5, 16, 17, 19	103(a)	Cheok, Nakamura, Foxlin077
4, 5, 17	103(a)	Nakamura, Benini
16, 19	103(a)	Nakamura, Benini, Foxlin068

⁴ Exhibit 1038 is the English translation of Nakamura (Ex. 1007), which is in Japanese. Petitioner cites to Exhibit 1007. *See, e.g.*, Pet. 17–18.

⁵ The application that issued as the ’270 patent was filed before the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA version of 35 U.S.C. § 103.

II. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if present, any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. The Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner contends that:

A person of ordinary skill in the art (“POSITA”) in 2004 would have had at least a bachelor’s degree in electrical engineering, computer science, or a similar field, with at least two years of relevant experience working with VR [virtual reality] and AR [augmented reality] systems. Additional experience could substitute for less education, and additional education could likewise substitute for less experience.

Pet. 27 (citing Welch Decl. ¶¶ 88–90, 91). Patent Owner, at this stage, does not disagree or propose a different definition of the person of ordinary skill in the art.

Petitioner’s definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner’s definition of the person of ordinary skill in the art.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b) (2025). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006)

(citing *Phillips*, 415 F.3d at 1312–17). “[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (internal quotation marks omitted). 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 contends that “[t]his Petition establishes the prior art meets each of the claim limitation[s] under any reasonable construction,” and, “[t]hus, no express construction is required.” Pet. 27–28. Patent Owner’s Preliminary Response does not contain a separate claim construction section.

On this record and for purposes of this decision, we determine that no claim terms require express construction.

D. Ground 2: Obviousness Over Nakamura and Benini

Petitioner asserts that independent claim 4 and dependent claims 5 and 17 would have been obvious over Nakamura and Benini. See Pet. 57–75. In doing so, Petitioner explains how the combination satisfies each claim limitation and provides supporting testimony from its expert. See *id.* Because the arguments presented by Patent Owner focus on independent claim 4, our analysis likewise focuses on that claim. See, e.g., Prelim. Resp. 2–3.

For the reasons that follow, we determine that Petitioner has demonstrated a reasonable likelihood of showing at least independent claim 4 is unpatentable as obvious over Nakamura and Benini.

1. Setting an origin location

Limitation 4.a.1 recites, “a first manual input for setting a[n] origin location setting for a location reference for gameplay.” Ex. 1001, 24:44–46. Patent Owner argues that Petitioner has not shown that this limitation disclosed or rendered obvious by the relied-on references. *See* Prelim. Resp. 29.

Petitioner contends that Nakamura teaches the user’s manual selection of a starting point of a game. Pet. 38–40 (citing, *inter alia*, Welch Decl. ¶¶ 147–148; Ex. 1007 ¶¶ 9, 35–36, Fig. 5); *see also id.* at 62 (for this Ground 2, referencing the contentions made for Ground 1). Petitioner further contends that “[a] POSITA would have also recognized that the initial position setting provides a *location reference for gameplay*.” *Id.* at 63.

For this Ground 2, Patent Owner incorporates by reference its arguments regarding Ground 1 based on Cheok, Nakamura, and Foxlin077. *See* Prelim. Resp. 29. Patent Owner argues that “Nakamura’s position icon 113 [displayed at a virtual location appropriate for the initial position] represents a virtual character’s ***virtual location*** in the virtual world, rather than a user’s physical location, and has no relationship to the physical location.” Prelim. Resp. 24 (citing Ex. 1038 ¶¶ 36, 38). According to Patent Owner, “establishing a physical origin location as a location reference is critical to key features of the patented system.” *Id.* at 25 (citing Section III of the Preliminary Response). Patent Owner’s argument is not commensurate in scope with the language of claim 4, which recites an input for setting “a[n] origin location,” not “a *physical* origin location.”

In support of its arguments, Patent Owner relies on the Specification, stating, for example, that “[t]he ’270 patent’s system ‘prompt[s] a user to

position the device at a desired origin’ and ‘wait[s] for a user to submit the origin (e.g., for a user to select a physical location as the start of a game).” *Id.* (quoting Ex. 1001, 8:66–9:3). The Specification’s use of “e.g.” indicates that the “physical location” phrase in the parenthetical merely is an example, not that the claimed invention is limited to that scenario. Additionally, the drafter’s use of the “physical” modifier in the Specification but not in independent claim 4 suggests the intention for the independent claim to be broader. On this preliminary record, we decline to read into the claim the requirement that the “origin location” be a “physical origin location.”

Patent Owner quotes the Specification’s statement that “[A] GUI may be provided that prompts a user on how much free physical space is needed on all sides of the origin for gameplay,” and argues that Nakamura’s initial virtual location setting cannot do that. Prelim. Resp. 25–26 (quoting 6:18–20) (alteration in original). Patent Owner’s argument is not persuasive as Patent Owner does not explain adequately how claim 4 contains such a free-space limitation in the subject recitation, “a first manual input for setting a[n] origin location setting.” *See id.*

Patent Owner next argues that Nakamura does not disclose that the origin location setting is “for a location reference for gameplay.” Prelim. Resp. 26. According to Patent Owner, “[b]ecause virtual-world representations simply track the physical world, an initialization point in the virtual world is not a reference for anything,” and “[m]ovement is only measured with respect to a reference in the physical world, and there is no manual input related to any such physical reference in Nakamura, nor does the Petition allege there is.” *Id.*

In this regard, Petitioner contends:

A POSITA would have also recognized that the initial position setting provides a *location reference for gameplay* because Nakamura discloses that “[w]hen the selected role-playing game is first executed, the starting position of the game will be the initial position 112” (EX1007, ¶¶0036)) and the initial setup process helps “define[] the correspondence between the current location and the virtual position” (*id.*, ¶¶0025)). Welch ¶¶200. The initial position setting thus provides a location reference that allows for a correspondence between real and virtual worlds as a user’s movement is tracked and gameplay proceeds through the virtual world. *Id.*

Id. at 63 (alteration in original). Petitioner, thus, ties the locations in the virtual and physical worlds, and Patent Owner does not explain adequately why these contentions are flawed. *See* Prelim. Resp. 26 (not citing the Petition regarding this argument).

At this stage, and on this record, we determine that Petitioner has shown sufficiently for institution that Nakamura discloses or teaches “a first manual input for setting a[n] origin location setting for a location reference for gameplay,” as recited in independent claim 4.

2. *Setting a directional reference for a direction of gameplay for a virtual character*

Limitation 4.a.2 recites:

a second manual input for *setting a directional reference for a direction of gameplay for a virtual character of a location-based game* provided on said device based on the direction of said device and said location-based game is provided on said device with respect to said directional reference and said directional reference is operable to be updated during said gameplay.

Ex. 1001, 24:46–53 (emphasis added).

Patent Owner asserts that the “direction of gameplay” is the direction for which the user will be playing. *See* Prelim. Resp. 6 (citing Ex. 1001, 16:2–8). Patent Owner also asserts that “a ‘directional reference for a direction of gameplay,’ as recited in claim 4, refers to a specific physical direction which is used as a reference to map physical directions to virtual directions on a virtual playfield.” *Id.* at 31 (citing Ex. 1001, 18:24–32 (stating, in part: “For example, if a user reaches the end of his/her physical playfield at the position of the grid that character 1091 resides then the user may reset that location to the origin, turn around, and set that direction and the reference direction.”); *see also id.* at 43 (Patent Owner arguing that “setting a directional reference for a direction of gameplay . . . is about determining which physical direction on a physical playfield corresponds to which virtual direction in a virtual world.” (citing Ex. 1001, 18:24–32))).

For this limitation, Petitioner contends that:

Nakamura discloses that the mobile terminal is a “device equipped with a direction sensor.” EX1007, ¶[0017]. “[I]t is possible to rotate the display of the virtual world so that the direction of real displacement aligns with the direction of virtual displacement,” *id.*, which allows for the “virtual displacement [to] always[] points upwards, based on the direction of movement (actual displacement) obtained from the GPS unit 51,” *id.*, ¶[0024]. Thus, Nakamura discloses rotating a display to set the directions of real and virtual displacement in alignment with one another (*setting a directional reference*), thereby establishing the direction of gameplay (*for a direction of gameplay*) for a user’s virtual character on a mobile terminal (*for a virtual character of a location-based game provided on said device*). Welch ¶203.

Pet. 63–64 (alterations in original). Petitioner, in describing the proposed modification, contends that a person of ordinary skill in the art “would have been motivated to rely on Benini’s teachings, which discloses a method for

manually changing the view of a virtual world map (e.g., to rotate the map), because Nakamura discloses a display rotation feature to align real and virtual displacement but does not disclose the specific processes for rotating the display.” Pet. 57 (citing Welch Decl. ¶ 187). Accordingly, we understand Petitioner to associate the references’ teachings of rotating the display with the claim’s recitation of “setting a directional reference for a direction of gameplay for a virtual character of a location-based game.”

In Petitioner’s proposed combination, the direction of gameplay of the virtual character is set at least relative to the displayed virtual world map. The pertinent claim language does not appear to exclude this situation, and Patent Owner has not explained adequately why that would be so. *See, e.g.* Prelim. Resp. 45 (Patent Owner arguing: “[T]his screen rotation does not set a directional reference for a direction of gameplay. It is simply rotating a screen. The motion, both real and virtual, is not impacted in any way whether the screen is rotated.”).

In future briefing authorized by the Scheduling Order, the parties are encouraged to address—as a matter of claim construction and in a separate section of their respective briefs dedicated to claim construction—the meaning of “setting a directional reference,” “direction of gameplay” and any other claim terms pertinent to this disputed issue.

Patent Owner next argues that Benini fails to supply this limitation because there is no gameplay in Benini (as it pertains to a cultural heritage environment) and “it would not be location-based because Benini does not track a user’s physical location, instead employing user interface buttons to navigate a virtual environment.” Prelim. Resp. 47. Patent Owner also argues that “using Benini’s arrow buttons to rotate the view does not set a

directional reference for a direction of gameplay,” because “[t]here is no ‘reference’ for anything[; t]he user is simply playing the alleged ‘game.’” *Id.* at 48.

Even if Patent Owner’s characterizations of Benini are correct, we do not find these arguments persuasive. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). Petitioner contends that Nakamura involves gameplay, is location-based, and discloses setting a directional reference for a direction of gameplay. *See, e.g.*, Pet. 17–18, 63.

Patent Owner argues that “the required second manual input needs to be ‘provided on said device based on the direction of said device,’” and “[h]ere, the alleged input [of Benini] is a manually-pressed button that rotates the view, rather than being based in any way on the direction of the device.” Prelim. Resp. 48. However, Petitioner contends that Nakamura discloses this direction-of-the-device aspect of the claim. Specifically, Petitioner contends that “Nakamura discloses rotating a display to set the directions of real and virtual displacement in alignment with one another (*setting a directional reference*), thereby establishing the direction of gameplay (*for a direction of gameplay*)” and that “Nakamura discloses that this *directional reference* is set based on the direction a user (holding a mobile terminal *device*) is facing in the real world (*based on the direction of said device*) because it relies on the device’s direction sensor to determine the direction of real displacement.” Pet. 64 (citing Welch Decl. ¶ 203). We determine that Petitioner has adequately, for purposes of institution,

accounted for the “based on the direction of said device” aspect of the claim. This issue may be addressed further during trial.

Lastly, Patent Owner argues that a person of ordinary skill in the art “would have had no reason to combine Benini’s arrow buttons into Nakamura,” because, “[i]n short, Benini’s arrow keys are simply incompatible with Nakamura’s location-based gameplay.” Prelim. Resp. 49–50. Patent Owner’s arguments about incompatibility are, at this stage, mere attorney argument, not evidence. Patent Owner also argues that Nakamura automatically adjusts the rotation and therefore there is no need for Benini’s manual process, and asserts that the proposed combination would “be redundant, slower, less user friendly, and require unnecessary user input.” *Id.* at 50. Dr. Welch, however, testifies that “it is my opinion that a POSITA would have been motivated to modify Nakamura’s system to implement a manual rotation feature because it would have given users a choice in alignment, consistent with Nakamura’s disclosures and a POSITA’s knowledge of alignment modes at the time of the alleged invention.” Welch Decl. ¶ 188 (cited at Pet. 57–58). Dr. Welch also testifies that “[t]he combination with Benini improves and enhances Nakamura by permitting the user to adjust the virtual world map so that the avoidance of the physical obstacle is not reflected in the virtual world.” *Id.* ¶ 210 (cited at Pet. 58). At this stage, that testimony is un rebutted. And, even if the proposed combination would not have been the best choice, that does not necessarily mean that it was non-obvious. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021) (“It’s not necessary to show that a combination is ‘the *best* option, only that it be a *suitable*

option.’” (quoting *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014)).

We determine that Petitioner has shown adequately for purposes of institution that a person of ordinary skill in the art would have had a motivation to make the proposed combination.

E. Remaining Challenges

Because we find Petitioner has demonstrated a reasonable likelihood of showing at least one challenged claim is unpatentable as obvious over Nakamura and Benini, we need not review all of Petitioner’s challenges. *See* 35 U.S.C. § 314(a) (“The Director may not authorize an inter partes review to be instituted unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”).

III. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of at least one of the challenged claims of the ’270 patent. At this stage of the proceeding, we have not made a final determination with respect to the patentability of any of the challenged claims.

IV. ORDER

For the foregoing reasons, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 4, 5, 16, 17, and 19 of the ’270 patent is instituted with respect to all grounds of unpatentability 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 '270 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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