

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

IPR2023-00946
Patent 9,727,217 B2

Before PATRICK R. SCANLON, CHRISTOPHER L. OGDEN and
IFTIKHAR AHMED, *Administrative Patent Judges*.

SCANLON, *Administrative Patent Judge*.

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

I. INTRODUCTION

Meta Platforms, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review (“IPR”) of claims 1–4, 8, 10, 11, and 17–19 of U.S. Patent No. 9,727,217 B2 (Ex. 1001, “the ’217 patent”). Immersion Corporation (“Patent Owner”) filed a Preliminary Response (Paper 10, “Prelim. Resp.”). With our authorization, Petitioner filed a Preliminary Reply (Paper 11, “Reply”) and Patent Owner filed a Preliminary Sur-Reply (Paper 12, “Sur-reply”) for additional briefing concerning Patent Owner’s proposed construction of “input device.”

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). To institute an *inter partes* review, we must determine that the information presented in the Petition shows “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). For the reasons set forth below, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one challenged claim. Accordingly, we institute an *inter partes* review of all the challenged claims on all the grounds set forth in the Petition.

Our factual findings and conclusions at this stage of the proceeding are based on the evidentiary record developed thus far. This is not a final decision as to patentability of the challenged claims. Any final decision will be based on the full trial record, including any response to the Petition timely filed by Patent Owner.

II. BACKGROUND

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 8, 1.

B. Related Matter

The parties identify the following proceeding as a related matter involving the '217 patent: *Immersion Corp. v. Meta Platforms, Inc.*, No. 6:22-cv-00541 (W.D. Tex. filed May 27, 2022), *transferred within district*, No. 1:23-cv-00623 (W.D. Tex. effective June 1, 2023). Pet. 1; Paper 8, 1.

C. The '217 Patent

The '217 patent, titled “Haptically Enhanced Interactivity with Interactive Content,” issued August 8, 2017, with claims 1–20. Ex. 1001, codes (54), (45), 12:49–14:40. The '217 patent describes “a system configured to present interactive content to a user that is manipulating a peripheral.” Ex. 1001, 1:46–48. The system can adjust the interactive content, as well as haptic feedback to the user, based in part on the sensed position of the peripheral. *See id.* at 1:53–64. Haptic feedback, according to the '217 patent, “may include tactile and/or kinesthetic (force) feedback technology that takes advantage of a user’s sense of touch by applying forces, vibrations, motions, and/or other touch feedback to the user” to create “a more compelling and complete user experience while interacting with interactive content.” Ex. 1001, 2:67–3:5. A “peripheral” can include a device or physical object, including a body part, that can be manipulated by a user. *See id.* at 3:20–47.

Sensing the position of a peripheral may involve the use of a “position sensor” that is “configured to generate an output signal that conveys

information related to the position of the peripheral.” Ex. 1001, 5:38–40; *accord id.* at 5:44–48. The position sensors may be used for “remote sensing,” such as by using an imaging device, triangulation with wireless signals, or other types of motion tracking. Ex. 1001, 5:25–35. Remote sensing may also include “access to data from device-embedded sensors such as magnetometer, accelerometer/gyroscope, and/or other remote sensing techniques.” *Id.* at 5:35–38. Also, “[i]n some implementations, the position sensor . . . may include one or more sensors carried by [the] peripheral,” such as “an accelerometer, a gyroscope, [or] a digital compass.” *Id.* at 5:43–46.

D. Challenged Claims

As noted above, Petitioner challenges claims 1–4, 8, 10, 11, and 17–19 of the ’217 patent. Independent claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. A system comprising:
 - a manipulatable input device movable through real space in at least three degrees of freedom, the manipulatable input device incorporating a haptic output device;
 - a processor in communication with the haptic output device;
 - a memory on which instructions executable by the processor are stored for causing the processor to:
 - receive one or more sensor signals indicating a position of the manipulatable input device in the at least three degrees of freedom and an identification of the manipulatable input device;
 - establish a communication pathway between the manipulatable input device and the processor;
 - after establishing the communication pathway, determine a feedback parameter based at least in part on the position of the manipulatable input device in the at least three

degrees of freedom and the identification of the manipulatable input device; and

transmit a haptic signal to the haptic output device, the haptic signal configured to cause the haptic output device to output a haptic effect according to the feedback parameter.

Ex. 1001, 12:49–13:4.

E. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following grounds:

Claims Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–4, 8, 10, 11, 17–19	103(a)	Nogami, ² Phelps ³
11, 19	103(a)	Nogami, Phelps, Kotake ⁴

Pet. 3. Petitioner relies on the Declaration of Jeremy Cooperstock, Ph.D. (Ex. 1002) to support its challenges. Patent Owner relies on the Declaration of Gregory Abowd, D.Phil. (Ex. 2002) to support its Preliminary Response.

III. ANALYSIS

A. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103(a) requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham v.*

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the challenged claims of the ’217 patent have an effective filing date before March 16, 2013, the pre-AIA version of 35 U.S.C. § 103 applies.

² US 2009/0066725 A1, published Mar. 12, 2009 (Ex. 1003).

³ US 2007/0088943 A1, published Apr. 19, 2007 (Ex. 1004).

⁴ US 2008/0285854 A1, published Nov. 20, 2008 (Ex. 1005).

John Deere Co., 383 U.S. 1, 17 (1966). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner contends that a person having ordinary skill in the art would have possessed a bachelor's degree in electrical engineering or computer science (or an equivalent degree), and two years of practical or industry experience in the field of human computer interaction, including implementation of computer-based systems and software for providing haptic feedback effects to a user and determining the position and/or orientation of a device used by a user (such as a device worn on the human body).

Pet. 4–5 (citing Ex. 1002 ¶¶ 12–13). Petitioner adds that “[a] person could also have qualified as an ordinarily skilled artisan with more formal education and less practical or industry experience, or vice versa.” *Id.* at 5 (citing Ex. 1002 ¶¶ 12–13).

Patent Owner contends that a person having ordinary skill in the art “would have had a bachelor's degree in electrical engineering or computer science (or an equivalent degree), and two years of practical or industry experience in the field of human computer interaction (HCI), including implementation of computer-based systems and software for providing haptic feedback effects to a user,” and “[a]lso, a person could have qualified as a [person of ordinary skill in the art] with more formal education and less

practical or industry experience, or vice versa.” Prelim. Resp. 11–12 (citing Ex. 2002 ¶ 11).

The only substantial difference between the two proposals is that Petitioner includes experience in “determining the position and/or orientation of a device used by a user (such as a device worn on the human body),” whereas Patent Owner does not. *Compare* Pet. 4–5, *with* Prelim. Resp. 11. At this stage, Patent Owner and its expert Dr. Abowd do not say if, or why, they disagree with this part of Petitioner’s articulation. *See* Prelim. Resp. 11–12; Ex. 2002 ¶¶ 8–12. We preliminarily determine that this part of Petitioner’s proposal is consistent with the types of technical problems that the ’217 patent assumes the reader would have been able to solve without detailed disclosure. *See, e.g.*, Ex. 1001, 5:25–48, 6:38–50. And because the remainder of Petitioner’s proposal is substantially undisputed, we adopt Petitioner’s articulation of the level of ordinary skill in the art for this decision. Because this is a preliminary determination, Patent Owner may provide additional arguments or evidence supporting a different level of ordinary skill at trial.

B. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the district-court-type standard, as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms 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, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful

when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

Petitioner notes that claim constructions for the term “real space” have been proposed by the parties in the related district court proceeding, but contends that no “term of the ’217 patent requires express construction at this time because, as shown below, the claims are obvious under the constructions proposed by both parties in the pending litigation, or any other reasonable construction.” Pet. 6 (citing Ex. 1011, 2).

Patent Owner informs us that the district court construed the term “real space” as having its plain and ordinary meaning. Prelim. Resp. 12 n.2 (citing Ex. 2005, 4). In addition, Patent Owner argues that the term “input device” should be construed as “hardware that actively inputs information.” *Id.* at 13 (citing Ex. 2002 ¶¶ 43–51). In support of this construction, Patent Owner asserts that the Specification of the ’217 patent “describes ‘**peripherals**’ broadly as including ‘a physical **object**, a physical **device**, and/or a combination thereof that can be manipulated by a user to interact with interactive content.’” *Id.* (citing Ex. 1001, 3:20–22). Patent Owner then argues that, during prosecution of the ’217 patent, the applicant “further clarified and narrowed the scope of the claim by amending the claim limitation from ‘**peripheral** configured to be manipulated by the user’ to ‘manipulatable **input device**.’” *Id.* (citing Ex. 1012, 338). Patent Owner further contends that, based on the different examples of physical objects and physical devices provided, the Specification distinguishes peripherals that include physical objects from peripherals that include physical devices, and peripherals that include physical devices are required by the challenged claims. *Id.* 13–14 (citing Ex. 1001, 3:30–32, 3:40–47).

In addition, Patent Owner argues that the Specification describes an example of a peripheral that includes, among other components, a user interface with buttons, dials, touch pads, or a touch screen for the user to input information. Prelim. Resp. 14–15 (citing Ex. 1001, 9:33–10:52, Fig. 3). Thus, in Patent Owner’s view, “[u]nlike a peripheral that is simply a passive physical object, an input device as claimed includes hardware that actively inputs information into the system by way of, for example, buttons, dials, touch pads, or a touch screen.” *Id.* at 15. Patent Owner also argues that, in view of this example peripheral, one of ordinary skill in the art “would understand that a physical object, such as Nogami’s glove, is not an ‘input device’ and thus, would not be able to achieve these gaming related functions like interactive user messaging and responses, which require active input by the user.” *Id.* at 16 (citing Ex. 2002 ¶ 49).

Petitioner argues that Patent Owner’s proposed construction should be rejected. Reply 1. Regarding Patent Owner’s reliance on the examples of physical devices set forth in the Specification, Petitioner contends that the ’217 patent “merely provides a lengthy list of non-limiting examples of physical devices that a peripheral ‘may’ include,” and “Patent Owner does not identify any disclaimer or disavowal that limits the claimed input device to any of the exemplary embodiments provided in the written description.” *Id.* at 1–2 (citing Ex. 1001, 3:34–44).

Petitioner also argues that Patent Owner’s construction excludes express embodiments in the written description. Reply 2. Namely, Petitioner asserts that the Specification describes an exemplary peripheral depicted in Figure 2 that does not require anything more than an identifying feature, such that Patent Owner’s contention that an “input device” must include hardware (and exclude a device relying on a physical identifying

marker) is refuted by the intrinsic record. *Id.* (citing Ex. 1001, 7:45–51, Fig. 2). Furthermore, Petitioner disagrees that an input device must *actively* input information, arguing that “Patent Owner also does not explain what it means for the device to ‘actively’ input information,” and “to the extent this is intended to exclude a ‘passive’ device, . . . the patent makes clear that the input device need not include anything beyond non-electronic identifying features.” *Id.* at 3.

Instead of Patent Owner’s proposal, Petitioner, relying on a definition from the *Microsoft Computer Dictionary*, contends that the term “input device” should be construed as “a device that allows a user to provide input.” Reply 1 (citing Ex. 1007, 16; Ex. 1002 ¶ 68).

In response, Patent Owner reiterates that the claims were amended during prosecution by replacing the broad term “peripheral” with the narrower term “manipulatable input device,” and argues that Petitioner “has not rebutted the presumption that the terms ‘peripheral’ and ‘manipulatable input device’ have different meaning.” Sur-reply 1 (citing *SimpleAir, Inc. v. Sony Ericsson Mobile Commc’ns AB*, 820 F.3d 419, 431 (Fed. Cir. 2016)).

Based on the preliminary evidence, however, we are not persuaded that the applicant intended to limit a “manipulatable input device” to the physical devices identified in the Specification, and therefore exclude the identified physical objects. To the extent Patent Owner is arguing that the amendment replacing “peripheral configured to be manipulated by the user” with “manipulatable input devices” was intended to disclaim physical objects from the scope of the claims, Patent Owner has not demonstrated that the amendment amounts to a “clear and unmistakable” disavowal. *See Traxcell Techs., LLC v. Nokia Sols. & Networks Oy*, 15 F.4th 1136, 1141 (Fed. Cir. 2021) (Prosecution disclaimer “attaches if a patentee ‘has

unequivocally disavowed a certain meaning to obtain [a] patent’ in a way that is ‘clear and unmistakable.’” (quoting *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324–26 (Fed. Cir. 2003)).

Here, the amendment does not appear, based on the preliminary evidence, to be an unambiguous disavowal because it uses a different term (“manipulatable input device”) than the term from the Specification (“physical device”). Moreover, applicant’s remarks accompanying the amendment do not state that the amendment was intended to distinguish peripherals that are physical objects from peripherals that are physical devices; nor do the remarks state that the amendment was intended to exclude physical object peripherals from the scope of the claims. *See* Ex. 1012, 342–47.

In addition, we disagree with Patent Owner’s argument that Petitioner “wrongly equates the term ‘input device’ with the broadest meaning of ‘peripheral’ by citing inapplicable embodiments relating to physical objects and not devices,” namely, “the inapposite peripheral 202 relating to physical objects and not peripheral 302 relating to devices.” Sur-reply 1 (citing Reply 2). In particular, we are not persuaded that peripheral 202 relates to physical objects only. The ’217 patent discloses that “the peripheral 202 may include an accessory 204, a base device 206, and/or other components,” and “the accessory 204 and/or the base device 206 may include . . . one or more of *a battery, an audio playback device, an accelerometer, a motion detector, buttons, and/or other components.*” Ex. 1001, 7:43–55 (emphasis added). Based on this disclosure, we preliminarily determine that peripheral 202 can include devices and is not limited to physical objects.

We also disagree with Patent Owner that Petitioner’s argument based on the ’217 patent’s disclosure of an “identifying feature” relies on a

“hypothetical” embodiment. *See* Sur-reply 2 (citing Reply 2). To the contrary, the ’217 patent discloses that “the accessory 204 and/or the base device 206 [of peripheral 202] *may include one or more of* an actuator 208, a wireless transmitter/receiver 210, an actuator control 212, one or more identifying features 214, *and/or* other components.” Ex. 1001, 7:47–51 (emphases added). The use of “one or more of” and “and/or” indicates that peripheral 202 can include any combination (including all or some subset) of actuator 208, wireless transmitter/receiver 210, actuator control 212, identifying features 214, and other components. Thus, we agree with Petitioner that peripheral 202 could comprise just a single identifying feature. *See* Reply 2. Furthermore, we disagree with Patent Owner’s argument that the ’217 patent “describes a base ‘device’ by listing ‘identifying features’ along with a list consisting *solely of* hardware examples, i.e., an actuator, an actuator control, and a wireless transmitter/receiver,” and “a natural reading of this list suggests that the generic ‘identifying feature’ also includes hardware like all of the preceding specific examples.” *See* Sur-reply 2 (citing Ex. 1001, 2–3; *Secure Access, LLC v. PNC Bank Nat’l Ass’n*, 859 F.3d 998, 1017 (Fed. Cir. 2017)). We are not persuaded that the identifying features must be a device simply because it is included in a list in which the other items are devices.

For the above reasons, we decline to adopt Patent Owner’s proposed construction of “input device” at this stage of the proceeding. On the other hand, Petitioner’s proposed construction is consistent with the Specification and supported by credible extrinsic evidence. *See* Ex. 1007, 16. Patent Owner argues that “extrinsic evidence cannot alter claim meaning that is clear in the intrinsic record.” Sur-reply 3 (citing *Seabed Geosolutions Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021)). In this case,

however, the meaning of “input device” is not clear in the intrinsic record. Indeed, the term “input device” does not appear in the written description of the ’217 patent. *See generally* Ex. 1001. Reliance on extrinsic evidence is appropriate under these circumstances. Accordingly, we preliminarily construe “input device” as “a device that allows a user to provide input.”

On the present record, we do not discern a need to construe explicitly any other claim language because doing so would have no effect on our analyses below of Petitioner’s asserted grounds and will not assist in resolving the present controversy between the parties. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. Discretion Under 35 U.S.C. § 314(a)

Institution of *inter partes* review is at the Director’s discretion, which has been delegated to the Board under her guidance. *See* 35 U.S.C. § 314(a); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he [USPTO] is permitted, but never compelled, to institute an IPR proceeding.”); 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”).

Under Board precedent, one of the considerations that may weigh in favor of denying a petition under § 314(a) is the advanced state of a parallel district court action. *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential); Patent Trial and Appeal Board, Consolidated Trial Practice Guide, 58 & n.2 (Nov. 2019), available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>. In *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB

Mar. 20, 2020) (precedential), the Board explained that “cases addressing earlier trial dates as a basis for denial under *NHK* have sought to balance considerations such as system efficiency, fairness, and patent quality.”

Fintiv, Paper 11 at 5. *Fintiv* sets forth six non-exclusive factors for determining “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding.” *Id.* at 6. The Director has also issued interim guidance to the Board on applying these factors. See Katherine K. Vidal, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022) 9, available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf (“Director Memo”).

The Director Memo explains that, “[c]onsistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.” Director Memo 3 (footnote omitted) (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A)). The Director Memo explains that such a *Sotera* stipulation “mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB . . . and allows the PTAB to review grounds that the parallel district court litigation will not resolve.” *Id.* at 7–8.

Petitioner acknowledges that in the related district court case, the court has set a trial date for February 20, 2024. Pet. 4.⁵ But to address any concerns regarding duplication of efforts between the related district court case and this proceeding, Petitioner provides a stipulation that it “will not pursue in the district court any grounds of invalidity against the challenged claims that were raised or reasonably could have been raised in IPR.” *Id.*

In response, Patent Owner acknowledges that Petitioner offers a *Sotera* stipulation, and that under these circumstances “a petition should not ordinarily be denied in accordance with the *Fintiv* factors.” Prelim. Resp. 40. But Patent Owner contends that we should still exercise our discretion to deny the Petition under § 314(a) based on the advanced state of the district court case and the duplication of invalidity grounds asserted in this proceeding. *Id.* at 40–41 (citing *Cisco Sys., Inc. v. Estech Sys., Inc.*, IPR2021-00329, Paper 13 (PTAB July 6, 2021)).

We do not agree that we can effectively ignore the Director Memo under these circumstances. Patent Owner cites *Cisco*, a non-precedential Board decision issued prior to the Director Memo in which the panel weighed the *Fintiv* factors and determined that a *Sotera* stipulation did not overcome a trial date scheduled significantly before the projected date of a final written decision. *See* Prelim. Resp. 40–41. The Director Memo issued after this decision as “binding agency guidance.” Director Memo at 3. Thus, the Director Memo abrogates any prior inconsistent holdings by Board panels, including the non-precedential holding in the *Cisco* decision.

⁵ Petitioner argues that it filed a motion to transfer the case to the U.S. District Court for the Northern District of California that remained pending at the time of filing the Petition. Pet. 4. Patent Owner informs us that this motion was unsuccessful. *See* PO Resp. 43.

Because Petitioner has provided a *Sotera* stipulation, the Director Memo is controlling and the *Fintiv* factors are not a basis for denying institution.

D. Ground 1: Asserted Obviousness Based on Nogami and Phelps

Petitioner asserts that claims 1–4, 8, 10, 11, and 17–19 are unpatentable based on Nogami and Phelps. Pet. 8–66. Patent Owner provides arguments addressing this asserted ground of unpatentability. Prelim. Resp. 23–38.

1. Nogami

Nogami generally relates to “an information-processing apparatus configured to implement an interaction between a virtual space and a user who observes the virtual space.” Ex. 1003 ¶ 2. Figure 1 of Nogami illustrates “an exemplary state of a system, which is being used by the user.” *Id.* ¶¶ 30, 47.

FIG.1

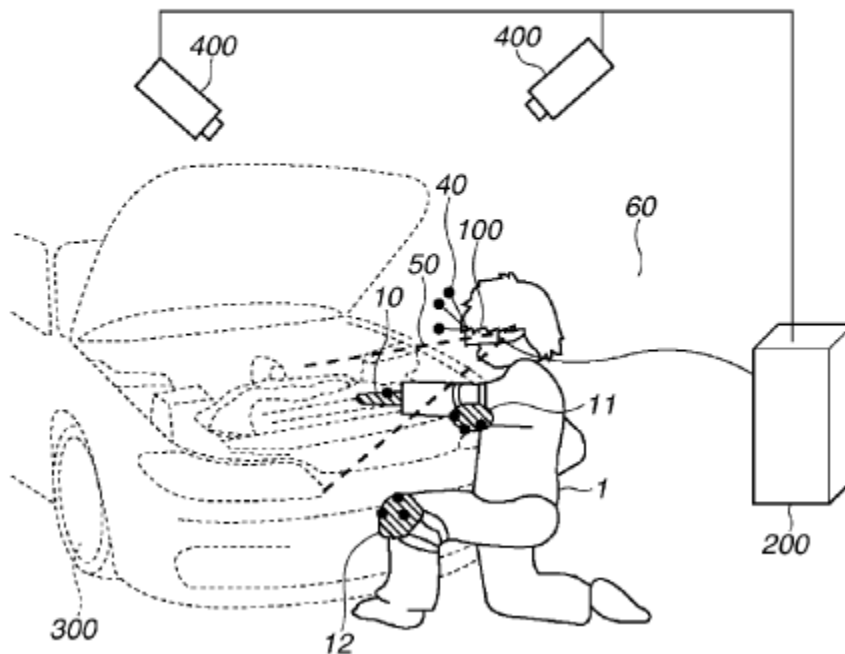


Figure 1, above, depicts user 1, on whose hand, elbow, and knee are mounted stimulation generation units 10, 11, and 12, respectively. Ex. 1003 ¶ 51. Head-mounted display (“HMD”) 100 is also mounted on user 1’s head. *Id.* ¶ 49. Each of these devices allows the user to experience a virtual space including virtual object 300, which in this example is a full-scale automobile. *Id.* ¶¶ 49–50. Position and orientation sensors 400 (depicted as cameras) also acquire the position of markers 40 attached to stimulation generation units 10–12 and HMD 100, and then calculation processing apparatus 200 uses this position information to output a combined image that includes a virtual image and real space image to HMD 100. *Id.* ¶¶ 52–53. Calculation processing apparatus 200 includes central processing unit (“CPU”) 201 that uses a program and data stored on random access memory 202 or read-only memory 203 to control operation of apparatus 200. *Id.* ¶ 83, Fig. 2.

In one embodiment, stimulation generation unit 10 includes a glove-like body with cutaneous sense stimulation units 20. Ex. 1003 ¶ 61, Fig. 3. In addition, stimulation generation unit 10 can include bar code 45 that indicates ID information unique to stimulation generation unit 10. *Id.* ¶¶ 205–206.

Nogami divides the space around user 1 into “attention range” 50 (the volume in which user 1 can perceive virtual objects visually) and “non-attention range” 60 (the remaining volume). Ex. 1003 ¶¶ 100–101. In both ranges, user 1 may make virtual tactile contact with virtual objects; for example, user 1’s hand (wearing stimulation generation unit 10) might contact virtual object 300 within attention range 50, while user 1’s knee (wearing stimulation generation unit 12) might contact virtual object 300 in non-attention range 60. *Id.* ¶¶ 102–03. In this example, calculation

processing apparatus 200 might generate different haptic stimulations to units 10 and 12, based on whether the contact is in attention range 50 or non-attention range 60. *Id.* ¶¶ 103, 120, 174, 279–280, Fig. 4.

2. *Phelps*

Phelps “relates generally to methods of programming electrical computers and data processing systems, and more specifically to a BIOS (Basic Input/Output System) method, apparatus and system for device identification, initialization and management in said systems.” Ex. 1004 ¶ 1.

3. *Independent Claims 1 and 17*

Petitioner contends that the proposed combination of Nogami and Phelps discloses the limitations of claim 1. Pet. 8–48. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Nogami and Phelps. *Id.* at 33–37. Petitioner relies on essentially the same arguments in connection with claim 17. *Id.* at 57–58. Patent Owner argues that (1) Nogami does not teach or suggest the claimed input device and (2) Nogami does not teach or suggest “determin[ing] a feedback parameter based at least in part on . . . the identification of the manipulatable input device.” Prelim. Resp. 23–38.

We have reviewed Petitioner’s contentions with respect to the limitations of claims 1 and 17, and for the reasons discussed below, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail in with respect to the contention that claims 1 and 17 would have been obvious based on the combination of Nogami and Phelps. *See* Pet. 8–48. We address Patent Owner’s arguments below.

a) The Recited Input Device

Petitioner maps the recited manipulatable input device to Nogami's stimulation generation unit 10. Pet. 11–12 (citing Ex. 1003 ¶¶ 49, 51–52, 60–61, Figs. 1, 3). Petitioner contends that

[s]timulation generation unit 10 in Nogami qualifies as an “input device” . . . because it enables input of information in at least two categories in response to user action: (1) device position and orientation information (based on location and movement of the user's hand), as well as (2) device identification information (based on information on the stimulation generation unit worn by the user).

Id. at 12 (citing Ex. 1002 ¶ 64). Specifically, Petitioner argues that stimulation generation unit 10 includes marker 40 that provides position and orientation information to the system and bar code 45 that indicates ID information unique to stimulation generation unit 10. *Id.* at 12–14 (citing Ex. 1003 ¶¶ 52–54, 74, 77–78, 82, 108, 204–213; Fig. 11; Ex. 1002 ¶ 64).

Petitioner also argues that stimulation generation unit 10: (1) is a manipulatable input device because it can be moved or manipulated by a user, resulting in inputs to the system (Pet. 14); (2) is movable through real space in at least three degrees of freedom (*id.* at 18); and (3) incorporates a haptic output device (*id.* at 19–21).

In response, Patent Owner argues that neither of the two categories of information that Petitioner alleges can be input with Nogami's stimulation generation unit 10 demonstrate active input of user information. Prelim. Resp. 24. According to Patent Owner, stimulation generation unit 10 is not “hardware for actively inputting information” because, other than stimulation units 20 that provide haptic output, stimulation generation unit 10 is only a glove having passive marker 40 and bar code 45. *Id.* (citing Pet. 12–13; Ex. 2002 ¶ 54). Patent Owner also argues that “[a]t best, this

glove with its marker 40 and bar code 45 are all merely physical **objects**. Such physical objects are described in the '217 patent specification, which clearly distinguishes these types of physical objects from physical **devices**, which the Challenged claims require.” *Id.* at 25 (citing *id.* at 13–17 (§ V.A.); Ex. 2002 ¶¶ 45–51, 56–58).

We are not persuaded by these arguments. First, for the reasons discussed above, we disagree that “input device” should be construed as “hardware that actively inputs information.” *See supra* § II.B. Active input of user information is not required. *Id.* Instead, under the construction of “input device” we have preliminarily adopted (i.e., “a device that allows a user to provide input”), we are persuaded that Nogami’s stimulation generation unit 10 is an input device.

Second, we nevertheless are not persuaded that Nogami fails to disclose active input of information. Nogami discloses that user 1 interacts with virtual object 300 to perform “a verification operation with respect to an operation to be performed on an engine compartment of the automobile” and thus consciously performs contact with the virtual object. Ex. 1003 ¶¶ 26, 50. Thus, even though stimulation generation unit 10 does not include buttons, dials, touch pads, a touch screen, or the like (which are not required by the claim language), the user purposely positions it with respect to virtual object 300 so that position and orientation sensors 400 can capture position information that is fed to calculation processing apparatus 200. *Id.* ¶ 52. As such, based on the current record, we determine that Nogami discloses active input of information via stimulation generation unit 10 because the position information is input in response to the user’s intentional physical act of moving and positioning the stimulation generation unit relative to virtual object 300. *See* Pet. 17 (asserting stimulation generation

unit 10 “can be manipulated by a user (for example, to interact with various virtual objects by making virtual contact”).

For the above reasons, we do not find Patent Owner’s argument persuasive. Instead, at this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing that Nogami discloses the “manipulatable input device” as claimed.

b) The Determining a Feedback Parameter Limitation

Petitioner argues that Nogami’s CPU 201 generates “operation setting information,” which specifies the intensity of haptic stimulation provided to the user. Pet. 37 (citing Ex. 1003 ¶¶ 120, 122–123; Ex. 1002 ¶¶ 100–101). Petitioner contends that this operation setting information is a feedback parameter. *Id.* at 38–39.

Regarding the requirement that the feedback parameter is based on the identification of the manipulatable input device, Petitioner contends that Nogami provides two separate examples, each of which independently satisfy this limitation. Pet. 39–40. For the first example, Petitioner argues that Nogami discloses that determining the operation setting information is based at least in part on the identification of the manipulatable input device because CPU 201 uses bar code 45 on stimulation generation unit 10 to determine whether the stimulation generation unit is located within the user’s attention range. *Id.* at 41. Petitioner contends that bar code 45 allows the system to uniquely identify the stimulation generation unit, and, if bar code 45 is recognized, CPU 201 determines that stimulation generation unit 10 is within the attention range and sets the operation setting information accordingly. *Id.* at 41–42 (citing Ex. 1003 ¶¶ 206, 208–209). Thus, according to Petitioner, Nogami discloses determining the operation setting information based at least in part on the identification of the manipulatable

input device because the operation setting information may indicate a lower or higher intensity, respectively, based on whether or not stimulation generation unit 10 was identified inside the user's attention range. *Id.* at 43 (citing Ex. 1003 ¶ 179; Ex. 1002 ¶ 107).

In its Preliminary Response, Patent Owner argues that Nogami does not disclose using “bar code 45 to **‘identify the peripheral from a plurality of possible peripherals’** according to the ’217 patent’s purpose of identifying the peripheral input device.” Prelim. Resp. 31 (citing Ex. 2002 ¶ 63; Ex. 1001, 1:46–2:19, 5:5–24, 7:24–27). Instead, Patent Owner argues that Nogami only uses bar code 45 to determine whether stimulation generation unit 10 is located inside or outside attention range 50—not to identify stimulation generation unit 10 from a plurality of possible stimulation generation units. *Id.* at 31–34 (citing Ex. 1003 ¶¶ 29, 209, 213, Fig. 11; Ex. 2002 ¶¶ 63–64). Moreover, Patent Owner asserts that Nogami discloses that only stimulation generation unit 10 contains bar code 45. *Id.* at 34 (citing Ex. 1003 ¶¶ 206–213; Ex. 2002 ¶ 65). According to Patent Owner, there is no disclosure in Nogami that stimulation generation units 11 or 12 also contain bar code 45, nor would there be a need for these two stimulation generation units to contain bar code 45 because Nogami is only concerned with whether stimulation generation unit 10 is inside or outside attention range 50. *Id.* at 34–35 (citing Ex. 1003 ¶¶ 209, 213; Ex. 2002 ¶ 65).

We do not find these arguments persuasive because they are based on a position—i.e., Nogami does not disclose using bar code 45 to identify stimulation generation unit 10 from a plurality of possible stimulation generation units—that is not required by the claim language. That is, claim 1 merely requires that the feedback parameter be based at least in part

on “the identification of the manipulatable input device.” Claim 1 does not require identifying the manipulatable input device from a plurality of possible devices. Based on the current record, we are persuaded by Petitioner’s arguments that Nogami’s system uses bar code 45 to identify stimulation generation unit 10 when generating the operation setting information. *See* Pet. 41–42 (citing Ex. 1003 ¶¶ 206, 208–209). Indeed, Nogami discloses that if “bar code 45 is detected in the real space image 410 and the two-dimensional bar code 45 is successfully recognized, then the CPU 201 determines that a stimulation generation unit 10 indicated by the two-dimensional bar code 45 and identified by the recognition is located within the attention range.” Ex. 1003 ¶ 208. Nogami also discloses that “when the two dimensional bar code 45 is detected and recognized, the CPU 201 can determine that the two-dimensional bar code 45 indicating the stimulation generation unit 10 is located within the real space image 410” and then “sets the operation setting information for the contact within the attention range to the stimulation generation unit 10.” *Id.* ¶ 209.

We also are not persuaded by Patent Owner’s argument that Nogami fails to disclose that stimulation generation units 11 or 12 contain a bar code. Petitioner maps Nogami’s stimulation generation unit 10, not stimulation generation units 11 and 12, to the claimed manipulatable input device (Pet. 11), so whether or not stimulation generation units 11 and 12 include a bar code have little or no bearing on the proposed ground of unpatentability.

For the above reasons, at this stage of the proceeding and on the current record, we determine that Petitioner has made a sufficient showing based on its first example that Nogami discloses “determin[ing] a feedback parameter based at least in part on . . . the identification of the manipulatable input device.” Because we determine that Petitioner’s first example satisfies

this limitation sufficiently for purposes of institution, we do not discuss the second example set forth on pages 43–45 of the Petition at this stage of the proceeding.

c) The Remaining Aspects of Petitioner’s Contentions

Patent Owner does not offer any arguments specifically addressing the remaining limitations of claims 1 and 17. *See* Prelim. Resp. 23–38. We have reviewed Petitioner’s contentions with respect to the remaining limitations of claims 1 and 17 and determine that the Petition provides a sufficient showing, at this stage of the proceeding, that the combination of Nogami and Phelps satisfies each limitation. *See* Pet. 8–48, 57–58.

d) Preliminary Determination as to Claims 1 and 17

Based on our review and consideration of the current record, we determine that the information presented sufficiently supports, for purposes of institution, Petitioner’s assertions that the combination of Nogami and Phelps satisfies each limitation of claims 1 and 17. We therefore determine Petitioner has met its burden to show a reasonable likelihood it would prevail in demonstrating that claims 1 and 17 are unpatentable over the combination of Nogami and Phelps.

4. Dependent Claims 2–4, 8, 10, 11, 18, and 19

Claims 2–4, 8, 10, 11, and 19 depend from claim 1, and claim 18 depends from claim 17. Ex. 1001, 13:5–10, 13:20–21; 13: 24–32; 14:26–36. Because Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the ’217 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting 35 U.S.C. § 314 to require “a simple yes-or-no institution choice respecting a petition,

embracing all challenges included in the petition”); 37 C.F.R. § 42.108(a) (“When instituting inter partes review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”). Therefore, it is not necessary for us to assess every claim challenged by Petitioner.

Nevertheless, we note that Petitioner provides reasonable and detailed explanations, supported with the testimony of Dr. Cooperstock, indicating where the combination of Nogami and Phelps discloses the limitations of claims 2–4, 8, 10, 11, 18, and 19. Pet. 48–66 (citing Ex. 1002 ¶¶ 64–65, 105–107, 118, 120, 122, 128–129, 131, 136, 142, 144, 146, 149–151, 153–156). Patent Owner relies on its arguments made in connection with the independent claims and does not address separately Petitioner’s arguments and supporting evidence regarding these dependent claims. *See* Prelim. Resp. 38. We have reviewed Petitioner’s contentions with respect to these claims and determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in its assertion that claims 2–4, 8, 10, 11, 18, and 19 are unpatentable over the combination of Nogami and Phelps.

E. Ground 2: Asserted Obviousness Based on Nogami, Phelps, and Kotake

Petitioner also challenges claims 11 and 19 as unpatentable under 35 U.S.C. § 103 based on the combination of Nogami, Phelps, and Kotake. Pet. 66–72. Petitioner relies on Kotake as disclosing “a technique for detecting ‘markers’ appearing in an image of three-dimensional space captured by a camera, which are analogous to bar code **45** attached to stimulation generation unit **10** of Nogami.” *Id.* at 67–68 (citing Ex. 1005 ¶¶ 46–47, 73, Fig. 1). Petitioner also provides reasons, supported with the testimony of Dr. Cooperstock, for why it would have been obvious to one of

ordinary skill in the art to combine Kotake's teachings with Nogami's bar code with a reasonable expectation of success. *Id.* at 69–72 (citing Ex. 1002 ¶¶ 164–166, 168).

Patent Owner argues that this ground is deficient for the same reasons discussed in connection with the first ground. Prelim. Resp. 38–39. However, we find Patent Owner's arguments regarding the first ground unpersuasive for the reasons discussed above.

On the current record, we find Petitioner's contentions sufficiently persuasive at this stage of the proceeding. Furthermore, because Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '217 patent is unpatentable (*see supra* § III.D.), we include this ground in the instituted *inter partes* review. *See SAS*, 138 S. Ct. at 1354, 1359–60; *PGS Geophysical*, 891 F.3d at 1360; 37 C.F.R. § 42.108(a).

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one of the challenged claims. Thus, we institute an *inter partes* review of all challenged claims on all presented challenges. *SAS*, 138 S. Ct. at 1359–60; *PGS Geophysical*, 891 F.3d at 1360; 37 C.F.R. § 42.108(a).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–4, 8, 10, 11, and 17–19 of the '217 patent on the unpatentability grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this decision.

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