

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZTE CORPORATION, ZTE (USA), INC., and ZTE (TX), INC.,
Petitioner,

v.

WSOU INVESTMENTS, LLC
d/b/a BRAZOS LICENSING AND DEVELOPMENT,
Patent Owner.

IPR2021-00695
Patent 8,147,071 B2

Before ROBERT J. WEINSCHENK, JOHN A. HUDALLA, and
JOHN D. HAMANN, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background and Summary

ZTE Corporation, ZTE (USA), Inc., and ZTE (TX), Inc. (collectively, “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–14 (“the challenged claims”) of U.S. Patent No. 8,147,071 B2 (Ex. 1001, “the ’071 patent”). WSOU Investments, LLC d/b/a Brazos Licensing and Development (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”) to the Petition. We instituted an *inter partes* review of the challenged claims on September 27, 2021. Paper 10 (“Dec. on Inst.”), 21. After institution, Patent Owner filed a Response (Paper 12, “PO Resp.”) to the Petition, Petitioner filed a Reply (Paper 14, “Pet. Reply”) to the Response, and Patent Owner filed a Sur-reply (Paper 15, “PO Sur-reply”) to the Reply. We held an oral hearing on July 1, 2022, and a transcript of the hearing is included in the record. Paper 23 (“Tr.”).

For the reasons set forth below, Petitioner has shown by a preponderance of the evidence that claims 1–14 of the ’071 patent are unpatentable.

B. Real Parties in Interest

The parties identify themselves as the only real parties in interest. Pet. 75; Paper 3, 1–2.

C. Related Matters

The parties indicate that the ’071 patent is the subject of the following district court case: *WSOU Investments, LLC v. ZTE Corporation*, No. 6:20-cv-00492 (W.D. Tex.). Pet. 1; Paper 3, 2. Petitioner indicates that the ’071

patent also is the subject of the following district court case: *ZTE (USA), Inc. v. WSOU Investments, LLC*, No. 3:21-cv-02128 (N.D. Tex.). Paper 9, 1.

D. The '071 Patent

The '071 patent relates to “projecting images and sensing movement.” Ex. 1001, 1:6–8. Specifically, the '071 patent explains that “[m]icroprojector technology has advanced considerably in the recent years, and microprojectors are now capable of being implemented in mobile phones such that they may be hand-held in use.” *Id.* at 1:34–37. But, according to the '071 patent, “there is little in the way of prior art for providing devices that can utilise microprojectors to create virtual environments.” *Id.* at 1:37–39. To address this alleged problem, the '071 patent describes a processor that is capable of modifying image data provided to a projector based on the projector’s movement. *Id.* at 4:16–23. For example, an abrupt movement of the projector to the right causes an incremental forward cycling through an image set (such as a slide presentation), whereas an abrupt movement of the projector to the left causes an incremental backward cycling through the image set. *Id.* at 6:62–7:14.

E. Illustrative Claim

Of the challenged claims, claims 1, 13, and 14 are independent. Claim 1 is reproduced below.

1. A processor for providing image data signalling to a projector, the image data signalling representing an image to be projected by the projector, the processor comprising:

an input to receive movement signalling associated with movement of the projector; and

an output configured to provide image data signalling to the projector, and wherein the processor is configured to provide image data signalling to the projector based on received

movement signalling, wherein the movement signalling provides an indication of one or more movement criterion of the projector, the movement criterion representing one or more of displacement and movement speed of the projector, and wherein the processor is configured to discriminate a movement criterion and to provide associated image data signalling to project associated image data.

Ex. 1001, 11:13–28.

F. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Declaration of Stephen Gray (“Gray Declaration”)	1003
Huebner, US 2009/0091710 A1, published Apr. 9, 2009 (“Huebner”)	1005
de Haan, US 2010/0031201 A1, published Feb. 4, 2010 (“de Haan”)	1006

G. Asserted Grounds

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

Claims Challenged	35 U.S.C. §	Reference/Basis
1–5, 7–11, 13, 14	102(b), (e) ¹	Huebner
1–5, 7–11, 13, 14	103(a)	Huebner
1–14	102(e)	de Haan
1–14	103(a)	de Haan

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102, 103. Because the ’071 patent was filed before the effective date of the relevant amendment, the pre-AIA versions of §§ 102, 103 apply.

II. ANALYSIS

A. Legal Standards

A claim is anticipated if each limitation of the claim is disclosed in a single prior art reference arranged as in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). A claim is unpatentable as obvious 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 the 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 ordinary skill in the art; and 4) any objective indicia of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner argues that a person of ordinary skill in the art would have had “a Bachelor of Science degree in Electrical Engineering or an equivalent field, with two years of academic or industry experience in computer systems or comparable industry experience.” Pet. 6 (citing Ex. 1003 ¶ 38). Petitioner’s description of the level of ordinary skill in the art is supported by the testimony of Petitioner’s declarant, Mr. Stephen Gray. Ex. 1003 ¶ 38. Patent Owner does not propose a description of the level of ordinary skill in the art or dispute Petitioner’s description. PO Resp. 3. We adopt Petitioner’s description for purposes of this Decision.

C. Claim Construction

In an *inter partes* review proceeding, a patent claim is construed using the same standard used in federal district court in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of the 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). The parties' disputes about the asserted grounds of unpatentability raise issues regarding the meaning of the phrase "wherein the movement signalling provides an indication of one or more movement criterion of the projector" in claims 1, 13, and 14.

1. Wherein the movement signalling provides an indication of one or more movement criterion of the projector

Patent Owner contends that the term "provides" in the phrase "wherein the movement signalling provides an indication of one or more movement criterion of the projector" means "includes." *See, e.g.*, PO Resp. 5 ("the movement signaling *providing* (in other words, included in the movement signaling)"); PO Sur-reply 1 ("the 'movement signaling *provid[ing]*' (in other words, included in the movement signaling)"). As discussed below, even if we were to assume that the term "provides" means "includes," the asserted prior art nonetheless teaches the disputed claim limitation. *See* Sections II.D.2, II.F.2. As a result, we need not resolve this particular claim construction issue in order to resolve the parties' disputes about the asserted grounds of unpatentability.

Patent Owner also contends that the phrase "wherein the movement signalling provides an indication of one or more movement criterion of the projector" requires the movement signaling and movement criterion to be separate signals. *See, e.g.*, PO Resp. 5 ("the claim language requires . . . one

or more movement criterion, which is not the same as the movement signaling”); PO Sur-reply 4 (“the claim language expressly makes clear, ‘movement criterion’ is not the same as, and is in addition to, ‘movement signaling’”). Patent Owner argues that because the claim language recites the movement signaling and movement criterion separately, the movement signaling and movement criterion must be separate signals. PO Resp. 4–7; PO Sur-reply 1, 3–6.

We disagree. The claims of the ’071 patent indicate that the movement signaling and movement criterion need not be separate signals. Claim 1, for example, recites “wherein the movement signalling *provides* an indication of one or more movement criterion of the projector.” Ex. 1001, 11:21–23 (emphasis added). Patent Owner acknowledges that the claim term “provides” indicates that the movement signaling includes the movement criterion, and, thus, the movement criterion is not a separate signal. *Id.*; PO Resp. 5; PO Sur-reply 1; *see Retractable Techs., Inc. v. Becton, Dickson & Co.*, 653 F.3d 1296, 1303 (Fed. Cir. 2011) (holding that the claim language indicates that the “needle holder” and “retainer member” need not be separate components).

The written description of the ’071 patent confirms that the movement signaling and movement criterion need not be separate signals. Specifically, the ’071 patent states that “[b]y providing these movement criterion *in* the movement signalling, the processor is capable of recognising one or more of different types of movement/combinations.” Ex. 1001, 2:18–21 (emphasis added). Thus, the ’071 patent describes the movement criterion as provided “in” the movement signaling, not as a separate signal. *Id.*; *see Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231–32 (Fed. Cir. 2011) (holding

that the specification discloses that the “cutting box” may also function as a “dust collection structure,” and, thus, the claim terms do not require separate components).

Because Patent Owner’s interpretation is not consistent with the scope of the claim language and the written description, we decline to adopt it. No further construction of the phrase “wherein the movement signalling provides an indication of one or more movement criterion of the projector” is necessary to resolve the parties’ disputes about the asserted grounds of unpatentability. *See* Sections II.D.2, II.F.2.

D. Anticipation of Claims 1–5, 7–11, 13, and 14 by Huebner

Petitioner argues that claims 1–5, 7–11, 13, and 14 are anticipated by Huebner. Pet. 8–39. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–11, 13, and 14 are anticipated by Huebner.

1. Overview of Huebner

Huebner discloses an image projecting device that includes a projector, a control unit, and a position sensor. Ex. 1005 ¶¶ 64, 66. The projector communicates with the control unit and projects an image from the image projecting device. *Id.* ¶ 66. The position sensor is an accelerometer “that provides movement signals to the control unit.” *Id.* ¶ 64. The movement signals include information “regarding movement of the entire image projecting device.” *Id.* As a result, the control unit “can determine the relative motion of the device in 3D space” as a player moves the device. *Id.* ¶ 80. “For example, if a player sweeps or moves the device along the wall in a left horizontal direction, the projected image moves in an animated manner to the left.” *Id.* “Likewise, if the player sweeps the projected beam

of light along the wall in a right horizontal direction, the projected image moves in an animated manner to the right.” *Id.*

2. *Claim 1*

Claim 1 recites “[a] processor for providing image data signalling to a projector, the image data signalling representing an image to be projected by the projector.”² Ex. 1001, 11:13–15. Huebner discloses a control unit with a microprocessor that provides image data representing an image to a projector.³ Pet. 9–12; Ex. 1005 ¶¶ 5, 24, 60, 64, 66, 75, 124–125, 144, 172. Patent Owner does not dispute that Huebner discloses the preamble of claim 1.

Claim 1 recites “an input to receive movement signalling associated with movement of the projector.” Ex. 1001, 11:16–17. Huebner discloses that the control unit receives movement signals from a position sensor and a range locator sensor that provide information regarding movement of the projector. Pet. 12–14; Ex. 1003 ¶ 64; Ex. 1005 ¶¶ 64, 66, 75, 142. Patent Owner does not dispute that Huebner discloses this limitation of claim 1.

Claim 1 recites “an output configured to provide image data signalling to the projector.” Ex. 1001, 11:18–19. Huebner discloses that the control unit provides image data to the projector. Pet. 14–16; Ex. 1005, code (57), ¶¶ 60, 64, 66, 124–125, 144, 172. Patent Owner does not dispute that Huebner discloses this limitation of claim 1.

² We need not decide whether the preamble in any of the challenged independent claims is limiting because we determine that the prior art discloses the recitations in each preamble.

³ Huebner discloses that its control unit can provide both video data and single image data to the projector. Dec. on Inst. 13; Ex. 1005 ¶ 66 (“operable to project an image”).

Claim 1 recites “wherein the processor is configured to provide image data signalling to the projector based on received movement signalling.” Ex. 1001, 11:19–21. Huebner discloses that the control unit provides image data to the projector based on the received movement signals. Pet. 16–18; Ex. 1005 ¶¶ 8, 80, 81, 142. For example, Huebner’s control unit modifies image data to simulate movement of the projector based on information in the movement signals received from the position sensor. Pet. 17; Ex. 1005 ¶ 8. Patent Owner does not dispute that Huebner discloses this limitation of claim 1.

Claim 1 recites “wherein the movement signalling provides an indication of one or more movement criterion of the projector.” Ex. 1001, 11:21–23. Huebner discloses that the control unit receives movement signals from a position sensor that indicate movement of the projector “along x, y and z axes.” Pet. 18–19; Ex. 1005 ¶¶ 64, 66. Huebner also discloses that the control unit receives movement signals from a range locator sensor that indicate the distance from the projector to a surface on which a projected image resides. Pet. 19; Ex. 1005 ¶¶ 75, 142.

Patent Owner responds that Huebner does not disclose that the movement signaling provides an indication of one or more movement criterion of the projector. PO Resp. 4–6; PO Sur-reply 1–4. Specifically, Patent Owner argues that Petitioner “relies upon the same disclosure of Huebner” for both the movement signaling and movement criterion. PO Resp. 4. Patent Owner further contends that “[t]here is nothing in the two paragraphs of the Petition dedicated to this limitation that shows any disclosure in Huebner that the alleged ‘movement signaling’ . . . *additionally provides* an indication of one or more **movement criterion** of the projector.”

Id. at 5. According to Patent Owner, Petitioner “points to the same signal that is received by control unit 24 for both (i) the ‘movement signalling’ and (i) the ‘indication.’” PO Sur-reply 4.

Patent Owner’s argument is unavailing. As discussed above, we decline to adopt Patent Owner’s interpretation that requires the movement signaling and movement criterion to be separate signals. *See* Section II.C.1. Further, Huebner discloses both the movement signaling and movement criterion. Huebner discloses a position sensor “that provides movement signals to the control unit 24.” Ex. 1005 ¶ 64. Huebner also discloses that the movement signals “provide[] information to the control unit regarding movement of the entire image projecting device 10 along x, y and z axes.” *Id.* In other words, Huebner discloses movement signals that *include* information indicative of the movement of the projector. *Id.* Thus, as Petitioner explains, Huebner’s movement signals disclose the recited “movement signalling” and the information included in Huebner’s movement signals disclose the recited “movement criterion.”⁴ Pet. 13, 18–19; Pet. Reply 4–5.

Claim 1 recites “the movement criterion representing one or more of displacement and movement speed of the projector.” Ex. 1001, 11:23–25. Huebner discloses that the movement signals include information representing displacement and speed of the projector. Pet. 19–21; Ex. 1003 ¶¶ 78–80; Ex. 1005 ¶¶ 7, 64, 75, 80–81, 142. Other than the arguments

⁴ In addition, Huebner also discloses a range locator sensor that provides movement signals (i.e., movement signaling) that include information indicative of the distance from the projector to a surface on which a projected image resides (i.e., movement criterion). Pet. 13–14, 19; Ex. 1003 ¶¶ 63–64; Ex. 1005 ¶¶ 75, 142.

discussed above, Patent Owner does not dispute that Huebner discloses this limitation of claim 1.

Claim 1 recites “wherein the processor is configured to discriminate a movement criterion and to provide associated image data signalling to project associated image data.” Ex. 1001, 11:25–28. Huebner discloses that the control unit receives the movement signals and modifies image data provided to the projector based on information in the movement signals. Pet. 22–24; Ex. 1005 ¶¶ 8, 80, 142. For example, Huebner’s control unit modifies image data to simulate movement of the projector based on information in the movement signals received from the position sensor. Pet. 22–23; Ex. 1005 ¶ 8. Patent Owner does not dispute that Huebner discloses this limitation of claim 1.

3. Claims 2–4

Claim 2 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with one or more of a particular function within an application, or one of a plurality of different applications, to be projected by the projector.” Ex. 1001, 11:29–33. Claim 3 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with a particular function within an application to be projected by the projector.” *Id.* at 11:34–37. Claim 4 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with one of a plurality of different applications to be projected by the projector.” *Id.* at 11:38–41.

Huebner discloses that the image data for a particular movement criterion corresponds to an image associated with a function of an

application. Pet. 24–28; Ex. 1005 ¶¶ 4, 76–77, 80–81, 87, 145, 172. For example, Huebner discloses that “if the control unit determines the device is tilted with a quick, upward flick of the wrist, the projected image may be revised to cause the image to perform a certain action, such as having a dog sit up on its hind legs.” Pet. 26; Ex. 1005 ¶ 81. Patent Owner does not dispute that Huebner discloses the limitations of claims 2–4.

4. Claims 5 and 7

Claim 5 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with part of a larger image, and wherein movement of the projector provides for scanning across to and projection of respective parts of the larger image.” Ex. 1001, 11:42–46. Claim 7 depends from claim 5, and recites “wherein the movement of the projector provides for continuous scanning across to and projection of respective parts of the larger image.” *Id.* at 12:1–3.

Huebner discloses that the image data for a particular movement criterion corresponds to an image associated with a larger image, and movement of the projector provides for scanning across the larger image. Pet. 28–31; Ex. 1005 ¶¶ 137–139, 162. For example, Huebner discloses that “if the device’s projected image was a dog, and the video display subject matter was a garden of flowers, a player may sweep the hand-held projector device in a horizontal motion, and see an animated dog go rollicking through the garden of flowers.” Pet. 29; Ex. 1005 ¶ 139. Patent Owner does not dispute that Huebner discloses the limitations of claims 5 and 7.

5. Claim 8

Claim 8 depends from claim 1, and recites “wherein the projector is a micro-projector.” Ex. 1001, 12:4–5. Huebner discloses a hand-held projector. Pet. 31; Ex. 1005 ¶¶ 4, 58. Patent Owner does not dispute that Huebner discloses the limitation of claim 8.

6. Claim 9

Claim 9 depends from claim 1, and recites “a movement sensor configured to detect movement of the apparatus and/or a projector, and wherein the movement sensor is configured to provide corresponding movement signalling to the processor.” Ex. 1001, 12:6–10. Huebner discloses that the position sensor is configured to detect movement of the projector and provide movement signals to the control unit. Pet. 31–34; Ex. 1005 ¶¶ 8, 64, 66, 75, 80. Patent Owner does not dispute that Huebner discloses the limitation of claim 9.

7. Claim 10

Claim 10 depends from claim 9, and recites “wherein: the apparatus is a projector, or the apparatus comprises a projector; and the movement sensor is configured to detect movement of the projector.” Ex. 1001, 12:11–15. Huebner discloses that the image projecting device includes the projector, and the position sensor detects movement of the projector. Pet. 34–35; Ex. 1005 ¶¶ 8, 64, 66, 75. Patent Owner does not dispute that Huebner discloses the limitation of claim 10.

8. Claim 11

Claim 11 depends from claim 9, and recites “wherein the apparatus is a module for a projector.” Ex. 1001, 12:16–17. Huebner discloses that the image projecting device is a module for the projector. Pet. 35–36; Ex. 1005

¶¶ 78, 137–139. Patent Owner does not dispute that Huebner discloses the limitation of claim 11.

9. Claims 13 and 14

Claims 13 and 14 recite limitations similar to those discussed above for claim 1. Ex. 1001, 12:22–48. Petitioner relies on evidence similar to that discussed above for claim 1, which shows that Huebner discloses the limitations of claims 13 and 14. Pet. 36–39. Patent Owner’s arguments regarding claims 13 and 14 are unavailing for the same reasons discussed above for claim 1. *See* PO Resp. 6; Section II.D.2.

10. Summary

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–11, 13, and 14 are anticipated by Huebner.

E. Obviousness of Claims 1–5, 7–11, 13, and 14 Over Huebner

Petitioner argues that claims 1–5, 7–11, 13, and 14 would have been obvious over Huebner. Pet. 8–39. For most of the limitations of claims 1–5, 7–11, 13, and 14, Petitioner relies on the same arguments and evidence discussed above for the asserted ground based on anticipation by Huebner. *See id.* Petitioner also presents evidence indicating that, to the extent Huebner does not disclose image data, it nonetheless would have been obvious. *Id.* at 8. Specifically, the evidence of record indicates that a person of ordinary skill in the art would have found it obvious to use Huebner’s control unit to provide single image data “through the same devices and functionality for sending video data.” *Id.* at 11–12; Ex. 1003 ¶¶ 57–58. Other than the arguments discussed above for the asserted ground based on anticipation by Huebner, Patent Owner does not raise any separate arguments regarding this asserted ground.

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–11, 13, and 14 would have been obvious over Huebner.

F. Anticipation of Claims 1–14 by de Haan

Petitioner argues that claims 1–14 are anticipated by de Haan. Pet. 40–71. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1–14 are anticipated by de Haan.

1. Overview of de Haan

De Haan discloses a device that includes a projector, a controller, and an accelerometer. Ex. 1006 ¶ 50. The projector displays content on a surface. *Id.* ¶¶ 51–52. The accelerometer measures gesture information, such as path, acceleration, and speed information, caused by a user performing a gesture with the device. *Id.* ¶¶ 53, 56. The controller receives the gesture information from the accelerometer. *Id.* ¶ 56. The controller uses the gesture information to discern a user’s gesture and perform a corresponding operation. *Id.* ¶ 37. “For example, the user may make a gesture to scroll,” and the device “may interpret the user’s gesture to scroll and then scroll with respect to [a] user interface.” *Id.*

2. Claim 1

Claim 1 recites “[a] processor for providing image data signalling to a projector, the image data signalling representing an image to be projected by the projector.” Ex. 1001, 11:13–15. De Haan discloses a controller that provides image data representing an image to a projector. Pet. 40–43; Ex. 1006 ¶¶ 37, 50–51, 54–56. Patent Owner does not dispute that de Haan discloses the preamble of claim 1.

Claim 1 recites “an input to receive movement signalling associated with movement of the projector.” Ex. 1001, 11:16–17. De Haan discloses that the controller receives signals from an accelerometer that provide information regarding the path, acceleration, and speed of the projector. Pet. 43–45; Ex. 1003 ¶ 142; Ex. 1006 ¶¶ 50, 56–57, 64. Patent Owner does not dispute that de Haan discloses this limitation of claim 1.

Claim 1 recites “an output configured to provide image data signalling to the projector.” Ex. 1001, 11:18–19. De Haan discloses that the controller provides image data to the projector. Pet. 45–46; Ex. 1003 ¶¶ 144–145; Ex. 1006 ¶¶ 56–57, 66. Patent Owner does not dispute that de Haan discloses this limitation of claim 1.

Claim 1 recites “wherein the processor is configured to provide image data signalling to the projector based on received movement signalling.” Ex. 1001, 11:19–21. De Haan discloses that the controller provides image data to the projector based on information in the signals received from the accelerometer. Pet. 46–47; Ex. 1006 ¶¶ 56–57. For example, de Haan’s controller provides image data to the projector so that the projected content remains relatively stable. Pet. 47; Ex. 1006 ¶ 56. Patent Owner does not dispute that de Haan discloses this limitation of claim 1.

Claim 1 recites “wherein the movement signalling provides an indication of one or more movement criterion of the projector.” Ex. 1001, 11:21–23. De Haan discloses that the controller receives signals from the accelerometer that indicate the path, acceleration, and speed of the projector. Pet. 47–48; Ex. 1006 ¶¶ 53, 56–57.

Patent Owner responds that de Haan does not disclose that the movement signaling provides an indication of one or more movement

criterion of the projector. PO Resp. 6–7; PO Sur-reply 4–8. Specifically, Patent Owner argues that Petitioner “relies upon the same disclosure of De Haan” for both the movement signaling and movement criterion. PO Resp. 6. Patent Owner further contends that “[t]here is nothing in the two paragraphs of the Petition dedicated to this limitation that shows any disclosure in De Haan that the alleged ‘movement signaling,’ *additionally provides* an indication of one or more **movement criterion** of the projector.” *Id.*

Patent Owner’s argument is unavailing. As discussed above, we decline to adopt Patent Owner’s interpretation that requires the movement signaling and movement criterion to be separate signals. *See* Section II.C.1. Further, de Haan discloses both the movement signaling and movement criterion. De Haan discloses that the accelerometer provides signals to the controller. Ex. 1003 ¶ 142; Ex. 1006 ¶ 56. De Haan also discloses that the signals provided by the accelerometer “may include, for example, trace or path information, an acceleration measurement, a speed measurement, and other types of information related to a user’s gesture with device 105.” Ex. 1006 ¶ 56. In other words, de Haan discloses that the signals provided by the accelerometer *include* information indicative of the movement of the projector. *Id.* Thus, as Petitioner explains, the signals provided by the accelerometer disclose the recited “movement signalling” and the information included in those signals disclose the recited “movement criterion.” Pet. 43–45, 47–48; Pet. Reply 9–10.

Claim 1 recites “the movement criterion representing one or more of displacement and movement speed of the projector.” Ex. 1001, 11:23–25. De Haan discloses that the signals provided by the accelerometer include

information representing the path, acceleration, speed, and length of movement of the projector. Pet. 48–49; Ex. 1006 ¶¶ 53, 56–57. Other than the arguments discussed above, Patent Owner does not dispute that de Haan discloses this limitation of claim 1.

Claim 1 recites “wherein the processor is configured to discriminate a movement criterion and to provide associated image data signalling to project associated image data.” Ex. 1001, 11:25–28. De Haan discloses that the controller receives signals from the accelerometer and provides image data to the projector based on the information in those signals. Pet. 50–51; Ex. 1006 ¶¶ 3–4, 6, 8, 37, 56–57, 65–66, 81, 112. For example, de Haan’s controller provides image data to the projector so that the projected content remains relatively stable. Pet. 50–51; Ex. 1006 ¶ 56. Patent Owner does not dispute that de Haan discloses this limitation of claim 1.

3. *Claims 2–4*

Claim 2 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with one or more of a particular function within an application, or one of a plurality of different applications, to be projected by the projector.” Ex. 1001, 11:29–33. Claim 3 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with a particular function within an application to be projected by the projector.” *Id.* at 11:34–37. Claim 4 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with one of a plurality of different applications to be projected by the projector.” *Id.* at 11:38–41.

De Haan discloses that the image data for a particular movement criterion corresponds to an image associated with a function of an application. Pet. 52–54; Ex. 1006 ¶¶ 4, 37–39, 62, 68, 103. For example, de Haan discloses “a set of default movements or gestures (e.g., a stroke from left to right, a stroke from right to left, a tap movement) that may be performed by a user for a particular operation (e.g., to scroll from left to right, to scroll from right to left, to enter a character or to make a selection).” Pet. 53–54; Ex. 1006 ¶ 68. Patent Owner does not dispute that de Haan discloses the limitations of claims 2–4.

4. Claims 5–7

Claim 5 depends from claim 1, and recites “wherein the particular image data for a particular movement criterion corresponds to an image associated with part of a larger image, and wherein movement of the projector provides for scanning across to and projection of respective parts of the larger image.” Ex. 1001, 11:42–46. Claim 6 depends from claim 5, and recites “wherein the movement of the projector provides for incremental scanning across to and projection of respective parts of the larger image.” *Id.* at 11:47–49. Claim 7 depends from claim 5, and recites “wherein the movement of the projector provides for continuous scanning across to and projection of respective parts of the larger image.” *Id.* at 12:1–3.

De Haan discloses that the image data for a particular movement criterion corresponds to an image associated with a larger image, and movement of the projector provides for scanning across the larger image. Pet. 54–59; Ex. 1006 ¶¶ 4, 6, 37, 62, 71, 80–81, 103, Fig. 1. For example, de Haan discloses that “a pointer or selector (e.g., an indicator 120) or user interface 110 may scroll to icon 115-2 in response to the user’s gesture.”

Pet. 55; Ex. 1006 ¶ 37, Fig. 1. Patent Owner does not dispute that de Haan discloses the limitations of claims 5–7.

5. Claim 8

Claim 8 depends from claim 1, and recites “wherein the projector is a micro-projector.” Ex. 1001, 12:4–5. De Haan discloses a hand-held projector. Pet. 59–60; Ex. 1006 ¶¶ 37, 50. Patent Owner does not dispute that de Haan discloses the limitation of claim 8.

6. Claim 9

Claim 9 depends from claim 1, and recites “a movement sensor configured to detect movement of the apparatus and/or a projector, and wherein the movement sensor is configured to provide corresponding movement signalling to the processor.” Ex. 1001, 12:6–10. De Haan discloses that the accelerometer is configured to detect movement of the projector and provide movement signals to the controller. Pet. 60–62; Ex. 1006 ¶¶ 37, 42, 50, 53, 56–57. Patent Owner does not dispute that de Haan discloses the limitation of claim 9.

7. Claim 10

Claim 10 depends from claim 9, and recites “wherein: the apparatus is a projector, or the apparatus comprises a projector; and the movement sensor is configured to detect movement of the projector.” Ex. 1001, 12:11–15. De Haan discloses that the device (i.e., the apparatus) includes the projector, and the accelerometer detects movement of the projector. Pet. 63–64; Ex. 1006 ¶¶ 50, 53. Patent Owner does not dispute that de Haan discloses the limitation of claim 10.

8. Claim 11

Claim 11 depends from claim 9, and recites “wherein the apparatus is a module for a projector.” Ex. 1001, 12:16–17. De Haan discloses that the device (i.e., the apparatus) is a module for the projector. Pet. 65; Ex. 1006 ¶¶ 41–42. Patent Owner does not dispute that de Haan discloses the limitation of claim 11.

9. Claim 12

Claim 12 depends from claim 1, and recites “[a] user interface configured to be connected to the processor of claim 1, the user interface configured to be operable to configure the processor to provide image data signalling to the projector based on received movement signalling.” Ex. 1001, 12:18–22. De Haan discloses a user interface with a wheel and button that allows a user to make selections, change modes, turn functions on and off, and set a movement to correspond to a particular operation. Pet. 65–68; Ex. 1006 ¶¶ 37–38, 44, 54, 68. Patent Owner does not dispute that de Haan discloses the limitation of claim 12.

10. Claims 13 and 14

Claims 13 and 14 recite limitations similar to those discussed above for claim 1. Ex. 1001, 12:22–48. Petitioner relies on evidence similar to that discussed above for claim 1, which shows that de Haan discloses the limitations of claims 13 and 14. Pet. 68–71. Patent Owner’s arguments regarding claims 13 and 14 are unavailing for the same reasons discussed above for claim 1. *See* PO Resp. 7; Section II.F.2.

11. Summary

For the foregoing reasons, on this record, Petitioner has shown by a preponderance of the evidence that claims 1–14 are anticipated by de Haan.

G. Obviousness of Claims 1–14 over de Haan

Petitioner argues that claims 1–14 would have been obvious over de Haan. Pet. 40–71. For most of the limitations of claims 1–14, Petitioner relies on the same arguments and evidence discussed above for the asserted ground based on anticipation by de Haan. *See id.* Petitioner also presents evidence indicating that, to the extent de Haan does not disclose the limitations of claims 6, 7, and 12, those limitations nonetheless would have been obvious. *Id.* at 40, 57–59, 65–68.

Specifically, for claim 6, the evidence of record indicates that a person of ordinary skill in the art “would have understood that [de Haan’s] disclosure of varying degrees of scrolling . . . render obvious the claimed ‘incremental scanning,’ because ‘incremental’ is a predictable and obvious degree of scrolling to use.” Pet. 58; Ex. 1003 ¶ 177. For claim 7, the evidence of record indicates that a person of ordinary skill in the art “would have understood that [de Haan’s] disclosure of varying degrees of scrolling . . . render obvious the claimed ‘continuous scanning,’ because ‘continuous’ is a predictable and obvious degree of scrolling to use.” Pet. 59; Ex. 1003 ¶ 179. For claim 12, the evidence of record indicates that a person of ordinary skill in the art “would have understood that changing a mode of device 105 . . . would have included using user interface 110 to operate and use device 105 including setting a movement corresponding to a particular operation” and “that controller 315 would process and adjust operation and use of device 105.” Pet. 68; Ex. 1003 ¶ 203. Other than the arguments discussed above for the asserted ground based on anticipation by de Haan, Patent Owner does not raise any separate arguments regarding this asserted ground.

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that claims 1–14 would have been obvious over de Haan.

III. CONCLUSION⁵

Petitioner has shown by a preponderance of the evidence that claims 1–14 of the '071 patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 7–11, 13, 14	102	Huebner	1–5, 7–11, 13, 14	
1–5, 7–11, 13, 14	103	Huebner	1–5, 7–11, 13, 14	
1–14	102	de Haan	1–14	
1–14	103	de Haan	1–14	
Overall Outcome			1–14	

IV. ORDER

It is hereby

ORDERED that claims 1–14 of the '071 patent are shown unpatentable; and

⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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PETITIONER:

Lionel Lavenue
Cory Bell
Bradford C. Schulz
Mingji Jin
R. Maxwell Mauldin
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP
lionel.lavenue@finnegan.com
cory.bell@finnegan.com
bradford.schulz@finnegan.com
mingji.jin@finnegan.com
r.maxwell.mauldin@finnegan.com

PATENT OWNER:

Brian Koide
James Etheridge
Ryan Loveless
Brett Mangrum
Jeffrey Huang
Nathan Cummings
ETHERIDGE LAW GROUP
brian@etheridgelaw.com
ipteam@etheridgelaw.com
ryan@etheridgelaw.com
brett@etheridgelaw.com
jeff@etheridgelaw.com
nathan@etheridgelaw.com