

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

Case IPR2016-01372
Patent 8,659,571 B2

Before MICHAEL R. ZECHER, BRYAN F. MOORE, and MINN CHUNG,
Administrative Patent Judges.

CHUNG, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314, Apple Inc. (“Petitioner”) challenges the patentability of claims 1–4, 6, 23–26, and 28 of (the “challenged claims”) of U.S. Patent No. 8,659,571 B2 (Ex. 1001, “the ’571 patent”), owned by Immersion Corporation (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. With respect to the ground instituted in this trial, we have considered the papers submitted by the parties and the evidence cited therein. For the reasons discussed below, we determine Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, 23–26, and 28 of the ’571 patent are unpatentable.

II. BACKGROUND

A. Procedural History

On July 7, 2016, Petitioner filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–7, 12–18, and 23–29 of the ’571 patent. Petitioner also filed a Declaration of Dr. Patrick Baudisch (Ex. 1002, “Baudisch Decl.”) in support of the Petition. Patent Owner filed a Preliminary Response (Paper 6, “Prelim. Resp.”). On January 11, 2017, we instituted an *inter partes* review only as to claims 1–4, 6, 23–26, and 28 of the ’571 patent based on the ground that these claims are unpatentable under 35 U.S.C. § 103(a) as obvious over Burrough¹ (Paper 7, “Dec. on Inst.,” 45).

¹ U.S. Patent Application Pub. No. 2010/0156818 A1 (published June 24, 2010) (Ex. 1005, “Burrough”).

After institution, Patent Owner filed a Patent Owner Response (Paper 14, “PO Resp.”), to which Petitioner filed a Reply (Paper 20, “Pet. Reply”). Patent Owner filed a Declaration of Yon Visell, Ph.D. (Ex. 2009, “Visell Decl.”) in support of its Patent Owner Response, and Petitioner filed a Reply Declaration of Dr. Patrick Baudisch in support of its Reply (Ex. 1014, “Baudisch Reply Decl.”). In addition, Patent Owner filed a Motion for Observations on certain cross-examination testimony of Dr. Baudisch (Paper 27, “Obs.”), to which Petitioner filed Responses (Paper 28, “Obs. Resp.”). An oral hearing was held on October 5, 2017. A transcript of the hearing is included in the record as Paper 34 (“Tr.”).

B. Related Proceedings

According to the parties, the ’571 patent is the subject of the following proceedings: (1) *Immersion Corp. v. Apple Inc.*, No. 1:16-cv-00077 (D. Del.); and (2) *In the Matter of: Certain Mobile Electronic Devices Incorporating Haptics (Including Smartphones and Smartwatches) and Components Thereof*, ITC Investigation No. 337-TA-990 (USITC), which has been consolidated with *In the Matter of: Certain Mobile and Portable Electronic Devices Incorporating Haptics (Including Smartphones and Laptops) and Components Thereof*, ITC Investigation No. 337-TA-1004 (USITC). Pet. 1–2; Paper 4, 2.

C. The ’571 Patent

The ’571 patent describes a system and method for producing a dynamic haptic effect based on a gesture signal and a device sensor signal. Ex. 1001, Abstract, col. 1, l. 66–col. 2, l. 5. According to the ’571 patent, a

dynamic haptic effect is a haptic effect that evolves over time as it responds to input parameters, such as a gesture signal or a device sensor signal. *Id.* at col. 2, ll. 64–66, col. 3, ll. 12–15.

Figure 1 of the '571 patent is reproduced below.

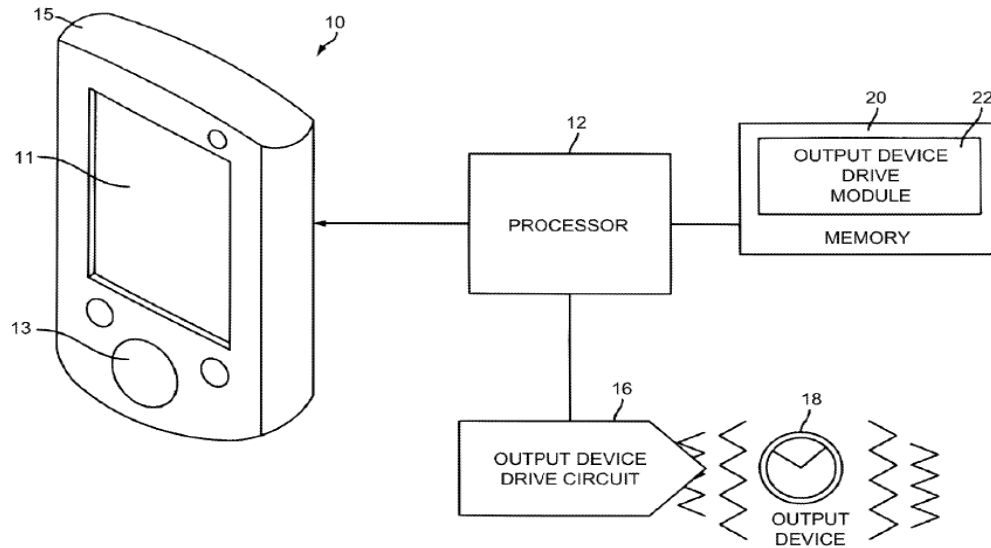


FIG. 1

Figure 1 depicts a block diagram of haptically-enabled system 10 in an exemplary embodiment of the '571 patent. *Id.* at col. 3, ll. 63–64. As shown in Figure 1 above, system 10 includes touch-sensitive surface 11 and may also include mechanical keys or buttons 13. *Id.* at col. 3, ll. 64–67. Further, system 10 includes a haptic feedback system that generates vibrations on system 10 (e.g., on touch surface 11). *Id.* at col. 3, l. 67–col. 4, l. 3. As also illustrated in Figure 1, the haptic feedback system includes processor 12, which is coupled to memory 20 and actuator drive circuit 16, which, in turn, is coupled to haptic actuator 18. *Id.* at col. 4, ll. 4–6.

Touch surface 11 recognizes touches and also may recognize the position and the magnitude or pressure of the touches on the surface. *Id.* at col. 4, ll. 41–43. The data corresponding to the touches is sent to processor

12, which interprets the touches and generates haptic effect signals. *Id.* at col. 4, ll. 43–46. Touch surface 11 may detect multi-touch contacts and may be capable of distinguishing between multiple touches that occur at the same time. *Id.* at col. 4, ll. 49–51.

According to the '571 patent, a gesture is any movement of the body that conveys meaning or user intent. *Id.* at col. 3, ll. 34–35. Simple gestures, such as a “finger on” or “finger off” gesture, may be combined to form more complex gestures, for example, a “tapping” or “swiping” gesture. *Id.* at col. 3, ll. 35–49. In addition, any number of simple or complex gestures may be combined to form other gestures, such as gestures based on multiple finger contacts. *Id.* at col. 3, ll. 52–56. Hence, multiple touch inputs may be received from a single gesture such as a swipe gesture performed on a touch sensitive display. *Id.* at col. 10, ll. 36–40. For example, when an index finger is swiped across the touch sensitive display during a swipe gesture, multiple inputs are received from the single swipe gesture, each of the multiple inputs occurring at a different time and indicating a different two dimensional position of the contact point of the index finger with the touch sensitive display. *Id.* at col. 10, ll. 36–43.

Dynamic haptic effects are produced by changing a haptic effect according to an interaction parameter, which may be derived from a gesture using information such as the position, direction, and velocity of the gesture. *Id.* at col. 10, ll. 24–29. An interaction parameter also may be derived from device sensor data, such as the device acceleration, gyroscopic, or ambient information. *Id.* at col. 11, ll. 4–6. Additionally, an interaction parameter may incorporate a mathematical model related to a real-world physical

effect, such as gravity, acceleration, friction, or inertia. *Id.* at col. 12, ll. 38–40. Further, an interaction parameter may optionally incorporate an animation index to correlate the haptic effect to an animation displayed on the device. *Id.* at col. 12, ll. 45–50. Once an interaction parameter is generated from one or more of these sources, a drive signal is applied to a haptic actuator according to the interaction parameter. *Id.* at col. 15, ll. 3–9.

D. Illustrative Claim

Of the claims instituted in this proceeding, claims 1 and 23 are independent. Claim 1 is illustrative of the instituted claims and is reproduced below:

1. A method of producing a haptic effect comprising:
receiving a first gesture signal;
receiving a second gesture signal;
generating a dynamic interaction parameter using the first gesture signal and the second gesture signal; and
applying a drive signal to a haptic output device according to the dynamic interaction parameter.

Ex. 1001, col. 16, ll. 8–14.

III. CLAIM CONSTRUCTION

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard as the claim construction standard to be applied in an *inter partes* review proceeding). Under the

broadest reasonable interpretation standard, and absent any special definitions, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in view of the specification. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms or phrases must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). A particular embodiment appearing in the written description generally is not incorporated into a claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

In our Decision on Institution, we preliminarily interpreted three claim terms as follows.

Term	Construction
“gesture”	“a movement of the body that conveys meaning or user intent” (Dec. on Inst. 8–9, 12)
“gesture signal”	“a signal indicating a gesture,” i.e., “a signal indicating a movement of the body that conveys meaning or user intent” (<i>id.</i> at 9, 12)
“dynamic interaction parameter”	“a parameter that changes over time or reacts in real time based on a user’s interaction with a device” (<i>id.</i> at 13)

The parties do not dispute the constructions of these terms in their Patent Owner Response or Petitioner Reply. PO Resp. 6, 23; Pet. Reply 4–6, 19. Upon considering the complete record, we discern no reason to deviate from our preliminary constructions and, therefore, adopt the constructions of the

terms “gesture,” “gesture signal,” and “dynamic interaction parameter” as set forth above for this Final Written Decision.

Apart from the three terms discussed above, no other claim terms need to be construed expressly for purposes of this Final Written Decision because we need only construe terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

IV. ANALYSIS OF PETITIONER’S PRIOR ART CHALLENGES

To prevail in challenging Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

The sole ground on which we instituted *inter partes* review is Petitioner's challenge to claims 1–4, 6, 23–26, and 28 as obvious under 35 U.S.C. § 103(a) over Burrough. Dec. on Inst. 45. A claim is unpatentable under § 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 skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

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 requires us to determine the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. 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). In determining the level of ordinary skill in the art, various factors may be considered, including the types of problems encountered in the art, prior art solutions to those problems, the sophistication of the technology, rapidity with which innovations are made, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.* In addition,

we may be guided by the level of ordinary skill in the art reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d. 1350, 1355 (Fed. Cir. 2001).

In our Decision on Institution, upon reviewing the parties' proposed definitions of the level of skill in the art, as well as the supporting declarations from Dr. Baudisch and Dr. Visell (Dec. on Inst. 24–25 (citing Pet. 6; Ex. 1002 ¶ 38; Prelim. Resp. 5; Ex. 2001 ¶ 24)), we determined preliminarily that the level of skill in the art is evidenced by the prior art of record and the type of problems and solutions described in the '571 patent, and includes experience in haptic response technology in multi-touch or multi-gesture systems (*id.* at 24–25 (citing Ex. 1001, col. 1, ll. 15–18; Ex. 1005, Abstract, ¶ 3)).

The parties do not dispute the level of skill in the art in their Patent Owner Response or Petitioner Reply. Upon considering the complete record, we discern no reason to deviate from our preliminary determination and, therefore, adopt the definition of the level of skill in the art as set forth above for this Final Written Decision.

B. Obviousness Over Burrough

Petitioner contends claims 1–4, 6, 23–26, and 28 are unpatentable as obvious under 35 U.S.C. § 103(a) over Burrough. Pet. 12–23, 24–25, 30–32. Petitioner explains how Burrough renders obvious the claimed subject matter of each challenged claim, providing detailed discussion and specific citations to Burrough indicating where in the reference the claimed features are disclosed, or explaining how the differences between the claimed subject matter and the prior art are such that the subject matter would have been

obvious to a person of ordinary skill in the art. *Id.* In addition, Petitioner relies upon the Declaration of Dr. Baudisch to support its positions. *Id.* Upon reviewing all of the parties' papers and supporting evidence discussed in those papers, we determine that Petitioner has demonstrated, by a preponderance of the evidence, claims 1–4, 6, 23–26, and 28 are unpatentable under 35 U.S.C. § 103(a) as obvious over Burrough.

1. Scope and Content of the Prior Art—Overview of Burrough (Ex. 1005)

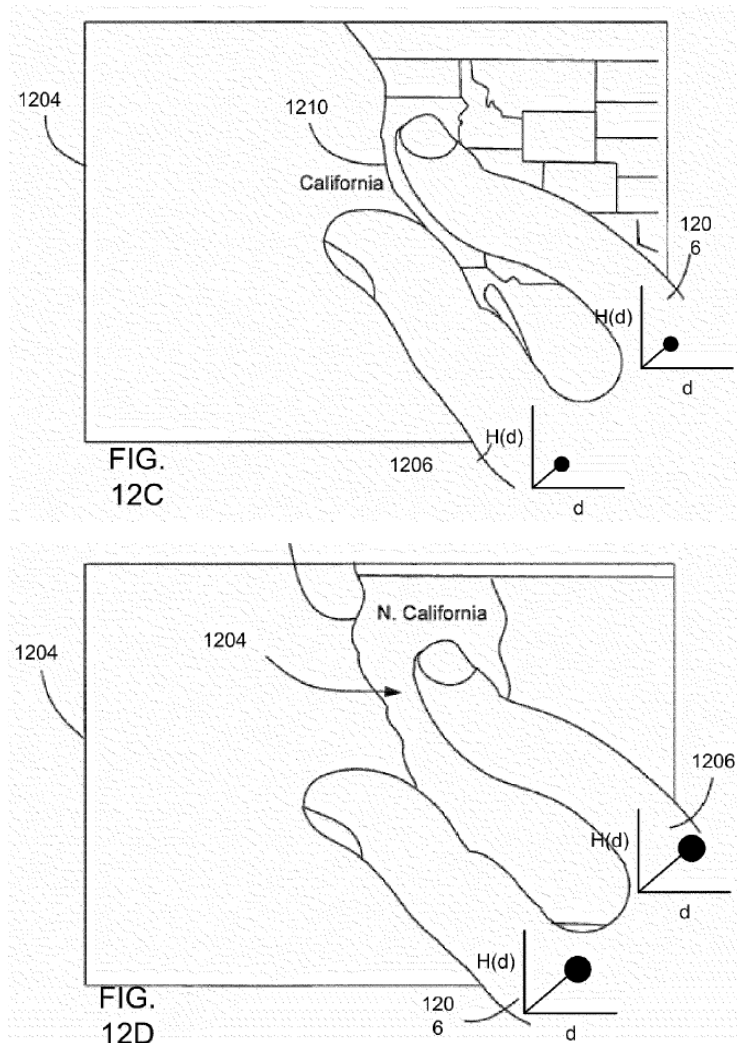
Burrough describes a method and system for identifying multi-touch gestures and providing multi-haptic responses. Ex. 1005, Abstract. In an exemplary embodiment, Burrough discloses an electronic device including a touch pad that can receive a touch event from a user, a controller coupled to and in communication with the touch pad to analyze the user touch event, and a haptic device for providing a haptic effect in response to the user touch event. *Id.* ¶ 15.

In another embodiment, Burrough discloses a touch sensitive input device capable of recognizing at least two substantially simultaneously occurring gestures using at least two different fingers as a multi-touch event. *Id.* ¶ 35. The touch sensitive device communicates with haptic actuators to provide haptic feedback according to a haptic profile in response to a multi-touch event. *Id.* In an aspect of the disclosed embodiment, each finger receives different haptic feedback depending on the location of each finger on the touch sensitive input device. *Id.*

Burrough discloses that the relationship between a touch event and the corresponding haptic response can be dynamic in nature, meaning that the haptic profile used to respond to a touch event can be varied based on

various factors. *Id.* ¶ 51. For example, in a zoom gesture using two fingers, as the distance between the two fingers increases during a zoom-in, the haptic feedback vibration can be made faster or more intense. *Id.* ¶ 80.

Figures 12C and 12D of Burrough are reproduced below.



Figures 12C and 12D depict two sequential steps in a zooming sequence to zoom in on a map of North America. *Id.* ¶ 82. During the zooming sequence, the haptic response $H(d)$ is applied to each finger. *Id.* As indicated in Figures 12C and 12D above, the magnitude of the haptic response $H(d)$ increases linearly with distance d between the fingers. *Id.* In

other words, as the two fingers move apart and the map is zoomed in, the haptic effect H becomes progressively stronger at each finger. *Id.*

Figures 12C and 12D above also show the graphical representation (i.e., the graphs) of the haptic profiles $H(d)$ for each finger used in the zoom gesture. As described in Burrough, the haptic profile $H(d)$ specifies the relationship between the distance d between the two fingers and the corresponding haptic response $H(d)$ applied to each finger.² *Id.* The haptic profile $H(d)$ may be a linear function, as illustrated by the linear graphs shown in Figures 12C and 12D reproduced above, or a nonlinear function, as illustrated by the nonlinear graph shown in Figure 12F (not reproduced herein). *Id.* ¶ 82, Figs. 12C, 12D, 12F. The haptic profile $H(d)$ is presumed to be a linear function for a zoom gesture. *Id.* ¶ 82.

2. Discussion —

Differences Between the Claimed Subject Matter and the Prior Art

a. Claim 1

(1) Preamble

The preamble of claim 1 recites a method of “producing a haptic effect.” Ex. 1001, col. 16, l. 8. We agree with Petitioner that Burrough teaches the preamble, because Burrough discloses “an apparatus and method for providing multi-touch haptic feedback” (Pet. 15 (citing Ex. 1005 ¶ 10))

² Although Burrough uses the symbol $H(d)$ to denote both the haptic profile $H(d)$ and the haptic response $H(d)$, the haptic profile $H(d)$ signifies the functional relationship between the haptic response and the distance d , whereas the haptic response $H(d)$ represents the value or the magnitude of the haptic response when the distance between the fingers is at a particular distance (or distance value) d . Ex. 1005 ¶ 82.

as well as “methods of implementing gestures with associated physical feedback with touch sensitive devices” (*id.* (citing Ex. 1005 ¶ 35)).

(2) Receiving a First Gesture Signal and a Second Gesture Signal

Claim 1 recites “receiving a first gesture signal” and “receiving a second gesture signal.” Ex. 1001, col. 16, ll. 9–10. Petitioner asserts that Burrough teaches these limitations because Burrough describes a touch sensitive device capable of recognizing “at least two substantially simultaneously occurring gestures using at least two different fingers or other object[s]” (Pet. 13 (citing Ex. 1005 ¶ 35)), such as a multi-touch zoom gesture in which a first finger and a second finger are detected on the touchscreen at the same time, and an image, such as a map, can be zoomed in by moving the two fingers apart together. *Id.* at 13–16 (citing Ex. 1005 ¶¶ 16, 17, 35, 46, 79, 80, 81, Figs. 11, 12A–12H).

To teach a first or second “gesture signal,” Petitioner relies on Burrough’s disclosure of various signals generated by the touch sensitive device during the zoom gesture when the first or second finger is detected on the touch sensitive screen, including “a touch event T” (which is initiated “each time an object, such as a user’s finger, is placed” on the touch sensitive surface), a touch signal S₁ (which is generated during the touch event T), and “any other signal consistent with a multi-touch event.” *Id.* at 15–16 (citing Ex. 1005 ¶¶ 16, 17, 46, 79, Figs. 11, 12A–12H; Ex. 1002 ¶¶ 57–60).

Citing the testimony of Dr. Baudisch, Petitioner argues that, because Burrough’s sensing device generates signals representing each touch on the touch screen in a multi-touch event (Ex. 1005 ¶ 46), a person of ordinary

skill in the art would have understood that, during the zoom gesture, the sensing device generates a first gesture signal representing one of the two fingers on the touch screen, and a second gesture signal representing the other finger on the touch screen. *Id.* at 16 (citing Ex. 1002 ¶ 62).

Although Patent Owner acknowledges that signals S are generated during a multi-touch event of Burrough (PO Resp. 1, 6–7 (citing Ex. 1005 ¶ 46)), Patent Owner asserts that Burrough’s signal S is not a “gesture signal” under our claim construction (i.e., “a signal indicating a movement of the body that conveys meaning or user intent,” as discussed above in Section III) because each signal S, “taken in isolation” (*id.* at 7), merely indicates a position of a finger touching the touch sensitive screen at a particular time, and, therefore, cannot “indicate a movement of the body that conveys meaning or user intent.” *Id.* at 1, 7–8 (citing Ex. 1005 ¶¶ 42, 46; Ex. 2009 ¶ 36).

We do not agree with Patent Owner’s argument because Petitioner does not rely on Burrough’s signal S alone in isolation from other teachings of Burrough to teach “a first gesture signal” and “a second gesture signal,” as recited in claim 1. Rather, as discussed above, Petitioner relies upon various signals generated by the touch sensitive device *during the zoom gesture* when the first and second fingers are detected on the touch sensitive screen. Pet. 15–16 (citing Ex. 1005 ¶¶ 16, 46, 79, Figs. 11, 12A–12H); Pet. Reply 2–3 (citing Pet. 15–16). Hence, Burrough’s zoom embodiment teaches “a first gesture signal” and “a second gesture signal” recited in claim 1 because, at minimum, the signal S is generated when each finger touches a location of a map during the zoom gesture, thereby indicating a movement

of the body—i.e., a finger touching a location of the touch sensitive screen—that conveys meaning or user intent—i.e., the user’s intent to touch the map. *See* Pet. Reply 10–11 (citing Ex. 1005 ¶ 81, Fig. 12B; Ex. 1014 ¶¶ 19, 20). In fact, the ’571 patent describes a similar touching—“bringing a finger into contact with a touch sensitive surface”—as a “finger on” gesture. Ex. 1001, col. 3, ll. 37–38. Similarly, during the oral argument, Patent Owner described the signal generated from a touching of a photograph during a swipe gesture disclosed in the ’571 patent as “the first gesture signal.” Tr. 17:18–18:24. In our view, there is no patentable distinction between the ’571 patent’s disclosure of a signal generated from touching a photograph during a swipe gesture and Burrough’s disclosure of touching a location on a map in the zoom embodiment discussed above.

In a related argument, Patent Owner argues that Burrough’s signal S alone does not convey meaning or user intent because the signal could be from an accidental or incidental touch. Tr. 20:18–23, 22:1–7. Patent Owner further asserts that the cross examination testimony of Dr. Baudisch shows that accidental touches do not convey meaning or user intent. Obs. 3–4 (citing Ex. 2012, 41:21–23). In a similar vein, Patent Owner argues that not every signal S generated from a finger movement conveys a discernable meaning or user intent because the intent of the finger movement may not be clear. PO Resp. 14.

In response to Patent Owner’s observations, Petitioner asserts that Patent Owner mischaracterizes Dr. Baudisch’s testimony and that Dr. Baudisch did not testify that signals generated from “accidental touching” constitute gesture signals. Obs. Resp. 4–5 (citing Ex. 2012, 41:12–42:1).

Regardless of what the appropriate weight accorded to Patent Owner's observation or the underlying cross examination testimony of Dr. Baudisch should be, we do not agree with Patent Owner's argument because, as discussed above, Petitioner does not rely on Burrough's signal S alone in isolation, but, rather, relies upon various signals generated in the course of a zoom gesture. Patent Owner's argument is unpersuasive because Patent Owner does not explain, nor do we discern anything in the record that explains, why the signals generated by Burrough's touch sensitive device *during the zoom gesture* should be (or may be) considered signals from accidental or incidental touches, or ambiguous finger movements.

We also do not agree with Patent Owner's argument focusing on Burrough's signal S alone in isolation from other teachings of Burrough because nonobviousness cannot be established by attacking the individual teachings of a reference when the unpatentability challenge is based on a combination of various teachings of the reference. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (nonobviousness cannot be established by attacking the references individually when the unpatentability challenge is based on a combination of prior art disclosures).

Patent Owner further asserts that a single signal S generated during a zoom gesture of Burrough, individually or in isolation, does not indicate the user's intent to zoom because information, such as the speed and direction of the finger movements and whether the distance between the two fingers are increasing (indicating the user intent to zoom in) or decreasing (indicating the intent to zoom out), can be "determined" only when a number of signals S (at least two sets of signals from a first and a second fingers) generated in

the course of the zoom gesture are considered collectively. PO Resp. 7 (citing Ex. 1005 ¶¶ 42, 36; Ex. 2009 ¶ 36), 9–12 (citing Ex. 1005 ¶¶ 42, 79, Fig. 11; Ex. 2009 ¶¶ 40–43).

We do not agree with Patent Owner’s argument because Petitioner does not rely on a single signal S individually or in isolation. Rather, as discussed above, Petitioner relies upon various signals, including the signals S, generated during the course of the zoom gesture. Pet. 15–16; Pet. Reply 2–3. Petitioner relies on at least two sets of signals from the fingers during the zoom gesture of Burrough, such as the signals at two different points of time during the zoom gesture, as depicted in Figures 12C and 12D. Pet. 13–16. In its Reply, in response to Patent Owner’s argument, Petitioner provides a detailed discussion of the signals generated during the zoom gesture at time points depicted in Figures 12B and 12C of Burrough. Pet. Reply 7–12.

According to Petitioner, the parties’ experts agree that when a user brings two fingers into contact with the touchscreen as illustrated in Figure 12B of Burrough, at least two signals (which Dr. Visell refers to as S1 and S2) are generated. *Id.* at 11 (citing Ex. 1014 ¶ 20; Ex. 1015, 183:8–17). Petitioner argues that signals S1 and S2 each constitute a “gesture signal” because each signal (1) indicates a movement of the user’s body (i.e., bringing a finger into contact with the touchscreen) and (2) conveys meaning or user intent (i.e., to contact the touchscreen in a particular position). *Id.* (citing Ex. 1014 ¶ 20). Petitioner further asserts that Figure 12C of Burrough depicts a user moving two fingers to new positions and that the parties’ experts agree that at least two new signals (which Dr. Visell refers to

as S3 and S4) are generated when the fingers are moved to the new positions. *Id.* (citing Ex. 1014 ¶ 20; Ex. 1015, 183:8–17). Petitioner argues that signals S3 and S4 are each a “gesture signal” because each signal (1) indicates a movement of the user’s body (i.e., moving the finger to a new location) and (2) conveys meaning or user intent (i.e., to zoom in). *Id.* at 11–12 (citing Ex. 1014 ¶ 20).

We note that Petitioner’s argument and evidence are similar to and consistent with Patent Owner’s discussion of the ’571 patent’s disclosure of the “gesture signals” generated during a swipe gesture. During the oral argument, Patent Owner explained that, during the swipe gesture depicted in Figures 9A–9C of the ’571 patent, touching a photograph with a finger generates a “gesture signal” and moving the finger to a second photograph generates another “gesture signal” indicating the user intent to display the second photograph. Tr. 17:18–18:24. Similarly, we agree with Petitioner’s argument that the signals of Burrough identified by the parties as signals S1 and S2 convey the user intent to touch a location of a map with each finger, and the signals identified by the parties as signals S3 and S4 convey the user intent to zoom in on the map. A similar analysis would apply to moving the first and second fingers to any position during the course of the zoom gesture. Thus, we find that the signals S generated in the course of Burrough’s zoom gesture teach “a first gesture signal” and “a second gesture signal,” as recited in claim 1.

To the extent Patent Owner argues that each signal S generated during the zoom gesture must, by itself or standing alone, convey the user intent to zoom, we do not agree with Patent Owner’s argument because, as discussed

in our Decision on Institution, our interpretation of the term “gesture signal” does not exclude conveying meaning and user intent in conjunction with other gesture signals. Dec. on Inst. 26–27. This understanding is supported by the ’571 patent’s disclosure, which describes combining multiple gestures to form other gestures, such as gestures based on multiple finger contacts. *Id.* at 27 (citing Ex. 1001, col. 3, ll. 52–56). For example, a “finger on” and a “finger off” gestures may be combined to form a “swiping gesture.” Ex. 1001, col. 3, ll. 35–49, 52–56. Further, as discussed above in Section II.C, the ’571 patent describes that, during a swipe gesture, multiple input signals are received from the swipe gesture when an index finger is swiped across the touch sensitive display, each of the multiple inputs occurring at a different time and indicating a different position of the contact point of the index finger with the touch sensitive display. *Id.* at col. 10, ll. 36–43. That is, although each input signal indicates the user intent to touch the screen (indicating a “finger on” or “touch” gesture) and may not itself convey the user intent to swipe, in conjunction with other signals generated during the course of the swipe gesture, each signal indicates a movement of the body that conveys the user’s intent to swipe. *See* Pet. Reply 13 (citing Ex. 1014 ¶ 23). Similarly, a signal S received from a finger during the zoom gesture of Burrough, in conjunction with other signals received from the same finger, as well as the signals received from the other finger during the course of the zoom gesture, indicates a movement of the body that conveys the user’s intent to zoom in or zoom out. Therefore, each signal S generated by the first and second fingers during the course of the zoom gesture of Burrough need not, by itself or standing alone, convey the user intent to

zoom to qualify as “a first gesture signal” and “a second gesture signal” recited in claim 1.

Finally, Patent Owner asserts that paragraph 35 of Burrough cited by Petitioner does not support Petitioner’s contention that Burrough’s zoom gesture includes two separate gestures performed by each of the two fingers involved in the zoom gesture. PO Resp. 15. Paragraph 35 of Burrough cited by Petitioner (Pet. 13) states as follows:

One aspect of the invention describes a touch sensitive input device able to recognize at least *two* substantially simultaneously occurring *gestures* using at least *two different fingers* or other objects (hereinafter referred to as *a multi-touch event*).

Ex. 1005 ¶ 35 (emphases added). Hence, as discussed in our Decision on Institution, Burrough discloses explicitly that a multi-touch event or gesture may be based on two or more single-touch gestures. Dec. on Inst. 25–26. Patent Owner disagrees and argues that paragraph 35 of Burrough merely describes recognizing two separate gestures simultaneously because paragraph 45 discloses processing two simultaneously occurring gestures, such as dragging a first object with one finger while dragging a second object with another finger. PO Resp. 15 (citing Ex. 1005 ¶ 45).

We do not agree with Patent Owner’s argument because paragraph 35 of Burrough expressly refers to the “two substantially simultaneously occurring gestures” as “*a multi-touch event*,” that is, a single multi-touch gesture. Ex. 1005 ¶ 35 (emphasis added). The mere fact that paragraph 45 of Burrough discloses an alternative embodiment of processing two separate, unrelated gestures occurring at the same time does not, without more, take away from Burrough’s teaching in paragraph 35 of a multi-touch event or

gesture based on two or more single-touch gestures. We also disagree with Patent Owner's argument because "the 'mere disclosure of more than one alternative' does not amount to teaching away from one of the alternatives where the reference does not 'criticize, discredit, or otherwise discourage the solution claimed.'" *SightSound Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1320 (Fed. Cir. 2015) (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)). Patent Owner does not cite, nor do we discern, anything in Burrough that criticizes, discredits, or otherwise discourages recognizing a multi-touch gesture based on two or more single gestures.

As discussed above, the '571 patent expressly contemplates complex gestures may comprise multiple simple gestures. For example, the '571 patent discloses that simple gestures, such as a "finger on" or "finger off" gesture, may be combined to form more complex gestures, for example, a "tapping" or "swiping" gesture. Ex. 1001, col. 3, ll. 35–49. In addition, any number of simple or complex gestures may be combined to form other gestures, such as gestures based on multiple finger contacts. *Id.* at col. 3, ll. 52–56. Similarly, during the oral argument, Patent Owner explained that the swipe gesture depicted in Figures 9A–9C of the '571 patent is comprised of at least two simple gestures of touching a photograph with a finger ("a first gesture") and moving the finger to a second photograph ("a second gesture"). Tr. 17:18–18:24. Hence, the '571 patent supports the conclusion that "a first gesture" and "a second gesture" recited in claim 1 may be part of a more complex gesture.

Based on the foregoing discussion, and upon reviewing the complete record, we determine that Petitioner has shown sufficiently that Burrough

teaches or at least suggests “receiving a first gesture signal” and “receiving a second gesture signal,” as recited in claim 1.

(3) Generating a Dynamic Interaction Parameter

Claim 1 recites “generating a dynamic interaction parameter using the first gesture signal and the second gesture signal.” Ex. 1001, col. 16, ll. 11–12. Petitioner asserts that Burrough’s multi-touch zoom gesture discussed above teaches this limitation because Burrough describes that the haptic effect corresponding to each finger in a multi-touch zoom gesture is a function of the distance d between the two fingers. Pet. 16–18 (citing Ex. 1005 ¶¶ 34, 51, 80, 82, Figs. 12A–12H; Ex. 1002 ¶¶ 63–70). Petitioner asserts that the haptic response $H(d)$ described in Burrough is a “dynamic interaction parameter” recited in claim 1 under our construction because $H(d)$ changes over time or reacts in real time based on a user’s interaction with the touch screen (i.e., as the user’s fingers move apart, the distance between the fingers increases, and the haptic response $H(d)$ likewise increases as a function of this distance d). *Id.* at 18. In support of its argument, Petitioner cites the disclosure in Burrough that describes a zoom gesture where the distance between the two fingers is compared and a zoom-in signal is generated in response, as well as an embodiment of a zoom gesture where, as the distance between the two fingers increases, the magnitude of the haptic response $H(d)$ is increased linearly with distance d . *Id.* at 16–17 (citing Ex. 1005 ¶¶ 34, 51, 80, 82, Figs. 12A–12H).

As discussed above in Section III, we construe the term “dynamic interaction parameter” to mean “a parameter that changes over time or reacts in real time based on a user’s interaction with a device.” We are persuaded

by Petitioner's argument and evidence that Burrough teaches "generating a dynamic interaction parameter using the first gesture signal and the second gesture signal" under this construction because, as the positions of the first and second fingers change during the course of Burrough's zoom gesture, the magnitude of the haptic response $H(d)$ increases over time as a function of the distance d between the two fingers.

Patent Owner asserts that the haptic response $H(d)$ is not "dynamic" because the haptic profile $H(d)$ of Burrough is predetermined and comprised of predefined static values stored in memory. PO Resp. 22–23. In its Reply, Petitioner argues that Patent Owner confuses the function that defines $H(d)$, which is referred to as the "haptic profile," with the output of that function, which is referred to as the "haptic response." Pet. Reply 17 (citing Pet. 17–18; Ex. 1005 ¶¶ 51, 82; Ex. 1004 ¶ 29). Petitioner further argues that, although Burrough's haptic profiles may be predetermined static profiles that are stored in memory, the haptic response changes over time based on the user's interaction with the device of Burrough during the zoom gesture. *Id.* at 17–19 (citing Pet. 18; Ex. 1005 ¶ 82, Fig. 12D; Ex. 1002 ¶ 68; Ex. 1014 ¶ 31; Ex. 1015, 160:13–22, 165:2–10).

We agree with Petitioner's argument. As Petitioner explains, the haptic profile $H(d)$ is a function that defines the relationship between the value or magnitude of the haptic response $H(d)$ and the value of the distance

d between the fingers.³ Pet. Reply 17–18. As Petitioner notes, Burrough illustrates this functional relationship with the graphs of haptic response $H(d)$ versus distance d shown on Figures 12B–12H. *Id.* (citing Pet. 18; Ex. 1005 ¶ 82, Fig. 12D). Hence, we agree with Petitioner’s argument that, although the functional relationship of haptic response $H(d)$ versus d —i.e., the haptic profile—may be predetermined and remain static during Burrough’s zoom gesture, the value or magnitude of $H(d)$ —i.e., the haptic response—changes over time as the distance d between the two fingers changes during the course of the zoom gesture. *Id.* at 17–19 (citing Pet. 18; Ex. 1005 ¶ 82, Fig. 12D; Ex. 1002 ¶ 68; Ex. 1014 ¶ 31; Ex. 1015, 160:13–22, 165:2–10). We do not agree with Patent Owner’s argument because it is directed to the haptic profile, whereas Petitioner relies upon the haptic response of Burrough to teach the “dynamic interaction parameter” recited in claim 1.

Patent Owner further asserts that Burrough does not “generate” a dynamic interaction parameter because “merely retrieving a haptic profile $H(d)$ from memory” would not constitute “generating” the profile. PO Resp. 22 (citing Ex. 1005 ¶ 51; Ex. 2009 ¶ 57). Citing the testimony of Dr. Visell, Patent Owner also argues that a person of ordinary skill in the art would have understood that the challenged claims require *calculating* the dynamic

³ As discussed above in Section IV.B.1 (Overview of Burrough), Burrough overloads the symbol $H(d)$ to denote both the haptic profile $H(d)$ and the haptic response $H(d)$. They have a different meaning, however, in that the haptic *profile* $H(d)$ signifies the functional relationship between the haptic response and the distance d , whereas the haptic *response* $H(d)$ represents the value or the magnitude of the haptic response when the distance between the fingers is at a particular distance (or distance value) d . Ex. 1005 ¶ 82.

interaction parameter using the two gesture signals, not merely retrieving a predetermined value from memory. *Id.* at 21 (citing Ex. 2009 ¶ 55; Ex. 1001, col. 15, ll. 3–7).

Similar to our discussion above, Patent Owner focuses on the haptic profile, whereas Petitioner relies on the haptic response to teach the “dynamic interaction parameter” recited in claim 1. To the extent Patent Owner argues the claim requires calculating the haptic response values rather than obtaining them from the haptic profile function, Patent Owner’s argument is not commensurate in scope with claim 1, which recites “generating,” *not* “calculating,” a dynamic interaction parameter. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (explaining that limitations not appearing in the claims cannot be relied upon for patentability).

In general, a particular embodiment appearing in the written description is not incorporated into a claim if the claim language is broader than the embodiment. *Van Geuns*, 988 F.2d at 1184. Further, even if “all of the embodiments discussed in the patent” included a specific limitation, it would not be “proper to import from the patent’s written description limitations that are not found in the claims themselves.” *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1375 (Fed. Cir. 2012). Patent Owner cites Table 2 of the ’571 patent and argues that each of the “examples” described in the table involves “a calculation, not merely a retrieval of a predetermined value from memory.” PO Resp. 20–21 (citing Ex. 1001, col. 15, ll. 3–7; Ex. 2009 ¶ 55). In view of the word “example” used in the cited passage (Ex. 1001, col. 15, l. 7 (“examples listed in TABLE 2”)), we are not persuaded that the cited passage limits the challenged claims

to require “calculating” a dynamic interaction parameter, which, as we explain above, is not recited in the claims.

Nonetheless, we note that one of the examples listed in Table 2 of the ’571 patent describes using “mathematical equations” to generate an interaction parameter. Ex. 1001, col. 15, ll. 31–32 (“Physical modeling - mathematical equations of the physical characteristics of virtual motion”). Similarly, the haptic profile function $H(d)$ of a linear relationship disclosed in Burrough (Ex. 1005 ¶ 82) is a function of a mathematical relationship. Thus, we determine that obtaining a haptic response value from a linear haptic profile function $H(d)$, which is relied upon by Petitioner (Pet. 17–18 (citing Ex. 1005 ¶ 82); Pet. Reply 17–18 (citing Ex. 1005 ¶ 82)), constitutes “generating a dynamic interaction parameter” under the broadest reasonable interpretation of that term.

Based on the foregoing discussion and upon reviewing the complete record, we determine that Petitioner has shown sufficiently that Burrough teaches or suggests “generating a dynamic interaction parameter using the first gesture signal and the second gesture signal,” as recited in claim 1.

(4) Applying a Drive Signal to a Haptic Output Device

The last limitation of claim 1 recites “applying a drive signal to a haptic output device according to the dynamic interaction parameter.” Ex. 1001, col. 16, ll. 13–14. Petitioner contends that Burrough teaches this limitation because Burrough describes that a microcontroller uses touch information (e.g., the location or movement of the user’s fingers on the touch screen) and a haptic profile (which describes a haptic response H in terms of duration, type, and strength of vibrotactile response) to control the

haptic actuators by applying a voltage V to the actuators. Pet. 18–19 (citing Ex. 1005 ¶¶ 35, 47, 56). The force of the haptic effect is directly proportional to the supplied voltage. *Id.* at 19 (citing Ex. 1005 ¶ 56). Citing the testimony of Dr. Baudisch, Petitioner argues that, in the case of the zoom gesture discussed above, a person of ordinary skill in the art would have understood that the microcontroller applies voltages (i.e., drive signals) to the haptic actuators according to the change in haptic response $H(d)$ (i.e., the dynamic interaction parameter) as the user’s fingers move together and apart. *Id.* at 19–20 (citing Ex. 1002 ¶ 74).

Citing the testimony of Dr. Baudisch, Petitioner argues that it would have been obvious to a person of ordinary skill in the art to apply Burrough’s teachings of controlling haptic actuators to Burrough’s multi-touch zoom embodiments. Pet. 20. That is, Petitioner proposes modifying Burrough by combining the teachings of different aspects of the reference’s disclosures that are not explicitly combined in the reference—to generate a drive signal for the haptic actuators according to the haptic response determined in the zoom gesture algorithm, for example, to generate haptic effects that vary as a function of the distance between the user’s fingers. *Id.* at 20 (citing Ex. 1002 ¶ 75). Petitioner argues that the motivation to make such a combination is found in Burrough’s disclosure of generating a “haptic effect H for each finger [that] increases linearly” with the distance between the user’s fingers. *Id.* (citing Ex. 1005 ¶ 82). In other words, Petitioner asserts that Burrough’s multi-touch zoom embodiment expressly contemplates producing haptic output via haptic actuators. *See id.*

Patent Owner does not dispute specifically Petitioner's contention that Burrough renders obvious the last limitation of claim 1. Based on the complete record, we determine that Petitioner has demonstrated sufficiently that a person of ordinary skill in the art would have combined the teachings of Burrough as Petitioner proposes, and that the proposed combination teaches or at least suggests "applying a drive signal to a haptic output device according to the dynamic interaction parameter," as recited in claim 1.

(5) Conclusion

Upon considering all of the evidence of record, we determine that Petitioner has demonstrated, by a preponderance of the evidence, the subject matter of claim 1 would have been obvious under 35 U.S.C. § 103(a) based on Burrough.

b. Claim 2

Claim 2 depends from claim 1, and further recites "wherein the first or second gesture signal comprises a vector signal." Ex. 1001, col. 16, ll. 15–16. The parties agree that a "vector signal" includes both a magnitude and direction. Pet. 9; PO Resp. 25. Petitioner asserts that Burrough renders obvious the method of claim 1 where "the first or second gesture signal comprises a vector signal," as recited in claim 2, because Burrough discloses that "the . . . haptic response H_x can vary depending upon . . . the location . . . of touch event T (i.e., $T(x)$) [or] any finger motion ($\partial T/\partial x$, $\partial T/\partial y$)." Pet. 20–21 (citing Ex. 1005 ¶ 51). Citing the testimony of Dr. Baudisch, Petitioner argues that a person of ordinary skill in the art would have understood that a motion of a user's finger (represented by $\partial T/\partial x$ or $\partial T/\partial y$)

has both a magnitude and a direction. *Id.* at 21 (citing Ex. 1002 ¶ 78). Petitioner further relies on Burrough's disclosure of the zoom gesture where the haptic effect varies based on the distance between the two fingers and whether the distance is increasing (i.e., when zooming in) or decreasing (i.e., when zooming out). *Id.* (citing Ex. 1005 ¶ 82; Ex. 1002 ¶ 78).

Patent Owner asserts that Petitioner does not demonstrate Burrough renders claim 2 obvious because Petitioner "relies solely on Burrough's 'signal(s) S' (such as S1, S2, etc.)" as teaching the "first gesture signal" and "second gesture signal" of claim 1 (PO Resp. 25), and Petitioner does not show how the magnitude and direction information would be contained in signal(s) S (*id.* at 26). Patent Owner argues that Burrough's signals S indicate only the momentary position of a finger (*id.*) and, therefore, do not contain magnitude and direction information (*id.* at 28).

We do not agree with Patent Owner's argument because Petitioner does not rely solely on Burrough's signal(s) S to teach the first and second "gesture signals." Contrary to Patent Owner's contention, as discussed above, to teach the "gesture signals," Petitioner relies on Burrough's disclosure of various signals generated by the touch sensitive device during the zoom gesture, including "a touch event T," a touch signal S₁, and "any other signal consistent with a multi-touch event" (Pet. 15–16; Pet. Reply 15), such as $(\partial T/\partial x, \partial T/\partial y)$, which represents a motion of a user's finger (Pet. 21; Pet. Reply 15, 20). The cited portions of Burrough indicate that a "touch event T" includes at least the location information of a user touch. Ex. 1005 ¶ 51 ("the location . . . of touch event T (i.e., T(x))"). In addition, we credit the testimony of Dr. Baudisch and agree with Petitioner that a person of

ordinary skill in the art would have understood that a motion of a user's finger (represented by $\partial T/\partial x$ or $\partial T/\partial y$) has both a magnitude and a direction. Pet. 21 (citing Ex. 1002 ¶ 78).

We agree with Petitioner's arguments and evidence that Burrough renders claim 2 obvious because paragraphs 51 and 82 cited by Petitioner teach or suggest generating different haptic responses during a zoom-in gesture and a zoom-out gesture. *Id.* at 20–21 (citing Ex. 1005 ¶¶ 51, 82). For example, paragraph 82 discloses that “[a]s the fingers . . . spread apart further (distance increases) the haptic effect felt by the two fingers changes as the map zooms in” and that “[i]n order to zoom out . . . the fingers . . . are closed back together (along with *the corresponding haptic effect*).” Ex. 1005 ¶ 82 (emphasis added). Burrough contemplates generating different haptic responses (i.e., the claimed “dynamic interaction parameter”) depending on whether the user is zooming in or zooming out—that is, depending on the direction of the motion of the first or second fingers—because Burrough also discloses that “the . . . *haptic response* H_x *can vary* depending upon . . . any *finger motion* ($\partial T/\partial x$, $\partial T/\partial y$).” Ex. 1005 ¶ 51 (emphases added). Thus, Burrough teaches or suggests “generating a dynamic interaction parameter using the first gesture signal and the second gesture signal,” as recited in claim 1, as well as “wherein the first or second gesture signal comprises a vector signal,” as recited in claim 2, because Burrough teaches or at least suggests that the signal from the first or second finger used to generate a haptic response during the zoom gesture is a ($\partial T/\partial x$, $\partial T/\partial y$) signal, which is a vector signal representing the motion of the first or second finger.

Based on the foregoing discussion and upon reviewing the complete record, we determine that Petitioner has demonstrated, by a preponderance of the evidence, the subject matter of claim 2 would have been obvious under 35 U.S.C. § 103(a) over Burrough.

c. Claims 3, 4, and 6

Claim 3 depends from claim 1, and further recites “wherein the first or second gesture signal comprises an on-screen signal.” Ex. 1001, col. 16, ll. 17–18. Although the parties do not propose a construction for the term “on-screen signal,” we agree with Petitioner that a signal generated based on interactions with a touch screen constitutes an “on-screen signal” under the broadest interpretation of that term. *See* Pet. 10. We further agree with Petitioner that Burrough teaches a gesture signal that comprises an “on-screen signal” because, as Petitioner argues, the signal representing the first or second user finger in the multi-touch zoom gesture of Burrough indicates one or more touches on the touch sensitive screen. Pet. 21–22 (citing Ex. 1005 ¶ 81, Figs. 12A–12H; Ex. 1002 ¶¶ 79–80).

Claim 4 depends from claim 1, and further recites “wherein generating a dynamic interaction parameter comprises generating a dynamic interaction parameter from a difference between the first gesture signal and the second gesture signal.” Ex. 1001, col. 16, ll. 19–22. Petitioner asserts that Burrough teaches generating a dynamic interaction parameter from a difference between the first gesture signal and the second gesture signal because Burrough discloses determining the distance between the user’s fingers in the multi-touch zoom gesture and generating the haptic response $H(d)$ (i.e., the claimed “dynamic interaction parameter”) as a function of this

distance. Pet. 22 (citing Ex. 1005 ¶¶ 80, 81; Ex. 1002 ¶¶ 81–84). Citing the testimony of Dr. Baudisch, Petitioner asserts that a person of ordinary skill in the art would have understood that the distance between the user’s fingers is calculated from a difference between the two position signals (i.e., the claimed “first gesture signal” and “second gesture signal”). *Id.* (citing Ex. 1002 ¶ 83).

We credit the testimony of Dr. Baudisch and agree with Petitioner’s argument and evidence that Burrough teaches the additional limitation recited in claim 4. In particular, we find that, under the broadest reasonable interpretation standard, a person of ordinary skill in the art would have understood that the distance between the first and second fingers during the zoom gesture of Burrough constitutes “a difference between the first gesture signal and the second gesture signal” recited in claim 4. Hence, we determine that generating the haptic response as a function of the distance between the first and second fingers during the course of the zoom gesture of Burrough teaches “generating a dynamic interaction parameter comprises generating a dynamic interaction parameter from a difference between the first gesture signal and the second gesture signal,” as recited in claim 4.

In addition, citing the testimony of Dr. Baudisch, Petitioner asserts that it would have been obvious to a person of ordinary skill in the art that the distance between the user’s fingers can be calculated by taking the difference between the positions of the fingers. *Id.* (citing Ex. 1002 ¶ 84). We credit Dr. Baudisch’s testimony and agree with Petitioner that a person of ordinary skill in the art would have been motivated to obtain the inter-digit distance from location information because Burrough discloses that

touch signals may indicate the “location . . . of the finger on the touch sensitive” screen. *Id.* at 22–23 (quoting Ex. 1005 ¶ 42).

Claim 6 depends from claim 1, and further recites “wherein generating a dynamic interaction parameter comprises generating a dynamic interaction parameter using the first gesture signal and the second gesture signal and an animation.” Ex. 1001, col. 16, ll. 27–30. Although the parties do not propose an express construction for any term recited in claim 6, we agree with Petitioner that coordination with an animation constitutes “using . . . an animation” recited in claim 6 under the broadest reasonable interpretation of that term. *See* Pet. 10–11. Petitioner contends that Burrough teaches generating a dynamic interaction parameter using an animation because Burrough discloses that haptic effects or haptic responses are coordinated with zooming in or out of a graphical object (i.e., the zoom in or zoom out animation of the map). *Id.* at 24–25 (citing Ex. 1005 ¶¶ 51, 81).

Petitioner argues, and we agree, that Burrough teaches generating a dynamic interaction parameter using an animation (i.e., in coordination with an animation), as well as using the first gesture signal and the second gesture signal, because, during the zoom gesture, both the zoom in or zoom out animation of the map and the generation of the haptic response $H(d)$ (i.e., the claimed “dynamic interaction parameter”) are controlled and coordinated by the distance between the first and second fingers. *Id.* at 16–18 (citing Ex. 1005 ¶¶ 34, 51, 80, 82, Figs. 12A–12H), 24–25 (citing Ex. 1005 ¶¶ 51, 81).

In addition, we agree with Petitioner that the cited disclosure of Burrough renders the additionally recited limitation of claim 6 obvious because it would have been obvious to a person of ordinary skill in the art to use an animation, such as a zoom in or zoom out animation, to generate the haptic response (and create haptic effects) coordinated with the displayed animation. *Id.* at 25 (citing Ex. 1002 ¶ 91). We agree with Petitioner that a person of ordinary skill in the art would have been motivated to do so because, as Petitioner argues, Burrough discloses that “the object zooms in or zooms out at the same time and the corresponding haptic effect will change.” *Id.* (quoting Ex. 1005 ¶ 81; citing Ex. 1002 ¶ 91).

Patent Owner does not respond separately, with specificity, to Petitioner’s challenges to dependent claims 3, 4, and 6 beyond Patent Owner’s arguments advanced with respect to independent claim 1 discussed above.

Upon considering the complete record, we determine that Petitioner has demonstrated, by a preponderance of the evidence, the subject matter of claims 3, 4, and 6 would have been obvious under 35 U.S.C. § 103(a) over Burrough.

d. Claims 23–26 and 28

Claims 23–26 and 28 are computer readable medium claims corresponding to method claims 1–4 and 6, respectively. Petitioner relies upon essentially the same analysis discussed above with respect to claims 1–4 and 6 to account for limitations recited in claims 23–26 and 28. *Compare* Pet. 15–25, *with id.* at 31. Patent Owner does not respond separately, with specificity, to Petitioner’s challenges to claims 23–26 and 28 beyond Patent

Owner's arguments advanced with respect to independent claim 1 and dependent claim 2 discussed above. Hence, for the same reasons discussed above with respect to claims 1–4 and 6, Petitioner has demonstrated, by a preponderance of the evidence, the subject matter of claims 23–26 and 28 would have been obvious under 35 U.S.C. § 103(a) based on Burrough.

V. MOTION FOR OBSERVATIONS

Patent Owner's observations are directed to the cross-examination testimony of Dr. Baudisch (Ex. 2012), who was cross-examined after Petitioner filed its Petitioner Reply. We have considered Patent Owner's observations and Petitioner's responses in rendering our decision, and have accorded the testimony the appropriate weight as explained above. *See* Obs. 1–5; Obs. Resp. 1–6.

VI. CONCLUSION

Petitioner has met its burden of proof, by a preponderance of the evidence, in showing that claims 1–4, 6, 23–26, and 28 of the '571 patent are unpatentable as obvious under 35 U.S.C. § 103(a) over Burrough.

VII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 6, 23–26, and 28 of the '571 patent are unpatentable; and

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.

IPR2016-01372
Patent 8,659,571 B2

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