Trials@uspto.gov
571-272-7822

Paper No. 41
Entered: December 18, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

KEYNETIK, INC.,
Patent Owner.

Case IPR2018-00986
Patent 8,370,106 B2

Before LYNNE E. PETTIGREW, IRVIN E. BRANCH, and STACEY G. WHITE, *Administrative Patent Judges*.

BRANCH, *Administrative Patent Judge*.

# JUDGMENT[1]
Final Written Decision
Determining All Challenged Claims Unpatentable
*35 U.S.C. § 318(a)*
ORDER
Granting Patent Owner's Motion to Seal
Denying Petitioner's Motion to Exclude
*37 C.F.R. §§ 42.5, 42.14, 42.54(a), 42.64*

[1] A sealed "Parties and Board Only" version of this Decision was entered on November 6, 2019. Pursuant to notice from the parties that this Decision may be made publicly available without any redactions, the Decision is reissued as a public version.

# I. INTRODUCTION

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1–20 of U.S. Patent No. 8,370,106 B2 (Ex. 1001, "the '106 patent"). KEYnetik, Inc. ("Patent Owner") filed a Preliminary Response. Paper 6 ("PO Prelim. Resp."). On November 7, 2018, we entered a Decision on Institution (Paper 7, "Inst. Dec." or "Institution Decision") instituting *inter partes* review of all challenged claims under all asserted grounds. Inst. Dec. 37.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, "PO Resp."), Petitioner filed a Reply (Paper 19, "Pet. Reply"), and Patent Owner filed a Sur-Reply (Paper 25, "PO Sur-Reply"). To support its arguments, Petitioner relies on the testimony of Dr. Gregory D. Abowd (*see* Exs. 1002, 1014); Patent Owner relies on testimony from Dr. Prasant Mohapatra (*see* Ex. 2005).

Per our authorization, Patent Owner filed a motion to seal certain exhibits (Paper 21 ("Mot. Seal")) and requested entry of a stipulated protective order (Ex. 2059). Patent Owner states "Petitioner consents to the Protective Order." Mot. Seal 5.

Petitioner filed a motion to exclude evidence. Paper 28 ("Pet. Mot. Exclude"). Patent Owner filed an opposition to Patent Owner's motion to exclude (Paper 30, "PO Opp. Exclude") and Petitioner filed a reply in support of the motion to exclude (Paper 32, "Pet. Reply Exclude").

Oral argument was held on August 6, 2019 in Alexandria, Virginia, and a transcript of the hearing is included in the record. Paper 37 ("Tr.").

We have authority under 35 U.S.C. § 6. Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of

persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Having reviewed the arguments of the parties and the supporting evidence, we find that Petitioner has demonstrated by a preponderance of the evidence that all challenged claims 1–20 of the '106 patent are unpatentable. Our determination is summarized in the table at the conclusion of this decision.

We grant Patent Owner's Motion to Seal and deny-in-part and otherwise dismiss as moot Petitioner's Motion to Exclude.

## II. BACKGROUND

### *A. The '106 Patent*

#### *1. Disclosure*

The '106 patent involves a motion-based system that acquires movement and orientation data from sensors, maintains a sequence of detected conditions, produces a profile description based on the detected sequence, and outputs a corresponding event. Ex. 1001, Abstract. In an exemplary application, the system is usable in a hand-held mobile device, such as a mobile phone, wherein the system detects and processes a user's gestures as the user responds to an incoming call. *Id.* at 6:56–7:30. This sequence is depicted in Figure 3, reproduced below.

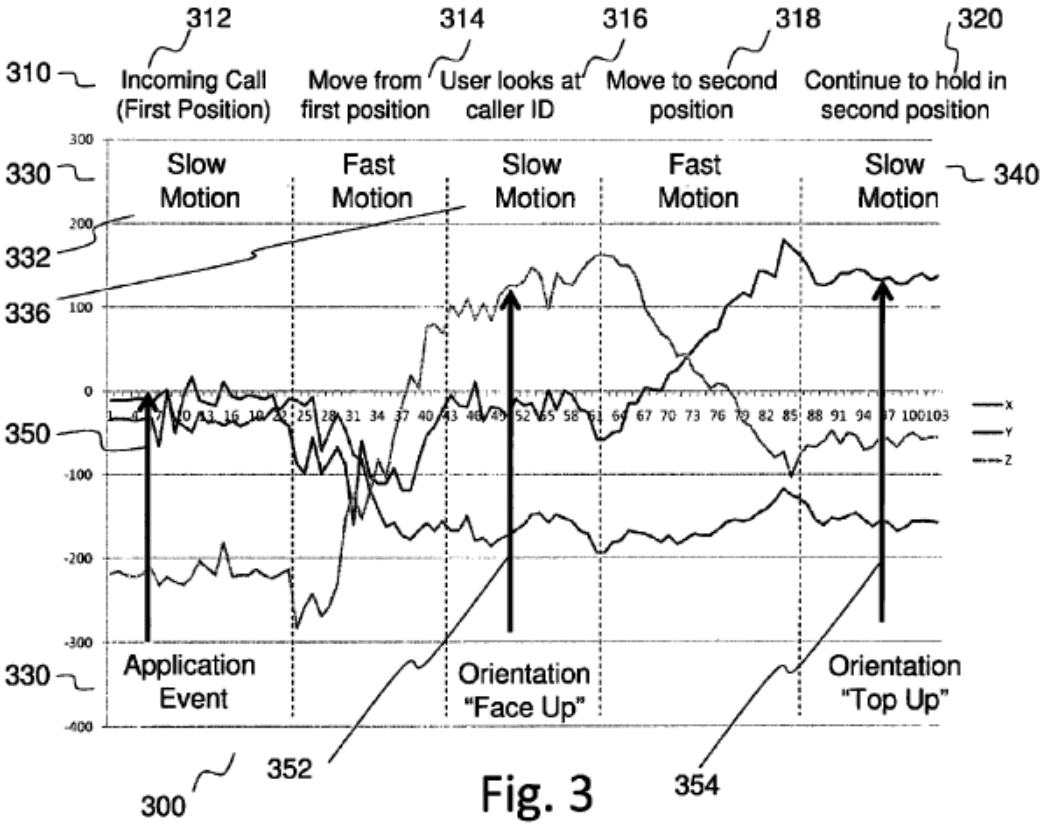


Fig. 3

Figure 3 depicts a graph of detected motion along three axes—x, y, and z—against a timeline as a user responds to an incoming call. *Id.* At 312, the incoming call initiates the process as an application event (300). The system detects fast motion as the user moves the phone (314) to a position to look at the caller ID (316). At 316, the system detects slow motion and a "Face Up" orientation as the user observes the caller ID. The system again detects fast motion (318) as the user positions the device to receive the incoming call. At 320, the system again detects slow motion and also detects that the device is oriented "Top Up." This sequence of detected movement and orientation is interpreted as a user answering a call. *Id.*

Figure 1, reproduced below, depicts a block diagram of the system architecture.

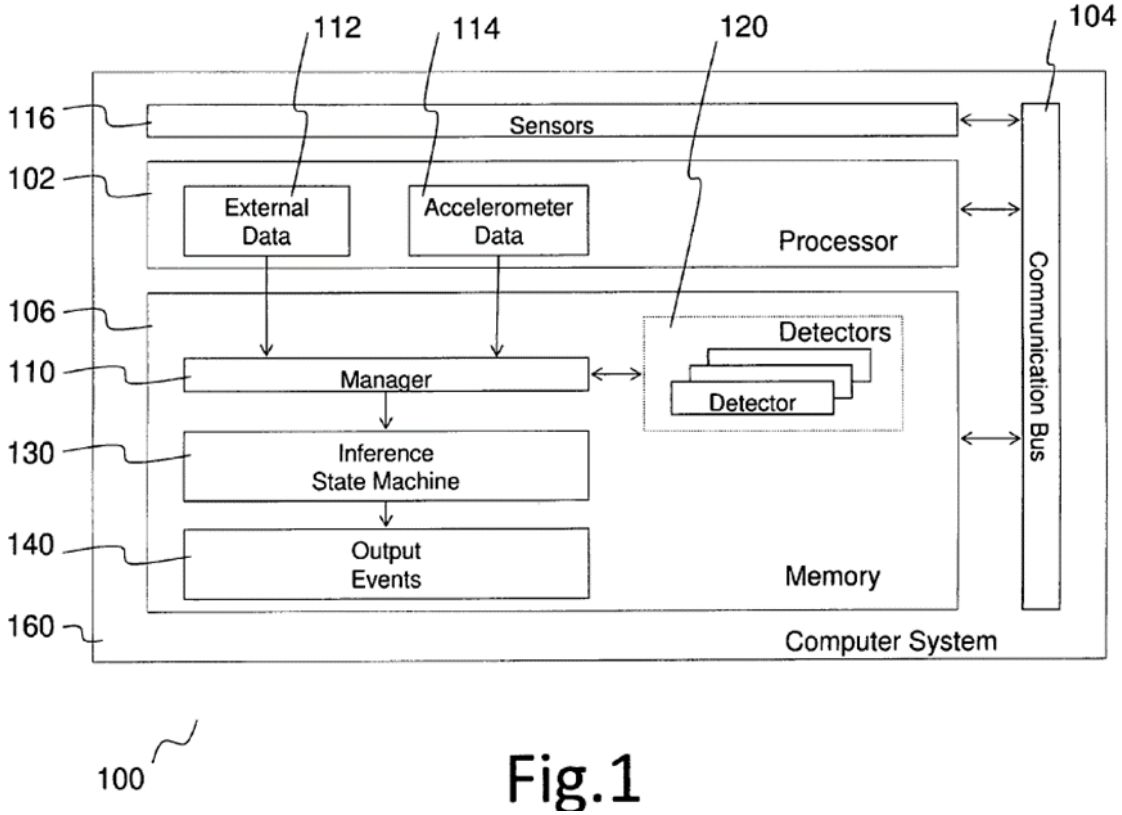


Fig.1

As shown in Figure 1, processor (102), memory (106), and sensors (116) communicate over bus (104). Processor (102) provides data to manager (110) in memory (102), "including external data (112) received from one or more client applications, the operating system and one or more non-motion sensors, and accelerometer data (114) received from one or more inertial motion sensors (116)." *Id.* at 4:40–56. "The manager (110) communicates the received data to an application detector (120) . . . for processing, and once processed, the manager (110) communicates the processed data to an inference state machine (130)." *Id.* at 4:56–60. "The inference state machine (130) maintains a sequence of the detected motion conditions[, ] produces a profile description for the detected motion[, and, b]ased upon matching the profile description, the inference state machine

(130) communicates an event (140) that corresponds to the profile description." *Id.* at 4:66–5:4.

Figure 2, reproduced below, depicts state diagram (200) that shows client application (210) in communication with motion detector (224) and orientation detector (226) of manager (22).

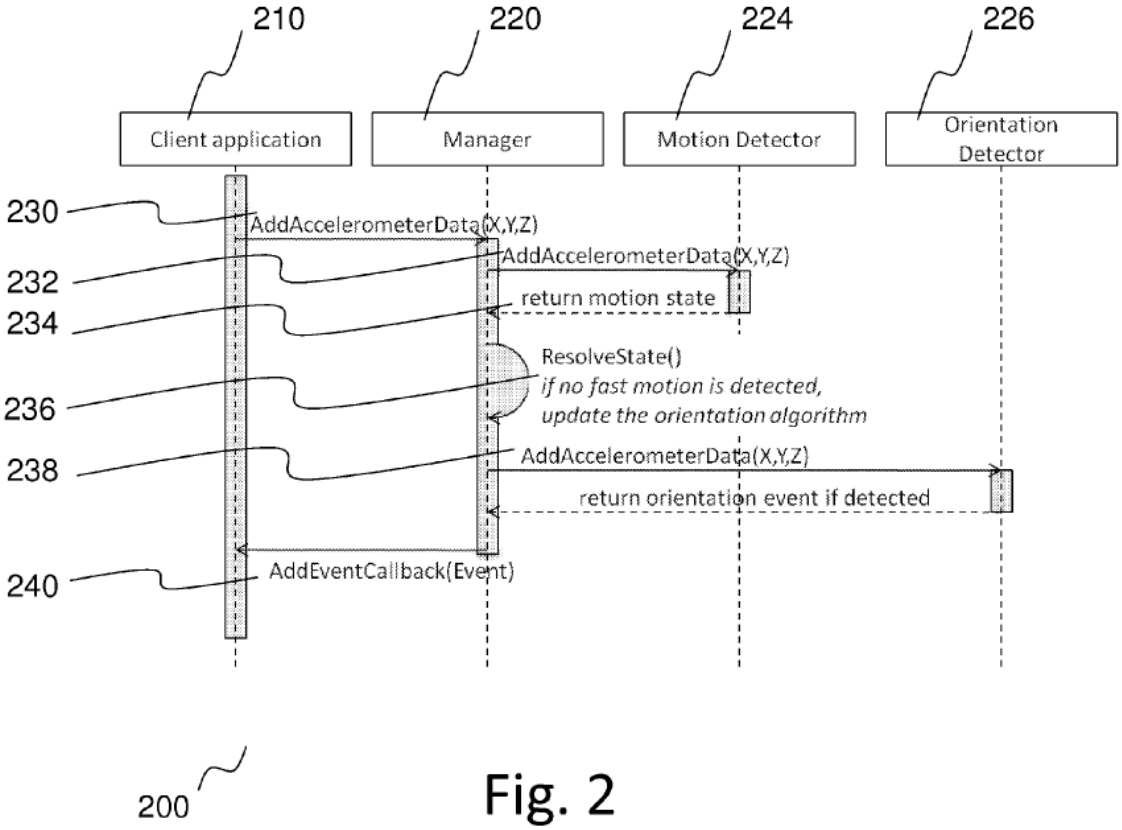


Fig. 2

The Specification of the '106 patent describes Figure 2 as follows:

> Initially, the manager (220) receives motion data and/or external data (230) from a client application (210), and communicates the received motion data (232) to the motion detector (224) for processing. The motion detector (224) processes the received data and returns motion state data (234) to the manager (220). If the motion detector (224) does not detect fast motion (236), the manager is sending the motion data (238) to the orientation detector (226). Similarly, if a fast motion is detected (240), the motion data is not communicated (and therefore not shown) to the orientation detector (226) for processing. In one

> embodiment, the manager (220) can communicate an output event (240) to the client application if such an event is programmed in the inference state machine (not shown).

*Id.* at 6:42–55.

*2. Illustrative Claims*

Of the challenged claims, claims 1 and 12 are independent. Claims 1, 4, 12, and 15 are illustrative of the claims at issue, and are reproduced below with emphasis added.

> 1. A motion based input system comprising:
>
> a processor in communication with a memory;
>
> a motion sensor in communication with the processor;
>
> the processor to acquire movement data from the motion sensor;
>
> a manager configured to execute on the processor and to control motion and orientation detectors, including:
>
> a motion detector to detect motion, including identification of a fast motion phase and a slow motion phase, wherein the motion is classified as slow and fast based upon comparing a magnitude of a motion vector with a magnitude of gravity; and
>
> *an orientation detector to detect orientation towards gravity for each slow motion phase*; and
>
> an inference state machine in communication with the manager configured to:
>
> *maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase*;
>
> produce a profile description for the sequence of the detected orientations; and
>
> output an event corresponding to the profile description.

Ex. 1001, 12:31–51.

> 4. The system of claim 1, further comprising instructions to *avoid detecting orientation during a fast motion condition*.

*Id.* at 12:61–62.

> 12. An article for processing motion data, comprising:
>
> a processor in communication with memory;
>
> a motion sensor in communication with the processor;
>
> the processor to acquire movement data from the motion sensor;
>
> a computer readable storage device including computer program instructions configured to detect a motion condition and an orientation condition, the instructions comprising:
>
> instructions to detect motion, including identification of a fast motion phase and a slow motion phase;
>
> instructions to *detect orientation towards gravity for each slow motion phase and absent detecting orientation towards gravity during fast motion phases*, wherein the motion is classified as slow and fast based upon comparing a magnitude of a motion vector with a magnitude of gravity;
>
> instructions to *maintain a sequence of the detected orientations, each orientation towards gravity in the sequence being limited to a slow motion phase*;
>
> instructions to produce a profile description for the sequence of the detected orientations; and
>
> instructions to output an event corresponding to the profile description.

*Id.* at 13:26–15:7.

> 15. The article of claim 12, further comprising *instructions to avoid detecting orientation during a fast motion condition*.

*Id.* at 14:17–18.

*B. Evidence and Asserted Grounds of Unpatentability*

Petitioner asserts that claims 1–20 are unpatentable based on the following grounds (Pet. 2–3):

| **Claims Challenged** | **35 U.S.C. §** | **References[2]** |
|---|---|---|
| 1, 3, 6, 10–12, 14, and 17 | 103 | Linjama[3] and Lehrman[4] |
| 2, 5, 8, 9, 13, 16, 19, and 20 | 103 | Linjama, Lehrman, and Marvit[5] |
| 1, 3, 4, 6, 7, 10–12, 14, 15, 17, and 18 | 103 | Linjama, Lehrman, and Tosaki[6] |
| 2, 5, 8, 9, 13, 16, 19, and 20 | 103 | Linjama, Lehrman, Tosaki, and Marvit |

*C. Real Parties-in-Interest*

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as the real parties-in-interest. Pet. 1. Patent Owner identifies only itself as a real party-in-interest. Paper 4, 1.

[2] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. §§ 102 and 103. Because the '106 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

[3] U.S. Patent Publication No. 2008/0229255 A1 to Linjama, *et al.*, published Sept. 18, 2008 (Ex. 1005, "Linjama").

[4] U.S. Patent No. 6,703,939 B2 to Lehrman, *et al.*, issued Mar. 09, 2004 (Ex. 1006, "Lehrman").

[5] U.S. Patent No. 7,180,500 B2 to Marvit, *et al.*, issued Feb. 20, 2007 (Ex. 1008, "Marvit").

[6] U.S. Patent No. 6,312,335 B1 to Tosaki, *et al*., issued Nov. 06, 2001 (Ex. 1009, "Tosaki").

### *D. Related Proceedings*

The parties state that the '106 patent is asserted in *KEYnetik, Inc. v. Samsung Electronics Co., Ltd.*, Case No. 2-17-cv-02794 (D.N.J.). Pet. 1; Paper 4, 2.

## III. ANALYSIS

### *A. The Level of Ordinary Skill*

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation and citation omitted). We also are mindful that the level of ordinary skill in the art may be reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

Petitioner proposes that "[a] person of ordinary skill in the art at the time of the alleged invention of the '106 patent ('POSITA') would have had at least a bachelor's degree in electrical engineering or a similar field, and at least two to three years of experience in motion sensing techniques and devices." Pet. 3–4 (citing Ex. 1002 ¶¶16–17). Petitioner also contends that "[m]ore education can substitute for practical experience and vice versa." *Id.* at 4.

In our Institution Decision, we noted that Patent Owner advanced essentially the same understanding as Petitioner. Inst. Dec. 9–10. For purposes of the Institution Decision, we adopted the following level of skill in the art proposed by Patent Owner:

> A PHOSITA relevant to the '106 Patent, in the 2007–2009 time frame, would have been someone familiar with the various motion-sensing technologies by way of experience and/or schooling. That person would likely have earned a bachelor's degree in electrical engineering, computer science or another related field, and have at least two years of experience with motion-sensing technologies. More education can substitute for practical experience and vice versa.

*Id.* at 10 & n.5 (quoting PO Prelim. Resp. 18).

During the *inter partes* review, Patent Owner agreed with the level of ordinary skill we adopted (PO Resp. 19), and Petitioner did not object (*see generally* Pet. Reply).

We determine that no material dispute exists over the level of ordinary skill, and the record prior art references support Patent Owner's proposed level of ordinary skill. Based on the evidence of record, including the types of problems and solutions described in the '106 patent and the asserted prior art, we agree with and adopt Patent Owner's definition of the level of ordinary skill in the art. Further, we would reach the same findings and determinations under either party's definition of the level of ordinary skill in the art.

### *B. Claim Construction*

For petitions filed before November 13, 2018, we use the broadest reasonable interpretation in light of the specification to interpret the claims of a patent that will not expire before issuance of a final written decision. *See* 37 C.F.R. § 42.100(b) (2017)[7]; *Cuozzo Speed Techs., LLC v. Lee*, 136 S.

[7] A recent amendment to this rule does not apply here because the Petition was filed before November 13, 2018. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018)

Ct. 2131, 2144–46 (2016). Under the broadest reasonable construction standard, claim terms are generally given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention and in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

In our analysis below, we first address Petitioner's contention that three claim terms should be construed under 35 U.S.C. § 112 ¶ 6. We then address the primary claim construction dispute in this case involving the following limitations that appear in claim 1: "an orientation detector to detect orientation towards gravity for each slow motion phase" (also referred to as the "orientation detector limitation") and "an inference state machine in communication with the manager configured to: maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase" (also referred to as the "sequence limitation"). The dispute also involves the construction of related limitations in independent claim 12 and dependent claims 4 and 15.

For purposes of this Decision, we determine that no other claim terms requires express construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) ("We need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'").

(amending 37 C.F.R. § 42.100(b) effective November 13, 2018).

*1. Claim Terms Allegedly Governed by 35 U.S.C. § 112 ¶ 6*

Petitioner proposes constructions for the claim 1 terms "motion detector," "orientation detector," and "inference state machine." Pet. 11–14. Petitioner contends that these terms "invoke [35 U.S.C.] § 112 ¶ 6 and that the specification must be consulted to determine the corresponding structure for the claimed functions." *Id.* at 13. Patent Owner contends these terms are not governed by § 112 ¶ 6. PO Resp. 38.

Claim 1's "motion detector," "orientation detector," and "inference state machine" limitations do not use the word "means." *See* Ex. 1001, 12:38–48. The failure to use the word "means" in a claim limitation creates a rebuttable presumption that 35 U.S.C. § 112 ¶ 6 does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc).

Petitioner fails to overcome this presumption. Specifically, Petitioner argues "Claim 1 does not recite any structure associated with the foregoing [terms] or with the corresponding functions." Pet. 13. Petitioner argues further, without evidentiary support, that "'detector' and 'state machine' are generic terms that do not . . . suggest any particular structure," even when modified by "motion" or "orientation." Pet. 13. Petitioner's conclusory statements are an insufficient explanation as to why the disputed claim language is so devoid of structure as to overcome the presumption against applying § 112 ¶ 6.

Accordingly, we find Petitioner has failed to carry the burden to demonstrate that "motion detector," "orientation detector," and "inference state machine" invoke 35 U.S.C. § 112 ¶ 6. *Id.* at 13. Thus, except as

discussed further below, we give these terms their ordinary and customary meaning under the broadest reasonable interpretation standard.

*2. Orientation Detector Limitation and Sequence Limitation*

In the Institution Decision, we determined that Patent Owner's arguments in the Preliminary Response raised the question of whether the claims must be construed such that orientation is detected and maintained during slow motion phases only. Inst. Dec. 12. Based on the preliminary record, we determined the sequence limitation does not preclude detecting orientations during fast motion phases. *Id.* at 14. We also determined that, on the preliminary record, we were unable to construe the additional limitation in claim 12 reciting "absent detecting orientation towards gravity during fast motion phases." *Id.* at 15.

Patent Owner now proposes a construction for the sequence limitation, contending that the Board's construction of the sequence limitation in the Institution Decision is unreasonable and inconsistent with the Specification of the '106 Patent as it would be understood by a POSITA. PO Resp. 20–21 (citing Ex. 2005 ¶ 52); *see* Inst. Dec. 14. Patent Owner contends "[a] POSITA would understand that the broadest reasonable interpretation of [the sequence limitation] is 'a sequence including two or more detected orientation conditions and precluding orientations detected during fast motion.'" PO Resp. 20–21 (quoting Ex. 2005 ¶ 52). Patent Owner cites to the testimony of Dr. Mohapatra in support of its contentions. Ex. 2005 ¶¶ 52–79.

For reasons explained below, we do not agree with Patent Owner's construction. The crux of the issue is whether the orientation detector limitation ("an orientation detector to detect orientation towards gravity for

each slow motion phase") means that "the detected orientations [in the sequence limitation] reflect the orientation condition for an entire 'slow motion phase,'" as Patent Owner contends. PO Sur-Reply 5; *see* PO Resp. 26–27. Petitioner contends, on the other hand, that multiple orientations may be detected during a single slow motion phase and each one may be "for" the phase. Pet. Reply 5.

Claim 1 recites "an orientation detector to detect orientation towards gravity for each slow motion phase; and an inference state machine in communication with the manager configured to: maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase." Claim 12 includes a similar recitation.

In our institution decision, we noted that

> claim 1 does not explicitly state that the orientation detector detects orientation 'only' during slow motion phases. Further, the inference state machine limitation does not explicitly restrict the orientation detector's detection of orientations, even during fast motion phases. Further still, the inference state machine limitation does not *preclude* maintaining sequences of orientations during fast motion phases or phases wherein fast motion and slow motion are both detected.

Inst. Dec. 12–13.

For purposes of that decision, we preliminarily determined, based on the plain and ordinary meaning of the terms of the claim, that

> claim 1 allows continuously maintaining orientations during both fast motion and slow motion phases, provided a sequence of orientations *is* maintained that is limited to slow motion phases. In other words, interpreting claim 1 in accordance with the plain and ordinary meaning of its terms does not preclude from the scope of the claim[,] maintaining a sequence of orientations during a slow motion phase within a larger sequence of orientations maintained during both fast motion and slow motion[] phases.

*Id.* at 13.

Patent Owner contends our preliminary construction of claim 1 "ignores an important distinction between the express claim language of the Orientation Detector Limitation and the Sequence Limitation[, because] the Sequence Limitation, unlike the Orientation Detector Limitation, expressly requires 'each orientation in the [maintained] sequence **being limited to** a slow motion phase.'" PO Resp. 21. Patent Owner contends that "[b]ecause a 'sequence' requires two or more orientation conditions, there must have been an intermittent fast motion condition so that there could be two or more slow motion phases each with a corresponding orientation condition." PO Resp. 24 (citing Ex. 2005 ¶ 60).

Patent Owner further contends that

> the broadest reasonable interpretation of the claim term must give meaning to the claim language "limited to a slow motion phase" . . . because a "fast motion condition" necessarily separates "orientation conditions," and orientations detected during a fast motion condition (which are unreliable) need to be excluded from the maintained sequence to ensure "fault resilience."

PO Resp. 25 (citing Ex. 2005 ¶ 61). Patent Owner argues that, because the claimed invention is "configured to" maintain the specific sequence, external conditions such as leaving the device on a table are not enough for the device to be so configured. *Id.* (citing 1001, 7:25–28; Ex. 2005 ¶ 61). Patent Owner contends that "if 'configured to' and 'being limited to a slow motion phase' are excised from the limitation, a sequence of only slow motion orientations would still be maintained if the external circumstances are such that only slow motion phases occurred in the first place." *Id.* (citing Ex. 2005 ¶ 62). Patent Owner contends that the Specification and the

prosecution history confirm Patent Owner's interpretation. PO Resp. 27–35 (citing Ex. 2005 ¶¶ 67–76).

Petitioner contends that "PO's proposed construction and all the limitations placed by PO on that construction deviate from the plain and ordinary meaning, and are not compelled by lexicography or disavowal in the intrinsic evidence." Pet. Reply 3; *see id.* at 3–8.

Patent Owner's arguments focus on construction of the sequence limitation. *See* PO Resp. 20–35. Patent Owner, however, embeds in its arguments a construction of the orientation detector limitation that is material to Patent Owner's construction of the sequence limitation. PO Resp. 26–27 ("the claimed 'a sequence of **the** detected orientations' [in the sequence limitation] refers to **the** orientations detected by the orientation detector '**for each** slow motion phase,'" and "use of the word 'for' informs that 'orientation' is detected for the phase itself – i.e., the orientation condition of the phase – not merely an orientation during the phase."); *see* Ex. 2005 ¶ 64 ("The use of the word 'for' would inform a POSITA that 'orientation' is detected for the phase itself - i.e., the orientation condition of the phase - not merely an orientation during the phase."). We therefore begin by construing the orientation detector limitation.

*a. The Orientation Detector Limitation*

As quoted previously, claim 1 recites "an orientation detector to detect orientation towards gravity for each slow motion phase" ("the orientation detector limitation"). Patent Owner contends "use of the word 'for' informs that 'orientation' is detected for the phase itself – i.e., the orientation condition of the phase – not merely an orientation during the phase." PO Resp. 27 (citing Ex. 2005 ¶ 64).

We find Patent Owner's construction of the orientation detector limitation is not the broadest reasonable construction in light of the Specification. Dr. Mohapatra's testimony (Ex. 2005 ¶ 64), does not include a persuasive explanation as to why "the word 'for'" "would inform a POSITA that 'orientation' is detected for the phase itself . . . not merely an orientation during the phase." "For" has many definitions, one of which includes "correspondence or correlation."[8] A detected orientation can be one of several detected orientations that "correspond" to each slow motion phase, not necessarily only one orientation "for" each phase, as Dr. Mohapatra testifies. Thus, the plain meaning of "an orientation detector to detect orientation towards gravity [corresponding to] each slow motion phase" encompasses multiple orientation detections for a given slow motion phase and does not preclude orientation detection for fast motions phases.

Our construction is consistent with Dr. Abowd's testimony, which we find more credible because it is consistent with the ordinary and customary meaning of the claim language. Dr. Abowd testifies that "[a] POSITA would have understood that the "'sequence limitation'" can be met by two orientations detected "'for'" a single slow motion phase." Ex. 1014 ¶ 10. We, thus, agree with Petitioner that Patent Owner "is reading too much into the term 'for' because the claim language (detect orientation for each slow motion phase) also supports the interpretation that two orientations are detected *for* each slow motion phase." Pet. Reply 5 (citing Ex. 1014 ¶¶ 9–11).

We also find credible Dr. Abowd's testimony that the orientation detector limitation does not preclude multiple detected orientations for each

[8] https://www.merriam-webster.com/dictionary/for. Ex. 3002.

slow motion phase because it is consistent with the Specification. Dr. Abowd refers to Figure 2, which is reproduced below.

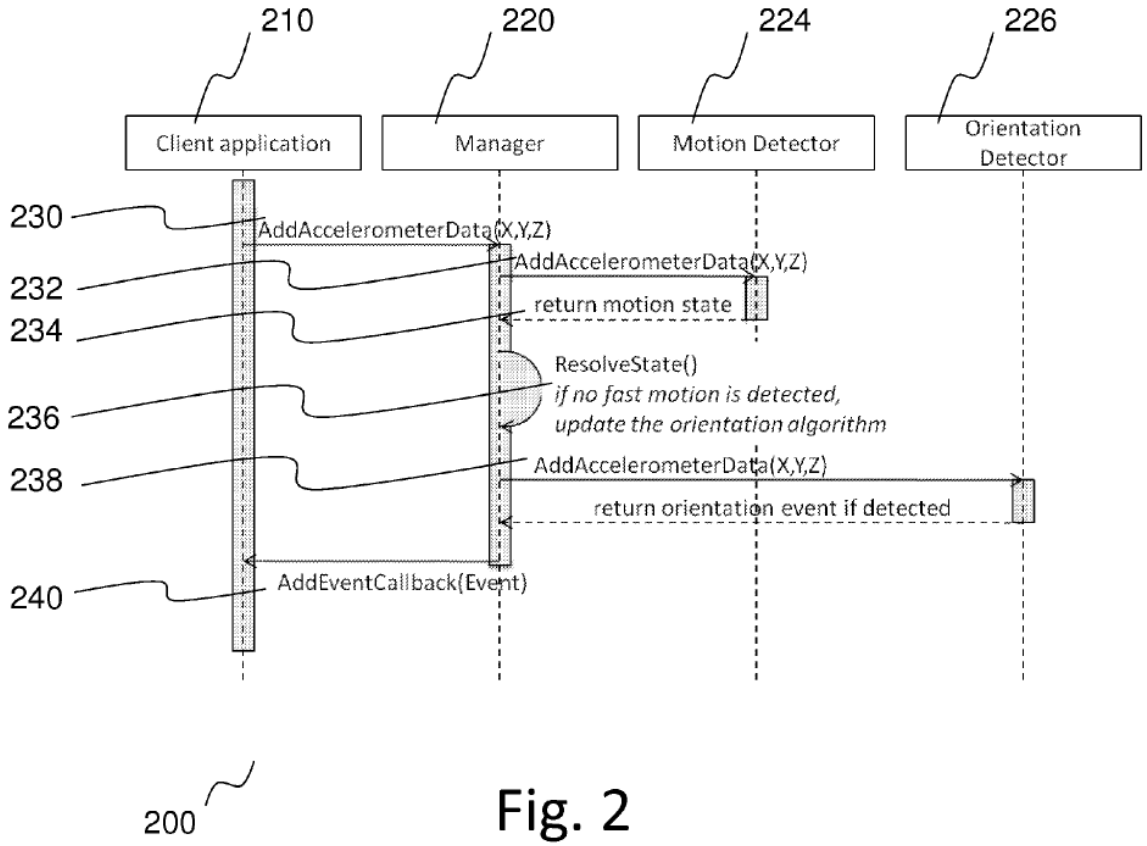


Fig. 2

Figure 2 depicts "a state diagram illustrating the interworking of the motion detector with a client application." Ex. 1001, 2:49–50. "If the motion detector **(224)** does not detect fast motion **(236),** the manager is sending the motion data **(238)** to the orientation detector **(226).** Similarly, if a fast motion is detected **(240),** the motion data is not communicated (and therefore not shown) to the orientation detector **(226)** for processing." *Id.* at 6:47–52. In accordance with this description, in the absence of detected fast motion (i.e., throughout a period of slow motion), the manager is sending motion data to the orientation detector for processing, which allows for the

possibility that multiple orientations may be detected for a single "phase"[9] of slow motion. Thus, we find credible Dr. Abowd's testimony that "there is no disclosure in the '106 patent that the inference state machine is **prohibited** from storing a sequence of orientations (e.g., facing down, facing down, facing down) detected during a single slow motion phase." Ex. 1014 ¶ 9.

Patent Owner argues that, because "Petitioner does not make any substantive argument concerning Figure 2 in its Reply . . . [we] should not consider [Dr. Abowd's] additional argument." PO Sur-Reply 6–7 (referring to Dr. Abowd's reply declaration, Ex. 1014, paragraphs 9–11). We have considered Dr. Abowd's testimony regarding Figure 2, however, because Petitioner references both the testimony and Figure 2 in Petitioner's Reply. Pet. Reply 5 ("PO is reading too much into the term 'for' because the claim language (detect orientation for each slow motion phase) also supports the interpretation that two orientations are detected *for* each slow motion phase. (Ex. 1014, ¶¶9–11 (explaining figure 2)"). We find this reference to Dr. Abowd's testimony discussing Figure 2 sufficient for us to consider it.

Patent Owner also argues that Figure 2 "is of questionable relevance" because it "does not concern the maintained sequence of the detected orientations." PO Sur-Reply 7. We, however, find that Figure 2 and Dr. Abowd's testimony regarding it are relevant because Figure 2 concerns the orientation detector limitation and Patent Owner argues that the orientation detector limitation constrains the sequence limitation. Thus, Dr. Abowd's

[9] Notably, we do not find where "phase" is used in the '106 Patent outside the claims.

testimony regarding Figure 2 is relevant to both the orientation detector limitation and the sequence limitation.

Patent Owner contends that Dr. Abowd "changes the words of Figure 2 to broaden the Sequence Limitation" by testifying that "'during a **single** slow motion phase, **more than one** orientation measurement will be detected and returned by the orientation detector 226' and 'there is no disclosure . . . that the inference state machine is **prohibited** from storing [such] a sequence of orientations.'" PO Sur-Reply 7–8 (quoting Ex. 1014 ¶ 9 with emphasis). Patent Owner contends that Figure 2 does not "return and store in the inference state machine an orientation measurement every time the orientation algorithm is updated, as opined by Dr. Abowd" but rather "shows a single pass of accelerometer data with only one possible 'orientation event' returned." *Id.* at 7. Patent Owner argues that "[a] motion state will only 'resolve' at the end of a motion phase so that an orientation event is returned 'for each slow motion phase' classified by the motion detector, as required by the Orientation Detector Limitation." *Id.* at 8–9. Patent Owner argues further that "if two orientation measurements were returned each for a particular instant in time during a single slow motion phase, as claimed by Dr. Abowd, the teaching in the specification of an 'orientation condition' would be nonsensical" and that "it is impossible to have a 'sustained value of x, y, and z sensor data' for any one particular instant in time." *Id.* at 9 (referring to Ex. 1001, 6:3–6 ("Based upon the sensor data, an orientation condition refers to sustained values of the x, y, and z, sensor data within certain limits over a predefined length of time.")). Patent Owner contends that, because *sustained* values of x, y, and z must be sustained for a period of time, and because that period of time does not

conclude until the end of a motion phase—when the motion detector returns a "motion state"—the orientation detector cannot detect more than one orientation (or orientation condition) for a slow motion phase. PO Sur-Reply 9–11 (referring to Ex. 1001, Figure 3, 6:3–6, 18–21, and 7:10–12).

Importantly, because Patent Owner's arguments in Patent Owner's Sur-Reply are not supported by any testimony from Dr. Mohapatra, we find Petitioner's position, which is supported by the testimony of Dr. Abowd, to be more persuasive. Further, we do not agree with Patent Owner that "[a] motion state will only 'resolve' at the end of a motion phase so that an orientation event is returned 'for each slow motion phase' classified by the motion detector, as required by the Orientation Detector Limitation." PO Sur-Reply 9. We see no disclosure in the Specification that precludes the motion detector from continuously providing accelerator data to the orientation detector during a single period of slow motion, even if the motion detector must first classify the motion as slow or fast. *See generally* Ex. 1001, Figs. 2, 3 and 6:37–7:17. Moreover, even if "Figure 2 shows a single pass of accelerometer data with only one possible 'orientation event' returned," as Patent Owner contends (PO Sur-Reply 8), we do not find that this "single pass" must be coextensive with a single slow motion phase such that only one orientation is detected "for each slow motion phase."

Accordingly, we do not find that the orientation detector limitation precludes multiple orientations being detected for each slow motion phase.

We also do not agree with Patent Owner that the word "each" in the phrase "for each slow motion phase" in the orientation detector limitation "confirms that 'the sequence of the detected orientations' [in the sequence limitation] must be for orientations corresponding to '**two or more** slow

motion phases.'" PO Sur-Reply 5 (referring to Pet. Reply 5). Patent Owner contends that "[e]ven if Petitioner were correct that the claims encompass multiple orientation signals detected during a single slow motion phase, it is undisputed that the claims require detection of orientation 'for each slow motion phase.'" *Id.* Patent Owner contends that the plain and ordinary meaning of "each" requires two or more slow motion phases. *Id.* at 5–6; *see* PO Resp. 27 n.5 (quoting the web version of the Oxford Dictionary (Ex. 2046) ("'Each' is defined as 'used to refer to every one of two or more people or things, regarded and identified separately.'")).

Petitioner contends that "although 'each' (recited in claim 1 in the context of 'each slow motion phase') can refer to each of two or more slow motion phases, 'each' can also refer to each of **one or** more slow motion phases, and thus can refer to **one** slow motion phase." Pet. Reply 5 (citing Ex. 1014 ¶¶ 9–11). Dr. Abowd testifies that, "[a]pplying the plain and ordinary meaning, this claim language does not require there to be more than one slow motion phase" and explains that "if there was only one slow motion phase and orientation was detected for that one slow motion phase; then the claim is satisfied because an orientation is detected for 'each' slow motion phase." Ex. 1014 ¶ 11.

Patent Owner criticizes Dr. Abowd's construction as "nonsensical," arguing that "one would not say 'each of you please stand up,' when there is only one person in the room." Sur-Reply 6.

We credit Dr. Abowd's testimony as more credible and are persuaded that, in accordance with its ordinary and customary meaning, the orientation detector limitation could be satisfied by only one slow motion phase because, in the context of the claims, "each" can refer to one or more. *See*

Ex. 2061, 12 ("a person of ordinary skill in the art would understand ["]each["] . . . in the context of this kind of phrasing . . . does not require that there be two"). For example, if one addressed a room full of people and asked each WW1 veteran to stand and only one person stood, each WW1 veteran would have stood. That is similar to the case here with each slow motion phase if there happens to be only one. The claim does not preclude only one slow motion phase.

Accordingly, we find that the ordinary and customary meaning, consistent with the Specification, of the orientation detector limitation ("an orientation detector to detect orientation towards gravity for each slow motion phase") does not preclude detecting orientation during fast motion phases and also does not preclude multiple orientations being detected during a slow motion phase, which could be the only slow motion phase.

*b. The Sequence Limitation*

Claim 1 recites "an inference state machine . . . configured to: maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase" ("the sequence limitation"). Claim 12 includes a similar recitation ("instructions to maintain a sequence of the detected orientations, each orientation towards gravity in the sequence being limited to a slow motion phase").

Patent Owner contends that "[a] POSITA would understand that the broadest reasonable interpretation of 'a sequence of the detected orientations towards gravity[,] each orientation in the sequence being limited to a slow motion phase' is 'a sequence including two or more detected orientation conditions and precluding orientations detected during fast motion.'" PO Resp. 20–21 (citing Ex. 2005 ¶ 52).

We disagree with Patent Owner's construction because the claim does not recite "conditions," and Patent Owner's construction is vague with respect to whether orientations detected during fast motion are precluded from *any* maintained sequence or merely precluded from *a specific* maintained sequence. Rather, for the following reasons, we construe the sequence limitation according to its ordinary and customary meaning.

Patent Owner makes the following assertions:

> 1) "there is a 'sequence,' which means 'a particular order in which related things follow each other'";
> 2) "there are plural 'orientation**s**'"; and
> 3) "each orientation in the sequence is 'being limited to a slow motion phase.'"

PO Resp. 23–24. We essentially agree with these assertions, but we do not agree with Patent Owner's ensuing arguments.

For instance, Patent Owner argues "[a] POSITA would understand that this claim language requires a sequence including two or more orientations – not simply a continuous series of signals both representative of a single orientation of a device in a single motion phase." PO Resp. 24 (citing Ex. 2005 ¶ 59). Patent Owner argues further that "'each orientation in the sequence being limited to ***a*** slow motion phase' makes clear that each maintained detected orientation corresponds to a single 'slow motion phase,' and therefore reflects the orientation condition for a particular slow motion phase." *Id.* (citing Ex. 2005 ¶ 60). Patent Owner concludes that "[b]ecause a 'sequence' requires two or more orientation conditions, there must have been an intermittent fast motion condition so that there could be two or more slow motion phases each with a corresponding orientation condition." *Id.*

These arguments are inapposite because, in view of our construction of the orientation detector limitation above, the plain meaning of the

sequence limitation does not preclude two orientations detected for a single slow motion phase being maintained as the sequence of detected orientations, each orientation limited to a slow motion phase (which may be the same slow motion phase).

We first address Patent Owner's contention that "'each orientation in the [maintained] sequence **being limited to** a slow motion phase'" precludes detecting and maintaining orientations for fast motion phases, contrary to our preliminary construction. PO Resp. 21 (quoting a portion of the sequence limitation); *see id.* at 23–24; Inst. Dec. 14. Patent Owner contends that "'each orientation in the sequence being limited to ***a*** slow motion phase' makes clear that each maintained detected orientation corresponds to a single 'slow motion phase,' and therefore reflects the orientation condition for a particular slow motion phase." PO Resp. 21 (citing Ex. 2005 ¶ 60). This reasoning is unconvincing.

The ordinary and customary meaning of the sequence limitation does not preclude two or more orientations in the sequence being limited to *the same* slow motion phase. As discussed above in our construction of the orientation detector limitation, the subject sequence (two or more consecutive detected orientations) could be from the same slow motion phase while also being "limited to a slow motion phase." The sequence limitation does not recite "each orientation in the [maintained] sequence being limited to [a different] slow motion phase."

For example, assume the following long sequence of detected orientations that has been maintained by a hypothetical inference state machine, together with the motion classification during which the orientation was detected for each. The example builds on one provided by

Dr. Abowd by adding a preceding and a succeeding fast motion phase. Ex. 1014 ¶¶ 7–8.

| Sequence No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Motion | Fast | Slow | Slow | Fast |
| Orientation | * | $Down^{T1}$ | $Down^{T2}$ | * |

For sequence numbers 2 and 3, superscripts T1 and T2 have been added to the detected orientation to allow for the possibility that the respective downward orientations detected during slow motion may have slightly different absolute detected orientations, Tilt 1 and Tilt 2, the difference between T1 and T2 being below any threshold for triggering a determination that "fast motion" has occurred. Within the larger sequence 1–4, consecutive sequence numbers 2-3 constitute a "sequence" of orientations as Patent Owner has proposed. PO Resp. 23–24 (Patent Owner's first assertion that "there is a 'sequence,' which means "a particular order in which related things follow each other."). Moreover, sequence 2-3 is limited to having been detected during slow motion.

To whatever extent Patent Owner's construction precludes the sequence limitation reading on sequence 2-3 because sequence numbers 1 and 4 have been allowed, contrary to "each orientation in the sequence being limited to a slow motion phase," we disagree. *See* PO Resp. 25 ("orientations detected during a fast motion condition (which are unreliable) need to be excluded from the maintained sequence to ensure 'fault resilience.'"); *id.* (arguing that because the claimed invention is "configured to" maintain the specific sequence, external conditions such as leaving the device on a table are not enough for the device to be so configured); *id.* ("if 'configured to' and 'being limited to a slow motion phase' are excised from

the limitation, a sequence of only slow motion orientations would still be maintained if the external circumstances are such that only slow motion phases occurred in the first place."); Ex. 2005 ¶¶ 61–62; *see also* Sur-Reply 4–6. The sequence limitation reads on sequence 2-3 without regard to the presence of sequence numbers 1 and 4. For orientation sequence 2-3, "each orientation in the sequence [is] limited to a slow motion phase."

To whatever extent Patent Owner's construction precludes the sequence limitation reading on the inference state machine that maintained this exemplary sequence because it is not "configured to" limit the sequence to slow motion phases, we disagree because the claim does not require that the "limiting" is a function performed by the inference state machine. *See* PO Resp. 25 ("orientations detected during a fast motion condition (which are unreliable) need to be excluded from the maintained sequence to ensure 'fault resilience.'"); *id.* (arguing that, because the claimed invention is "configured to" maintain the specific sequence, external conditions such as leaving the device on a table are not enough for the device to be so configured); Ex. 2005 ¶ 61). The claim reads: "an inference state machine . . . configured to: maintain a sequence of the detected orientations towards gravity, each orientation in the sequence being limited to a slow motion phase." Hence, although the claim recites that the inference state machine is configured to *maintain* the sequence of detected orientations, the plain meaning of "each orientation in the sequence being limited to a slow motion phase" does not require the inference state machine to have orchestrated the limiting of the orientations to those corresponding to slow motion. A sequence of detected orientations during slow motion could "be limit[ed]" because no fast motion occurred, rather than having been limited by the

inference state machine. In other words, according to the ordinary and customary meaning of the terms of the sequence limitation, it reads on prior art configured to maintain a sequence of detected orientations toward gravity that allows both fast motion and slow motion orientations in the sequence.

To whatever extent Patent Owner's construction precludes sequence 2-3 from being the claimed sequence because each amounts to a single phase (i.e., does not have an intermittent fast motion phase), we disagree. *See* PO Resp. 24 ("[a] POSITA would understand that this claim language requires a sequence including two or more orientations – not simply a continuous series of signals both representative of a single orientation of a device in a single motion phase."); *id.* ("'each orientation in the sequence being limited to ***a*** slow motion phase' makes clear that each maintained detected orientation corresponds to a single 'slow motion phase,' and therefore reflects the orientation condition for a particular slow motion phase."); *id.* ("Because a 'sequence' requires two or more orientation conditions, there must have been an intermittent fast motion condition so that there could be two or more slow motion phases each with a corresponding orientation condition."); Ex. 2005 ¶ 59–60. We disagree because this construction is incorrect in light of our construction *supra* of the orientation detector limitation, which allows multiple orientations to be detected during a single slow motion phase.

As to Patent Owner's argument that "[b]ecause a 'sequence' requires two or more orientation conditions, there must have been an intermittent fast motion [phase] so that there could be two or more slow motion phases each with a corresponding orientation condition" (PO Resp. 24), Patent Owner introduces "condition" into the construction, although "condition" does not

appear in the claim. Patent Owner argues that an orientation condition is coextensive with the phase (either fast or slow motion) to which it corresponds, thereby backing into the conclusion that the limitation's reference to "sequence of orientation [conditions]" (which corresponds to an entire phase) necessitates a motion phase change for every orientation detection. We do not find this persuasive because the claim does not recite "condition" and the Specification does not define "phase." Thus, the claim does not preclude a slow motion period during which multiple orientations are detected, rather than the entire period during which slow motion is present and to which a single orientation corresponds. *See* Orientation Detector Limitation *supra*.

Accordingly, we are not persuaded that Patent Owner's construction of the sequence limitation is the broadest reasonable construction according to its ordinary and customary meaning. We also are not persuaded that Patent Owner's narrower construction is required in light of the Specification.

Patent Owner argues that the Specification "supports" the construction that only one orientation condition corresponds to each slow motion phase. PO Resp. 27–33 (citing Ex. 1001, 6:1–36; Ex. 2005 ¶¶ 67–68). More particularly, Patent Owner argues, for instance, that "[t]he specification describes that an orientation detected 'for a slow motion phase' is referred to as an 'orientation condition,' which is expressly defined as 'sustained values of the x, y, and z, sensor data within certain limits over a predefined length of time.'" PO Resp. 27–28 (citing Ex. 1001, 6:3–6 ("Based upon the sensor data, an orientation condition refers to <u>sustained values</u> of the x, y, and z, sensor data <u>within certain limits</u> over a predefined length of time.")). Patent

Owner contends that "[s]uch 'sustained values of the x, y, and z sensor data' would necessarily indicate to the motion detector that only a single 'slow motion phase' has occurred because no 'fast motion condition' would have been detected." *Id.* at 28 (citing Ex. 1001, 6:18–21 ("a stream of motion data is processed through a function, and a [fast motion] condition is detected when the sum of motion vector amplitudes within the function exceeds a threshold."); Ex. 2005 ¶ 67). Patent Owner further contends that "the segment of raw data that the motion detector classified as a single 'slow motion phase' will also be classified by the orientation detector as a single 'orientation condition," and "[a] substantial change in the x, y, z sensor data (i.e., a fast motion condition) will necessarily end both the detected 'slow motion phase' and the detected 'orientation condition.'" *Id.* (citing Ex. 1001, 6:1–36; Ex. 2005 ¶ 68).

Although the Specification may "support" Patent Owner's construction, Patent Owner does not persuade us that the narrower construction is required by the Specification or that our determination of the broadest reasonable construction is inconsistent with it. According to the Specification, slow motion includes conditions of changing orientation. *See, e.g.*, Ex. 1001, Fig. 3. It is, therefore, axiomatic that a period of slow motion may include different orientations. We find no persuasive evidence that the ordinary and customary meaning of the sequence limitation precludes multiple detected orientations during a period of slow motion, or a slow motion "phase." *See* Orientation Detector Limitation *supra*. Moreover, the word "condition" does not appear in the sequence limitation, and we see no persuasive evidence that it must be read into the claim.

Thus, on the complete record, we are persuaded our construction is the broadest reasonable interpretation consistent with the Specification. The Specification discloses "[a]t all slow motion states (332), (336), and (340), the orientation of the device towards gravity will be determined." Ex. 1001, 7:6–8. This statement does not limit detecting or maintaining orientation to slow motion phases *only*, and Patent Owner does not specify where the Specification otherwise limits orientation detection to slow motion phases.

We note Patent Owner's argument referencing the prosecution history of the '106 patent, where counsel for the applicant argued that "neither [*Marvit*] nor *Huang* teach the aspect pertaining to classifying motion into fast and slow motion phases and calculating orientation towards gravity **only** for the slow motion phases" and that the "[e]vent profiles of *Marvit* and *Huang* are based on all motion phases and are not limited to orientations for slow motion phases." PO Resp. 34 (citing Ex. 1004, 92–93, 216). We are not persuaded these statements amount to a clear disclaimer of claim scope such that the claims must be interpreted to mean orientation is detected and maintained for slow motion phases only. Counsel for applicant used the term "calculating orientation," rather than either "detect[ing] orientation" or "maintain[ing] . . . orientations," as used in claim 1. Ex. 1004, 93. Moreover, the word "only" does not appear in claim 1.

Thus, we are not persuaded that Patent Owner's proposed construction of the sequence limitation is correct ("a sequence including <u>two or more</u> detected orientation conditions and <u>precluding</u> orientations detected during fast motion" (PO Resp. 21; Ex. 2005 ¶¶ 52)). Rather, we find that the sequence limitation ("an inference state machine in communication with the manager configured to: maintain a sequence of the detected orientations

towards gravity, each orientation in the sequence being limited to a slow motion phase") means, in accordance with the ordinary and customary meaning and consistent with the Specification, the inference state machine is configured to maintain "a sequence including two or more detected orientations and wherein the maintained sequence includes only orientations detected during slow motion." As we stated previously and reiterate here, "claim 1 does not explicitly state that the orientation detector detects orientation 'only' during slow motion phases." Inst. Dec. 12. We also reiterate that "the inference state machine limitation does not explicitly restrict the orientation detector's detection of orientations, even during fast motion phases." *Id.* at 12–13. We also reiterate that "the inference state machine limitation does not *preclude* maintaining sequences of orientations during fast motion phases or phases wherein fast motion and slow motion are both detected." *Id.* at 13. We reaffirm here that "applying a plain and ordinary meaning of the terms, claim 1 allows continuously maintaining orientations during both fast motion and slow motion phases, provided a sequence of orientations *is* maintained [i.e., merely consecutive orientations corresponding to slow motions] that is limited to slow motion phases." We find no reason based on the complete record to depart from interpreting claim 1 in accordance with the ordinary and customary meaning of its terms, which does not preclude from the scope of the claim maintaining a sequence of orientations during a slow motion phase within a larger sequence of orientations maintained during both fast motion and slow motions phases. *Id.* at 13.

Our construction is consistent with Dr. Abowd's testimony (Ex. 1014 ¶¶ 6–8), which we credit as being more persuasive that Dr. Mohapatra's

testimony (Ex. 2005 ¶¶ 52–66) because Dr. Mohapatra's testimony is at odds with the broadest reasonable construction of the orientation detector limitation, which we discuss in detail *supra*. Patent Owner's construction of the sequence limitation is based on an unreasonably narrow construction of the orientation detector limitation, which precludes detecting multiple orientations for a single slow motion phase. Specifically, as Dr. Abowd testifies,

> the plain language of the "sequence limitation" does not impose any restriction as to whether [] two [detected] orientations (O1 and O2) [in the maintained sequence] must indicate different values of orientation relative to each other (e.g., oriented facing up vs. oriented facing down) or as to whether the two signals [representing O1 and O2] must correspond to different slow motion phases.

Ex. 1014 ¶ 8. We agree with Petitioner that "if a sequence includes two orientation signals (e.g., O1 and O2) indicating the device's orientation towards gravity, each corresponding to a slow motion phase, then such a sequence satisfies the claimed "sequence" because the two orientations form a sequence and each orientation is limited to a slow motion phase." Pet. Reply 3–4 (citing Ex. 1014 ¶¶ 6–8).

*c. Relevance in Context of Specific Claims*

We now turn to the implications of our constructions specifically with respect to claims 1, 4, 12, and 15.

*i. Claim 1*

Consistent with our analysis above, we interpret claim 1 in accordance with the ordinary and customary meaning of its terms, including the orientation detector limitation and the sequence limitation. Hence, claim 1: does not preclude *detecting* orientations toward gravity for fast motion phases; does not preclude *maintaining* orientations detected during fast

motion phases, provided a sequence of maintained orientations is detected during slow motion; and does not preclude multiple orientations being detected during a slow motion phase, which may be the only motion phase.

*ii. Claim 4*

Claim 4 depends from claim 1 and recites "instructions to avoid detecting orientation during a fast motion condition." Because the invention recited in claim 4 "avoid[s] detecting orientation during a fast motion condition," we construe claim 4 to require instructions to implement not detecting orientation towards gravity for fast motion.

*iii. Claim 12*

Independent claim 12 is similar to claim 1, except that claim 12 recites "instructions to detect orientation towards gravity for each slow motion phase and *absent detecting orientation towards gravity during fast motion phases*, wherein the motion is classified as slow and fast based upon comparing a magnitude of a motion vector with a magnitude of gravity" (emphasis added), the emphasized portion being a key difference between claims 1 and 12.

As we stated in the Institution Decision, we have reviewed the Specification and find only a single use of "absent," but this use is not in the context of a limitation such as that in claim 12. Ex. 1001, 7:25–27 ("By using a sequence of orientation conditions of the handheld device, the signal processing generates a fault resilient command absent complex analysis during periods of fast motion."). We have considered whether "absent detecting" should be read as "instructions to avoid detecting," but note that such a construction would render claim 15 superfluous. *Id.* at 14:17–18 ("instructions to avoid detecting orientation during a fast motion condition").

Moreover, this construction would require replacing "absent" with "instructions to avoid," which we find to be a bridge too far if another construction does not require such a reach. Hence, we reject this construction.

We also have considered whether "absent detecting" should be construed to mean "absent instructions for detecting" or, more appropriately, "absent instructions to detect" (so that the phrase would be grammatically parallel with the prior phrase "instructions to detect"). Petitioner also considers this possibility. *See* Pet. 50 ("[T]o the extent that Patent Owner contends that this limitation simply means an absence of instructions to detect orientation towards gravity during fast motion phase, *Linjama* discloses this feature because *Linjama* does not disclose such instructions. (Ex. 1002, ¶ 118.)").

In its Patent Owner Response, Patent Owner contends "[t]he proper interpretation . . . is "'absent instructions for detecting" or, more appropriately, "absent instructions to detect" (so that the phrase would be grammatically parallel with the prior phrase "instructions to detect[]") [orientation towards gravity during fast motion phases].'" PO Resp. 35 (quoting Inst. Dec. 15). Patent Owner contends that "this negative claim limitation requires a lack of instructions to detect orientation during fast motion phases." *Id.* (citing Ex. 2005 ¶ 81).

Petitioner "adopts" Patent Owner's construction for purposes of this Decision. Pet. Reply 9.

We are not persuaded by this construction. Rather, we construe "absent detecting orientation towards gravity during fast motion phases" to

mean "without[10] detecting orientation towards gravity during fast motion phases," which we determine is the ordinary and customary meaning of the limitation. *See Translogic*, 504 F.3d at 1257. Unlike the other constructions we have considered, this construction requires no rewriting of the limitation (i.e., adding "instructions), it does not render claim 15 superfluous, and it is consistent with the Specification, which discloses without detecting orientation during fast motion. *See*, *e.g.*, Ex. 1001, Fig. 2. Accordingly, we determine this construction to be the broadest reasonable construction consistent with the Specification.

*iv. Claim 15*

Claim 15 is similar to claim 4 discussed above. We construe claim 15, similar to claim 4, to require instructions to implement not detecting orientation towards gravity for fast motion.

*d. Summary*

We interpret the "orientation detector" limitation ("an orientation detector to detect orientation towards gravity for each slow motion phase" in claim 1 and similar language in claim 12) according to its ordinary and customary meaning. Namely, the orientation detector detects orientation toward gravity for each slow motion phase, which does not preclude detecting multiple orientations for a single slow motion phase and does not preclude detecting orientations for fast motion, unless specified otherwise (i.e., claims 12, 4, and 15).

We interpret the "sequence" limitation ("an inference state machine . . . configured to: maintain a sequence of the detected orientations towards

[10] www.merriam-webster.com/dictionary/absent: "in the absence of (something): WITHOUT." Ex. 3003.

gravity, each orientation in the sequence being limited to a slow motion phase") in claim 1 and similar language in claim 12) according to its ordinary and customary meaning. Namely, the inference state machine maintains the sequence for slow motion and does not preclude maintaining orientations for both slow motion and fast motion, provided at least consecutive orientations correspond to a slow motion phase.

We interpret claim 12's "absent detecting orientation towards gravity during fast motion phases" to mean without detecting orientation towards gravity for fast motion. We interpret "instructions to avoid detecting orientation during a fast motion condition," as recited in claims 4 and 15, according to its plain meaning, namely instructions to implement not detecting orientation towards gravity for fast motion.

*C. Principles of Law*

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

*D. Obviousness under § 103 over Linjama and Lehrman*

Petitioner contends that claims 1, 3, 6, 10–12, 14, and 17 would have been obvious over the combination of Linjama and Lehrman. Pet. 15–52. Claims 1 and 12 are independent claims. Petitioner's analysis maps the claim limitations to the teachings of the references and is supported by the declaration testimony of Dr. Abowd. *Id.*; Ex. 1002. Petitioner also provides a rationale to combine the teachings of Linjama and Lehrman. Pet. 32–34. Ex. 1002 ¶¶ 89–92.

*1. Linjama (Ex. 1005)*

Linjama relates to "sens[ing] orientations or sequence of orientations, i.e. gestures, of mobile devices. The orientation or sequence of orientations control components and/or functions of the mobile device." Ex. 1005, Abstract. Figure 1 of Linjama is reproduced below.

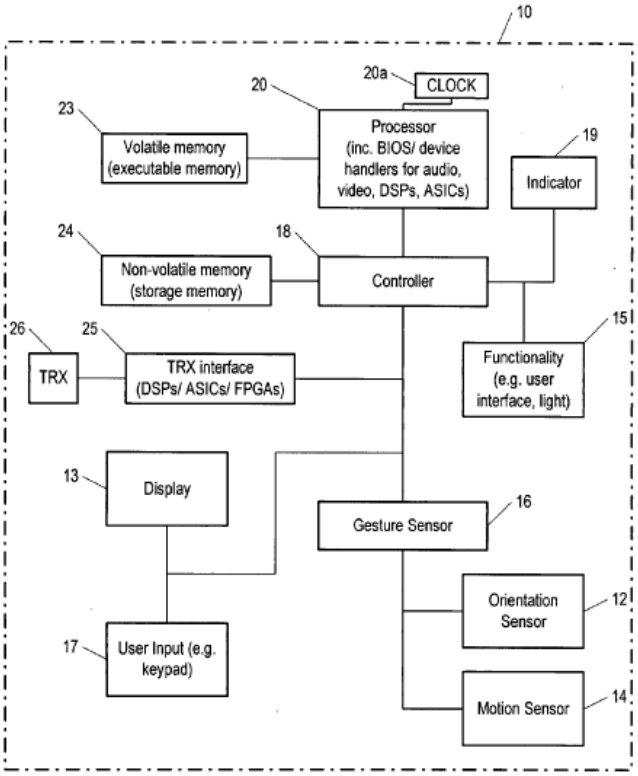


Fig. 1

Figure 1 of Linjama depicts mobile device 10 having motion, orientation, and gesture sensors 12, 14, and 16. Linjama discloses the following exemplary embodiment:

> [T]he motion sensor 14 may determine that the mobile terminal is substantially stationary, and may provide a signal indicating that the mobile terminal is substantially stationary to the gesture detector 16. At approximately the same time, the gesture detector 16 receives from the orientation sensor 12 a signal or signals indicating that the mobile terminal is in a downward orientation. This combination of substantially stationary and downward orientation may correspond to a predefined gesture, and therefore the gesture detector 16 may provide a control signal indicating that the predefined gesture has occurred to the controller 18. For example, the predefined gesture may correspond to a control signal activation or inactivating one or more of the components, i.e. functionalities of the mobile terminal 10. For example, the control signal for the predefined gesture discussed above may correspond to inactivating the audible sounds of the mobile terminal 10, by placing the mobile terminal 10 in a silent mode.

*Id.* ¶ 52.

*2. Lehrman (Ex. 1006)*

Lehrman relates to detecting acceleration of a body and evaluating movement of a body relative to an environment. Ex. 1006, Abstract. Figure 2 of Lehrman is reproduced below.

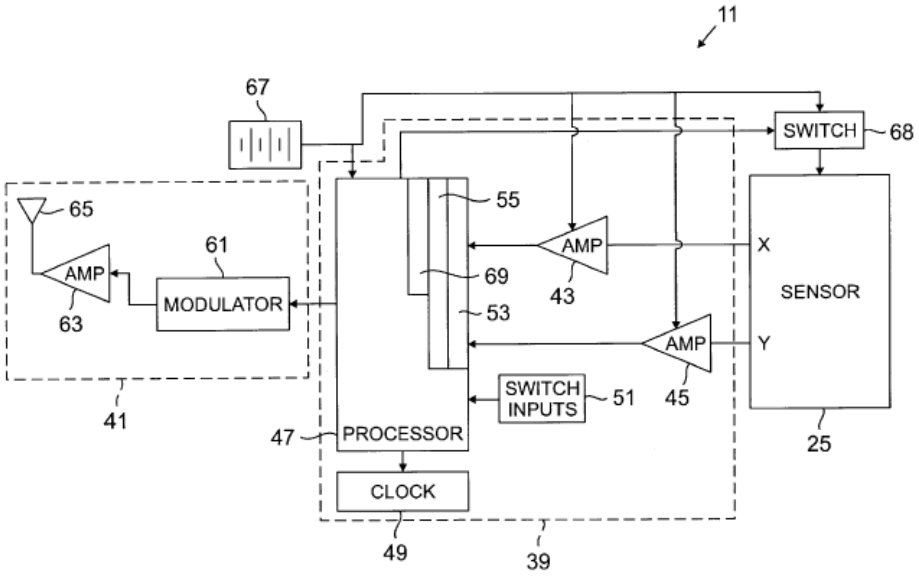


**FIG. 2**

Figure 2 depicts a block diagram of an exemplary system according to Lehrman. The system includes sensor 25, which senses acceleration along two axes and provides representative signals to a processor (47). Ex. 1006, 5:46–50. Processor 47 processes sensed acceleration data and generates state information of the body. *Id.* at 6:55–65. Figure 9, reproduced below, depicts a three-axis sensor, which may be sensor 25. *Id.* at 12:51–58.

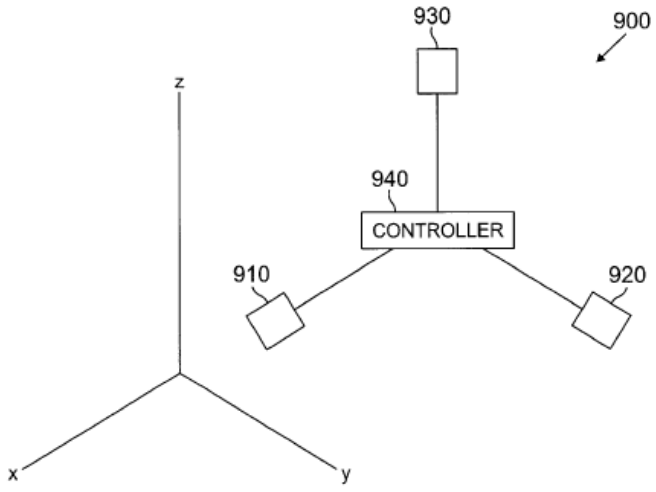


**FIG. 9**

Figure 9 depicts three accelerometers 910, 920, 930, the output of which may be combined to determine the acceleration the body is experiencing. *Id.* at 14:20–31. Notably, Lehrman discloses identifying "dynamic acceleration" by comparing the combined acceleration of the accelerometers to one "g," which is acceleration due to gravity. *Id.* at 14:58–15:3.

*3. Analysis*

*a. Claims 1 and 12*

In contending that claim 1 is rendered obvious by the combined teachings of Linjama and Lehrman, Petitioner emphasizes Figures 1 and 2 and paragraphs 47 and 52 of Linjama for most claim elements. Pet. 15–43. In particular, Petitioner maps claim 1's processor and manager ("a processor in communication with a memory . . . to acquire movement data from the motion sensor[ and ]a manager configured to execute on the processor and to control motion and orientation detectors") to processor 20, controller 18, and gesture sensor 16 of Linjama's Figure 1. *Id.* at 19–25. Petitioner maps claim 1's motion detector and orientation detector to motion sensor 14, orientation sensor 12, and gesture detector 16 of Figure 1 and the corresponding functions to steps in the flowchart of Figure 2. *Id.* at 20–21, 35–36. Petitioner maps claim 1's inference state machine to Figure 1's gesture detector 16 and the corresponding functions to steps in the flowchart of Figure 2. *Id.* at 37–43. Petitioner supports these contentions with reference to testimony from Dr. Abowd. *Id.* at 19–25, 35–43 (citing Ex. 1002 ¶¶ 61–85, 94–105).

Linjama's Figure 1 and relevant portions of paragraph 52 are reproduced above. Paragraph 47 of Linjama discloses:

> The mobile terminal 10 may also include a gesture detector 16 that receives signals from the orientation sensor 12, and determines whether a predefined gesture has been made. For example, the gesture detector 16 may receive a signal indicative of a first orientation and a signal indicative of a second orientation of the mobile terminal 10 from the orientation sensor 12. The gesture detector 16 may be configured to determine that the signals are indicative of a particular predefined gesture. The gesture detector 16 is configured to provide a control signal to a controller 18 when the gesture detector 16 determines that a predefined gesture has occurred. The controller 18 is coupled to a processor 20 of the mobile terminal 10, to non-volatile memory 24 and volatile memory 23 as well. The controller 18 either by itself or in conjunction with the processor 20 is responsible for carrying out the functions, i.e. controlling the components, of the mobile terminal 10. When the controller 18 receives a signal from the gesture detector 16 indicating a predefined gesture has occurred, the controller 18 is configured to determine which function the predefined gesture corresponds to, and activate or inactivate that function of the mobile terminal 10. It is understood that the control signal from the gesture detector 16 may activate or inactivate one or more functions 15 of the mobile terminal 10. A predefined gesture may be used to control one or more functions of the mobile terminal in the following manner.

Ex. 1005 ¶ 47.

Petitioner turns to Lehrman for the aspect of the motion detector limitation "wherein the motion is classified as slow and fast based upon comparing a magnitude of a motion vector with a magnitude of gravity." Pet. 25–35 (citing Ex. 1002 ¶¶ 85–93). Specifically, Petitioner contends Linjama does not explicitly disclose how motion is classified, but argues this feature would have been obvious in view of Lehrman. *Id.* at 29. Petitioner contends Lehrman discloses a sensor having three accelerometers, the sum of the outputs from which represent motion. *Id.* at 29–30 (citing Ex. 1006,

12:50–13:21, 14:20–59, and Figs. 2, 9). Petitioner explains Lehrman's disclosure as follows:

> *Lehrman* makes the simple observation that if the "total value of acceleration . . . exceeds one 'g,'" that must mean that the body is not at rest and is experiencing "dynamic acceleration" due to external forces. (Ex. 1002, ¶88; Ex. 1006, 14:66-15:22.) *Lehrman* discloses using this observation to trigger events. (Ex. 1002, ¶88.) For example, *Lehrman* discloses comparing a detected acceleration to a threshold and if the acceleration exceeds a threshold, signaling an alarm condition. (Ex. 1006, 14:50-57.) *Lehrman* describes detecting dynamic acceleration (i.e., acceleration that is not due to gravity) by comparing a magnitude of detected acceleration to a magnitude of gravity (which is 1 "g"). (*Id*., 14:58- 15:3.) *Lehrman* thus discloses determining whether the object is moving or at rest by "comparing a magnitude of a motion vector with a magnitude of gravity" because *Lehrman* determines whether the body is at rest or moving by comparing a magnitude of the vector R ("magnitude of a motion vector") with 1 "g" ("a magnitude of gravity"). (Ex. 1002, ¶88.)

*Id.* at 31–32 (citations in original).

Petitioner also explains that

> A POSITA would have been motivated to take these teachings from *Lehrman* and apply them to *Linjama*'s system such that *Linjama*'s gesture detector 16 is able to distinguish between substantially stationary ("slow motion") and moving ("fast motion") phases of mobile terminal 10. ([Ex. 1002] ¶89.) Specifically, a POSITA would have been motivated to configured *Linjama*'s gesture detector 16 (e.g., by modifying the software code that performs the functions of gesture detector 16) such that it is able to determine whether the mobile terminal 10 is "substantially stationary" or "moving" by comparing a magnitude of acceleration of mobile terminal 10 against a magnitude of gravity like in *Lehrman*. (*Id.*)

*Id.* at 32 (citations in original).

Thus, Petitioner provides a detailed mapping of all elements of claim 1 to the combined teachings of Linjama and Lehrman. Pet. 15–43. Petitioner also provides a rationale for combining the teachings of Lehrman with those of Linjama for the specific features Petitioner concedes are not explicitly taught by Linjama. *Id.* at 32–38. Petitioner supports these contentions with reference to Dr. Abowd's testimony. *Id.* at 15–43 (citing Ex. 1002 ¶¶ 65–105).

Patent Owner argues that the Linjama-Lehrman Ground "fails because neither *Linjama* nor *Lehrman* teach that orientation is detected *for* each slow motion phase, as required by the Orientation Detector Limitation." PO Resp. 40–41 (citing Ex. 1001, 12:43–44, 13:37–38; *see id.* 40–44. Patent Owner contends that "*Linjama* . . . does not teach orientation detection 'for' – i.e., corresponding to – 'each slow motion phase,' as expressly required by the claim language" because "the Orientation Detector Limitation expressly requires detection of orientation 'for each slow motion phase' – i.e., for the phases classified as slow motion by the 'motion detector' of the preceding claim limitation." *Id.* at 42 (citing Ex. 2005 ¶ 93). Patent Owner argues that "the 'motion detector' classifies the raw motion data stream received from the motion sensor into fast and slow motion phases [and t]hen, the orientation detector detects an orientation condition (such as 'Top Up') corresponding to each motion phase classified as a slow motion phase (i.e., 'for each slow motion phase')." *Id.* at 42 (citing Ex. 1001, Fig. 3, 6:17–31, 7:10–12, 12:38–39, 13:34–35). Patent Owner relies on the testimony of Dr. Mohapatra. *Id*. at 40–44 (citing Ex. 2005 ¶¶ 91–96).

Patent Owner's arguments regarding the orientation detector limitation (*id*. at 40–44) are unavailing because they are beyond the scope of

the claim. The claim does not require the motion to be first classified before the orientation is detected. Properly construed, Linjama discloses the orientation detector limitation (Orientation Detection Limitation *supra* ("an orientation detector to detect orientation towards gravity for each slow motion phase")).

In this regard, we credit Petitioner's expert's testimony as more persuasive evidence because it is consistent with our construction of the orientation detector limitation. Ex. 1014 ¶ 17; *see supra* § III.B.2.a. Petitioner contends that "a temporal requirement is not recited in the claims and would be inconsistent with the broadest reasonable interpretation standard." Pet. Reply 10 (responding to Patent Owner's argument that the claim first requires the motion detector to classify the motion as fast or slow before the orientation detector detects the orientation); *see* Ex. 1014 ¶ 17. Petitioner contends that "[a]pplying BRI, *Linjama* discloses the 'Orientation Detector Limitation' because the gesture detector detects an orientation towards gravity for a phase ('substantially stationary') classified as slow motion." Pet. Reply 10 (citing Ex. 1005 ¶ 52). Petitioner contends that "[w]hether the classification of the phase as slow motion occurs before or after orientation is detected for that phase is irrelevant." *Id.* (citing Ex. 1014 ¶ 18).

Petitioner's contentions are persuasive because the claim does not require the motion to be first characterized. For reasons we have explained previously, we also agree with Petitioner that neither the plain meaning of the claims nor the Specification require, as Patent Owner contends, that the "Orientation Detector Limitation" requires detection of an "orientation condition," which is "representative of the entirety of the data set received

during the slow motion phase from beginning to end." Pet. Reply 10–11 (referring to PO Resp. 42–3); *see* Ex. 1014 ¶ 19.

Patent Owner also argues that the combination of Linjama and Lehrman does not teach the sequence limitation. PO Resp. 44–47. Specifically, responding to Petitioner's contention that "a sequence of the detected orientations" is satisfied by two successive signals both pertaining to the single downward facing orientation of a stationary device (Pet. 40), Patent Owner contends Petitioner's interpretation of the sequence limitation is "distorted," arguing instead that the sequence limitation means "a sequence including two or more detected orientation conditions and precluding orientations detected during fast motion." PO Resp. 44–45. Patent Owner argues that "[t]o maintain such a 'sequence,' the device must experience at least two slow motion phases with an intermittent fast motion condition[, because w]ithout an intermittent period of fast motion, as in Petitioner's *Linjama* disclosure, there can be only one slow motion phase, and consequently, only one detected orientation condition." *Id*. at 45 (citing Ex. 2005 ¶ 98). We disagree because, as we have construed the sequence limitation, the claim does not recite "condition" and does not require an intermittent period of fast motion between to separate the detected orientations that are maintained to form the sequence. *See supra* § III.B.2.a. The claim reads on two successive detected orientations, without regard to whether those orientations are identical to one another (i.e., on a stable surface) or different but within the tolerance of slow motion (i.e., being held face down). *Id.*

Patent Owner also argues unpersuasively that, even if Petitioner were correct that the sequence limitation reads on multiple signals from a

stationary device, "*Linjama* still does not teach 'that each orientation in the sequence is **limited to** the slow motion phase,' as expressly required by the Sequence Limitation." PO Resp. 45. Patent Owner contends that "*Linjama* teaches no technique for filtering or otherwise preventing reliable data from becoming contaminated by data that is unlikely to accurately portray the user's intent (e.g., orientation data detected during fast motion)," because it has no means for filtering orientations detected during fast motion or otherwise "limit[ing]" a maintained sequence of detected orientations to slow motion phases. *Id.* at 45–47 (citing Ex. 2005 ¶¶ 102–104).

We again find Patent Owner's arguments unavailing because they are beyond the scope of the claim. In accordance with our prior analysis, the sequence limitation ("the inference state machine maintains the sequence for slow motion and does not preclude maintaining orientations for both slow motion and fast motion, provided at least consecutive orientations correspond to a slow motion phase") does not require the inference state machine to actively limit the maintained sequence to slow motion phases but merely requires that it is configured to maintain a sequence of orientations detected during slow motion without regard to cause of the being limited. *See supra* § III.B.2.b.

Nevertheless, Linjama discloses a maintained sequence of orientations that is limited to slow motion (i.e., no fast motion). Ex. 1005, ¶ 52 ("the gesture detector **16** receives from the orientation sensor **12** a signal or signals indicating that the mobile terminal is in a downward orientation" and "[t]his combination of substantially stationary and downward orientation may correspond to a predefined gesture"). This sequence of "signals," indicative of a downward orientation, is detected during a period of slow

motion (*id.* ("the motion sensor **14** may determine that the mobile terminal is substantially stationary")), and the maintained sequence corresponds to a predefined gesture. *Id.*

Our determination here is consistent with Dr. Abowd's testimony (Ex. 1014 ¶ 20), which we credit as more persuasive than Dr. Mohapatra's testimony (Ex. 2005 ¶¶ 102–104) because Dr. Mohapatra misunderstands claim 1 to require first identifying fast motion before detecting orientation (*id.* ¶ 103) and also to require actively filtering orientations detected during fast motion (*id.* at ¶ 104), neither of which are required by the broadest reasonable interpretation of the sequence limitation.

Patent Owner argues this ground fails also because "*Linjama* does not teach producing a profile description for the maintained limited sequence, as required by the Profile Description Limitation." PO Resp. 49 (referring to "produce a profile description for the sequence of the detected orientations"). PO contends that, because Linjama does not teach the profile description limitation, it also does not teach the event limitation ("output an event corresponding to the profile description"). *Id.* at 39–50 (citing Ex. 2005 ¶¶ 106–109). Patent Owner argues "the state machine first 'produces' a profile description and only then, in a separate limitation, does it confirm whether the profile description for the detected sequence corresponds to an 'event.'" PO Sur-Reply 22. (citing Ex. 1001, 12:49-51).

We are not persuaded by Patent Owner's arguments. By maintaining the recited sequence, the inference state machine's maintained sequence "produces" a pattern, which we find corresponds to the claimed profile description. The output signal in response to having this pattern produced (i.e., the event description) is the claimed event. *See* Ex. 1005 ¶ 52.

Our determination is consistent with Dr. Abowd's testimony (Ex. 1014, ¶ 24; Ex. 1002 ¶¶ 103-04), which we credit as more persuasive than Dr. Mohapatra's (Ex. 2005 ¶¶ 106–109).

For the reasons discussed above, we are persuaded by Petitioner's contentions that the combination of Linjama and Lehrman teaches or suggests the limitations of claim 1. We are also persuaded that Petitioner has provided a sufficient rationale for combining the teachings of Linjama and Lehrman, which Patent Owner does not dispute.

Claim 12 is similar to claim 1. Ex. 1001, 12:31–51, 13:26–14:7. While claim 12 does not recite a manager, a motion detector, an orientation detector, and an inference state machine, as in claim 1, claim 12 recites "instructions" that implement substantially the same functions as these elements in claim 1. Claim 12 materially differs from claim 1, however, by including the "absent detecting orientation towards gravity during fast motion phases" limitation discussed in detail above. In accordance with our construction of claim 12 for this ground (*see supra* § III.B.2.c.iii), claim 12 requires "without detecting orientation towards gravity during fast motion phases."

We find Linjama teaches or suggests claim 12's "without detecting orientation towards gravity during fast motion phases," as we have construed claim 12. Specifically, Linjama discloses "[i]t is also understood that the orientation sensor **12** may be configured to provide signals indicative of the orientation of the mobile terminal **10** when the mobile terminal **10** is in particular orientations and not others." Ex. 1005 ¶ 46. Linjama does not exclude the possibility of fast motion during this "particular orientation[]" in which orientation signals are not provided. *Id.* Accordingly, we find that

Linjama at least suggests claim 12's "absent detecting orientation towards gravity during fast motion phases."

*b. Claims 3, 6, 10, 11, 14, and 17*

Claims 3, 6, 10, and 11 depend from claim 1. Claims 14 and 17 depend from claim 12. These claims relate to specific motion detection conditions, orientation detection conditions, and profile configurations. Ex. 1001, 12:57–60, 13:1–3, 19–25, 14:13–16, 24–26. Petitioner maps the elements of these claims to the teachings of Linjama. Pet. 43–46, 51–52 (citing Ex. 1005 ¶¶ 48–49, 52, 56, 122, 123).

For example, claim 3 depends from claim 1 and recites "instructions to detect orientation change for adjacent motion phases selected from the group consisting of: a rest and a defined slow motion phase." Ex. 1001, 12:57–60. Petitioner contends that claim 3 reads on Linjama's software-implemented orientation detection, which can detect a predefined gesture that includes turning a mobile terminal face downwards for one or two seconds followed by turning the mobile terminal face upwards. Pet. 43–44 (citing Ex. 1005 ¶¶ 48, 52, 56). Claim 6 depends from claim 1 and recites detecting "direction of motion when the motion is orthogonal to gravity." Ex. 1001, 13:1–3. Petitioner contends claim 6 reads on Linjama's teaching of detecting the direction of motion without restriction on the direction. Pet. 45–46 (citing Ex. 1005 ¶ 52). Claims 14 and 17, which depend from claim 12, are similar to claims 3 and 6, respectively. Petitioner supports the contentions regarding claims 3, 6, 10, and 11 with reference to Dr. Abowd's testimony. *Id.* at 43–46 (citing Ex. 1002 ¶¶ 106–109).

With respect to claims 3 and 14, Patent Owner contends that Petitioner has not identified sufficient disclosure for the limitation "a rest

and a defined slow motion phase." PO Resp. 50. Patent Owner contends that, because Petitioner alleges that Linjama's disclosure of detecting orientation while "substantially stationary" discloses both "a rest and a defined slow motion phase," "Petitioner fails to overcome the presumption that these distinct limitations have different meanings, and therefore Petitioner cannot meet its burden of showing" claims 3 and 14 would have been obvious. *Id.* at 50–51.

Patent Owner's arguments are unavailing because they do not rebut that Linjama's software-implemented orientation detection, which can detect a predefined gesture that includes turning a mobile terminal face downwards for one or two seconds followed by turning the mobile terminal face upwards, teaches or suggests "instructions to detect orientation change for adjacent motion phases selected from the group consisting of: a rest and a defined slow motion phase." Ex. 1005 ¶¶ 48, 52, 56.

Patent Owner does not respond to Petitioner's challenge to claims 6, 10, 11, and 17 except by virtue of the arguments addressed above regarding claims 1 and 12.

*c. Objective Evidence of Nonobviousness*

"A determination of whether a patent claim is invalid as obvious under §103 requires consideration of all four *Graham* factors, and it is error to reach a conclusion of obviousness until all those factors are considered." *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1071 (Fed. Cir. 2018) (quoting *WBIP, LLC v. Kohler Co*, 829 F.3d 1317, 1328). "The objective indicia of non-obviousness [Graham factor 4] play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis." *Polaris*, 882 F.3d at 1071.

Patent Owner contends that, even if the asserted references render the claims obvious, Patent Owner's objective indicia of nonobviousness "tip the scale" in Patent Owner's favor. PO Resp. 61. Patent Owner contends that "[c]ommercial success exists here, as KEYnetik entered into licensing agreements concerning the KEYnetik Applications." *Id.* at 62 (citing Exs. 2048, 2049). Patent Owner also claims "praise from the industry[, which] is strong objective evidence of nonobviousness." *Id.* at 64 (citing Exs. 2035, 2036, 2038, 2054, 2055); *see* Ex. 2002 ¶¶ 20–23, 29, 32. Patent Owner also contends that Petitioner copied KEYnetik's application. PO Resp. 64–66.

To be relevant, evidence of non-obviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). Nexus is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining non-obviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). There is a "presumption of a nexus" when a product is "coextensive" with a patent claim. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1372 (Fed. Cir. 2013). The Federal Circuit has held that "if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus." *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000).

Patent Owner contends the detailed claim chart attached to the declaration of Dr. Mohapatra proves a nexus between Patent Owner's "Hi-N-Bye and Touch-N-Go applications (the 'KEYnetik Applications') and independent Claims 1 and 12 of the '106 Patent." PO Resp. 61 (citing Ex. 2042). Patent Owner contends that the Hi-N-Bye application is the embodiment of Figure 3" and that the "Touch-N-Go application is substantially the same as Hi-N-Bye – except that Touch-N-Go is for placing phone calls and Hi-N-Bye is for receiving them." *Id.* at 61–62 (citing Exs. 2037, 2047); *see* Ex. 2005 ¶¶ 128–129. Patent Owner contends that "[g]iven the strength of the evidence, the nexus between the KEYnetik Applications and the Challenged Claims should be 'presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus." *Id.* at 62 (citing *Brown & Williamson*, 229 F.3d at 1130).

Dr. Mohapatra testifies on behalf of Patent Owner that Patent Owner's claim chart "shows in great detail the comparison between [Patent Owner's] Hi-N-Bye and Touch-N-Go applications and independent claims 1 and 2," and that in his opinion "each of these applications as installed on a mobile device embodies each and every claim element of both independent claims." Ex. 2005 ¶ 128. Dr. Mohapatra testifies that he "believes there is a nexus between the KEYnetik Applications and the Challenged Claims." *Id.* at ¶ 129. Dr. Mohapatra testifies further that his review of Patent Owner's "Supplemental Infringement Contentions" (Ex. 2007), leads him to conclude that "the Accused Devices" (i.e., Petitioner's products) identified therein "embody the Challenged Claims of the '106 Patent." Ex. 2005 ¶ 130.

Patent Owner contends that its "detailed limitation-by-limitation claim chart," which includes, among other things, a document "showing that Hi-N-

Bye[,] is the embodiment of Figure 3 of the '106 Patent," and that "[n]othing more is required to show a nexus." PO Sur-Reply 25–26 (citing *Polaris Indus.*, 882 F.3d at 1073 n.7 (rejecting implication that "either a 'limitation-by-limitation analysis' or 'documentary evidence' is required" to show a nexus)). Patent Owner cites *Polaris* for the proposition that "[t]here is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'is the invention disclosed and claimed in the patent.'" *Id.* at 26; *Polaris*, 882 F.3d at 1071.

We do not agree with Patent Owner that "nothing more" is required to establish the presumption of a nexus than a showing that all claim elements are found in the product. The presumption requires Patent Owner to establish that the product is "coextensive" with the claims to thereby establish that the secondary considerations are tied to that which is claimed. *Brown & Williamson*, 229 F.3d at 1130. We are not persuaded that Patent Owner has established that the "marketed product embodies the claimed features, and is coextensive with them." *Id.*

We focus specifically on Patent Owner's evidence that the KEYnetik Applications are coextensive with the claims of the '106 Patent. Dr. Mohapatra testifies to having formed his belief that "a nexus exists between the KEYnetik Applications and the Challenged Claims" based on a review of Patent Owner's claim chart and supporting documentation. Ex. 2005 ¶¶ 128–130. Patent Owner's claim chart, however, attests to unclaimed features being embodied in the products. *See* Ex. 2042, 1–58 (mapping the elements of claim 1 to various publications); *see* Ex. 2015. Specifically, for example, Patent Owner's claim chart indicates that the KEYnetik

applications are Spatially Aware Inference Logic ("SAIL") applications. Ex. 2042, 1. According to the claim chart, SAIL, among other things, "[m]erge[s] acceleration data with application events (e.g., incoming call) and non-motion sensory data (proximity, light, air pressure, etc.)." *Id.* at 16, 43. The claims of the '106 patent, however, include no such merging of "non-motion sensory data" such as "proximity, light, air pressure, etc." Accordingly, because Patent Owner's argument and evidence regarding a nexus fail to account for the presence of these and other unclaimed features in the products, Patent Owner has not demonstrated an entitlement to the presumption that the described products and the claims are "coextensive."

"When the thing that is commercially successful is not coextensive with the patented invention—for example, if the patented invention is only a component of a commercially successful machine or process—the patentee must show prima facie a legally sufficient relationship between that which is patented and that which is sold." *Demaco*, 851 F.2d at 1392. Patent Owner provides no argument or evidence to account for the influence unclaimed features of the KEYnetik products may have had on Patent Owner's evidence of commercial success or professional approval and praise by professionals in the industry. *See* PO Resp. 62–64. Accordingly, we give little weight to Patent Owner's evidence of commercial success and professional approval and praise by professional in the.

Patent Owner contends that Petitioner's copying KEYnetik's Applications also is evidence of nonobviousness. PO Resp. 64–66. Petitioner's evidence is based on Dr. Mohapatra's review of Patent Owner's Supplemental Infringement Contentions (Ex. 2007). PO Resp. 65; Ex. 2005 ¶ 30. We agree with Petitioner that, because Dr. Mohapatra testifies to not

having directly reviewed the accused products (i.e., the source code), "he cannot tell for sure whether the Samsung products embody every claimed feature." Pet. Reply 24 (citing Ex. 1015, 106:12–108:13, 120:8–121:2, 123:25–126:24). Accordingly, we give little or no weight to Patent Owner's evidence of alleged copying.

*d. Conclusion*

In view of the foregoing analysis, including the differences between the prior art and the challenged claims as well as Patent Owner's evidence of objective indicia of nonobviousness, and based on our review of the complete record, Petitioner has demonstrated by a preponderance of the evidence that 1, 3, 6, 10, 11, 12, 14, and 17 are unpatentable because they would have been obvious over the combined teachings of Linjama and Lehrman.

*E. Obviousness under § 103 over Linjama, Lehrman, and Marvit*

Petitioner contends that dependent claims 2, 5, 8, 9, 13, 16, 19, and 20 would have been obvious over the combined teachings of Linjama, Lehrman, and Marvit. Pet. 52–65.

*1. Marvit (Ex. 1008)*

Marvit relates to "[a] motion controlled handheld device" that includes a display, a gesture database, a motion detection module operable to detect orientation and motion in three dimensions, and a control module for recording new gestures. Ex. 1008, Abstract, 9:55–58. Marvit discloses that gestures may be application specific and that functions are performed based on detected gestures. *Id.* at Fig. 19, 28:41–64.

*2. Analysis*

Claims 2, 5, 8, and 9 depend from claim 1, and claims 13, 16, 19, and 20 depend from claim 12. Petitioner's analysis maps the additional limitations of these dependent claims to the teachings of Marvit and its analysis is supported by the testimony of Dr. Abowd. Pet. 52–65; Ex. 1009, Figs. 6, 11, 13, 19 and 1:19–20, 4:40, 48–49, 5:29–31, 8:55–9:6, 10:9, 13–17, 14:61–15:4, 20:29–30, 21:65–22:1, 28:41–64, 29:1–4, 11–14, 25–28, 30:5–22; Ex. 1002 ¶¶ 125–145. For instance, claim 2 depends from claim 1 and recites "the detectors and the manager are configured to receive data from at least one client application and use this data to interpret the profile, wherein the profile descriptions are bound with external data from the at least one client application." Petitioner contends that claim 2 reads on Marvit's teachings that raw motion data is processed to identify gestures, which are then mapped to functions based on which application is in focus on the device. Pet. 53–55 (citing Ex. 1009, Fig. 19 and 28:41–64, 29:1–51). Petitioner provides rationale to combine the teachings of Linjama, Lehrman, and Marvit, which Patent Owner does not dispute. *Id.* at 52–65 (citing, e.g., Ex. 1002 ¶¶ 129–130, 132).

Patent Owner argues claims 2, 5, 8, 9, 13, 16, 19, and 20 on the basis that "*Marvit* is not used to show any disclosure of the Inference Logic Limitations and cannot cure the deficiencies of *Lehrman* or *Linjama*, as discussed in [the Linjama-Lehrman Ground]." PO Resp. 53. Patent Owner argues claims 13, 16, 19, and 20 based on the "absent detecting" limitation of claim 12. *Id.* at 54. In other words, Patent Owner does not dispute Petitioner's case with respect to the teachings of Marvit or the reasons for

combining Marvit with the other references. *See generally* PO Resp. 53–54; Pet. 52–65.

In view of the foregoing, and the relatively little weight we give to Patent Owner's evidence of objective indicia of nonobviousness, Petitioner has demonstrated by a preponderance of the evidence that claims 2, 5, 8, 9, 13, 16, 19, and 20 would have been obvious over the combined teachings of Linjama, Lehrman, and Marvit.

*F. Obviousness under § 103 over Linjama, Lehrman, and Tosaki*

Petitioner contends the combination of Linjama, Lehrman, and Tosaki renders obvious claims 1, 3, 4, 6, 7, 10–12, 14, 15, 17, and 18. Pet. 65–74. In the Linjama-Lehrman Ground, reviewed above, the Petition challenges all of these claims—except for claims 4, 7, 15, and 18—as obvious over the combination of Linjama and Lehrman only. *Id.* at 15–52. Petitioner includes Tosaki in the event Patent Owner shows that the claims should be interpreted such that orientation detection and maintenance is limited to slow motion phases only and that the combination of Linjama and Lehrman does not disclose this. *Id.* at 65. Petitioner also relies on Tosaki for the additional limitations of claims 4, 7, 15, and 18. *Id.* at 72–74.

Our review above explains that we are persuaded claims 1, 3, 6, 10, 11, 12, and 14 are unpatentable over the combination of Linjama and Lehrman. Material to our analysis is that we are not persuaded claim 1 requires orientation detection for slow motion phases itself, rather than an orientation during the phase. *See supra* § III.B.2.a. The addition of Tosaki does not alter our analysis of the previous ground, but rather it serves to provide additional support. Thus, we find claims 1, 3, 6, 10–12, and 14

would have been obvious over Linjama, Lehrman, and Tosaki for the same reasons discussed above in regards to the previous ground.

Below we review Petitioner's allegations as to claim 4, noting that claim 15 contains a similar limitation as claim 4. We then review claim 7, considering whether Petitioner has shown sufficiently that Tosaki teaches the limitations of claim 7, noting that claim 18 contains similar limitations as claim 7.

*1. Tosaki (Ex. 1009)*

Tosaki discloses "an input device used in a game which simulates fishing, or the like." Ex. 1009, 1:8–9. Tosaki's device includes an acceleration sensor which selectably operates in two detection modes, detecting either strength of movement or orientation of the device. *Id.* at 7:11–20 ("by selecting the program processing method for the game processing device 2, [the acceleration sensor] can be set to operate as movement detecting means which detects the strength of movement, or to operate as movement detecting means which detects the orientation of the input device."). Figure 4 of Tosaki is reproduced below.

FIG.4

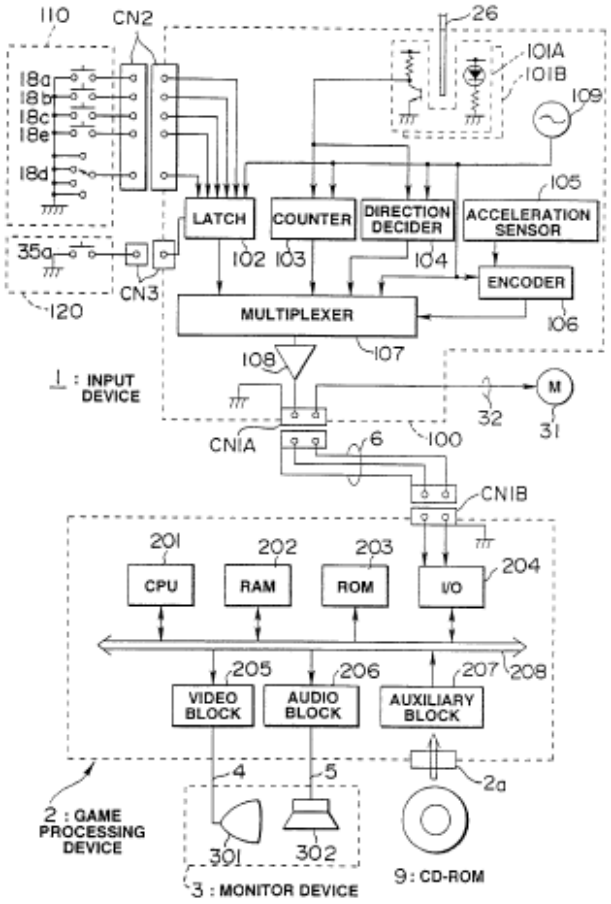


Figure 4 depicts a block diagram of input device 1 and game processing device 2, to which it is connected. Input device 1 contains acceleration sensor 105.

Notably, Tosaki discloses the following:

> changing between the two detection modes can be set and altered according to the aims of the program. For example, it may be set such that whilst the trigger button is being depressed *35a*, or for a prescribed period of time after the trigger button *35a* has been depressed, the strength of movement is detected, and at other times, the inclination of the input device is detected. . . .
>
> This clear distinction between an acceleration detection mode and an inclination detection mode is made in order to eliminate the instability arising when the system detects inclination at all times, whereby even the smallest movements

> made by the player holding the rod are detected and these are reflected in the game processing, leading to processing [] that is not intended by the player.

*Id.* at 7:20–39.

*2. Analysis*

*a. Claims 4 and 15*

Claim 4 depends from claim 1 and recites "instructions to avoid detecting orientation during a fast motion condition." Ex. 1001, 12:61–62. As discussed above, we have construed claim 4 such that detecting and maintaining orientation are limited to slow motion phases. *See supra* § III.B.2.b.

Petitioner maintains that "*Linjama* in combination with *Lehrman* discloses all the limitations of claim 1." Pet 65 (citing Pet. § IX.A.1(a)–(k); Ex. 1002 ¶¶ 66–105, 147). With respect to orientation detection being limited to slow motion phases only (i.e., claim 4), Petitioner contends "*Tosaki* discloses that 'the inclination is detected when the size of the data is smaller than the acceleration due to gravity' and the strength of the movement is detected if the strength of the movement is greater than the acceleration due to gravity." Pet. 68 (quoting Ex. 1009, 9:5–11). Petitioner argues "*Tosaki* discloses detecting orientation or inclination of the input device only when the detected acceleration is less than the acceleration due to gravity (i.e., only when the input device is in 'a slow motion phase')." *Id.* (citing Ex. 1002 ¶ 151).

Specifically regarding claim 4's "instructions to avoid detecting orientation during a fast motion condition," Petitioner contends that Linjama's gesture detector 16, whose functions are implemented in software, would be modified such that orientation is detected in slow motion phases

only (i.e., avoiding detecting orientation in fast motion phases). Pet. 72 (citing Ex. 1002 ¶ 159).

Petitioner also provides a rationale for modifying Linjama in view of Tosaki. *Id.* at 69. Specifically, Petitioner contends "[i]n light of *Tosaki*'s disclosures, a POSITA would have been motivated to modify *Linjama*'s system so that gesture detector 16 only detects orientation during a slow motion phase (e.g., when the mobile terminal 10 is 'substantially stationary')" and "*Linjama* discloses a first phase in which mobile terminal 10 is substantially stationary and a second phase in which mobile terminal is moving, and further discloses that a 'downward orientation' is sensed during the substantially stationary phase." *Id.* (citing Ex. 1002 ¶ 152; Ex. 1005 ¶ 52). Petitioner contends further that

> a POSITA would have recognized that maintaining a sequence of detected orientations where each orientation in the sequence is limited to a slow motion phase (e.g., limited to a substantially stationary phase) would have helped ensure that unintended movements (e.g., when the mobile terminal is not substantially stationary) do not result in identification of gestures that the user did not intend . . . [thus making] the combined system more user-friendly.

*Id.*; Ex. 1002 ¶ 152.

Petitioner provides additional rationale as follows:

> A POSITA would have also recognized that detecting orientation in only a slow motion phase would have allowed the mobile terminal 10 to save power because the orientation detection would not be conducted all the time. (*Id.*, ¶153.) The power savings motivation is consistent with *Linjama*'s discussion in ¶[0046] where *Linjama* explains reducing signaling to reduce power consumption. (Ex. 1002, ¶153; Ex. 1005, ¶[0046].)
>
> Such a modification of the combined *Linjama-Lehrman* system based on *Tosaki* would have been straightforward for a

> POSITA to implement. (Ex. 1002, ¶154.) *KSR*, 550 U.S. at 416. For instance, simple modifications would have been made to the software code for gesture detector 16 such that the orientation of mobile terminal 10 is only detected when the mobile terminal 10 is substantially stationary. (Ex. 1002, ¶154.)

Pet. 69–70.

Patent Owner argues "*Tosaki* cannot cure the deficiencies of *Linjama* and *Lehrman* because it likewise fails to teach the Inference Logic Limitations." PO Resp. 54 (citing Ex. 2005 ¶ 117). Patent Owner attempts to "incorporate[] the arguments it made in the Preliminary Response, which have now been confirmed by Patent Owner's expert, Dr. Mohapatra." *Id.* (citing PO Prelim. Resp. 24–28); *see* Ex. 2005 ¶ 119–120. However, we agree with Petitioner that Patent Owner has waived such arguments because "[i]ncorporation [of] arguments by reference is not allowed." Pet. Reply 19 (citing *Itron, Inc. v. Smart Meter Techs., Inc.*, IPR2017-01199, Paper No. 36 at 11 n.6 (Oct. 10, 2018)); *see* 37 C.F.R. § 42.6(a)(3); *see also* Paper 8, 5 ("Patent Owner is cautioned that any arguments for patentability not raised in the response may be deemed waived.").

Patent Owner now contends in Patent Owner's Response that "Petitioner fails to support its conclusion that a POSITA would have been motivated to combine *Tosaki* and *Linjama*." PO Resp. 56; *see id*. at 56–60. Patent Owner contends "Petitioner concludes that a POSITA would have recognized both the problem and solution of the '106 Patent without indicating how either was made apparent by the prior art," arguing "[t]his conclusory allegation is insufficient for Petitioner to meet its burden for a finding of obviousness." *Id.* at 56–57 (citing *Takeda Chem. Indus., Ltd. v. Alphaharm Pty., Ltd.*, 492 F.3d 1350, 1355 (Fed. Cir. 2007)). Patent Owner argues that "there is no evidence that a POSITA would have thought to limit

detection – much less to limit the maintained sequence of orientations – to 'ensure that unintended movements . . . do not result in identification of gestures that the user did not intend,' as asserted by Petitioner." *Id.* at 57 (citing Pet. 69); *see* Ex. 2005 ¶ 122. Patent Owner argues that the portion of Tosaki Petitioner cites "addresses a problem at odds to the one considered by '106 Patent – the problem of differentiating unintentional user orientations during slow motion phases from a 'fish bite' – not the problem of unreliable orientation data detected during fast motion phases contaminating the data sets of the '106 Patent." *Id.* at 58–59; Ex. 2005 ¶ 124.

Patent Owner further contends

> [t]he teachings of *Tosaki* . . . are inconsistent with *Linjama*'s disclosure of receiving an orientation and a movement indication at "approximately the same time" because *Tosaki* discloses being "set to operate as movement detecting means which detects the strength of movement, or to operate as movement detecting means which detects the orientation of the input device."

PO Resp. 59; Ex. 1009, 7:13–16; Ex. 2005 ¶ 125. Patent Owner argues that "[b]ecause *Linjama* and *Tosaki* contain teachings at odds with each other, a POSITA would not be motivated to combine them." PO Resp. 60; Ex. 2005 ¶ 116.

Petitioner correctly points out that "the prior art need not recognize or solve the same problem as the patentee." Pet. Reply 19 (citing *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 420–21 (2007)). Petitioner further contends that "PO misunderstands and ignores Petitioner's proffered motivation, which is clearly supported by *Tosaki*," namely that "*Tosaki* suggests that detecting orientation **only** during an inclination detection mode would allow filtering of unintended movements by the player." *Id.* at 19–20 (citing

Ex. 1009, 7:33–39 (distinguishing "between an acceleration detection mode and an inclination detection mode" "eliminate[s] the instability arising when the system detects inclination at all times" when "even the smallest movements made by the player holding the rod are detected and these are reflected in the game processing, leading to processing is that is not intended by the player."); PO Resp. 56–58; Ex. 1002 ¶ 150). Petitioner contends "*Tosaki* further states . . . that orientation is detected only during a slow motion phase." *Id.* at 20 (citing Ex. 1009, 9:5–11 ("inclination is detected when the size of the data [i.e., the strength of the movement] is smaller than the acceleration due to gravity")); Ex. 1002 ¶ 151.

Petitioner also argues that Patent Owner "fails to dispute a **second** motivation proffered by Petitioner that limiting orientation detection to slow motion phases would result in **power savings**." Pet. Reply 20; Ex. 1002 ¶ 153. Petitioner also contends that Patent Owner's allegation "that a minor difference in the operation of *Linjama* and *Tosaki* would prohibit their combination" "does not and cannot establish that the combination of *Linjama-Tosaki-Lehrman* would not be operable or that the references teach away from each other or the claim." Pet. Reply 20 (citing PO Resp. 59–60).

We are persuaded, on the complete record, that Petitioner has established a sufficient rationale to combine Linjama and Lehrman with Tosaki, at least because Petitioner's "power saving" motivation (Pet. 69–70) is unrebutted and Dr. Abowd's testimony is convincing. *See generally* PO Resp. 56–69; Pet. Reply 20; Ex. 1002 ¶ 153.

We are not persuaded by Patent Owner's additional arguments. Specifically, Patent Owner argues that Petitioner's assertion that Tosaki suggests "limiting orientation detection to slow motion phases would allow

filtering out unintentional movements" "is unsupported by any specific citation to the reference and is merely a vague, conclusory argument that mischaracterizes the teachings of *Tosaki*." PO Reply 24–25 (citing Pet. Reply 20; *Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) ("unsworn attorney argument ... is not evidence" and cannot rebut record evidence)). We are not persuaded because Petitioner relies on Dr. Abowd's testimony and not "unsworn attorney argument." *Id.*; *see* Ex. 1002 ¶¶ 152–153. Moreover, Dr. Abowd provides several citations to Tosaki in coming to the conclusion that Tosaki suggests that "limiting orientation detection to slow motion phases would allow filtering out unintentional movements." *Id.* at ¶¶ 150–151.

We also are not persuaded by Patent Owner's argument that "Petitioner ignores its burden to show that a POSITA 'would have had a reasonable expectation of success' in combining the references." PO Sur-Reply 25 (citing *Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1360-61 (Fed. Cir. 2017), *cert. denied*, 139 S. Ct. 143 (2018)). Petitioner has no such "burden" to show that a POSITA would have had a reasonable expectation of success in combining the references. *Arctic Cat* speaks of no such burden. *Id.* The case upon which *Arctic Cat* relies for the proposition that "where a party argues a skilled artisan would have been motivated to combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so,'" (*In re Cyclobenzaprine Hydrochloride Extended–Release Capsule Patent Litig.*, 449 Fed.Appx. 35 (Fed.Cir.2011)) also notes "[t]he Supreme Court has warned, however, that, while an analysis of any teaching, suggestion, or motivation to combine known elements is useful to an obviousness analysis, the overall obviousness

inquiry must be expansive and flexible." *Cyclobenzaprine*, 676 F.3d at 1068–69 (citing *KSR* 550 U.S. at 415, 419). Accordingly, we do not agree that Petitioner "ignores its burden" to demonstrate "reasonable success."

We also do not agree with Patent Owner's argument that it "demonstrated teaching away because *Linjama* teaches detecting motion AND orientation at the same time, which *Tosaki* prohibits, because it teaches detecting orientation OR acceleration but never both at the same time." PO Sur-Reply 25 (citing PO Resp. 59). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 Fed. 3D 551 (1994). That two references teach different ways does not establish a "teaching away."

*b. Claims 7 and 18*

Claim 7 depends from claim 1 and recites

> the fast motion detection by the motion detector includes instructions to compute and add to the profile a rotation angle required to transfer from a first motion phase to a second motion phase based on orientation at the first and second motion phases, the first and second motion phases selected from the group consisting of slow motion and rest.

Ex. 1001, 13:4–10. Claim 18 includes a similar recitation. *Id.* at 14:27–33. The Petition maps claim 7 to the disclosure of Tosaki and provides a rationale for combining the teachings of Tosaki with the teachings of Linjama and Lehrman. Pet. 72–74 (citing Ex. 1009, 16:17–18, 43–47). Specifically, Petitioner contends that claim 7 reads on Tosaki's teachings that

> when [Tosaki's] input device 1 is used in the context of a computer-implemented baseball simulation game, "the path of

> the swing should be determined *by detecting the angle of the bat before the start of the swing and after the end of the swing*, and then finding the general path of the bat by referring to a table or the like which converts these angles to a path of travel." (*Id.*, 16:43–47 (emphasis added).)

*Id.* at 72–73 (citation in original). The Petition's contentions are supported by Dr. Abowd's testimony. *Id.* (citing Ex. 1002 ¶¶ 160–164).

Patent Owner does not specifically argue claim 7 or claim 18.

*c. Conclusion*

In view of the foregoing analysis, and in view of the relatively little weight we give to Patent Owner's evidence of objective indicia of nonobviousness, Petitioner has demonstrated by a preponderance of the evidence that claims 1, 3, 4, 6, 7, 10–12, 14, 15, 17, and 18 are unpatentable as obvious over the combined teachings of Linjama, Lehrman, Tosaki.

*G. Obviousness under § 103 over Linjama, Lehrman, Tosaki, and Marvit*

The Petition relies on the same analysis of claims 2, 5, 8, 9, 13, 16, 19, and 20 over Linjama, Lehrman, Tosaki, and Marvit as over Linjama, Lehrman, and Marvit. Pet. 74. That is, the Petition contends "[t]he addition of *Tosaki* does not affect the analysis for these dependent claims" with respect to the prior analysis over Linjama, Lehrman, and Marvit. *Id.*

Patent Owner also relies on arguments previously presented with respect to these claims over the combination without Tosaki. PO Resp. 60.

In view of the foregoing analysis and based on our review of the complete record, Petitioner has demonstrated by a preponderance of the evidence that claims 2, 5, 8, 9, 13, 16, 19, and 20 are unpatentable over the combined teachings of Linjama, Lehrman, Tosaki, and Marvit.

## IV. PATENT OWNER'S MOTION TO SEAL

During this proceeding, Patent Owner filed a first motion to seal certain exhibits (Paper 14). We denied Patent Owner's motion, without prejudice (Paper 18), because it did not comply with the Scheduling Order (Paper 8). Per our authorization, Patent Owner then filed a compliant motion to seal ("Mot. Seal") and requested entry of a stipulated protective order (Ex. 2059). Patent Owner states "Petitioner consents to the Protective Order." Mot. Seal 5.

There is a strong public policy that favors making information filed in an *inter partes* review open to the public. *Garmin Int'l, Inc. v. Cuozzo Speed Techs. LLC*, Case IPR2012-00001, slip op. at 1–2 (PTAB Mar. 14, 2013) (Paper 34). The standard for granting a motion to seal is good cause. 37 C.F.R. § 42.54. That standard includes showing that the information addressed in the motion to seal is truly confidential, and that such confidentiality outweighs the strong public interest in having the record open to the public. *See Garmin*, slip op. at 2–3.

In its unopposed Motion, Patent Owner seeks to seal Exhibits 2012, 2017, 2018, 2019, 2020, 2021, 2035, 2036, 2042, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, and 2057. We have considered the arguments presented by the parties and determine that good cause has been established for sealing the documents identified in Patent Owner's motion. *See* Mot. Seal 5–16. Specifically, Patent Owner demonstrates that the information sought to be sealed contains "confidential or highly confidential business information." *Id.* at 4.

Accordingly, we grant Patent Owner's Motion, including Patent Owner's unopposed request for entry of the Stipulated Protective Order (Ex.

2059), which is the Board's default protective order provided in the Office Patent Trial Practice Guide. *See* 77 Fed. Reg. 48,756, 48,769–71 (Aug. 24, 2012) (Exhibit B). The record will be preserved in its entirety, and the confidential documents will not be expunged or made public, pending the outcome of any appeal taken from the Final Written Decision. At the conclusion of any appeal, or, if no appeal is taken, after the time for filing a notice appeal has expired, the documents may be made public. *See id.* at 48,761. At that time, either party may file a motion to expunge sealed documents from the record pursuant to 37 C.F.R. § 42.56.

*Redacted Version of Final Written Decision*

This Order, being entered as part of the Final Written Decision entered in this proceeding pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, is entered as a non-public version covering protective order material because it references and cites to several documents subject to the Motion to Seal. No later than ten (10) business days after entry of the Final Written Decision, the parties shall jointly submit, as an Exhibit, a proposed redacted version of the Final Written Decision that will be publicly available, or inform the Board by e-mail that the Final Written Decision may be made publicly available without redactions.

## V. PETITIONER'S MOTION TO EXCLUDE EVIDENCE

Petitioner filed a motion to exclude evidence after having timely objected to certain of Patent Owner's exhibits. Papers 15 ("Pet. Obj.") 28 ("Pet. Mot. Exclude"). Patent Owner filed an opposition to Patent Owner's motion to exclude (Paper 30, "PO Opp. Exclude") and Petitioner filed a reply in support of the motion to exclude (Paper 32, "Pet. Reply Exclude").

Petitioner moves to exclude Exhibits 2008–2024, 2027–2032, 2035–2042, and 2045–2057 and portions of Exhibits 2005 and 2042 that rely on any of the foregoing (collectively the "challenged exhibits"). Petitioner contends "these exhibits are inadmissible as hearsay under Federal Rule of Evidence (FRE) 802, are not subject to any hearsay exceptions, and/or are inadmissible under FRE 901 due to lack of authentication." Pet. Mot. Exclude 4.

Patent Owner contends "the challenged Exhibits are admissible as non-hearsay party admissions or are not being used for the truth of the matter asserted." PO Opp. Exclude 1. Patent Owner argues that "[t]he Board, 'sitting as a non-jury tribunal with administrative expertise, is well-positioned to determine and assign appropriate weight to evidence presented.'" *Id.* (citing *Denso Corp. v. Collision Avoidance Techs., Inc.*, IPR2017-01715, Paper 27 at *43 (PTAB Jan. 22, 2019) (citing *Corning Inc. v. DSM IP Assets B.V.*, IPR2013-00053, Paper 66 at 19 (PTAB May 1, 2014)).

In coming to our conclusion in this Decision, of the challenged exhibits we have relied only on portions of two Exhibits: Exhibit 2042, a claim chart mapping the limitations of claims 1 and 12 to the Hi-N-Bye product; and Exhibit 2015, a presentation entitled "Spatially Aware Inference Logic (SAIL)." *See supra* § III.D.3.c. Accordingly, because we have not relied on the other challenged exhibits, we begin by dismissing as moot Petitioner's Motion to Exclude with respect to the exhibits we did not rely on.

As to the two exhibits we do rely on, we agree with Patent Owner that we are positioned "to determine and assign appropriate weight to evidence

presented." Accordingly, we deny Petitioner's motion with respect to these Exhibits 2042 and 2015. Our reliance on these exhibits has worked to the detriment of Patent Owner and thus they are admissible at least because "admitting [them] will best serve the purposes of these rules and the interests of justice." Fed. R. Evid. 807 (a)(4).

Thus, we deny Petitioner's motion to exclude with respect to evidence we have reviewed to come to our determination that the evidence does not overcome our obviousness findings. We otherwise dismiss Petitioner's motion as moot.

## VII. CONCLUSION[11]

For the foregoing reasons, we find that Petitioner has shown by a preponderance of the evidence that all challenged claims are unpatentable under at least one asserted ground, as summarized below:

| Claims | 35 U.S.C. § | References | Claims Shown Unpatentable | Claims Not shown Unpatentable |
|---|---|---|---|---|
| 1, 3, 6, 10–12, 14, and 17 | § 103 | Linjama, Lehrman | 1, 3, 6, 10–12, 14, and 17 | |
| 2, 5, 8, 9, 13, 16, 19, and 20 | § 103 | Linjama, Lehrman, and Marvit | 2, 5, 8, 9, 13, 16, 19, and 20 | |
| 1, 3, 4, 6, 7, 10–12, 14, 15, 17, and 18 | § 103 | Linjama, Lehrman, and Tosaki | 1, 3, 4, 6, 7, 10–12, 14, 15, 17, and 18 | |
| 2, 5, 8, 9, 13, 16, 19, and 20 | § 103 | Linjama, Lehrman, Tosaki, and Marvit | 2, 5, 8, 9, 13, 16, 19, and 20 | |
| **Overall Outcome** | | | 1–20 | |

[11] 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. 16654 (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).

## VIII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has proven by a preponderance of the evidence that claims 1–20 of the '106 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Seal and request for entry of the Stipulated Protective Order (Mot. Seal; Ex. 2059) is *granted*;

FURTHER ORDERED that no later than ten (10) business days after entry of this Final Written Decision, the parties shall jointly submit, as an Exhibit, a proposed redacted version of the Final Written Decision that will be publicly available;

FURTHER ORDERED that Petitioner's motion to exclude is denied-in-part and otherwise dismissed as moot; 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.

PETITIONER:

Naveen Modi
Joseph E. Palys
Chetan Bansal
Arvind Jairam
PAUL HASTINGS LLP
naveenmodi@paulhastings.com
josephpalys@paulhastings.com
chetanbansal@paulhastings.com
arvindjairam@paulhastings.com

PATENT OWNER:

Edward Frederick Behm
ARMSTRONG TEASDALE LLP
ebehm@armstrongteasdale.com