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Paper 22
Date: March 4, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

Uniloc 2017 LLC,
Patent Owner.

IPR2018-01664
Patent 8,872,646 B2

Before JENNIFER S. BISK, CHARLES J. BOUDREAU, and GARTH D. BAER, *Administrative Patent Judges*.

BAER, Administrative Patent Judge.

JUDGMENT
Final Written Decision
Granting Patent Owner's Motion to Amend to Cancel Claim 22
Denying Patent Owner's Motion to Amend to Substitute Claim 23
35 U.S.C. § 318(a)

I. INTRODUCTION

Samsung Electronics America, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claim 22 of U.S. Patent No. 8,872,646 B2 (Ex. 1001, "the '646 patent"). Uniloc Luxembourg, S.A. ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp."). We granted Petitioner's request and instituted an *inter partes* review of claim 22. Paper 7.

Following institution, Patent Owner filed a non-contingent Motion to Amend, cancelling claim 22 and proposing substitute claim 23. Paper 10 ("Mot. Amend"). Petitioner filed an Opposition to the Motion (Paper 11, "Mot. Amend Opp."), Patent Owner filed a Reply (Paper 13, "Mot. Amend Reply"), and Petitioner filed a Sur-Reply (Paper 14, "Mot. Amend Sur-Reply"). A hearing was held on December 12, 2019. The Hearing Transcript ("Tr.") is included in the record as Paper 21. Having considered the evidence of record, and for the reasons set forth below, we cancel claim 22 and deny the Motion to Amend as to proposed substitute claim 23.

II. BACKGROUND

A. THE '646 PATENT

The '646 patent is titled "Method and System for Waking Up a Device Due to Motion" and describes a device with an accelerometer that wakes up from a low power idle state in response to detecting motion. Ex. 1001, code (57), 1:27–28.

Figure 3 of the '646 patent is reproduced below.

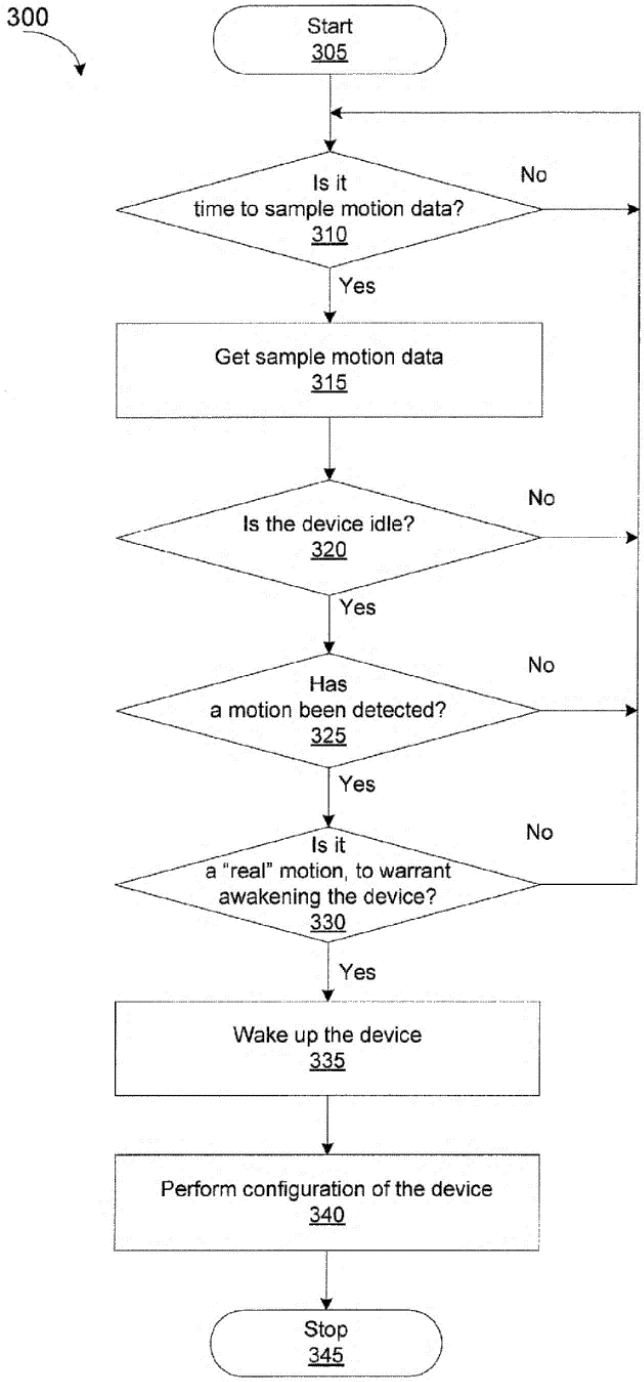


Figure 3 is a flowchart for determining whether to wake up a device based on motion. *Id.* at 4:25–26. At block 315, the process gets sample motion data and calculates a current/updated acceleration average. *Id.* at 4:36–38. At block 320, the process determines whether the device is idle—i.e.,

whether it is not moving and there are no active user-interactive applications. *Id.* at 4:45–47. If the device is idle, the process continues to block 325 and determines if the device has experienced any motion larger than a minimum threshold. *Id.* at 4:49–55. If so, at block 330, the process determines if the movement is a real motion that warrants waking up the device—i.e., movement from being picked up by a user intending to use the device, as opposed to a mere jostle or bump. *Id.* at 4:61–5:2. If the movement is real, the process continues to blocks 335 and 340, where the process wakes up the device and restores it to either a last active state or a user-customized configuration. *Id.* at 5:3–12.

Figure 4 of the '646 patent is reproduced below.

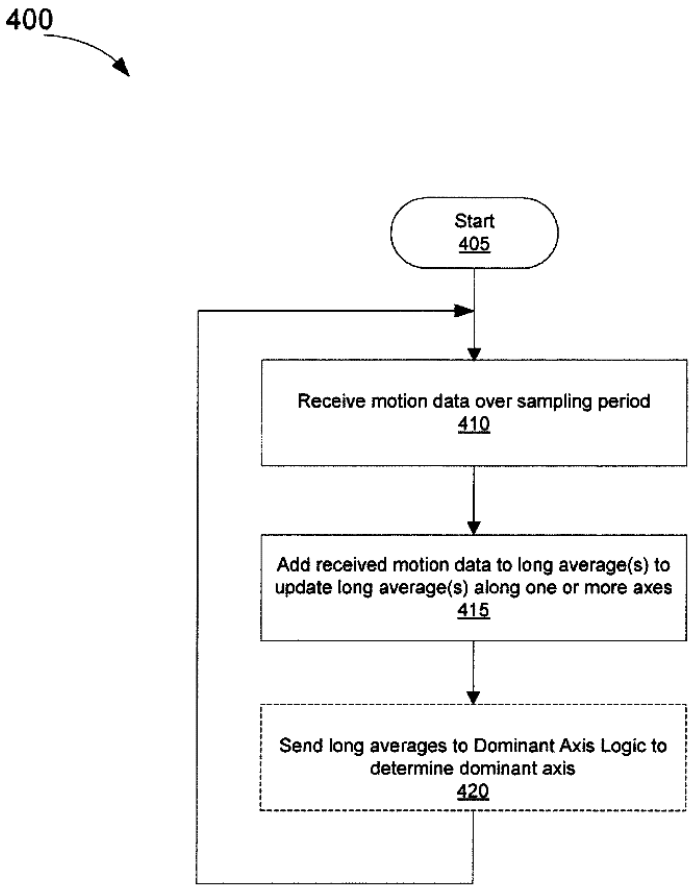


Figure 4 is a flowchart of a process to create a long average of accelerations. *Id.* at 5:14–15. At block 410, the process sends motion data from an accelerometer through a glitch correcting logic, which removes abnormal data before passing it along to a long average logic. *Id.* at 5:18–23. At block 415, the long average logic adds the sampled motion data to a long average, to create an updated long average of accelerations. *Id.* at 5:24–26. The '646 patent explains that "[i]n one embodiment, the long average logic maintains a long average only for the dominant axis (e.g., the axis on which the gravitational effect is detected)," whereas "[i]n another embodiment, the long average logic maintains an average for one or more axes." *Id.* at 5:26–30. At block 420, the process determines the dominant axis using long averages of accelerations for a plurality of axes. *Id.* at 5:32–37.

B. Challenged and Substitute Claims

Claim 22, the Petition's only challenged claim, depends from independent claim 20. Claims 20 and 22 are reproduced below.

> 20. A system to wake up a mobile device comprising:
>
> a motion sensor to detect motion along three axes and generation motion data;
>
> a glitch corrector to determine whether the motion data includes one or more glitches and remove the one or more glitches from the motion data;
>
> a dominant axis logic to determine an idle sample value, comprising an average of accelerations over a sample period along a dominant axis, the dominant axis defined as an axis with a largest effect of gravity among the three axes; and
>
> a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis which is the axis experiencing the largest effect of gravity.

Id. at 10:23–37.

> 22. The system of claim 20, further comprising:
>
> a device state logic to restore the device to one of: a last active state, a preset customized state.

Id. at 10:45–47.

Proposed substitute claim 23 is reproduced below, with language deleted from issued claim 22 indicated by brackets and language added to claim 22 indicated with underlining.

> 23. A system to wake up a mobile device comprising:
>
> a motion sensor to detect motion along three axes and [[generation]] generate motion data;
>
> a glitch corrector to determine whether the motion data includes one or more glitches and remove the one or more glitches from the motion data, the one or more glitches each indicating a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range, the motion data containing less data as a result of the removal of the one or more glitches from the motion data;
>
> a dominant axis logic to determine a dominant axis and determine an idle sample value comprising an average of accelerations over a sample period along [[a]] the dominant axis, the dominant axis defined as an axis with a largest effect of gravity among the three axes; [[and]]
>
> a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis which is the axis experiencing the largest effect of gravity[[.]]; and
>
> a device state logic to restore the device to one of: a last active state, a preset customized state.

Mot. Amend, Appendix A.

C. Asserted Grounds of Unpatentability

Petitioner asserted the following ground of unpatentability in the Petition. Pet. 16.

Claim Challenged	35 U.S.C. §	References
22	103	Pasolini,[1] Goldman,[2] McMahan,[3] Mizell,[4] Park[5]

Because we grant Patent Owner's request to cancel claim 22, we need not consider this ground.

In opposition to the Motion to Amend, Petitioner asserts the following grounds of unpatentability. Mot. Amend Opp. 6 n.3.

Claim Challenged	35 U.S.C. §	References
23	103	Pasolini, Goldman, McMahan, Mizell, Park, Marvit[6]
23	103	Pasolini, Goldman, McMahan, Mizell, Park, Fabio[7]
23	103	Pasolini, Goldman, Hyatt,[8] Mizell, Park, Marvit
23	103	Pasolini, Goldman, Hyatt, Fabio, Mizell, Park

[1] U.S. Patent No. 7,409,291 B2 (Aug. 5, 2008) (Ex. 1003, "Pasolini").
[2] Ron Goldman, *Using the LIS3L02AQ Accelerometer*, Sun Microsystems Inc. (Feb. 23, 2007) (Ex. 1004, "Goldman").
[3] U.S. Patent No. 7,204,123 B2 (Apr. 17, 2007) (Ex. 1005, "McMahan").
[4] David Mizell, *Using Gravity to Estimate Accelerometer Orientation*, Proceedings of the Seventh IEEE International Symposium on Wearable Computers (2003) (Ex. 1007, "Mizell").
[5] U.S. Patent No. 7,028,220 B2 (Apr. 11, 2006) (Ex. 1014, "Park").
[6] U.S. Patent No. 7,180,502 B2 (Feb. 20, 2007) (Ex. 1015, "Marvit").
[7] U.S. Patent No. 7,463,997 B2 (Dec. 9, 2008) (Ex. 1016, "Fabio").
[8] U.S. Patent Appl. Pub. No. 2007/0268246 A1 (pub. Nov. 22, 2007) (Ex. 1017, "Hyatt").

D. Real Parties in Interest

Petitioner identifies Samsung Electronics America, Inc. and Samsung Electronics Co., Ltd. as the real parties in interest. Pet. 2. Patent Owner identifies Uniloc 2017 LLC, Uniloc USA, Inc., and Uniloc Licensing USA LLC as real parties in interest. Paper 4, 1–2.

E. Related Proceedings

The parties assert the '646 patent is involved in *Uniloc USA, Inc. v. Apple Inc.*, Case No. 4:18-cv-00361 (N.D. Cal. 2018); *Uniloc USA, Inc. v. Samsung Electronics America, Inc.*, 2:17-cv-00652 (E.D. Tex. 2017); and *Uniloc USA, Inc. v. Huawei Device USA, Inc.,* 2:17-cv-00746 (E.D. Tex. 2017). Pet. 2; Paper 4, 2.

III. MOTION TO AMEND

Patent Owner's non-contingent Motion to Amend cancels the only challenged claim, claim 22, and seeks to substitute new claim 23. Mot. Amend 1.

A. The Applicable Law

In an *inter partes* review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d) (2012). The Board must assess the patentability of proposed substitute claims "without placing the burden of persuasion on the patent owner." *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017) (en banc); *see* Memorandum, "Guidance on Motions to Amend in view of *Aqua Products*" (Nov. 21, 2017) (*available at* https://www.uspto.gov/sites/default/files/documents/guidance_on_motions_to_amend_11_2017.pdf) ("Guidance"). Subsequent to the issuance of *Aqua Products* and the Board's Guidance, the

Federal Circuit issued a decision in *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017) ("*Bosch*"), as well as a follow-up Order amending that decision on rehearing. *See Bosch Auto. Serv. Sols., LLC v. Iancu*, Order on Petition for Panel Rehearing, No. 2015-1928 (Fed. Cir. Mar. 15, 2018).

In accordance with *Aqua Products*, the Board's Guidance, and *Bosch*, Patent Owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claim presented in the Motion to Amend. Rather, ordinarily, "the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the evidence." *Bosch*, 878 F.3d at 1040 (as amended on rehearing). "The Board itself also may justify any finding of unpatentability by reference to evidence of record in the proceeding, for example, when a petitioner ceases to participate . . . ." *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential) (citing *Bosch*, 878 F.3d at 1040). "Thus, the Board determines whether substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, including any opposition made by the petitioner." *Id.*

Notwithstanding the foregoing, Patent Owner's proposed substitute claims must meet the statutory requirements of 35 U.S.C. § 316(d) and the procedural requirements of 37 C.F.R. § 42.121. *Id.* Accordingly, Patent Owner must demonstrate: (1) the amendment proposes a reasonable number of substitute claims; (2) the proposed claims are supported in the original disclosure; (3) the amendment responds to a ground of unpatentability involved in the trial; and (4) the amendment does not seek to enlarge the

scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121 (2018).

B. PREDICATE REQUIREMENTS

1. Reasonable Number of Substitute Claims

By statute, in a motion to amend, a patent owner may propose a reasonable number of substitute claims for each challenged claim. 35 U.S.C. § 316(d)(1)(B). There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim. 37 C.F.R. § 42.121(a)(3). Patent Owner proposes a single substitute claim for the only cancelled claim, and therefore meets this requirement.

2. Support in the Original Disclosure

A motion to amend may not present substitute claims that introduce new subject matter. 35 U.S.C. § 316(d); 37 C.F.R. § 41.121(a)(2)(ii). New matter is any addition to the claims without support in the original disclosure. *See TurboCare Div. of Demag Delaval Turbomach. v. Gen. Elec. Co.*, 264 F.3d 1111, 1118 (Fed. Cir. 2001) ("When [an] applicant adds a claim . . . the new claim[] . . . must find support in the original specification.").

Substitute claim 23 parallels cancelled claim 22, except that it is written in independent form and adds three limitations: 1) "the one or more glitches each indicating a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range," 2) "the motion data containing less data as a result of the removal of the one

or more glitches from the motion data," and 3) "a dominant axis logic to determine a dominant axis." Mot. Amend, Appendix A.[9]

Patent Owner asserts written description support in the originally filed disclosure of the subject patent for each proposed substitute claim. Mot. Amend 3–6. We have reviewed Patent Owner's assertions and agree that the original specification supports Patent Owner's proposed amendments. *See id*. at 4 (citing Ex 1002, Figs. 3–6, ¶¶ 10, 12, 16–17, 21–22, 33–34, 38, 50–57 as support for "the one or more glitches each indicating a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range" and "the motion data containing less data as a result of the removal of the one or more glitches from the motion data"); *id*. (citing Ex. 1002, Figs. 2, 4, ¶¶ 17, 23–25 as support for "a dominant axis logic to determine a dominant axis").

Petitioner contends in response only that "within an operational range" lacks written description support in the original specification. *See* Mot. Amend Opp. 1–5. We nonetheless agree with Patent Owner that the specification includes written description support for the amended claim language.

As Patent Owner notes,

> the original application discloses "glitch correcting logic 235 further may be used to discard non-human motions" that are nevertheless accurately detectable by the sensor. EX1002, pp. 12-13, ¶ 21. This example is further explained in the context

[9] The amended claim also makes several changes addressing clerical issues with original claim 22. *See* Mot. to Amend, Appendix A (changing "generation motion data" to "generate motion data," changing "a dominant axis" to "the dominant axis," and replacing a period in the middle of the claim with "; and.").

> of "a device [that] is not being used but is in a moving vehicle." *Id*. While the vehicle's motion is measurable by the sensor, it is considered a glitch that "can be discarded as not fitting the signature of human motion." *Id*.

Mot. Amend 5; *see also* Ex. 1001, 3:23–27. In short, we agree with Patent Owner that non-human motions due to a vehicle's motion would be within the device's operational range. Petitioner is correct that the specification also includes examples of motion outside the device's operational range. *See, e.g.*, Ex. 1001, 5:19–23 (describing "a glitch correcting logic which removes abnormal data from the motion data"); *id* at 6:56–65 (explaining "an excessive number of glitches may indicate a problem with the accelerometer"); *id*. at 3:33–37 (noting "glitches generally are indicative that the accelerometer or sensor is malfunctioning"). Those examples, however, do not undermine the specification's additional support for a glitch that is within the device's operational range. *See Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1331 (Fed. Cir. 2004) ("[P]atentees [are] not required to include within each of their claims all of [the] advantages or features described as significant or important in the written description.").

3. Responding to a Ground of Unpatentability

As stated in 37 C.F.R. § 42.121(a)(2)(i), "[a] motion to amend may be denied where . . . [t]he amendment does not respond to a ground of unpatentability involved in the trial." In considering the motion, the entirety of the record is reviewed to determine whether a patent owner's amendments respond to a ground of unpatentability involved in the trial. Once a proposed claim includes amendments to address a prior art ground in the trial, a patent owner also may include additional limitations to address, for example, Section 112 issues, if necessary. *Lectrosonics*, Paper 15 at 5–6.

We determine that the proposed amendments meet this requirement. They respond to Petitioner's reliance on McMahan, which discloses "determining whether the measure [of an accelerometer] falls outside of an acceptable range." Ex. 1005, code (57); *see* Mot. Amend 7. In addition, as Patent Owner notes, "[t]he amendment is also responsive to Petitioner's argument that the original claim language does not explicitly require 'determining which of the three axes is the dominant axis.'" Mot. Amend 7 (quoting Pet. 5). Petitioner does not dispute this aspect of the Motion to Amend.

4. Not Enlarging the Scope of the Claims

Proposed substitute claims may not enlarge the scope of the claims. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 41.121(a)(2)(ii). Patent Owner establishes that the proposed substitute claim recites "verbatim" canceled claim 22, and "further recites a number of clerical and clarifying amendments." Mot. Amend 2. Thus, Patent Owner concludes, "[t]o the extent scope is changed at all by these amendments, the scope can only be *narrowed*." *Id*. Petitioner does not challenge this showing by Patent Owner, and we determine it to be adequate.

5. Summary

We determine that Patent Owner has satisfied the predicate requirements for considering a motion to amend as to substitute claim 23.

C. Obviousness Analysis

In its Opposition to the Motion to Amend, Petitioner asserts that proposed substitute claim 23 would have been obvious over Pasolini, Goldman, Hyatt, Fabio, Mizell, and Park. Mot. Amend Opp. 6 n.3; *see id*. at 9–11, 14–18, 22–25. For the reasons explained below, we determine

Petitioner has demonstrated by a preponderance of the evidence that the subject matter of substitute claim 23 would have been obvious over the combination of Pasolini, Goldman, Hyatt, Fabio, Mizell, and Park.

1. Level of Ordinary Skill in the Art

Petitioner asserts a person of ordinary skill in the art "would have had at least a Bachelor's degree in Electrical Engineering, Computer Engineering, Computer Science, or equivalent, as well as at least two years of technical experience in the field of systems that use signals and sensory data (e.g., accelerometer data)." Ex. 1010 ¶ 13. Patent Owner does not assert a different ordinary level of skill in the art. We agree with and adopt Petitioner's proposal because it is consistent with the '646 patent, as well as the problems and solutions in the prior art of record. *See Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

2. Claim Construction

Patent Owner does not propose any terms for claim construction. *See* Mot. Amend 9 (explaining that proposed substitute claim 23 resolves the parties' claim construction disputes). Although Petitioner proposes a construction for "motion data," we conclude no express claim construction is necessary for our determination whether to grant Patent Owner's Motion to Amend.[10] *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the

[10] The dispute over "motion data" relates to whether McMahan teaches the motion data containing less data as a result of the removal of the one or more glitches. *See* Mot. to Amend, 13–14; Mot. Amend Opp., 6–7. We need not resolve this issue because we do not rely on Petitioner's grounds involving McMahan. *See infra* Section III.D.

controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

3. Asserted Prior Art

a. Pasolini (Ex. 1003)

Pasolini is a U.S. patent titled "Device for Automatic Detection of States of Motion and Rest, and Portable Electronic Apparatus Incorporating It." Ex. 1003, code (54). It teaches activating an electronic device from a standby mode in response to detected acceleration. *See id*. at 1:32–38, 1:66–2:4, 3:17–23. Pasolini teaches detecting static accelerations due to constant forces like gravity and dynamic accelerations due to non-constant forces. *Id.* at 2:66–3:7. In particular, Pasolini teaches picking up the device will wake it from the stand-by mode. *Id.* at 5:31–41.

b. Goldman (Ex. 1004)

Goldman is a publication by Sun Microsystems that teaches how to use an LIS3L02AQ accelerometer built into a Sun Spot sensor board. Ex. 1004, 1. As Petitioner's expert, Dr. Irfan Essa, explains, Goldman describes various Java methods associated with the Application Programming Interfaces (APIs) for the Sun Spot sensor board, including obtaining acceleration along various axes or measuring tilt. Ex. 1010 ¶ 48 (citing Ex. 1004, 1, 2). Goldman also teaches measuring acceleration relative to gravity and outputting acceleration when it exceeds a threshold. *Id.* ¶¶ 48–49 (citing Ex. 1004, 2).

c. Hyatt (Ex. 1017)

Hyatt is a U.S. patent publication directed to "electronic equipment, such as a mobile phone" that is "responsive to detected motion." Ex. 1017, code (57). Relevant to this case, Hyatt teaches "a motion signal processing

circuit" that "filter[s] the output of the motion sensor 60 or . . . condition[s] the output . . . such that the indication of motion or an appropriate signal to represent motion to the control circuit 42 only is provided in instances where the user decidedly moves the mobile phone 10 in a prescribed manner." *Id.* ¶ 58. According to Hyatt, "signals representing brief or casual movement . . . such as a result of being carried by a user while walking, bouncing in a moving car, etc., [are] not registered as an intended motion." *Id.*

d. Fabio (Ex. 1016)

Fabio is a U.S. patent directed to "a pedometer device" that "processes an acceleration signal relating to the acceleration in order to detect the occurrence of a step." Ex. 1016, code (57). Relevant to this case, Fabio teaches "identifying the main vertical axis . . . as the axis of detection that has the highest mean acceleration value Accm (on account of gravity)." *Id*. at 8:18–20.

e. Mizell (Ex. 1007)

Mizell is a publication from the Proceedings of the Seventh IEEE International Symposium on Wearable Computers, titled "Using Gravity to Estimate Accelerometer Orientation." Ex. 1007, 1. As Dr. Essa explains, Mizell "describes obtaining orientation-independent acceleration information, taking into account gravitational (static) acceleration as well as (dynamic) accelerations. Mizell describes an algorithm for calculating the gravity component on each axis by averaging sampled accelerometer data for each axis." Ex. 1010 ¶ 52 (internal quotation marks omitted) (quoting Ex. 1007, 1).

f. Park (Ex. 1014)

Park is a U.S. patent that teaches saving a device's system status data when the device goes into a suspend mode. Ex. 1014, 4:12–14. The data is then used to restore the system to the state it was in before entering suspend mode. *Id*. at 5:36–40.

4. Limitations in Proposed Substitute Claim 23

a. "A system to wake up a mobile device"

Proposed substitute claim 23's preamble recites "[a] system to wake up a mobile device." Petitioner asserts that, to the extent the preamble is limiting, Pasolini discloses this limitation because it teaches "a *portable* electronic apparatus" and "an activation device 10 (system) to wake up the mobile device." Pet. 28 (citing Ex. 1003, 2:26–28, 2:42–44; Ex. 1010 ¶¶ 55–59).[11] Patent Owner does not challenge Petitioner's assertions in this regard. We agree with Petitioner that Pasolini discloses a system to wake up a mobile device.

b. "a motion sensor to detect motion along three axes and generate motion data"

Proposed substitute claim 23 requires "a motion sensor to detect motion along three axes and generate motion data." Petitioner asserts the combination of Pasolini and Goldman teaches this limitation because "Pasolini's device includes an activation device 10 that includes the 'internal sensor'" and "'[w]hen dynamic ***accelerations are detected*** along at least one of the ***three axes X, Y, or Z,***' the device is woken from a sleep state." *Id.* at

[11] This Decision relies on the Petition for Petitioner's arguments as to the limitations appearing in originally challenged claim 22 and on Petitioner's Opposition to the Motion to Amend and Sur-Reply for Petitioner's arguments as to the limitations Patent Owner added through amendment.

29 (citing Ex. 1003, 1:66–2:1, 2:26–34, 3:17–19; Ex. 1010 ¶¶ 61–64). In addition, Petitioner explains, "Goldman teaches programmatic techniques to receive motion data from a three-axis accelerometer system," and "generate[ ] motion data for various Java methods." *Id*. at 30 (citing Ex. 1004, 1; Ex. 1010 ¶¶ 65–66). Patent Owner does not challenge Petitioner's assertions in this regard. We agree with Petitioner that the combined Pasolini/Goldman system teaches "a motion sensor to detect motion along three axes and generate motion data," as recited in substitute claim 23.

Reason to Combine Pasolini and Goldman

Petitioner further asserts it would have been obvious to one skilled in the art to modify Pasolini's device to include Goldman's enhanced accelerometer techniques as a known method "to distinguish static acceleration (due to gravity) from dynamic acceleration (due to movement) when calculating acceleration." *Id*. at 20–21 (citing Ex. 1010 ¶¶ 68–72). Petitioner explains, with relevant support from its expert, Dr. Essa, that "when analyzing acceleration signals, it is beneficial to factor in calibration, sampling rates, and tilt," as Goldman teaches, "because the results are more accurate." *Id*. at 21 (citing Ex. 1010 ¶ 71). Thus, Petitioner explains, combining Pasolini's device with Goldman's accelerometer techniques amounts to no more than "using the known techniques of Goldman to improve the similar device of Pasolini in the same way." *Id*. at 22. Patent Owner does not challenge Petitioner's assertions in this regard. We conclude Petitioner has articulated sufficient reasoning with rational underpinning to support the legal conclusion that its proffered combination

of Pasolini and Goldman would have been obvious to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

c. "glitch corrector to determine whether the motion data includes one or more glitches and remove the one or more glitches from the motion data, the one or more glitches each indicating a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range, the motion data containing less data as a result of the removal of the one or more glitches from the motion data"

Proposed substitute claim 23 requires a "glitch corrector to determine whether the motion data includes one or more glitches and remove the one or more glitches from the motion data, the one or more glitches each indicating a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range." Petitioner explains that Hyatt teaches this limitation because

> *Hyatt* discloses "a motion signal processing circuit" that "filter[s] the output of the motion sensor 60 or . . . condition[s] the output using known techniques such that the indication of motion or an appropriate signal to represent motion to the control circuit 42 only is provided in instances where the user decidedly moves the mobile phone 10 in a prescribed manner."

Mot. Amend Opp. 9 (quoting Ex. 1017 ¶ 58). Petitioner notes further, "Hyatt states that '***signals representing brief or casual movement*** of the [device], e.g., a dead zone where slight movement of the [device], such as a ***result of being carried by a user while walking, bouncing in a moving car***, etc., is not registered as an intended motion." *Id*. at 9–10 (quoting Ex. 1017 ¶ 58). Hyatt blocks these unwanted signals using a "low pass filter 64 [that] ***removes or blocks*** signals representing casual motions or noise or spurious signals representing brief, unintended movement of the mobile phone 10 or casual movement of the mobile phone, ***such as may occur during walking***

or bouncing in a moving vehicle." *Id*. at 10 (quoting Ex. 1017 ¶ 59). Patent Owner does not challenge Petitioner's assertions in this regard. Based on Hyatt's disclosures, we agree with Petitioner that Hyatt teaches determining whether the motion data includes one or more glitches and removing the one or more glitches from the motion data. In addition, we agree with Petitioner that Hyatt teaches the one or more glitches each indicate a respective detected motion that is both within an operational range of the motion sensor and outside an acceptable range, as substitute claim 23 requires.

Proposed substitute claim 23 further requires "the motion data containing less data as a result of the removal of the one or more glitches from the motion data." Petitioner asserts that Hyatt teaches this limitation, as well. *Id*. at 14–15. As Petitioner explains, Hyatt's system includes "a 'motion signal processing circuit 62,' which receives motion data from the 'motion sensor 60.'" Mot. Amend Opp. 14 (quoting Ex. 1017 ¶ 58, Fig. 2). Petitioner further explains that Hyatt's motion data contains less data as a result of glitch removal because Hyatt employs a low pass filter so that "[t]he motion signal processing circuit 62 ***may block from the control circuit 42*** signals representing brief or casual movement." *Id*. (quoting Ex. 1017 ¶ 58); *see id*. at 14–15 (citing Ex. 1017 ¶¶ 58–59, Figs. 3–5).

Patent Owner asserts that Hyatt does not disclose "the motion data containing less data as a result of the removal of the one or more glitches *from the motion data*" because "Hyatt is directed to processing performed by the signal processing unit 62 that prevents a signal in its entirety from being provided as input to the control circuit 42." Mot. Amend Reply 9–10. According to Patent Owner,

> [a] signal that is never provided to control circuit 42 (because it is blocked/removed by signal processing circuit 62) cannot subsequently be *removed from control circuit 42*, much less removed from a collection of generated "motion data" that includes non-glitch data, such that "the motion data contain[s] less data as a result of the *removal* of the one or more glitches *from the motion data*," as recited in substitute claim 23.

Id. at 10–11. We disagree with Patent Owner's argument.

The limitation at issue requires "a glitch corrector to . . . remove . . . glitches from the motion data." It does not require that the motion data be removed from any specific part of the system, such as from Hyatt's control circuit 42 as Patent Owner's argument implies. As Petitioner explains, "*Hyatt* discloses a motion sensor 60, which continuously 'produces . . . output indicative of motion of the mobile phone 10.'" Mot. Amend Sur-Reply 9 (quoting Ex. 1017 ¶ 58). "This output is provided to the motion signal processing circuit 62," which "may block" unintended movements (i.e., glitches) from being provided as input to the control circuit 42. Ex. 1017 ¶ 58. Although unintended motion may be filtered, as Petitioner explains, in Hyatt, "an 'appropriate signal' representing 'intended motion' is provided to the control circuit 42." Mot. Amend Sur-Reply 10 (quoting Ex. 1017 ¶ 58). Because Hyatt teaches filtering that removes some—but not all—motion data, we agree with Petitioner that Hyatt discloses "the motion data containing less data as a result of the removal of the one or more glitches from the motion data," as substitute claim 23 requires. *See id*.

Reason to Combine Hyatt

Petitioner asserts that it would have been obvious to one skilled in the art to combine the Pasolini/Goldman combination with Hyatt's teaching of blocking signals representing brief, casual, or unintended movement. Mot.

Amend Opp. 15–16. Petitioner explains, with relevant support from the prior art and Dr. Essa, that one skilled in the art would have done so "to ensure that the device in the combination only wakes up upon detection of intended motion, including motion indicative of the device being picked up, to further improve the device's power conservation." *Id*. at 16 (citing Ex. 1018 ¶ 97) (internal quotation marks omitted). "Otherwise," Petitioner explains, "'casual motion or noise . . . ***such as may occur during walking or bouncing in a moving vehicle***', may trigger a wakeup, thus causing unnecessary power consumption." *Id.* (Ex. 1017 ¶ 59; citing Ex. 1018 ¶ 87). Patent Owner does not challenge Petitioner's assertions in this regard. We conclude Petitioner has articulated sufficient reasoning with rational underpinning to support the legal conclusion that its proffered combination of Hyatt with Pasolini/Goldman would have been obvious to one of ordinary skill in the art. *See KSR*, 550 U.S. at 418.

d. "a dominant axis logic to determine a dominant axis . . . the dominant axis defined as an axis with a largest effect of gravity among the three axes"

Proposed substitute claim 23 requires "a dominant axis logic to determine a dominant axis." Petitioner explains that Fabio teaches this element because Fabio discloses an "accelerometer 2 [that] detects the component along the detection axis z of the ***vertical acceleration generated during the step***, and produces a corresponding acceleration signal A." Mot. Amend Opp. 22 (quoting Ex. 1016, 3:13–19). In addition, "[b]ecause 'the orientation of the . . . device' varies, *Fabio* discloses that a 'main vertical axis' should be identified 'to take into account [such] variations.'" *Id*. (quoting Ex. 1016, 8:18–24). "*Fabio* further discloses 'identifying ***the main vertical axis*** . . . as the axis of detection that ***has the highest mean***

acceleration value Accm (on account of gravity)." *Id*. (quoting Ex. 1016, 8:18–24). Based on these disclosures, we agree with Petitioner that Fabio teaches determining a dominant axis that is defined as an axis with the largest effect of gravity among the three axes.

Patent Owner does not dispute that Fabio teaches determining a dominant axis that is defined as the axis with a largest effect of gravity among the three axes. *See* Mot. Amend Reply 11–12. Instead, Patent Owner criticizes Petitioner's obviousness theory based on Fabio as "redundant" to Petitioner's alternative obviousness ground involving Marvit, and notes that Fabio "appear[s] on the face of the '646 patent." *Id*. at 11. Patent Owner also contends it "should not be expected to address Petitioner's" reliance on Fabio "given that . . . Petitioner raises [Fabio] as a *do-over* in addressing *unamended* claim language." *Id*.

We disagree with Patent Owner's arguments. First, even if Fabio's dominant-axes teaching were redundant to Marvit's disclosure, that would not undermine Petitioner's obviousness case based on Fabio. Nor does the '646 patent's inclusion of Fabio as one in a list of hundreds of cited references undermine Petitioner's reliance on Fabio to teach the disputed "determining a dominant axis" limitation. *See* Ex. 1001, code (56). Last, Petitioner does not rely on Fabio to address unamended claim language, as Patent Owner asserts. As noted above, Petitioner relies on Fabio to teach the amended claim language requiring "determin[ing] a dominant axis." *See* Mot. Amend Opp. 22–25. Originally challenged claim 22 did not require determining a dominant axis. *See* Mot. Amend, Appendix A.

Reason to Combine Fabio

Petitioner provides a sufficient reason why a skilled artisan would have combined Fabio's teaching of determining a dominant axis that is defined as the axis with a largest effect of gravity among the three axes. Petitioner explains, with relevant support from the prior art and Dr. Essa, that "[a] POSITA would have had good reason to apply *Fabio*'s 'main vertical axis' to *Pasolini* such that *Pasolini*'s goal of reactivating a device 'when the user picks up the device' can be more accurately and reliably achieved." Mot. Amend Opp. 24 (quoting Ex. 1003, 5:35–41 and citing Ex. 1018 ¶ 132). Petitioner further explains that "[a] POSITA would have recognized that by orienting *Pasolini*'s device with respect to the vertical direction, as taught by *Fabio*, *Pasolini*'s device can be configured to reactivate only upon detection of upward movements, i.e., when the user picks up the device." *Id*. (citing Ex. 1018 ¶ 133). Patent Owner does not challenge Petitioner's assertions in this regard. We conclude Petitioner has articulated sufficient reasoning with rational underpinning to support the legal conclusion that its proffered combination of Fabio with Pasolini, Goldman, and Hyatt would have been obvious to one of ordinary skill in the art. *See KSR*, 550 U.S. at 418.

e. "a dominant axis logic to . . . determine an idle sample value comprising an average of accelerations over a sample period along the dominant axis"

Proposed substitute claim 23 also requires the dominant axis logic to "determine an idle sample value comprising an average of accelerations over a sample period along the dominant axis." Petitioner asserts that the combination of Pasolini, Goldman, and Mizell renders this feature obvious because "Goldman teaches determining an idle sample value along all three

axis, including the dominant axis, by sampling motion data at 'a sample rate of 10-20 readings per second.'" Pet. 34 (citing Ex. 1004, 5; Ex. 1010 ¶¶ 88–91, 99); *see id*. at 32–34. Petitioner asserts further that "Mizell teaches that accelerometer samples are averaged over a sampling interval (sample period) to capture a representation of gravity for all three axes . . . 'for a chosen sampling interval, typically a few seconds, [to] obtain an estimate of the gravity component on ***each axis*** by ***averaging*** all the readings in the interval on that axis.'" *Id*. at 34–35 (citing Ex. 1007, 1; Ex. 1010 ¶ 100). Patent Owner does not challenge Petitioner's assertions in this regard. We agree with Petitioner that the combined teachings of Pasolini, Goldman, and Mizell teach determining an idle sample value comprising an average of accelerations over a sample period along the dominant axis, as substitute claim 23 requires.

Reason to Combine Mizell

Petitioner asserts that it would have been obvious to one skilled in the art to further combine Mizell's method of capturing a device's rest acceleration of each axis by averaging samples over a sampling interval to "smooth and reduce noise" and thereby "obtain a more accurate representation of the gravity signal." *Id*. at 25 (citing Ex. 1010 ¶¶ 101–104). Petitioner further explains, "[t]he techniques of Mizell teach an exemplary solution for handling noise generated by accelerometer signals." *Id*. Patent Owner does not challenge Petitioner's assertions in this regard. We conclude Petitioner has articulated sufficient reasoning with rational underpinning to support the legal conclusion that its proffered combination of Mizell, Hyatt, Pasolini, and Goldman would have been obvious to one of ordinary skill in the art. *See KSR*, 550 U.S. 398 at 418.

f. *"a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis which is the axis experiencing the largest effect of gravity"*

Proposed substitute claim 23 requires "a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis which is the axis experiencing the largest effect of gravity." Petitioner asserts that the combination of Pasolini and Fabio teaches this limitation. *See* Mot. Amend Opp. 22–25; Mot. Amend Sur-Reply 12. Specifically, as Petitioner explains, "*Pasolini* discloses mov[ing] the device from the inactive state to an active state upon detection of at least one of three acceleration signal exceeding a threshold." Mot. Amend Sur-Reply 12 (internal quotation marks omitted); *see* Mot. Amend Opp. 23. "[I]n view of *Fabio*'s teaching of detecting acceleration in the main vertical axis," i.e., the axis experiencing the largest effect of gravity, Petitioner asserts "the combination of *Pasolini* and *Fabio* discloses power logic, as recited in substitute claim 23." Mot. Amend Sur-Reply 12 (internal quotation marks omitted); *see* Mot. Amend Opp. 23.

Patent Owner asserts that "neither Fabio nor Pasolini disclose 'a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis.'" Mot. Amend Reply 12. We disagree. Patent Owner's only explanation is "[t]he unamended 'upon' condition recites an explicit interrelationship which is itself meaningfully limiting yet not disclosed in any cited reference." *Id*. Patent Owner does not appear to contest that the *combined* teachings of Fabio and Pasolini disclose the disputed power-logic limitation. In short, Patent Owner's argument is not persuasive because it attacks Fabio and Pasolini individually, rather than their combined teachings. *See In re Keller*, 642

F.2d 413, 425 (CCPA 1981). We agree with Petitioner that the combination of Pasolini and Fabio teaches "a power logic to move the device from the inactive state to an active state upon detection of a change in the dominant axis which is the axis experiencing the largest effect of gravity."

g. "a device state logic to restore the device to one of: a last active state, a preset customized state"

Proposed substitute claim 23 requires "a device state logic to restore the device to one of: a last active state, a preset customized state." Petitioner asserts that Park teaches this limitation because "Park teaches a device that saves status data when it transitions from a normal mode to a suspend mode so that the state prior to entering suspend mode can be resumed when the device wakes up." Pet. 40 (citing Ex. 1010 ¶ 123). In particular, "[w]hen a 'suspend mode interrupt signal is generated . . . the CPU 10 stores the status data of the system and the network resources to the RAM 20 and then converts the system into the suspend mode." *Id*. at 40–41 (quoting Ex. 1014, 4:4–14). "When the device wakes up, 'the system status is returned to the status prior to the suspend mode on the basis of the stored system status data and then the corresponding application programs are restarted.'" *Id*. at 41 (quoting Ex. 1014, 5:37–40). Patent Owner does not challenge Petitioner's assertions in this regard. We agree with Petitioner that Park teaches logic to restore the device to a last active state.

Reason to Combine Park

Petitioner provides a sufficient reason why a skilled artisan would have combined Park's teaching of saving system status data when a device goes into a suspend mode and using the data to restore the system back to its pre-suspension state. Petitioner explains one skilled in the art would have been motivated to apply the teachings of Park to the asserted combination to

"enhance[] convenience to the user because the user does not have to manually put the device back into the state it was in before the device went to sleep." *Id*. at 27. Patent Owner does not challenge Petitioner's assertions in this regard. We conclude Petitioner has articulated sufficient reasoning with rational underpinning to support the legal conclusion that its proffered combination of Park, Mizell, Hyatt, Pasolini, and Goldman would have been obvious to one of ordinary skill in the art. *See KSR*, 550 U.S. at 418.

In sum, for the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of substitute claim 23 would have been obvious over the combination of Pasolini, Goldman, Hyatt, Mizell, Park, and Fabio.

D. MOTION TO AMEND SUMMARY

Because the Motion to Amend is non-contingent, we grant Patent Owner's motion as to cancellation of issued claim 22. After reviewing the entire record, we determine Patent Owner has satisfied the predicate requirements for considering a motion to amend as to substitute claim 23. However, we determine Petitioner has demonstrated by a preponderance of the evidence that the subject matter of substitute claim 23 would have been obvious over the combination of Pasolini, Goldman, Hyatt, Fabio, Mizell, and Park. We therefore deny Patent Owner's Motion to Amend as to proposed substitute claim 23. Because Petitioner has demonstrated by a preponderance of the evidence that the subject matter of substitute claim 23 would have been obvious over Pasolini, Goldman, Hyatt, Fabio, Mizell, and Park, we do not need to determine whether substitute claim 23 would have been obvious over Petitioner's alternate asserted grounds involving McMahan in place of Hyatt and Marvit in place of Fabio.

In summary:

Motion to Amend Outcome	Claim(s)
Original Claims Canceled by the Amendment	22
Substitute Claims Proposed in the Amendment	23
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	23
Substitute Claims: Not Reached	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Patent Owner's Motion to Amend is denied as to proposed substitute claim 23;

FURTHER ORDERED that claim 22 of the U.S. Patent No. 8,872,646 B2 is cancelled; 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.

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