

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOMTOM, INC., Petitioner,

v.

BLACKBIRD TECH, LLC d/b/a BLACKBIRD TECHNOLOGIES, LLC
Patent Owner.

Case IPR2017-02023
Patent 6,434,212 B2

Before DEBRA K. STEPHENS, THOMAS L. GIANNETTI, and
CHRISTA P. ZADO, *Administrative Patent Judges*.

STEPHENS, *Administrative Patent Judge*.

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

I. INTRODUCTION

We have authority to hear this *inter partes* review under 35 U.S.C. § 6(c), and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that TomTom, Inc. (“Petitioner”) has shown by a preponderance of the evidence that claims 1–5 of U.S. Patent No. 6,434,212 B2 (Ex. 1001, “the ’212 patent”) are unpatentable and Petitioner has not shown by a preponderance of the evidence that claims 6–8 of the ’212 patent are unpatentable.

A. *Procedural History*

Petitioner filed a Petition requesting an *inter partes* review of claims 1–8 (“the challenged claims”) of the ’212 Patent (Paper 1 (“Pet.”)).

Petitioner relies on the following references in asserting their grounds:

Levi et. al., U.S. Patent 5,583,776 (Ex. 1003 (hereinafter, “Levi”));

Jimenez et al., U.S. Patent 4,367,752 (Ex. 1002 (hereinafter, “Jimenez”)); and

Ebeling et. al., U.S. Patent 6,145,389 (Ex. 1004 (hereinafter, “Ebeling”))

(Pet. 4–5). Blackbird Tech LLC (“Patent Owner”) filed a Preliminary Response (Paper 6 (“Prelim. Resp.”)). Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review (Paper 7, “Dec.”) of claims 1–5 as

unpatentable under 35 U.S.C. § 103(a)¹ in view of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” (Dec. 36).

On April 24, 2018, the Supreme Court held that a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition (*SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018)). Subsequent to the holding in *SAS*, we modified our institution decision to institute on all challenged claims and all grounds presented in the Petition (Paper 10). Specifically, we modified our institution decision to include review of

Claims 1–8 under 35 U.S.C. § 103(a) as obvious over Jimenez, Levi, and “knowledge of a person having ordinary skill in the art”; and

Claims 1–8 under 35 U.S.C. § 103(a) as obvious over Jimenez, Ebeling, and “knowledge of a person having ordinary skill in the art”

(*id.*).

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 15, “PO Resp.”), to which Petitioner filed a Reply (Paper 17, “Reply”). Pursuant to guidance provided in the Patent Trial and Appeal Board issued an updated Trial Practice Guide (PTAB Trial Practice Guide Update (August 2018)). Patent Owner requested authorization to file a sur-reply (Exhibit 3002). We authorized Patent Owner to file a sur-reply (*id.*; Paper 21), and Patent Owner thus filed a Sur-Reply (Paper 19).

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 100 et seq. effective on March 16, 2013. The ’212 Patent issued from an application filed before March 16, 2013; therefore, we apply the pre-AIA versions of the statutory bases for unpatentability.

At the parties' request (Papers 18, 20), an Oral Hearing was held on December 11, 2018, a transcript of which is included in the record (Paper 24, "Tr.").

B. Related Matters

The parties advise us that the '212 Patent is at issue in the following:

Blackbird Tech LLC d/b/a Blackbird Technologies v. Garmin International, Inc. and Garmin USA, Inc., Case No. 16-CV-689 (D. Del.),

Blackbird Tech LLC d/b/a Blackbird Technologies v. Fitbit, Inc., Case No. 16-CV-683 (D. Del.),

Blackbird Tech LLC d/b/a Blackbird Technologies v. Aliphcom d/b/a Jawbone, Case No. 16-CV-684 (D. Del.),

Blackbird Tech LLC d/b/a Blackbird Technologies v. Sony Corp. et al., Case No. 16-CV-685 (D. Del.),

Blackbird Tech LLC d/b/a Blackbird Technologies v. Timex Group USA, Inc., Case No. 16-CV-686 (D. Del.),

Blackbird Tech LLC d/b/a Blackbird Technologies v. TomTom, Inc., Case No. 16-CV-687 (D. Del.), and

Blackbird Tech LLC d/b/a Blackbird Technologies v. Wahoo Fitness, Inc., Case No. 16-CV-688 (D. Del.)

(Pet. 1–2; Paper 4, 2). The '212 Patent was additionally at issue in IPR2017-01058 (*Garmin International, Inc. v. Blackbird Tech LLC d/b/a Blackbird Technologies*), now terminated, and IPR2017-02025 (*TomTom, Inc. v. Blackbird Tech LLC d/b/a Blackbird Technologies*), not instituted; and remains at issue in IPR2017-02012 (*Fitbit, Inc. v. Blackbird Tech LLC d/b/a Blackbird Technologies*) and IPR 2019-00275 (*Wahoo Fitness LLC v.*

Blackbird Tech LLC d/b/a Blackbird Technologies) (joined with IPR2017-02012).

C. *The '212 Patent*

The '212 Patent, entitled “Pedometer,” relates to a “pedometer having improved accuracy by calculating actual stride lengths of a user based on relative stride rates” ('212 Patent, Abstract). More particularly, the patent relates to “pedometers having a waist mounted stride-counting device and transmitter, and a wrist-mounted receiver and display” (*id.* at 1:9–11). The device calculates a distance walked or run based on converting a base stride length and a base stride rate to an actual stride length and using that to calculate distance traveled (*id.* at 1:12–17).

Specifically, a step counter, which is an inertia device, counts the number of steps a user takes (*id.* at 3:7–8). A data processor includes a data archive that stores historic data on stride length and pace and closed loop or fuzzy logic programming that continually or periodically replaces the base stride rate and length with recently calculated stride rates and lengths (*id.* at 3:39–47).

The pedometer of the '212 Patent may optionally require the user to operate a “sampling mode” (*id.* at 3:56–57). In this mode, a user walks or runs a predetermined distance with the distance then divided by the number of strides counted (*id.* at 3:58–62). The result is the average stride length, which is stored in the data archive as the “Base Stride Length” (*id.* at 3:62–64). The data processor further divides the number of strides by the time of the run or walk to calculate a “Base Stride Rate” (*id.* at 3:65–67).

According to the '212 Patent, using a fixed average stride length does not account for changes in the user's pace or improved performance (*id.* at 4:19–29). To correct for this, a “Use Mode” is activated that causes the data processor to calculate an “Actual Stride Rate” ('212 Patent, 4:30–33). The “Actual Stride Rate” is calculated periodically, based on data from the stride counter and the clock (*id.* at 4:30–36). An “Actual Stride Length” is calculated by determining a percentage change between the Actual Stride Rate and the Base Stride Rate (*id.* at 4:36–38). More specifically, the Actual Stride Length is calculated by the following formula:

$$\text{Actual Stride Length} = \text{Base Stride Length} + \text{Base Stride Length} * (((\text{Actual Stride Rate} - \text{Base Stride Rate})N) / \text{Base Stride Rate})$$

Where: N=1 when Actual Stride Rate is less than or equal to Base Stride Rate multiplied by 1.02, and N=3 when Actual Stride Rate is greater than Base Stride Rate multiplied by 1.02, although other N values in the range of one to three can be used

(*id.* at 4:50–58). To further improve accuracy, an N value is derived for the user by using a number of samples to establish Stride Length and N (*id.* at 5:1–6:9). Specifically, a first sample S1 establishes Base Stride and Base Steps Per Second:

$$S1 \text{ Stride} = \text{Base Stride} = \text{Distance} / \text{Number of Steps}$$

$$S1 \text{ Steps Per Second or } S1 \text{ Steps Per Second} = \text{Base Steps Per Second} = \text{Number of Steps Per Second}$$

(*id.* at 5:2–8). A second sample, S2, is then taken, with the user traversing the same distance at a faster pace (*id.* at 5:10–14). S2 is used to calculate an N2 value for each individual “which reflects the effect an increase in Steps Per Second has on this individual's stride length” (*id.* at 5:14–17).

$$N2 = ((S2 \text{ Stride} * S1 \text{ Steps Per Second}) - (S1 \text{ Stride} * S1 \text{ Steps per second})) / (S1 \text{ Stride} (S2 \text{ Steps Per Second} - S1 \text{ Steps Per Second}))$$

(*id.* at 5:26–28) where Fast Stride Length (S2) and Fast Steps Per Second (S2 Steps Per Second) can be calculated from the second sample S2 (*id.* at 5:29–32).

A third sample, S3, is acquired from a user traversing the same distance at a slower pace that does not exceed S1’s pace (*id.* at 5:33–36). An N3 value for each individual is calculated:

$$N2 = ((S3 \text{ Stride} * S1 \text{ Steps Per Second}) - (S1 \text{ Stride} * S1 \text{ Steps per second})) / (S1 \text{ Stride} (S[3] \text{ Steps Per Second} - S1 \text{ Steps Per Second}))$$

(*id.* at 5:47–54).

If: Actual Steps Per Second is less than or equal to Base Steps Per Second, Then: Stride Length=Base Stride+Base Stride*(((Actual Steps Per Second-Base Steps Per Second)N)/Base Steps Per Second) And N=N3 (Stored Value)

If: Actual Steps Per Second is [greater than] Base Steps Per Second, Then: Stride Length=Base Stride+Base Stride*(((Actual Steps Per Second-Base Steps Per Second)N)/Base Steps Per Second) And N=N2 (Stored Value)

(*id.* at 5:58–6:9 (reformatted)). The ’212 Patent further describes “[i]f an individual’s running or walking style is progressing with training and practice (as seen by significantly improved times), then it may be beneficial for them to “recalibrate their device by repeating the three samples every 3 to 6 months” (*id.* at 6:14–18).

Once the actual stride length is calculated for a given period of time, the value can be multiplied by the number of strides in that period to obtain a total distance for that period to be stored in a data archive file for that particular walk or run and added to other

actual stride lengths or distances for other periods in which stride length was calculated.
(*id.* at 6:34–38).

D. Challenged Claims

Petitioner challenges claims 1–8 of the '212 Patent (Pet. 4–5). The '212 Patent has four independent claims, 1, 2, 5, and 6, and four dependent claims, 3 and 4 (depending from claim 2), and 7 and 8 (depending from claim 6) (Ex. 1001, Claims). Claims 1 and 6 are illustrative of the challenged claims and are reproduced below:

1. An exercise monitoring device comprising:
 - a strap for releasably securing the exercise monitoring device to a user;
 - a step counter joined to the strap;
 - a heart rate monitor joined to the strap; and
 - a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted.

6. A pedometer comprising:
 - a step counter;
 - a transmitter in communication with the step counter to generate a step count signal corresponding to each step and transmit the step count signal;
 - a receiver mountable on a user body portion to receive the step count signal transmitted from the transmitter; and
 - a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by a stride length that

varies according to a rate at which steps are taken, and further programmed to derive an actual stride length from a range of stride lengths calculated from a range of corresponding stride rates.

II. ANALYSIS

A. *Claim Construction*

In an *inter partes* review filed before November 13, 2018, a district court-type claim construction approach may be applied if a party requests such a construction and certifies that the involved patent will expire within 18 months from the entry of the Notice of Filing Date Accorded to Petition, in a motion under 37 C.F.R. § 42.20.

Here, neither party submitted a motion for district court-type claim construction in accordance with 37 C.F.R. § 42.100(b), certifying that the challenged patent will expire within 18 months of the entry of the Notice of Filing Data Accorded to Petition, indicating Patent Owner did not oppose the motion (*compare* IPR 2017-02012, Papers 6, 8). In the Patent Owner Response, however, Patent Owner asserts the claim terms in the '212 patent should be construed under district court-type claim construction (PO Resp. 9–10).

In the Petitioner's Reply, Petitioner does not address Patent Owner's assertion (*see generally* Pet. Reply); rather, Petitioner asserts it "adopt[s] Patent Owner's proposed claim constructions for the purposes of this proceeding" and argues particular claim interpretations without addressing Patent Owner's proffered standard (Pet. Reply 3–5).

We adopt Patent Owner's approach and take judicial notice that the

patent will expire within eighteen months from the entry of the Notice of Filing Date Accorded to Petition. We thus apply district court-type claim construction, due to the expiration date of the patent and the desire for consistency in interpretation between this IPR2017-02023 and IPR2017-02012. We note our rules do not preclude us from deciding to apply district court-type claim construction under the circumstances presented here.

Under district court-type claim construction, claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record (*Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); see also *In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012) (“While claims are generally given their broadest possible scope during prosecution, the Board’s review of the claims of an expired patent is similar to that of a district court’s review.”) (internal citation omitted)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence” (*DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17)). There is a “heavy presumption,” however, “that a claim term carries its ordinary and customary meaning” (*CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted)).

We construe expressly the following terms.

1. “a plurality of calibrations”

In our Decision to Institute, we encouraged the parties to develop the record regarding the meaning of calibration (Dec. 22).

Patent Owner proposes “‘calibration’ should be construed as a ‘process which correlates a particular user’s stride rate and stride length’” (PO Resp. 11 (citing Ex. 2001 ¶¶ 27–29)). Specifically, Patent Owner asserts “calibration” must be specific to a user because of how claims 3 and 4 use the term “recalibration” (PO Resp. 12). Patent Owner also points to the ’212 patent’s Specification for support (*id.* at 13). Specifically, Patent Owner points to disclosure of “[a] preferred embodiment [that] uses a plurality of sample runs over known distances [*i.e.* calibration] to derive an accurate N value [the correlation coefficient relating stride length to stride rate] for ***each individual***” (*id.* at 13 (citing ’212 Patent, 2:56–59)). According to Patent Owner, “every embodiment of ‘calibration’ described in the ’212 Specification discusses a process by which ‘the user’ calibrates the device for his or her own stride rate/stride length correlation” (*id.*).

Patent Owner additionally directs us to an amendment in the prosecution history of U.S. Patent 6,175,608, parent to the ’212 patent, which shares a specification with the ’212 patent (PO Resp. 14). In that amendment, Patent Owner documented an Examiner interview (*id.* at 14; Ex. 1010, 101). Patent Owner states the Examiner had indicated that a distinction between the art of record and the present pedometer invention is the “use of data input from runs or walks over known distances to establish a range of stride rate versus stride length data that can be used in subsequent runs or walks to derive actual stride lengths from actual stride rates” (PO

Resp. 14; Ex. 1010, 101). This alleged distinction, however, is not mentioned in the Examiner's Interview Summary (see Ex. 1010, 104).

Petitioner does not provide an interpretation for "calibration"; rather, Petitioner argued the term "was not a disputed term in the district court litigation" and Patent Owner's proffered construction of "calibration" relies on a preferred embodiment from the Specification to read the phrase "for a particular user" into the claims (Reply 4–5). Petitioner asserts, however, that even if Patent Owner's proposed interpretation were to be adopted, the prior art would still render the claims unpatentable (*id.* at 5).

Turning to the '212 Patent's Specification, the only use of the term "calibration" is in discussion regarding a prior art patent:

U.S. Pat. No. 5,117,444 discloses pedometer and calibration method with two calibration modes. First, a user travels a predetermined "half-distance" for the device to count and store the number of strides in that distance. Next, the user travels a second distance with the step counter comparing actual steps to the steps in memory and a current trip memory are incremented by a tenth of a "whole unit" distance. There is no correlation between stride length and stride rate which requires the user to re-calibrate the device when walking as opposed to running.

('212 Patent, 1:56–65). Other disclosures in the '212 Patent discuss "recalibration" or "recalibrate," but do not provide any discussion as to how the term "calibration" or "calibrate" should be construed. For example, the '212 Patent describes

If an individual's running or walking style is progressing with training and practice (as seen by significantly improved times), then it may be beneficial for them to *recalibrate* their device by repeating the three samples every 3 to 6 months. If there are no significant improvements in time, then recalibration is not necessary

(*id.* at 6:14–19 (emphasis added); *see also* '212 Patent, 1:56–65, 4:25–28).

We find the '212 Patent is directed to data for a particular user (*see, e.g.,* '212 Patent, Abstract). This conclusion is supported by the Specification. Indeed, all discussion in the '212 patent is directed to a pedometer for use by and relying on data obtained from an individual user. Thus, the Specification suggests that the term “calibration” should be construed as a process that correlates a user’s stride rate and stride length. The Oral hearing confirms this conclusion. In the Oral Hearing, Petitioner’s counsel, Mr. Doshi, responded to a request to identify the calibration and the plurality of calibrations as follows:

JUDGE STEPHENS: So what are you pointing at in the 212 patent as being [a] calibration and the plurality of calibrations?

MR. DOSHI: That’s in column 5. So at column 5 it says that after a proper warm up the user completes a sample run or walk on the track at normal pace, et cetera, et cetera. So it's saying that here’s S1 and following completion of the first run, so here it’s saying you’re doing different walks at different speeds . . .where you're having the user walk at different walking speeds and measuring their step size as you do that

(Trans. 21:1–10; *see also* Tr. 19:4–7)

JUDGE ZADO: Okay. And then so taking that further then, I understand your argument to be that in the 212 patent the runner for the first sample S1 will run at one pace and that’s, according to Petitioner, that's one calibration and then the runner will run at a second pace for the S2 sample and that’s the second calibration, and then the runner will run at a third pace and then that's the S3 sample and then that's a third calibration? Is that Petitioner's argument?

MR. DOSHI: Yes

(Tr. 22:4–11). Therefore, based on Petitioner’s statements at the Oral Hearing, the term “calibration” should be construed as the process of taking a sample that correlates step rate and step length for an individual.

Patent Owner’s counsel, Mr. Davis, responding to our request to identify where the ’212 Patent discloses a calibration, asserted a portion of the Specification discusses the calibration:

JUDGE STEPHENS: So, Counsel, what do you point to in the 212 patent as the calibration, as a calibration?

MR. DAVIS: So, Your Honor, the Patent Owner’s response is instructive in this regard. On pages 12 and 13 of the Patent Owner’s response where we go into the construction of the term calibration there’s a section on the specification on page 13. This is not fully limiting but it’s certainly an example and you will see in that discussion on page 13. Your Honor, that we discuss a preferred embodiment that uses a plurality of sample runs over known distances to derive an accurate N value for each individual.

JUDGE STEPHENS: So then it’s the sample runs?

MR. DAVIS: Yes, Your Honor.

JUDGE STEPHENS: Each of the sample runs is a calibration?

MR. DAVIS: Yes, Your Honor.

(Trans. 31:14–32:2). Thus, Patent Owner’s response is consistent with their proffered construction of the term “calibration.”

We determine that the expert testimony in the case also favors this construction. In his deposition, Petitioner’s technical expert, Thomas Blackadar testified “[c]alibration would be to have an individual perform a known walk or run in order to capture their biometric parameters . . . I would

add to profile an individual” and “[t]o have an individual perform a series of known walk/run events to capture their physiological profile” (Ex. 1022, 52:7–15, 53:2–4).

Similarly, Patent Owner’s expert, Dr. Michael Caloyannides, testified “calibration should be construed as a process which correlates a particular user stride rate and stride length” (Ex. 1023, 54:4–7). Dr. Caloyannides further testified “I think calibration . . . only makes sense, rather, for [an] individual user. It makes no sense to average apples and oranges. For a particular user, it makes sense. Otherwise, there would be no need to recalibrate if one just averages out the whole world . . . it makes no [sense] to me to calibrate in any other way” (*id.* at 55:12–56:1).

Thus, both the parties’ experts are consistent in their interpretation of calibration as being a process particular to an individual user.

Accordingly, in light of the Specification, Patent Owner’s and Petitioner’s assertions, and both parties’ declarants’ statements, we construe the term “calibration” as “a process that correlates a particular user’s stride rate and stride length.”

2. *Additional claim terms*

We determine that no additional claim terms require express construction (*see Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (Only terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy)).

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations (*see Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966)).

“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” (*Apple v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc) (citations omitted)). “This requirement is in recognition of the fact that each of the *Graham* factors helps inform the ultimate obviousness determination” (*id.*).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable” (*Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”))). This burden never shifts to Patent Owner (*see*

Dynamic Drinkware, LLC v. Nat'l Graphics, Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review)). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements” (*In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016)).

Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. At this final stage, we determine whether a preponderance of the evidence of record shows that the challenged claims would have been obvious over the proposed combinations of prior art.

We analyze the instituted grounds of unpatentability in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention (*Graham*, 383 U.S. at 17). “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry” (*Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention (*In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995)). The level of ordinary skill in the art may be reflected by the prior art of record (*Okajima v. Bourdeau*, 261 F.3d 1350,

1355 (Fed. Cir. 2001)). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field (*GPAC*, 57 F.3d at 1579). In a given case, one or more factors may predominate (*id.*). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art (*Innovention Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”)).

The level of skill in the art is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis (*Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham*, 383 U.S. at 17–18; *Ryko Mfg. Co.*, 950 F.2d at 718)).

Petitioner’s declarant, Mr. Blackadar, opines that a person of ordinary skill in the art relevant to the ’212 Patent

would have been [1] a person with a bachelor’s degree in mechanical engineering, electrical engineering, or a similar field with at least two years of experience in motion tracking, motion analysis, inertial sensing, or signal analysis, or [2] a person with a master’s degree in mechanical engineering, electrical engineering, or a similar field with a specialization in motion tracking, motion analysis, inertial sensing, or signal analysis (Ex. 1005 ¶ 36; Pet. 16).

Patent Owner does not dispute the educational level or experiential aspects of Petitioner’s definition in its Response (*see generally* PO Resp.),

despite Patent Owner's declarant, Dr. Caloyannides, opining that the level of ordinary skill would not be so limited as proposed by Mr. Blackadar:

I note that although the qualifications Mr. Blackadar describes would qualify one as a PHOSITA in this case, I do not believe the definition of a PHOSITA here would be so limited. The technology of the '212 Patent implicates other fields, such as Sports Medicine, Exercise Science, and Physiology. I believe that a bachelor's degree in one of these fields, or a similar field, with at least two years of practical experience working with pedometers and/or health or fitness trackers or sensors, or an advanced degree in one of these areas, could qualify one as a PHOSITA in this case

(Ex. 2001 ¶ 26). Petitioner argues that Patent Owner's definition of a person of ordinary skill in the art would mean a "[person having ordinary skill in the art] under Patent Owner's definition would be more well-informed than Patent Owner's own expert" (Pet. Reply. 2); however, we do not read Patent Owner's assertion or Dr. Caloyannides' testimony as suggested by Petitioner. Rather, we read Dr. Caloyannides' testimony as expanding the fields of expertise.

We do not observe a meaningful difference between the parties' assessments of a person of ordinary skill in the art. We further note that either assessment appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art in the instant proceeding (*see Okajima*, 261 F.3d at 1355). Our analysis in this Decision is supported by either assessment. Based on our review of the '212 Patent, the types of problems and solutions described in the '212 Patent and cited prior art, and the testimony of Mr. Blackadar and Dr. Caloyannides, we adopt and

apply Mr. Blackadar’s definition of a person of ordinary skill in the art at the time of the claimed invention for purposes of this Decision.

D. Overview of the Asserted Prior Art

1. Jimenez

Jimenez is a patent entitled “Apparatus for Testing Physical Condition of a Subject” (Jimenez, [54]). Jimenez is related to “apparatus for testing the physical condition of a subject,” and in particular, “for testing the physical condition of a subject in response to signals indicative of heart activity of the subject and of the distance traversed by a limb of the subject during a timed testing period” (Jimenez, 1:6–12). Jimenez teaches combining monitored heart rate functionality and monitored distance traveled functionality into a single device that monitors both heart rate and distance traveled (*id.* at 1:8–2:10, 2:38–44).

2. Levi

Levi is a patent entitled “Dead Reckoning Navigational System Using Accelerometer to Measure Foot Impacts.” Levi is directed to an electronic, portable navigational method and system that use radionavigational data and dead reckoning for foot navigation (Levi, 1:8–11). According to Levi,

[t]he term “dead reckoning” (DR) refers to a position solution that is obtained by measuring or deducing displacements from a known starting point in accordance with motion of the user. Two types of DR are known: inertial navigation and compass/speedometer (*id.* at 1:13–17). Levi teaches incorporation of DR functions through use of a digital electronic compass with a silicon pedometer and a barometric

altimeter, with Global Positioning System (GPS) position information and digital maps to arrange an integrated navigation system that “provides advantages during GPS outages” (*id.* at 1:60–64, 2:5–11). Specifically, during GPS outages, “DR continuously tracks the user’s position without references to external aids or signals” (*id.* at 2:12–14).

Levi teaches the frequency of a user’s footsteps is used in determining the size of footsteps taken by the user (*id.* at 2:57–60). A silicon accelerometer, mounted or attached to the user, senses harmonic motions and impact accelerations that result from walking or running, and thus, provides acceleration data indicative of footsteps (*id.* at 3:13–20). Levi further teaches three different algorithms: peak detection algorithm, frequency measurement algorithm, and dynamic step size algorithm to be used (*id.* at 4:29, 5:20, 6:6).

The peak detection algorithm “allows determination of distance directly by a scale factor” (*id.* at 4:30–31). In the peak detection algorithm, accelerometer samples are taken and from each sample, it is determined if a peak over a threshold exists, thus, indicating a step (*id.* at 4:36–60, 5:9–11, Fig. 4). The frequency measurement algorithm is performed “primarily to obtain step size” because “[s]tep size is related to frequency” (*id.* at 5:21–23, Fig. 5).

In the dynamic step size algorithm “[a]s a user walks, faster, both the step size and the frequency of steps increases. This can be simply modeled as a linear fit to observed data at different walking speeds” (*id.* at 6:6–9, Fig. 5). The step size is initialized from stored default values, particular to an

individual person, generated during a calibration process (*id.* at 6:22–28, Fig. 7, step 701).

3. *Ebeling*

Ebeling is a patent entitled “Pedometer Effective for Both Walking and Running” (Ebeling, [54]). Ebeling is related to a pedometer that “accurately calculates the length of the strides taken by a user when walking and running,” by “using measurements of the acceleration of the wearer’s foot during each stride” (*id.* at Abstract). In Ebeling, “[t]he total distance traveled is computed as the sum of the individual stride lengths” (*id.* at 4:4–5). The length of each individual stride is calculated independently, from a profile data vector which includes “values that characterize the running stride” and walking strides length coefficients (*id.* at 4:5–6, 9:51–55, 10:24–34).

E. Alleged Obviousness of Claims 1–8 over Jimenez, Levi, and “knowledge of a person having ordinary skill in the art”

1. *Analysis*

Petitioner contends that claims 1–8 are obvious over the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art,” providing an element-by-element analysis identifying where each element is found (Pet. 19–52). Petitioner provides supporting testimony from its expert, Mr. Blackadar (Ex. 1005).

Patent Owner asserts the combination of Levi and Jimenez fails to teach “the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride

rate,” as recited in claim 2 and “a data processor . . . further programmed to derive an actual stride length from a range of stride lengths calculated from a range of corresponding stride rates,” as recited in claims 5 and 6 (PO Resp. 25–34). Patent Owner further argues Petitioner has not shown Levi teaches the recited “recalibration” process recited in claims 3 and 4 of the ’212 Patent (*id.* at 34–42). Patent Owner additionally asserts Jimenez fails to teach a “transmitter” and a “receiver,” as recited in claim 6 (*id.* at 42–46). Patent Owner additionally asserts Petitioner failed to establish that a person of ordinary skill in the art would have been motivated to combine the teachings and suggestions of Jimenez and Levi to achieve the recited claims (*id.* at. 34–43, 48–53). Petitioner provides supporting testimony from its expert, Dr. Caloyannides.

a. Claim 1

Petitioner asserts the limitations recited in claim 1 are taught by the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” (Pet 19-34). Petitioner sets forth detailed findings as to where the references teach or suggest each of the limitations (*id.*). Patent Owner does not proffer any arguments that the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” fails to teach or suggest claim 1 (*see generally* PO Resp.).

We agree with Petitioner and find that an ordinarily skilled artisan would have recognized Jimenez teaches or suggests the recited “exercise monitoring device,” (Pet. 19–20 (quoting Jimenez, 1:8–14, 2:38–44)); “strap for releasably securing” (*id.* at 20–22 (citing Jimenez, 16:35–39, 12:11–13,

Figs. 9, 13)); “step counter” (*id.* at 22 (citing Jimenez, 7:21–24)); and “heart rate monitor” (*id.* at 22–24 (citing Jimenez, 15:54–61, 65–68, 16:39–41)).

We further find Jimenez teaches housing that includes a microcomputer capable of calculating distance based on the number of steps and stride length to arrive at a calculated distance (*id.* at 24 (Jimenez, 2:56–62, 16:44–54)). Additionally, we find Levi teaches or suggests the recited “calculat[ing] a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted” (*id.* at 24–34). Specifically, we find Levi discusses “a step counter” and “determining a number of steps counted by the step counter” (*id.* at 24–26; *see also* Levi, claims 1, 4, 14, 15). We also find Levi teaches or suggests “a stride length that varies according to a rate at which steps are counted” (*id.* at 26–34 (citing Levi, 3:45–49, 6:6–43, Fig. 5, 7; quoting Levi, 3:66–4:11, 6:15–20, 22–43)). Lastly, we conclude an ordinary skilled artisan would have been motivated to combine the teachings and suggestions of Jimenez and Levi (*id.* at 31–34 (citing Ex. 1005 ¶¶ 88–96)).

We have reviewed the limitations and based on the entirety of the record before us, we determine that the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” teaches or suggests claim 1.

b. Claims 2 and 5

“stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate” — claim 2

“programmed to derive the stride length from a range of stride lengths calculated from a range of corresponding stride rates calculated from a plurality of calibration samples” — claim 5

Petitioner asserts that these limitations are met by Levi. In particular, Petitioner asserts Levi teaches “the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate,” as recited in claim 2 (Pet. 35–37); and “a stride length that varies according to the rate at which steps are counted,” as recited in claims 5 and 6 (Pet. 44–46, 47–49). According to Petitioner, Levi teaches “an algorithm wherein the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate” (*id.* at 35). Petitioner identifies step 701 of Levi as teaching the step size is initialized from default values stored in a configuration file and “[t]he configuration is particular to the individual person using the system and is generated during the calibration process” (*id.* (citing Levi, 6:22–28)). According to Petitioner, “Levi explains that the calibration curve is taken by measuring at least three step sizes at different speeds,” identifying Figure 5 as support (*id.* at 36 (citing Levi, 6:7–15, 7:37–52); Ex. 1005 ¶¶ 101–105)). Petitioner contends, “Levi’s dynamic step size algorithm adjusts the step sizes (or stride lengths) based on the plurality of calibrations” and identifies the discussion of Step 705 in which a new step size is calculated by $S = S_0 + m * (f - f_0)$, where “m is the slope of the

calibration curve’ based on the three speeds/step size” (Pet. 36–37 (citing Levi, 6:25–28, 40–42)). Petitioner then asserts a person having ordinary skill in the art would have understood that Levi discloses two or more calibrations, each generating a correspondence between step size (or stride length) and step frequency (or stride rate) (*id.* at 37; Ex. 1005 ¶ 105)).

Patent Owner contends Levi fails to teach the recited “plurality of calibrations” (PO Resp. 25–26). Initially, Patent Owner asserts that although Levi describes a calibration process, that process, shown in Figure 9, Levi’s calibration process and the description in columns 9 and 10 teaches “a single calibration procedure that results in a single new step size parameter,” not a calibration algorithm as recited in the claims (*id.* at 26–28). Patent Owner also asserts Mr. Blackadar testified that “he examined the process described in [Levi], which Levi calls ‘the calibration algorithm,’ but determined that it was not a calibration at all” but rather, a “nudge” (*id.* at 26–27 (citing Ex. 1022, 77:6–21)). Patent Owner further contends Levi’s “calibration algorithm,” described in columns 9 and 10, “is fundamental to the operation of the Levi device, and is the only description of the way such a device is calibrated” (*id.* at 26–27 (citing Ex. 2001 ¶ 49)). Thus, Levi’s calibration, according to Patent Owner, discloses a single calibration of stride rate to stride length — a single calibration used to generate a single set of default variables — not a “**plurality** of calibrations’ that generate stride lengths that correspond to a different stride rates” as required by independent claims 2, 5, and 6 (*id.* at 28).

Petitioner, however, relies on Figures 5 and 7 and accompanying discussion to teach the disputed limitation (Pet. 35–37, 44–45). We note the

teaching in the prior reference need not be *ipsissimis verbis* (*Structural Rubber Products Co. v. Park Rubber Co.*, 749 F. 2d 707, 716 (Fed. Cir. 1984)). “While [] elements must be “arranged or combined in the same way as in the claim,” (*Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008)), the reference need not satisfy an *ipsissimis verbis* test (*In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990))” (*In re Gleave*, 560 F.3d 1331 (Fed. Cir. 2009)). Thus, Patent Owner’s arguments based on Levi’s use of the term “calibration” are not persuasive.

Patent Owner additionally asserts Figure 5 to which Petitioner points, does not show a plurality of calibration for a single user but rather “concerns two different users” (PO Resp. 29). According to Patent Owner, although Levi describes a “calibration curve,” it is shown in Figure 1, not Figure 5, and Figure 1 describes a “calibration curve of speed versus fundamental frequency for two different users” (*id.* (citing Levi, 2:25–26), 29, 36). Thus, Patent Owner asserts, Petitioner’s reliance on Figure 5 of Levi to “perform a plurality of calibrations relating step size (stride length) to step frequency (stride rate)” is misplaced because Figure 5 does not show a plurality of calibrations for a single user (*id.* (citing Pet. 28, 36; Ex. 2001 ¶ 50)). In particular, Patent Owner disputes Petitioner’s argument that three points on the graph of Figure 5 in Levi, correspond to three calibration samples from a single test subject (*id.* at 30). Rather, Patent Owner contends, Levi’s Figure 5 is simply an illustration of the relationship determined through lab experiments that do not correspond to three calibration samples from a single test subject (*id.* at 30–31). Patent Owner then argues Levi’s discussion of Figure 5 describes “the configuration is particular to the

individual person using the system and is generated during the calibration process” (Levi, 6:23–25); however, that calibration process “is only described in Levi Figure 9 and corresponding disclosures in columns 9 and 10” and is described as a single “new step size” (Levi, 10:14, Figure 9, step 906), not a plurality of calibrations (PO Resp. 32).

We agree with Petitioner that Levi describes the observed data shown in Levi’s Figure 5 are for a single user (Pet. Reply 8–11). Initially, we note Figure 1 is described as illustrating acceleration data resulting from walking at a specific speed on a treadmill during lab experiments (Levi, 3:38–40). Specifically, Figure 1 discloses speed plotted versus fundamental frequency for two different users (*id.* at 2:25–26, Fig. 1). Levi describes that simple pulse counting acquired through use of an accelerometer, is unreliable:

This data indicates that simple pulse counting is unreliable for counting the acceleration peaks that correspond to footsteps . . . Simple pulse counting is the method used by existing pedometers.

The present invention combats problems associated with simple pulse counting by extracting the fundamental frequency of *a hiker’s footsteps*, using digital signal processing techniques (*id.* at 3:40–49 (emphasis added)). Levi then describes an approach to combat this problem. “[A] fundamental frequency is determined for each speed of a hiker, by collecting acceleration peaks corresponding to *the user’s* footsteps at that speed, taking an FFT of the data, and recording the fundamental frequency for *the hiker* at that speed” (*id.* at 3:52–57 (emphases added)). Thus, Levi discloses the fundamental frequency is of a *hiker’s* footsteps.

Petitioner contends an ordinarily skilled artisan “would have understood [Figure 5] shows a calibration process involving three different step rates that correlate to three different step sizes” (Pet. 36 (citing Ex. 1005 ¶¶ 101–105)). Petitioner then asserts “Levi’s dynamic step size algorithm adjusts the step sizes (or stride lengths) based on the plurality of calibrations in Step 705” (*id.* at 36–37).

Levi describes the Dynamic Step Size Algorithm with references to Figures 5 and 7 to account for a user’s changing step size and frequency of steps due to changes in the user’s speed (Levi, 6:6–43). Figure 5 of Levi, illustrates the linear relationship between frequency of a user’s steps and step size, and is shown below:

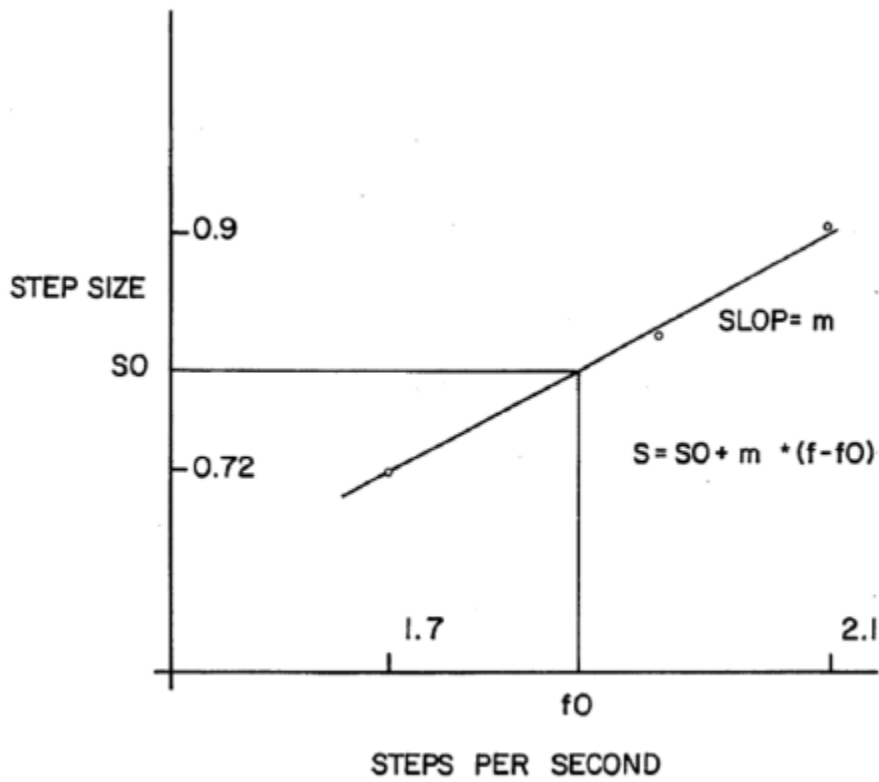


FIG. 5

Levi teaches that Figure 5 “illustrates the relationship between frequency of *a user’s* steps and step size” (Levi, 2:34–35 (emphasis added)). Levi describes:

[a]s *a user* walks faster, both the step size and the frequency of steps increases. This can be simply modeled as a linear fit to observed data at different walking speeds. Looking at the *calibration data* shown in FIG. 5, as the number of steps increases from 1.7 to 2.1 steps per second, for example, the step size increases from 0.72 meters (2.36 feet) to 0.90 meters (2.95 feet).

(*id.* at 6:7–15 (emphases added)). Levi discloses developing this linear fit model based on a user’s observed data at different walking speeds (*id.*).

Levi refers to this data as “calibration data” (*id.*). Thus, Levi teaches or suggests that a user’s steps per second are plotted against the step size for that speed to acquire the linear function set forth in Figure 5. Specifically, Figure 5 describes m as the slope of the line created in plotting step size vs. steps per second (*id.* at Fig. 5). Therefore, both the description of the Figure 5 in the “Brief Description of the Drawings” (*id.* at 2:34–35) and the disclosure discussing Figure 5 (*id.* at 6:7–13) state the relationship shown is for *a user*.

Thus, we credit Mr. Blackadar’s testimony that an ordinarily skilled artisan would have understood Figure 5 to represent data from different walking speeds of 1.7 steps per second, 2.1 steps per second, and a rate in between for a particular user (Ex. 1005 ¶¶ 103–104; Ex. 1022, 57:2–58:6; Pet. Reply 10–11 (citing Ex. 1022, 67:4–68:8)). We further credit Mr. Blackadar’s testimony that an ordinarily skilled artisan would have understood that the slope m shown in Levi’s Figure 5, represents the linear fit of observed data (Ex. 1022, 72:2–73:9; Pet. Reply 11) and the values of S_0 and f_0 would be picked, as for example, a midpoint (Ex. 1022, 70:23–71:8).

Patent Owner next asserts that even though Levi’s “‘configuration file’ [referred to in discussion of Figure 7,] is particular to an individual[, that] does not mean that an individual performed a ‘plurality of calibrations’ to create that configuration” (PO Resp. 32). Rather, according to Patent Owner, the “configuration file” stores default values determined through lab experiments (*id.* at 32 n3 (citing Levi 4:4–5, 3:37–38, Fig. 1)).

Levi teaches that because step size directly affects the estimated DR (dead reckoning) distance, step size is adjusted according to step frequency (*id.* at 6:15–17). In particular, Levi teaches a dynamic scaling algorithm to adjust step size (*id.* at 6:17–20). Levi explains:

Step 701: The step size may be initialized from default values stored in a configuration file. *The configuration is particular to the individual person using the system and is generated during the calibration process.* Three constants are saved: S_0 , f_0 , and m . S_0 is the default step size, f_0 is the frequency at which there is no correction to S_0 , and m is the slope of the calibration curve

(*id.* at 6:22–28, Fig. 7, step 701 (emphasis added); Pet. 35–36).

Figure 7 of Levi, as shown below, “illustrates the dynamic step size algorithm of the presently preferred embodiment” (*id.* at 2:39–40).

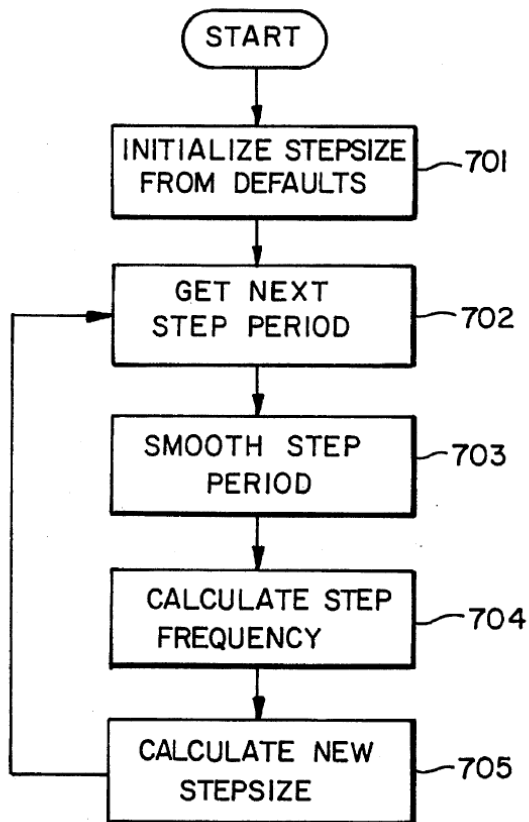


FIG. 7

(Levi, Fig. 7). Levi describes steps 701-705 used in the dynamic step size algorithm. Levi explains:

Step 701: The step size may be initialized from default values stored in a configuration file. *The configuration is particular to the individual person using the system and is generated during the calibration process.* Three constants are saved: S_0 , f_0 , and m . S_0 is the default step size, f_0 is the frequency at which there is no correction to S_0 , and m is the slope of the calibration curve

(*id.* at 6:22–28, Fig. 7, step 701 (emphasis added); Pet. 35–36).

Patent Owner asserts “Levi teaches that a user performs a single calibration (shown in Figure 9) to generate a single new ‘default step size’ (S0) which is stored in a ‘configuration file’ and *dictates* the step size/step frequency correspondence the Levi system assigns to that user” (PO Resp. 33 (emphasis added)).

We are not persuaded the “configuration process” discussed with reference to Figure 9, is the same configuration process contemplated in Step 701. Specifically, Levi discusses Directional Correcting and Position Fixing Algorithms Incorporating Digitized Maps with reference to Figure 9 (Levi, 6:44–45). One of these methods is a DR (Dead Reckoning) calibration that uses a digital map, and in particular, that “describes the calibration for both the compass and the ground speed/distance sensor as integrated with the digital mapping system” (*id.* at 9:53–54). The description of Figure 9, entitled “DR Calibration Using the Digital Map,” however, does not teach or suggest determining the default values S0, f0, or m — the configuration data in the configuration file referred to in Step 701. Patent Owner’s own expert admitted there is no explicit disclosure of the determination of S0, f0, and m in Figure 9 (Ex. 1023, 76:17–22, 77:19–78:2). The accompanying description of Figure 9 does not provide any discussion on determining S0, f0, or m. Rather, in Step 902, Levi describes that “the current step size and compass offset are used to calculate a DR path” (*id.* at 9:64–65). Moreover, again, in Step 902, Levi teaches that “the user walks at a steady pace” (Levi, 9:63–64 (emphasis added)) but does not discuss determination of any steps/second (f0), or slope of a calibration curve (m).

Thus, we are not persuaded the data of the configuration file, S0, f0, and m contemplated with respect to Figures 5 and 7, are acquired by the method set forth in Figure 9. Rather, we are persuaded an ordinarily skilled artisan would have understood Levi as teaching the configuration files uses data for that user. In particular, Step 701 describes that “[t]he configuration is *particular to the individual person* using the system *and* is generated during the calibration process” (*id.* at 6:22–28 (emphases added)). That calibration data is stored in a configuration file which is then used in steps 702–705, as shown in Figure 7. Nevertheless, even the discussion accompanying Figure 9 is directed to an individual user performing the steps (*id.* at 9:63–64 (“The user walks at a steady pace”)).

Accordingly, upon review of the entirety of the record, we find the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” teaches “stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate,” as recited in claim 2 and “programmed to derive the stride length from a range of stride lengths calculated from a range of corresponding stride rates calculated from a plurality of calibration samples,” as recited in claim 5.

c. Claims 3 and 4

Claim 3 recites “the data processor is further programmed to recalibrate the stride length as a function of a subsequently calculated and known stride rate” (’212 Patent, claim 3). Petitioner, relying on its expert, Mr. Blackadar, contends an ordinarily skilled artisan “would have been

motivated to allow a user to recalibrate the modified Jimenez device . . . because it was well known that stride lengths could change after conditioning and that recalibrating results in more accurate distance calculations” (Pet. 38 (citing Ex. 1005 ¶ 111); 41 (citing Ex. 1005 ¶ 111)).

In its Reply, Petitioner identifies portions of the ’212 Patent to support its position that recalibrating was well known and obvious (Pet. Reply 18–19). Petitioner further identifies Levi’s calibration technique described in Figure 6 and specifically, that “the step size is readjusted according to the newly-calculated [step] frequency” (Pet. 39–40 (citing Levi, 5:31–67)).

Moreover, as Mr. Blackadar testified, a PHOSITA [(Person Having Ordinary Skill in the Art)] would have been motivated to modify Jimenez in view of Levi and in view of the knowledge of a PHOSITA because it was well known that “recalibrating the stride length increases the accuracy of the distance calculation” (*id.* at 41 (citing Ex. 1005 ¶ 111)).

Patent Owner contends Petitioner has not shown Levi teaches the recited “recalibration” process recited in claims 3 and 4 (PO Resp. 34). Patent Owner further contends Petitioner originally identified Figure 6 as disclosing claim 3, but now points to different disclosure, neither of which teaches the limitation (*id.* at 35–36).

The ’212 Patent describes “If an individual’s running or walking style is progressing with training and practice (as seen by significantly improved times), then it may be beneficial for them to recalibrate their device by repeating the three samples every 3 to 6 months. If there are no significant improvements in time, then recalibration is not necessary” (’212 Patent, 6:14–19). The ’212 Patent also discusses a prior art pedometer and

calibration method that “requires the user to re-calibrate the device when walking, as opposed to running” (*id.* at 1:63–65) and “[w]ith old device a user needed to re-calibrate periodically to be close to getting an accurate reading” (*id.* at 4:26–29). Patent Owner agrees the recalibration disclosed in the ’212 Patent is repeating the three samples S1, S2, and S3 at a specified period (Tr. 37). Thus, in light of the ’212 Patent’s disclosure and Patent Owner’s agreement that recalibration is repeating the three samples, we find Levi teaches the recited calibration.

We further note that, according to Patent Owner, “Mr. Blackadar recanted his testimony with respect to claim 3, leaving Petitioner with no support for its arguments regarding that claim” (*id.*). We do not find Mr. Blackadar’s testimony to be inconsistent. In particular, Mr. Blackadar was asked whether Figure 9 disclosed a calibration process to which he responded “Yes. An additional calibration process, a subsequent one” (Ex. 1022, 74:4–7). He further testified that the process of Figure 9 was a “nudge calibration” and that “to recalibrate Levi, you always have to go back to the fundamental piece” (*id.* at 76:11–18). Mr. Blackadar additionally testified that if circumstances change, such as the wearing of heavier footwear, walking/running in a different environment, or improving fitness, “[t]he best thing to do at that point in time is to actually recalibrate your whole thing . . . you should really go do the three point calibration” (*id.* at 75:3–17, 82:9–17, 114:1–16). Thus, despite the testimony related to other sections of Levi, Mr. Blackadar maintained his position that it would have been obvious to repeat the three samples.

Accordingly, we are persuaded that an ordinarily skilled artisan would have found it obvious to repeat the process of gathering samples to account for changes in gait, fitness level, conditions, etc. Additionally, we find repeating the method described would not have been “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art” because the process would be the same as set forth in claim 1 – just done again (*see Leapfrog Enters., Inc. v. Fisher-Prince Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 416–19)).

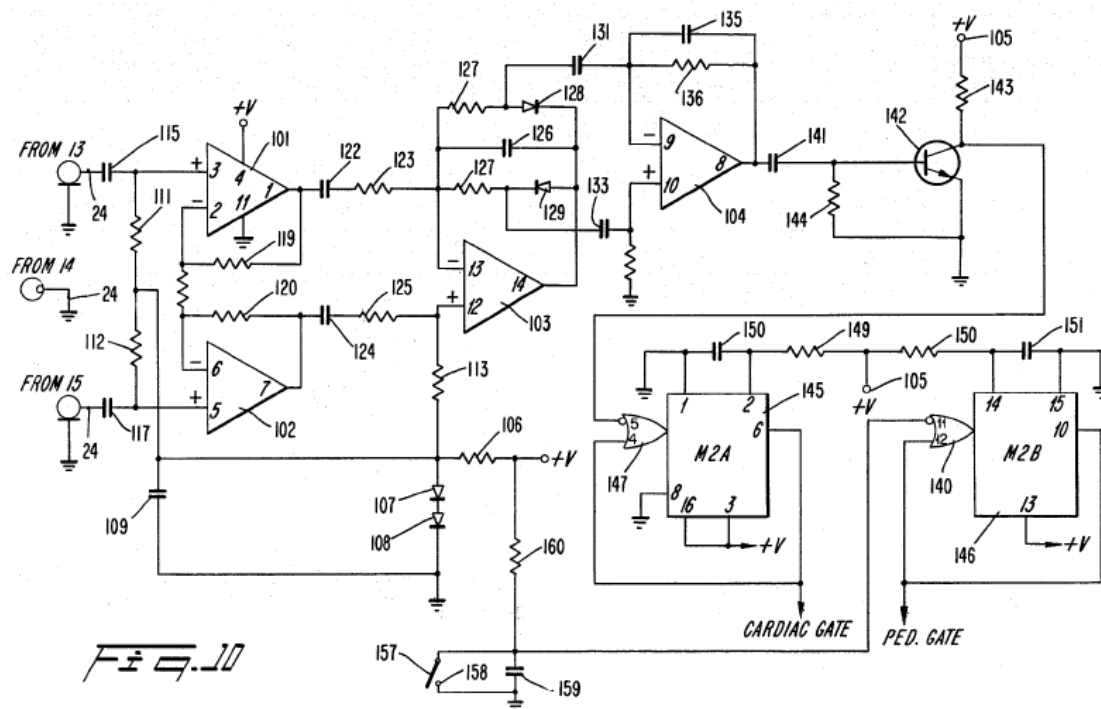
Therefore, upon review of the entirety of the record, we find the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” teaches or suggests the subject matter of claims 3 and 4.

d. “a transmitter . . . to generate a step count signal corresponding to each step and transmit the step count signal; a receiver . . . to receive the step count signal transmitted from the transmitter”– claim 6

Petitioner points to Jimenez’s discussion regarding microcomputer 301 as teaching “a transmitter in communication with the step counter” and “a receiver mountable on a user body portion to receive the step count signal transmitted from the transmitter,” as recited in claim 6 (’212 Patent, claims) (Pet. 46–47 (citing Jimenez, 18:59–19:1)). According to Petitioner, an ordinarily skilled artisan would have recognized Jimenez’s one shot 146 is the recited transmitter (*id.* at 47 (citing Ex. 1005 ¶ 128)) and Jimenez’s microcomputer 301 is a receiver that receives the step count signal transmitted from the one shot 146 (*id.*).

Patent Owner asserts “A ‘one shot’ is a type of monostable multivibrator[’] that is an electrical component used, in this context, to normalize the voltage wave input from a sensor. It is not, as Petitioner claims, a transmitter” (PO Resp. 44 (citing Ex. 1022, 94:176–20)).

Figure 10 of Jimenez is a circuit diagram of the electrocardiogram amplifier and filter circuitry in the instrument housing of an electronic instrument housing carried on a user's waist band (Jimenez, 5:60–62, 7:16–18), and is reproduced below.



As shown in Figure 10, Jimenez describes “one shot **146** [] functions as a pulse former for closing of pedometer switch contacts **157** and **158**” (*id.* at 14:51–53). “Each closure of pedometer switch contact **157** onto stationary contact **158**, each time the subject takes a stride, causes the voltage across

shunt capacitor **159** to be reduced substantially to ground, to produce a negative going pulse across capacitor **159**” which is then coupled through inverting input terminal **11** to a trigger input of one shot 146 (*id.* at 15:26–35). “Each such pulse is converted by one shot **146**” into a pulse having a predetermined amplitude and duration” (*id.* at 15:35–36).

Jimenez further describes microcomputer 301, shown in Figure 11, includes an arithmetic logic unit which “responds to signals” from various components including “pedometer signals from one shot **146**” (*id.* at 16:60–67).

In its Reply, to support their assertion that Jimenez’s one shot is a transmitter, Petitioner points to the ’212 Patent disclosure (Pet. Reply 12–13 (citing ’212 Patent, 3:12–17, 22–24)).

We are not persuaded a “one shot” is a “transmitter.” Rather, we agree with Patent Owner that Jimenez’s one shot 146 is not a transmitter, but instead, a type of monostable multivibrator (PO Resp. 44; PO Sur-Reply 1). Petitioner asserts that a monostable multivibrator is a “transmitter” (Pet. 46–47). Petitioner’s expert, Mr. Blackadar, testifies “It is my opinion that a PHOSITA would have understood ‘one shot 146’ in Jimenez as being a transmitter in communication with the step counter that generates a step count signal corresponding to each step and transmits the step count signal to the microcomputer (Ex. 1005 ¶ 128). Mr. Blackadar further testifies

The One-Shot Monostable Multivibrator is a computer component in an analog computer. It is programmed by the capacitor and the resistance network; thus, it is a single computing element that is determining what information to send. . . it’s preprocessing the information and then sending it out to a microcontroller. So it’s

transmitting it to a microcontroller. And the microcontroller receives the information.

The same is true for the ECG monitor. It works on the same premise.

(Ex. 1022, 98:3–12). Mr. Blackadar relies on the '212 Patent alternate embodiment, — the transmitter is a wired digital transmitter ('212 Patent, 3:14–17) — to support his position that Levi's one shot monostable multivibrator 146 is a transmitter (Ex. 1022, 98:22–100:15).

In our Oral Hearing, Petitioner indicated the term “transmitter” should be construed broadly so as to cover any electronic component that sends information out:

JUDGE GIANNETTI: -- other than your expert's testimony is there anything in the record that identifies a monostable multivibrator as a transmitter?

MR. DOSHI: Well it transmits a signal. It certainly takes the signal from the step counter and cleans it up and processes it.

(Tr. 11). Petitioner further indicated a transmitter “transmits a signal to the microprocessor” (*id.* at 12). Thus, Petitioner's interpretation of “transmitter” would include anything that processes and “transmits” a signal, e.g., an ECG monitor, a flip-flop, etc., all of which “process” and “transmit” and signal (*see, e.g.*, Tr. 11—12).

The '212 Patent describes:

The transmitter **34** is mounted in the step counter housing and is preferably an Rf telemetric signal transmitter with a 30 inches to 36 inches transmission range. Alternately, the transmitter is a wireless or wired digital transmitter with a coding function to limit or eliminate interference with other similar devices. The wireless transmission

range is set between 30 inches and 36 inches to provide adequate range to transmit signals from a user's waist to wrist, but not so far as to cause interference with other Rf or digital devices in the vicinity.

The transmitter **34** transmits either raw data or calculated distances, pace, etc. to a wrist-mounted display unit receiver **40**

('212 Patent, 3:12–24).

Petitioner relies on the description that the transmitter may be a wired digital transmitter ('212 Patent, 3:14–17). However, the description in the '212 Patent states “a wired digital transmitter *with a coding function* to limit or eliminate interference with other similar devices” (*id.* (emphasis added)). Whether the coding function would be necessary with a wired digital transmitter as asserted by Mr. Blackadar (Ex. 1022, 99:5–21) is irrelevant, as the '212 Patent describes the wired transmitter having a coding function. Petitioner admits that a monostable multivibrator does not have a coding function (Tr. 12) as does Petitioner's declarant (Ex. 1022, 99:22–100:7). Thus, the monostable multivibrator fails to meet the described transmitter in the identified disclosure in the '212 Patent.

Accordingly, Petitioner has not persuaded us an ordinarily skilled artisan would have understood a monostable multivibrator to be a transmitter. Rather, we credit Dr. Caloyannides' testimony that the “one shot” taught in Jimenez, “is a type of monostable multivibrator that is an electrical component used, in this context, to normalize the voltage wave input from a sensor. It is not a transmitter.” (Ex. 2001, 18).

In light of the Specification and evidence of record, we are not persuaded an ordinarily skilled artisan would have understood a one-shot to

be the recited transmitter. Upon review of the entirety of the record, we find the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” fails to teach independent claim 6 and thus, dependent claims 7 and 8.

e. Alleged Non-Analogous Art

Petitioner asserts Levi is concerned with the same field of invention as Jimenez, and particularly, that both references “were seeking to improve on prior art pedometers and/or exercise monitoring devices” (Pet. 25 (citing Ex. 1005 ¶ 78)).

Patent Owner contends Levi discloses “a navigational tool that is very different — in both purpose and function — from the ’212 Patent” (PO Resp. 46). Specifically, Patent Owner argues Levi’s system tracks a user’s location using a Global Positioning System (“GPS”), unless a GPS outage occurs during which Levi’s system uses dead reckoning to continuously track the user’s position (*id.* at 47 (citing Levi, 2:13-15)). According to Patent Owner “[t]he step-by[-]step ‘displacement’ measurements in Levi are fundamentally different from the ‘distance’ measurements in the ’212 Patent or Jimenez” (*id.*). In particular, Patent Owner contends, the ’212 Patent is concerned with “only one-dimensional **distance**” and calculates a total distance while Levi’s device continually monitors “the three-dimensional **displacement** of the user” and reports a current position (*id.* at 47–48 (citing Levi, 10:9–12)).

Petitioner, in its Reply, asserts “Levi discusses prior art pedometers like Jimenez that calculated distance by multiplying the number of steps

counted with an average stride length” (Pet. Reply 24—25 (citing Levi, 2:65–3:12)).

Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved

(*In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004)).

Here, Petitioner has persuaded us that Levi is from the same field of endeavor as the ’212 Patent — pedometers that count the number of steps taken to calculate distance traveled (*see* Pet. 20). Specifically, although Levi adds a navigation feature, Levi is directed to a pedometer that, in pertinent part, adjusts step size according to step frequency in order to estimate distance traveled by a user (Levi, 6:6–43). Levi states “[t]he present invention for a ground speed/distance sensor is an improvement over a common hiker’s pedometer” and “[t]he present invention analyzes the frequency of a user’s footsteps to aid in the detection of future footsteps, and further to aid in determining the size of footsteps taken by the user” (Levi, Abstract, 2:57–60, 2:65–67).

Similarly, the ’212 Patent is directed to a pedometer and specifically, a pedometer that calculates actual stride lengths of a user based on relative stride rates (’212 Patent, Abstract). Thus, both the ’212 Patent and Levi are from the same field of endeavor — pedometers or devices that include or rely on pedometers. Furthermore, both Levi and the ’212 Patent are pertinent to the particular problem with which the inventor is involved — accurate distance identification.

Patent Owner additionally argues “[t]he different problems addressed by Levi and the ’212 Patent are particularly evident in the context of exercising in place (*e.g.*, on a treadmill), where an exercise monitoring device will register and measure significant activity but where a navigation device will show no displacement at all” (PO Resp. 51 n7). Both references, however, are directed to measuring distance. Although Levi also describes techniques for navigation, Levi does measure distance walked and adjusts that if needed (*i.e.*, a user does not walk in a straight line). Levi’s specific use of “radionavigational data” and “dead reckoning” for foot navigation in its pedometers does not persuade us of a different result. Rather, these features are a complement to determining the distance traveled. Therefore, we determine Levi is analogous art.

f. Alleged Improper Combination of Jimenez and Levi

Petitioner asserts an ordinarily skilled artisan would have found it obvious to combine Jimenez and Levi because both are concerned with the same field of invention, and specifically, both “were seeking to improve on prior art pedometers and/or exercise monitoring devices” (Pet. 25 (citing Levi, 2:65–66; Ex. 1005 ¶ 78)). Petitioner further states:

A PHOSITA would have been motivated to combine the disclosures of Jimenez and Levi to achieve an exercise monitoring device that enables a user to 1) more accurately sense a user’s physical condition, including heart rate, to achieve “optimum benefit from aerobic exercise . . . at a target heart rate range of between 75% to 85% of maximum heart rate for a particular subject for at least twelve minutes” (see EX1002 at 2:15-19) while 2) ***monitoring the distance traveled more***

accurately than prior pedometers that calculated distance based on an average stride length. EX1005 at ¶90.
(Pet. 31 (emphasis added)). As support, Petitioner relies on Mr. Blackadar, who testifies that an ordinarily skilled artisan “would have been motivated to [program Jimenez’s processor] to more accurately calculate the distance” traveled (Pet. 33 (citing Ex. 1005 ¶¶ 95–96)). Mr. Blackadar further testifies that an ordinarily skilled artisan would have “understood that Jimenez’s microprocessor programmed to calculate distance as taught by Levi[,] would have calculated distance by multiplying a number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted” and “expected to successfully combine the teachings . . . to achieve the predictable result of a pedometer capable of monitoring heart rate while more accurately calculating distance because it was well known” that a data processor as taught by Jimenez and Levi, could be programmed “to take advantage of the known relationship between stride rate and stride length” (*id.* at 33–34 (citing Ex. 1005 ¶¶ 95–96)).

Patent Owner asserts Petitioner has failed to articulate a proper motivation to combine Levi’s navigation system with Jimenez’s exercise monitor (PO Resp. 48). Although Patent Owner acknowledges that Petitioner relies on Jimenez for all elements of each independent claim, “other than an algorithm that relates stride rate to stride length” for which Petitioner relies on Levi, Patent Owner asserts that Petitioner only provides a conclusory statement to support its contention that an ordinarily skilled artisan would have been motivated to combine the teachings of the two references (*id.* at 48–49). Patent Owner contends Levi’s distance calculation

is not more accurate than Jimenez’s because “Levi calculates a geographical displacement based upon two map locations” and thus, an ordinarily skilled artisan would not have been motivated to combine the teachings (*id.* at 49 (citing Levi, 10:3–5; Ex. 2001 ¶ 63)).

Initially, we note “[t]he test for obviousness is . . . what the combined teachings of the references would have suggested to those of ordinary skill in the art” (*In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (citations omitted)). Here, it is whether the combined teachings of Jimenez and Levi would have suggested the limitations recited in claims 1–8 to an ordinarily skilled artisan at the time of the invention. Moreover, that Jimenez teaches a pedometer does not negate that an ordinarily skilled artisan would have sought to improve the technology.

As acknowledged by Patent Owner, Petitioner relies on Jimenez to teach calculating distance based on the number of steps and stride length to arrive at a calculated distance and Levi to teach the recited “stride length that varies in accordance with a stride rate, wherein the stride length is determined with reference to a plurality of calculations that each calculate a stride length as a function of a known stride rate” (Pet. 24, 35–37). Therefore, arguments directed to Levi’s other features are not persuasive. In particular, Patent Owner’s arguments that dead reckoning for foot *navigation* is “notoriously inaccurate” (PO Resp. 49–50) are not directed to Levi’s algorithm to calculate stride length.

Patent Owner additionally argues Levi’s algorithm “attempts to determine the geographical displacement of a user . . . using a single calibration” (*id.* at 50). Patent Owner specifically contends “the Levi system

determines a user's default step size (S0) through one calibration process and then matches the user to a predetermined linear step-size-to-step-frequency curve that is generic to all users with a similar default step size" (PO Resp. 50). As set forth above, we determine Levi's step-size to frequency curve is not "generic to all users with a similar default step size," but rather is for an individual user.

We further find unavailing Patent Owner's contention that "a PHOSITA would actually regard Levi as teaching away from the '212 Patent because Levi does not even acknowledge the problem addressed by the '212 Patent, let alone the solution of the '212 Patent" (*id.* at 51 n7 (citing Ex. 2001 ¶ 68)). A reference may be said to teach away from the invention if it criticizes, discredits, or otherwise discourages modifying a reference to arrive at the claimed invention (*see In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)). We will not "read into a reference a teaching away from a process where no such language exists" (*DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006)). Here, Patent Owner has not pointed to any language in Levi criticizing, discrediting, or otherwise discouraging the solution of the '212 Patent. Therefore, we do not find Levi teaches away from the '212 Patent.

Patent Owner next argues "Jimenez discloses its own distance calculation system: a user enters their (constant) step size, and the Jimenez device multiplies that length by the number of steps it counts" (PO Resp. 51–52). Specifically, Patent Owner contends that Jimenez describes storing "predetermined, constant physiological parameters" as a feature and "not a shortcoming that requires a more advanced methodology" (*id.* at 52 (citing

Jimenez, 4:46–49, 2:55–60)). Patent Owner asserts Petitioner provides a conclusory statement (*id.* at 52). According to Patent Owner, although it was known “a user’s stride length could vary with her stride rate[,] the precise relationship between those two inputs was anything but settled in 1998” (*id.*). Thus, Patent Owner argues, although an ordinarily skilled artisan may have “noted that Levi recognized that step size and step frequency are related (which was common knowledge at the time),” an ordinarily skilled artisan “would also have recognized Levi as disclosing an inflexible and inaccurate method of correlating the two inputs” (*id.* (citing Ex. 2001 ¶ 71)).

A holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed” (*KSR Int’l v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)). Such a showing requires

some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

(*id.* at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)) (internal quotation marks omitted)).

As admitted by Patent Owner, an ordinarily skilled artisan would have known a user’s stride length could vary with stride rate at the time of invention (*see* PO Resp. 52). As noted by Petitioner, Levi discloses using a dynamic step size algorithm that “improve[s] the accuracy of distance

measurements of a human footstep sensor” (Pet. Reply 25 (citing Levi, 6:17–21)). We further credit Mr. Blackadar’s testimony that an ordinarily skilled artisan would have been motivated to improve Jimenez using Levi’s dynamic step size algorithm, to improve the calculated distances (Ex. 1005 ¶¶ 92). Indeed, we find that an ordinarily skilled artisan would have been motivated to combine the teachings of Jimenez and Levi to “monitor [] the distance traveled more accurately than prior pedometers that calculated distance based on average stride length” (Pet. 31 (citing Ex. 1005 ¶ 90), 32 (citing Ex. 1005 ¶ 92)). In particular, we find that, given it was known a user’s stride length could vary with stride rate, as admitted by Patent Owner (PO Resp. 52), an ordinarily skilled artisan would have been motivated to implement a data processor that accounted for this relationship, such as that described in Levi (Pet. 32–33 (citing Ex. 1005 ¶¶ 93–94)).

Accordingly, we find Petitioner has articulated reasoning with some rational underpinnings as to why an ordinarily skilled artisan would have been motivated to combine Jimenez’s monitor with a pedometer.

2. *Conclusion*

Based on the entirety of the record before us, we find Petitioner has established by a preponderance of the evidence, that claims 1–5 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Jimenez, Levi, and “knowledge of a person having ordinary skill in the art.” Petitioner, however, has not established by a preponderance of the evidence, that claims 6–8 are unpatentable under 35 U.S.C. § 103(a) as obvious over Jimenez, Levi, and “knowledge of a person having ordinary skill in the art.”

F. Alleged Obviousness of Claims 1–8 over Jimenez, Ebeling, and Knowledge of a Person Having Ordinary Skill in the Art

1. Analysis

Petitioner contends that each element of claims 1–8 is taught by the combination of Jimenez, Ebeling, and knowledge of a person having ordinary skill in the art (Pet. 52–57). Petitioner also provides supporting testimony from its expert, Mr. Blackadar (Ex. 1005 ¶¶ 144–197).

In response, Patent Owner contends the combination of Jimenez and Ebeling fails to teach a correlation between a user’s stride rate and stride length to calculate distance or that a stride rate is captured at all (PO Resp. 39). Patent Owner further argues Jimenez fails to teach the “transmitter” and “receiver,” as recited in claim 6, and asserts no motivation has been articulated for combining the teachings of Jimenez and Ebeling (PO Resp. 38–46, 53–54).

a. “stride length” — claims 1, 2, 5, and 6

Petitioner asserts Jimenez teaches “a microcomputer capable of calculating distance based on the number of steps and stride length to arrive at a calculated distance” (Pet. 53 (citing Jimenez 2:56–62, 18:59–19.1)). Relying on Mr. Blackadar, Petitioner then asserts an ordinarily skilled artisan “would have known that the constant (or single) stride length used by Jimenez’s device would have resulted in inaccurate distances because it was well known that stride lengths increase with stride rate” (*id.* (citing Ex. 1005 ¶ 146 (citing Ebeling, 1:22–27))). Petitioner thus relies on Ebeling “to solve these deficiencies by using the frequency of steps to determine stride length and to calculate the distance traveled” (Pet. 53–55). Petitioner further relies on Ebeling’s teaching of a formula for computing walking stride lengths and

running stride lengths (Pet. 55 (citing Ebeling, 10:26–34)). Petitioner then asserts Ebeling’s data vector includes “a value corresponding to ‘[t]he duration of the stride, defined as the elapsed time between the start of the stride (503) and the end of the stride (520)’” (*id.* (citing Ebeling, 9:53–55)).

According to Petitioner, an ordinarily skilled artisan “would have been motivated to program [Jimenez’s] processor [] to more accurately calculate the distance traveled” and account for the relationship between step size (or stride length) and step frequency (Pet. 56–57 (citing Ex. 1005 ¶¶ 155–156)). Petitioner then contends an ordinarily skilled artisan “would have calculated distance by multiplying a number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted” (*id.* at 57 (citing Ex. 1005 ¶ 158)).

Patent Owner contends “Ebeling does not teach or suggest an algorithm that correlates a user’s stride rate and stride length to calculate distance, or indeed, that a stride rate is captured at all” (PO Resp. 38–39). Specifically, Patent Owner contends Ebeling teaches “**“each stride is calculated independently”**” and “the distance is accurately calculated regardless of the stride rate” (*id.* at 39 (citing Ebeling, Abstract, 3:61–63, 4:5–8)). According to Patent Owner, “Ebeling uses acceleration and time from an individual stride to calculate an individual stride length” but does not “calculate a stride length as a function of a known stride rate” (PO Resp. 39).

Ebeling teaches “calculating the distance traveled by a person’s foot when that person is walking or running. The length of each stride is calculated accurately from data provided by an accelerometer” (Ebeling,

3:66–4:3). Specifically, Ebeling teaches computing stride length from the following formula:

$$\text{stride length} = a_0 + (a_1 \cdot d_1) + (a_2 \cdot d_2) + (a_3 \cdot d_3) + (a_4 \cdot d_4) + (a_5 \cdot d_5) + (a_6 \cdot d_6) + (a_7 \cdot d_7) + (a_8 \cdot d_8) + (a_9 \cdot d_9)$$

where the values d_1 through d_9 are nine values in the stride profile data vector [], and the values a_0 through a_9 are constant walking stride length coefficients stored in memory

(Ebeling, 10:26–34). The values d_1 through d_9 result from the stride analysis process (*id.* at 8:22–38, 10:1–3).

Patent Owner asserts Ebeling, at best, teaches that stride length varies according to an equation which uses the nine measurements; however, Patent Owner argues, Petitioner Patent Owner asserts Petitioner identifies only one measure of “[t]he duration of the stride, defined as the elapsed time between the start of the stride (503) and the end of the stride (520)” and then contends this measurement corresponds to the recited “stride rate” (PO Resp. 40–41). Patent Owner contends this duration of the stride is not the same as “stride rate” – “a ‘rate’ measurement with **both** a number and a time component” (*id.* at 41).

In its Reply, Petitioner contends “each step has a time component to it, to which Ebeling then assigns a stride length based in part on the duration of the step” (Pet. Reply 22–23). As support, Petitioner identifies Ebeling’s disclosure that “the user walks a predetermined distance *at a constant speed* and gait” (Ebeling, 10:45–11:2) and the testimony of Mr. Blackadar that “Ebeling discloses that the: ‘pedometer can fill in the distance of the missing strides by averaging the stride lengths for strides occurring before and after the missing strides’” (Pet. Reply 23 (quoting Ex. 1022, 106:2–5)).

Petitioner, however, has not identified any teaching in Ebeling to support its assertion that Ebeling teaches “a stride length that varies according to a rate at which steps are counted,” as recited in independent claim 1 and commensurately recited in independent claims 2, 5, and 6. Rather, Petitioner relies upon Ebeling’s disclosure that calculates stride length by dividing distance by number of steps taken.

In particular, as noted by Patent Owner, the duration of the stride, upon which Petitioner relies (Pet. 55), does not teach or suggest a stride rate — it teaches a time of a stride. Moreover, Petitioner has not explained adequately how this duration value (d1) is used in calculating the stride length, in a way that would teach “a stride length that varies according to a rate at which steps are counted,” as recited in claim 1; “the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate,” as recited in claim 2; and “deriv[ing of] the stride length from a range of stride lengths calculated from a range of corresponding stride rates,” as recited in claim 5 and commensurately recited in claim 6.

We are not persuaded by Petitioner’s declarant who asserts “A [person having ordinary skill in the art] would understand that the stride duration in Ebeling is analogous to the stride rate in the ’212 Patent” (Ex. 1005 ¶ 152). In particular, we are not persuaded an ordinarily skilled artisan would have found stride duration, a time measurement, to be analogous to stride rate, a distance per unit time measurement. Petitioner, when asked at the Oral Hearing, to explain where Ebeling teaches this limitation, pointed to Ebeling’s disclosure in column 10, lines 44 through 49, and Ebeling’s

discussion of stride length coefficients and stride duration, but provided no additional explanation as to where the stride rate is taught (Tr. 24:3–11, 44:5–47:6). Indeed, Ebeling’s disclosure in column 10, lines 44 through 49 discusses that stride length coefficients are derived during a calibration process requiring a user to walk a predetermined distance at a constant speed and gait. And, as discussed above, the stride length coefficient and duration of the stride do not teach the recited limitation.

Thus, we are not persuaded Ebeling teaches or suggests “stride length that varies according to a rate at which steps are counted,” as recited in independent claim 1 and as commensurately recited in independent claims 2, 5, and 6. It follows, we are not persuaded Ebeling teaches or suggests dependent claims 3, 4, 7, and 8.

Accordingly, based on the entirety of the record before us, we find Petitioner has not established by a preponderance of the evidence, that claims 1–8 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Jimenez, Ebeling, and “knowledge of a person having ordinary skill in the art.”

G. Assertion that Statutes Governing Inter Partes Review Require Dismissal of the Proceeding

Patent Owner asserts “[t]he Board’s partial institution decision [] was unlawful under 35 U.S.C. § 134, and the Board cannot correct that unlawful order by issuing an unauthorized and untimely Order attempting to modify the institution decision outside of the statutory period for issuing institution decisions” (PO Resp. 2, 15–22). Specifically, Patent Owner argues:

First, the Board's institution "modification" order [of its prior institution decision] improperly attempts to address, without the statutorily-mandated rulemaking, how to govern a proceeding covering all challenged claims and all asserted grounds, including those for which a petitioner failed to establish a reasonable likelihood of prevailing. Second, the Board lacks authority to modify an unlawful institution decision once the statutory timeframe for issuing an institution decision has expired. Because full institution of this IPR did not occur until after the three-month statutory period for making the requisite determination, the Agency has no authority to carry out this proceeding and the IPR must be terminated

(*id.* at 2). For those reasons, Patent Owner asserts the issuance of a final written decision in this case would be improper and seeks dismissal of the Petition (*id.* at 15–22). For the reasons discussed below, we reject both aspects of Patent Owner's reasoning and decline to dismiss the Petition on these bases.

1. *Modification of Decision to Institute*

In the Decision on Institution, we determined that Petitioner demonstrated a reasonable likelihood of prevailing on some claims and grounds, but had not demonstrated a reasonable likelihood of prevailing on other claims and grounds. We are not persuaded by Patent Owner's argument that, absent promulgation of new rules, we are precluded from reaching a final written decision with respect to the claims and grounds for which we determined Petitioner had failed to persuade us there was a reasonable likelihood of success at the time of institution of review. Rather, the current rules cover the scenario in which, at the time of institution of review, the Board determines Petitioner has not shown a reasonable likelihood of prevailing at trial on certain claim(s) and ground(s).

Specifically, as noted by Patent Owner (PO Resp. 17), 37 C.F.R. § 42.108(a) (2016) allows the Board to “authorize the review to proceed on all or some of the challenged claims and on all or some of the grounds of unpatentability asserted for each claim.”” Additionally, as also noted by Patent Owner (PO Resp. 17), 37 C.F.R. § 42.108(b) (2016) states “At any time prior to institution of *inter partes* review, the Board may deny some or all grounds for unpatentability for some or all of the challenged claims. Denial of a ground is a Board decision not to institute *inter partes* review on that ground.” Neither 37 C.F.R. § 42.108(a) nor 37 C.F.R. § 42.108(b) prohibit inclusion of claims or grounds for which we determined Petitioner had not shown a reasonable likelihood of prevailing at trial in our Decision on Institution.

Patent Owner further notes 37 C.F.R. § 42.108(c) provides that “*Inter partes* review ***shall not be instituted for a ground of unpatentability*** unless the Board decides that the petition supporting the ground would demonstrate that there is a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable” (PO Resp. 17 (quoting 37 C.F.R. § 42.108(c))). However, this rule does not prohibit *inter partes* review on all claims and all grounds; rather, 37 C.F.R. § 42.108(c) allows the Board to institute if “there is a reasonable likelihood that *at least one* of the claims challenged . . . is unpatentable.” Here, we found Petitioner had established a reasonable likelihood that *at least one* of the claims challenged is unpatentable (*see* Dec. 31–32, 36).

Accordingly, contrary to Patent Owner’s assertion, none of these referenced parts of 37 C.F.R. § 42.108 requires exclusion of any claim or

ground from an instituted proceeding—including those for which the Board has determined that Petitioner has not shown a reasonable likelihood that it would prevail in establishing unpatentability. Thus, the rules in effect at the time of institution of review in this proceeding already covered the situation in which the trial includes challenged claims and corresponding grounds of unpatentability for which the Petitioner has not shown a reasonable likelihood of prevailing.

Patent Owner further asserts:

In implementing these final rules, the Agency stated, “The Board will identify the grounds upon which the review will proceed on a claim-by-claim basis. Any claim or issue not included in the authorization for review is not part of the review.” 77 Fed. Reg. 48,689. Indeed, the Agency specifically stated that the regulations ***did not adopt*** comments requesting that “all challenged claims to be included in the *inter partes* review when there is a reasonable likelihood of prevailing with respect to one challenged claim.” Fed. Reg. 48,702–03

(PO Resp. 17–18). Thus, according to Patent Owner, the Board’s decision not to institute became “final and non-reviewable” when Petitioner did not request a rehearing as permitted under 37 C.F.R. § 42.71(c) (*id.* at 18 (citing 77 Fed. Reg. 48,702)). Patent Owner contends the Supreme Court decided partial institution decisions are unlawful in *SAS*; however, “no new rules have been promulgated and the modification order violated the still-existing rules by instituting a challenge[d] ground . . . for which there was no reasonable likelihood that at least one of the challenged claims was unpatentable” (*id.* at 18–19).

As with 37 C.F.R. § 42.108, however, such statements do not indicate the Board is *prohibited* from including all challenged claims in the *inter*

partes review—including when a petitioner shows a reasonable likelihood of success at trial with respect to just some (or even only one) of the challenged claims and just some (or even only one) of the asserted grounds of unpatentability (see, e.g., *FMC Techs., Inc. v. OneSubsea IP UK Ltd.*, Case IPR2016-00378, 2016 WL 5219870 (PTAB June 30, 2016) (instituting review “on all of the challenged claims and on all of the asserted grounds, as raised in the Petition,” upon finding a reasonable likelihood of success with respect to one claim)).

In summary, Patent Owner asserts that, for this case, issuing a final written decision on all challenged claims and grounds identified in the Petition is “expressly contrary to and specifically rejected by the regulations promulgated by the Agency to govern *inter partes* review,” and the Board “must adhere to its own rules and regulations” (PO Resp. 19 (citing *Reuters Ltd. v. FCC*, 781 F.2d 945, 950–51 (D.C. Cir. 1986))). According to Patent Owner, “the Board essentially operated under a new, *de facto* set of rules that did not go through any of these proper channels . . . the Board’s modification Order is improper as it constitutes improper rulemaking by the Board, and conflicts with 35 U.S.C. § 316 and the Administrative Procedure Act” (*id.* at 20).

For reasons discussed above, we reject Patent Owner’s contention that issuing a final written decision with respect to all challenged claims and grounds identified in the Petition is contrary to regulation, i.e., that it constitutes improper rulemaking or conflicts with 35 U.S.C. § 316 and the Administrative Procedure Act.

2. *Statutory Due Date*

Patent Owner additionally asserts “the Board lacks authority to modify an unlawful institution decision once the statutory timeframe for issuing an institution decision has expired” (PO Resp. 16). We are not persuaded that the statutory due date under 35 U.S.C. § 314(b) for determining whether to institute an *inter partes* review, was violated in this proceeding.

Patent Owner contends “The Board’s modification Order (Paper 10) attempted to bring the content of the Board’s Institution Decision into compliance with § 314(a), but the modification Order also fails to comport with the governing statute by violating the mandatory timing of institution decisions, 35 U.S.C. § 314(b)” (PO Resp. 20–21). Patent Owner further asserts that under 35 U.S.C. § 314(b), the Board’s statutorily-required decision whether to institute is due within three months of filing of Patent Owner’s Preliminary Response (*id.* at 21).

We agree with Patent Owner’s articulation of the due date for the Board to determine whether to institute *inter partes* review and also agree that in this case, because Patent Owner filed a preliminary response on December 13, 2017 (Paper 6), the due date for the Board to determine whether to institute review was March 13, 2018 (PO Resp. 21). Here, we decided to institute *inter partes* review on March 12, 2018 (Dec.).

Patent Owner argues, however, the Board’s complete determination of whether to institute an *inter partes* review did not occur until May 16, 2018, with the issuance of an Order (Paper 10), which was outside of the time period required under the statute (PO Resp. 21). According to Patent

Owner, “the Board’s final written decision must address all claims in the petition but a corrected institution decision instituting all claims and all challenges would be out of time” (*id.*). Thus, Patent Owner asserts, the Board should have dismissed the *inter partes* review “[b]ecause the Board’s attempt to correct the improper institution was untimely under 35 U.S.C. § 314(b)(1) and in violation of the Director’s obligation to engage in formal rulemaking under 35 U.S.C. § 316” (*id.* at 22).

We determine that Patent Owner’s contention is misplaced. In particular, we determine the question before us and decided by the U.S. Supreme Court in *SAS*, was not whether a partial institution decision was null and void, as though the Board never determined whether to institute an *inter partes* review, but whether the Board, after instituting an *inter partes* review, must issue a final written decision with respect to the patentability of every patent claim challenged by a petitioner. In *SAS*, the Supreme Court framed the issue before it as:

When the Patent Office initiates an *inter partes* review, must it resolve *all* of the claims in the case, or may it choose to limit its review to only *some* of them? The statute, we find, supplies a clear answer: the Patent Office must “issue a final written decision with respect to the patentability of *any* patent claim challenged by the petitioner.” 35 U.S.C. § 318(a) (emphasis added). In this context, as in so many others, “any” means “every.” The agency cannot curate the claims at issue but must decide them all

(*SAS*, 138 S. Ct. at 1352–1353). We recognize that the Supreme Court explained: “The Director, we see, is given only the choice ‘whether’ to institute an *inter partes* review. That language indicates a binary choice—either institute review or don’t” (*id.* at 1355). “The text says only that the

Director can decide ‘whether’ to institute the requested review—not ‘whether and to what extent’ review should proceed” (*id.* at 1356 (citing 35 U.S.C. § 314(b))). Thus, the Supreme Court did not hold that the Board’s institution decision in *SAS* was null and void. Rather, the Court in *SAS* simply recognized that, in the case before it, the Board instituted review, but incorrectly limited the scope of the review: “Because everything in the statute before us confirms that *SAS* is entitled to a final written decision addressing all of the claims it has challenged . . . the case is remanded for further proceedings consistent with this opinion” (*id.* at 1359–60).

Therefore, *SAS* did not preclude a scope correction of an already instituted case by the Board, including corrections made after the due date for the Board to decide whether to institute review. Similarly, the U.S. Court of Appeals for the Federal Circuit, subsequent to the Supreme Court’s decision in *SAS* and for the Board proceeding underlying *SAS*, did not vacate the Board’s initial institution decision in that proceeding (*see also AC Techs. S.A. v. Amazon.com, Inc.*, No. 2018-1433, slip op. at (Fed. Cir. Jan. 9, 2019) (“[N]either § 314(b)’s timing requirements nor § 314(d)’s limits on appealability alter the Board’s statutory obligation to rule on all claims and grounds presented in the petition.”) (citing *SAS*, 138 S. Ct. at 1356))).

Here, the Board’s decision on whether to institute review (Paper 7) was issued on March 12, 2018. The subsequent order (Paper 10) correcting the scope of review, dated May 16, 2018, did not change that the Board decided on March 12, 2018, to institute review. Thus, we determine that our Decision to Institute (Paper 7) was not unlawful.

Accordingly, Patent Owner’s assertion is not persuasive.

H. Assertion that Petitioner Cannot Salvage its Petition's Deficient Challenges Post-Institution

Patent Owner asserts “Petitioner is prohibited from introducing new theories of unpatentability in a reply or otherwise post-institution . . . in an attempt to remedy shortcomings identified in the Board’s Institution Decision” (PO Resp. 22 (citing 37 C.F.R. § 42.23(b); *Dell Inc. v. Accelaron, LLC*, 818 F.3d 1293 (Fed. Cir. 2016))). Specifically, Patent Owner contends the “sole permissible outcome” is for the Board to confirm the patentability of claims 6 through 8 under Ground 1 and all the claims under Ground 2, i.e., the claims for which the Board found Petitioner had failed to institute on (*id.* at 22–23). Patent Owner contends “SAS does not allow Petitioners to modify or otherwise pivot from the Petition’s challenges, which have already been deemed insufficient in the Board’s Institution Decision” (*id.* at 23). According to Patent Owner, Petitioner “is prohibited from introducing a newly modified argument of unpatentability post-institution, or new evidence or testimony in support of such improper argument” and, with respect to the non-instituted claims, nothing in SAS enables a different result in the final written decision than that set forth in the Decision to Institute (*id.* at 24).

We direct the parties’ attention to the Trial Practice Guide Update which states:

A petitioner may file a reply to a patent owner response, and a patent owner may file a reply to an opposition to a motion to amend. 37 C.F.R. § 42.23. Additionally, in response to issues arising from the Supreme Court’s decision in SAS (138 S. Ct. at 1358), the Board will permit the petitioner, in its reply brief, to *address issues discussed in the institution decision . . .* Petitioner *may not submit new evidence or*

argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability. But a petitioner may submit directly responsive rebuttal evidence in support of its reply. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1077–78 (Fed. Cir. 2015). If a party submits a new expert declaration with its reply, the opposing party may cross-examine the expert, move to exclude the declaration, and comment on the declaration and cross-examination in any sur-reply. *Id.* at 1081–82.

(*Trial Practice Guide Update* 14 (2018)). Thus, Petitioner is limited in issues that may be addressed, and evidence or argument that may be presented. The Trial Practice Guide Update further states that

Generally, a reply or sur-reply may only respond to arguments raised in the preceding brief. 37 C.F.R. § 42.23, except as noted above. To the extent that a reply or sur-reply “responds” to the institution decision as discussed above, “respond,” in the context of § 42.23(b), does not mean embark in a new direction with a new approach as compared to positions taken in a prior filing

(*id.* at 15). Therefore, Petitioner cannot “embark in a new direction with a new approach.” The Trial Practice Guide Update provides examples of new issues: new theories or arguments, such as a newly raised rationale to combine prior art references not expressed in the Petition; and new evidence that could have been previously presented, e.g., newly cited prior art references (*id.*). Similarly, sur-replies are held to a similar standard (*id.* at 14–15).

Therefore, to the extent the parties adhere to the Trial Practice Guide Update, the reply and/or sur-reply will be considered by the Board. The Board is not required to reach the same “outcome” as set forth in our Decision to Institute because the burdens of proof differ between institution

and final decision, and additional briefing and evidence may be proffered according to the rules, after the Decision to Institute.

I. Constitutionality of Alleged Retroactive Application of Inter Partes Review

Patent Owner argues “the express provisions of the Patent Act did not make patent revocable through *inter partes* review” (PO Resp. 54). According to Patent Owner, “Retroactively subjecting Patent Owner’s vested patent rights to new qualifications . . . presents a constitutional concern sufficient to preclude invalidation of the claims” (*id.* at 54–55). The United States Supreme Court has held that “inter partes review does not violate Article III or the Seventh Amendment” (*Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1379 (2018) (“*Oil States*”)). The Court did emphasize the narrowness of its holding, stating that *Oil States* did not challenge the retroactive application of *inter partes* review to patents that had issued before the process was put in place (*id.*).

In response, Petitioner contends *inter partes* review does not operate retroactively “because they do not ‘attach[] new legal consequences to events completed before [their] enactment’” (Pet. Reply 26 (citing *Landgraf v. USI Film Prods.*, 511 U.S. 244, 270 (1994))). According to Petitioner, “the PTO exercises a basic power to correct its own mistakes: cancelling issued patents that fail to satisfy the requirements of the Patent Act” through *ex parte* reexamination, *inter partes* reexamination, and *inter partes* review (*id.*). Thus, Petitioner contends, “Patent Owner has failed to articulate why

inter partes review ‘attaches new legal consequences to events completed before its enactment’” (*id.* at 26–27 (citing *Landgraf*, 511 U.S. at 270)).

The Board previously has declined to consider constitutional challenges because “generally, ‘administrative agencies do not have jurisdiction to decide the constitutionality of congressional enactments’” (*Square Inc. v. Unwired Planet LLC*, Case IPR2014-01165, slip op. at 25 (PTAB Oct. 30, 2015) (Paper 32) (quoting *Riggin v. Office of Senate Fair Emp’t Practices*, 61 F.3d 1563, 1569 (Fed. Cir. 1995))). We likewise decline to consider the merits of Patent Owner’s constitutional challenges.

III. CONCLUSION

For the foregoing reasons, we conclude Petitioner has established by a preponderance of the evidence that claims 1–5 of the ’212 Patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Jimenez, Levi, and “knowledge of a person having ordinary skill in the art.” We further conclude Petitioner has not established by a preponderance of the evidence that claims 6–8 of the ’212 Patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Jimenez, Levi, and “knowledge of a person having ordinary skill in the art” and that claims 1–8 would not have been obvious over Jimenez, Ebeling, and “knowledge of a person having ordinary skill in the art.”

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–5 of the '212 Patent have been shown to be unpatentable; and claims 6–8 of the '212 Patent have not been shown to be unpatentable; and

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

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