

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

IPR2024-00290
Patent 8,190,223 B2

Before RICHARD H. MARSCHALL, DAVID COTTA, and
ALYSSA A. FINAMORE, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

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

Petitioner Apple Inc. challenges claims 1–4, 6, 11–22, 27, 28, 32, 34, 36, 37, and 42–44 of U.S. Patent No. 8,190,223 B2 (Ex. 1001, “the ’223 patent”), which is assigned to Patent Owner Masimo Corporation. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we determine that Petitioner has shown that claims 1–3, 6, 11–17, 21, 22, 27, 28, 32, 34, 36, 37, and 42–44 are unpatentable and has not shown that any of claims 4 and 18–20 are unpatentable.

BACKGROUND

A. Summary of Filings

Petitioner filed a Petition requesting *inter partes* review of claims 1–4, 6, 11–22, 27, 28, 32, 34, 36, 37, and 42–44 of the ’223 patent. *See* Paper 2, (“Pet.”), 1. Patent Owner filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). With our authorization, Petitioner filed a Preliminary Reply (Paper 7), and Patent Owner filed a Preliminary Sur-reply (Paper 8). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review as to all challenged claims and all grounds raised in the Petition. Paper 9 (“Institution Decision” or “Inst. Dec.”).

After institution, Patent Owner filed a Response (Paper 13, “PO Resp.”), Petitioner filed a Reply (Paper 15, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 21, “PO Sur-reply”). The record includes a transcript of an oral hearing held on April 2, 2025. Paper 30 (“Tr.”). With our authorization, Patent Owner filed a post-hearing brief (Paper 27, “PO Post-hearing”), and Petitioner filed related Observations Regarding Cross-Examination (Paper 29).

B. Real Parties-in-Interest and Related Matters

Petitioner identifies itself as its only real party-in-interest. Pet. 88.
Patent Owner identifies itself as its only real party-in-interest. Paper 4, 2.

The parties identify *Apple Inc. v. Masimo Corp.*, No. 1-22-cv-01378 (D. Del.) (“Delaware Litigation”), involving the ’223 patent, as a related matter. Pet. 89; Paper 4, 1–2. Patent Owner also identifies as related matters the following *inter partes* review proceedings involving patents asserted by Patent Owner in the Delaware Litigation:

Petitioner	Case No.	Patent No.
Apple Inc.	IPR2024-00296	10,984,911
Apple Inc.	IPR2024-00243	10,722,159
Apple Inc.	IPR2024-00244	10,722,159
Apple Inc.	IPR2024-00293	10,736,507
Apple Inc.	IPR2024-00294	10,736,507
Apple Inc.	IPR2024-00241	10,687,743
Apple Inc.	IPR2024-00242	10,687,743

Paper 4, 1–2.

C. The ’223 Patent

The ’223 patent relates to a “multi-parameter patient monitor” capable of displaying multiple patient parameters in various display modes. Ex. 1001, code (57). The ’223 patent describes obtaining patient measurements from signals sent by optical sensors. *Id.* at 1:55–57. In one embodiment, the displays include mode indicators providing caregivers easily identifiable visual cues, “such as LED’s, text, icons, or other indicia” indicating which parameter is being displayed. *Id.* at 4:62–66. In addition, “the display may shift, may be parameter color-coded, or the like to further

ensure quick comprehension of which measured parameter is the displayed parameter.” *Id.* at 4:66–5:2.

We reproduce the '223 patent's Figure 11B below.

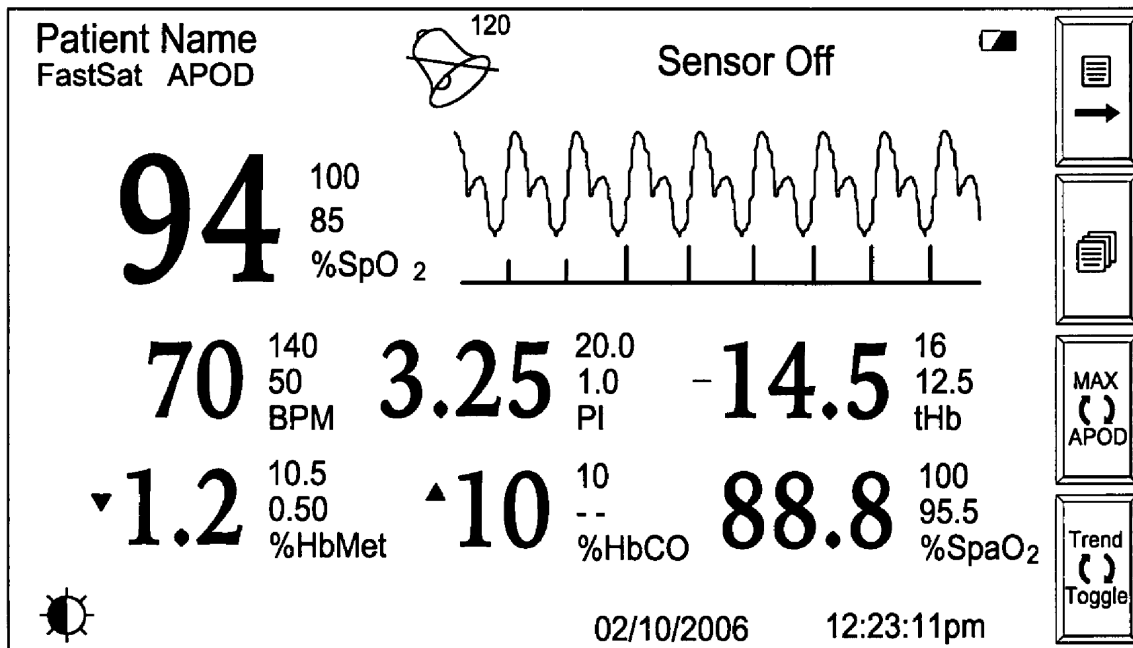


FIG. 11B

Figure 11B illustrates a display screen of the patient monitor described in the '223 patent. Ex. 1001, 4:39–43. The display shown in Figure 11B includes measured values for “a plurality of parameter data,” including the ability to show trending or prediction indicators for various parameters. *Id.* at 17:20–22, 17:42–47.

The '223 patent states that, in some embodiments, the patient monitor may employ “audio or visual alarms that alert the caregiver to particular one or more of worsening parameters” or indicate the severity of the condition or change in condition. Ex. 1001, 5:9–17. For example, “the patient monitor may automatically change display modes when a particular parameter

crosses one or more thresholds.” *Id.* at 5:17–19. In addition, the ’223 patent indicates that “an alarming parameter may automatically be displayed, may be emphasized, flashed, colored, combinations of the same or the like to draw a user’s attention to the alarming parameter.” *Id.* at 14:12–15. The ’223 patent also describes enlarging or reorganizing parameter data based on the severity of the measurement, or changing the location of the alarming value on the display “so as to be readily noticeable and its display values readily ascertainable.” *Id.* at 19:24–39.

D. Challenged Claims

Petitioner challenges claims 1–4, 6, 11–22, 27, 28, 32, 34, 36, 37, and 42–44¹ of the ’223 patent, with independent claims 1, 13, 15, 18, 21, 27, and 28 among the claims challenged. Pet. 1; Ex. 1001, claims 1–28; *see also* Pet. vi–xi (reproducing the text of all challenged claims as amended after reexamination). Claim 1, which illustrates the challenged subject matter, is reproduced below. *See* Pet. vi.

1. [1pre] A patient monitor capable of measuring at least two physiological parameters,

[1a] the patient monitor comprising a display capable of displaying a measured value of a first physiological parameter of body tissue of a monitored patient in a first display area or displaying a measured value of a second physiological parameter of the body tissue in a second display area where the first display area and the second display area comprise at least some common display area capable of displaying information,

[1b] wherein in the common display area, the display of one of the measured values of the first or second physiological

¹ The claims were subject to *ex parte* reexamination, and a reexamination certificate issued on April 24, 2013. *See* Ex. 1001, 39. We address the claims as amended after reexamination. *See id.* at 40–41; Pet. vi–xi.

parameter is replaced with the other of the measured values based on an occurrence of an event,

[1c] the event being the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.

Id. (using bracketed additions used by Petitioner).

E. Asserted Grounds of Unpatentability

Petitioner challenges the claims based on the following grounds (Pet. 1):

Claim(s) Challenged	35 U.S.C. §	Basis/Reference(s)
1–4, 6, 11–18, 20–22	103(a) ²	Naghavi, ³ Hochstedler, ⁴ Burnes ⁵
19, 27, 28, 32, 34, 36, 37, 42, 43	103(a)	Naghavi, Hochstedler, Burnes, Hayashi ⁶
42–44	103(a)	Naghavi, Hochstedler, Burnes, Hayashi, Mortz ⁷

Petitioner relies on the Declarations of Dr. Andrew Cockburn. *See* Exs. 1003, 1022. Patent Owner relies on the Declarations of Dr. R. James Duckworth. *See* Exs. 2002, 2042, 2046.

² Because the '223 patent issued from an application filed before March 16, 2013, the effective date of the amendment to 35 U.S.C. § 103 enacted by the Leahy-Smith America Invents Act (AIA), we apply the pre-AIA version of this section. *See* Ex, 1001, code (22); AIA, Pub. L. No. 112–29, § 3(n)(1), 125 Stat. 284, 293 (2011).

³ US 2002/0184055 A1, published December 5, 2002 (Ex. 1005, “Naghavi”).

⁴ US 6,707,476 B1, issued March 16, 2004 (Ex. 1004, “Hochstedler”).

⁵ US 2006/0064020 A1, published March 23, 2006 (Ex. 1006, “Burnes”).

⁶ US 6,151,518, issued November 21, 2000 (Ex. 1007, “Hayashi”).

⁷ US 6,385,471 B1, issued May 7, 2002 (Ex. 1009, “Mortz”).

ANALYSIS

A. Legal Standards

To prevail in its challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

Petitioner relies on obviousness in its challenges. Pet. 1. A claim is unpatentable as obvious under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which 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) where in evidence, so-called secondary considerations, also

known as objective indicia of nonobviousness.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (quoting *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007)). “The patent’s purpose can also be informative.” *Id.*

Petitioner refers to Dr. Cockburn’s declaration testimony for the definition of a person of ordinary skill in the art (“POSITA”). *See* Pet. 9 n.2 (citing Ex. 1003 ¶¶ 22). Dr. Cockburn testifies:

In my opinion, one of ordinary skill in the art relating to, and at the time of, the invention of the ’223 Patent would have had at least a bachelor’s degree in computer science, computer engineering, electrical engineering, biomedical engineering, human-computer interaction, or a related field, and would have had at least two years of relevant work experience in the design and development of graphical user interfaces (GUIs), human-

⁸ The parties do not address any objective indicia of nonobviousness in this proceeding.

computer interfaces, or equivalents thereof. Less work experience may be compensated by a higher level of education and vice versa.

Ex. 1003 ¶ 22.

Patent Owner, relying on Dr. Duckworth's testimony, provides a proposed definition of a POSITA that differs from Petitioner's proposal:

A POSITA at the time of the '223 Patent would be a person with a Bachelor of Science degree in an academic discipline emphasizing the design of software or user interfaces, in combination with training or at least one to two years of related work experience with the design of user interfaces. Alternatively, the person could have also had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline. A POSITA would also include persons with a working knowledge of physiological monitoring technologies and/or optical sensors used in physiological monitoring technologies. The person would have had a Bachelor of Science degree in an academic discipline emphasizing the design of electrical, computer, software, or optical technologies, in combination with training or at least one to two years of related work experience with capture and processing of data or information, or designing and using optical sensors or systems, including but not limited to physiological monitoring technologies. Alternatively, the person also could have had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline.

PO Resp. 19–20 (quoting Ex. 2042 ¶¶ 48–53).

In our Institution Decision, we deemed the differences in the parties' proposals not material due to their substantial overlap, adopted Patent Owner's proposal for purposes of that Decision, noted that the outcome of the Decision would not change if we adopted Petitioner's proposal, and instructed the parties to "explain the differences and their relevance to the patentability issues in this case, and state whether any issue in the case turns

on those differences” if either party continued to propose differing proposals during trial. Inst. Dec. 10–11. After institution, neither party has explained the materiality of the differences in their proposals or argued that any issues in this case turn on those differences.

Based on our review of the parties’ proposals, we find Patent Owner’s proposal consistent with the level of skill exemplified by the prior art of record and the disclosure of the ’223 patent. Accordingly, we apply Patent Owner’s proposal in our analysis in this Decision. *See Okajima*, 261 F.3d at 1355 (“[T]he prior art itself” may reflect an appropriate level of the ordinary level of skill in the art. (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))). The outcome of this Decision would not change if we applied Petitioner’s proposed definition.

C. Claim Construction

We construe each claim “using the same claim construction standard that would be used to construe the claim in a civil action” under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed Cir. 1996))). “The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368,

1375 (Fed. Cir. 2019) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

In the Petition, Petitioner asserts that “no claim terms need to be construed to resolve issues of controversy in the present Petition.” Pet. 3 (citing *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011)). In its Preliminary Response, Patent Owner asserts that we “should give the claims their ordinary and customary meaning” and that the claims “require no construction.” Prelim. Resp. 15 (noting that this is the same position it took in the Delaware Litigation).

In our Institution Decision, we determined that no terms required express construction at that time, but instructed the parties to set forth any proposed constructions if a dispute turns on the scope of a limitation. Inst. Dec. 12. We also noted that Patent Owner’s arguments addressing the prior art in its Preliminary Response appeared to assume that the claims are narrower than the language of the claims suggests, and counseled Patent Owner to support such an argument with proposed constructions and related argument if it continued to make such assertions during trial. *See id.* at 20–21 (“Patent Owner assumes, without adequate argument or evidence, that the claims require replacing one parameter with another parameter that does not previously appear anywhere on the display.”), 24 n.9.

In its Patent Owner Response, Patent Owner proposes constructions for “replace” and its variants in the challenged independent claims, “changes,” and “measured value.” PO Resp. 8–19.⁹ Petitioner disputes

⁹ Patent Owner also proposes constructions for “first” and “second” in the context of “the display of a *first* physiological or blood parameter, and a *second* physiological or blood parameter.” PO Resp. 10–11. Patent Owner

Patent Owner’s proposals. *See* Pet. Reply 3–13. We address each dispute in turn below.

1. Replaced/Replaces/Replacing

a. The Parties’ Positions

Independent claims 1, 15, 18, 21, and 27 each recite a limitation that refers to replacing one measured value of a physiological parameter with another measured value of a physiological parameter. *See* Pet. vi–ix. Claims 1, 15, and 18 require that “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values.” *Id.* at vi, viii. Claim 21 recites similar language but uses the term “replacing” while claim 27 uses the term “replaces.” *Id.* at ix. The parties treat these claim terms the same way without noting any differences for purposes of claim construction. *See* PO Resp. 8–19; Pet. Reply 3–13. For ease of reference, we will sometimes refer to “replaced” as the claim language at issue, but our analysis applies to the variants of this term in the independent claims.

Patent Owner argues that “a POSITA would have understood that when a measured value of a first parameter is ‘replaced’ by the measured value of a second parameter, the measured value of the first parameter is removed from display and the measured value of the second parameter is displayed in its place.” PO Resp. 18 (citing Ex. 2042 ¶ 79). In support of this construction, Patent Owner contends that (1) dictionary definitions

asserts that this language requires two different parameters. *See id.* Petitioner does not address this proposed construction. Pet. Reply 3–13. We adopt Patent Owner’s construction of “first” and “second” and apply it in our analysis of the prior art.

support reading “replaced” as “to take the place of;” (2) the specification “uses the term ‘replace’ consistent with this meaning” by, for example, referring to “replace the batteries;” (3) Figures 4 and 5 show replacement by removing a previously displayed parameter; and (4) requiring removal of a measured value from the display remains consistent with the purpose of the ’223 patent, which “enable[es] more parameter data to be displayed than the available physical display real estate.” *Id.* at 12–14 (citing Ex. 2042 ¶¶ 65–68). Patent Owner further asserts that the *ex parte* reexamination “confirms that a measured value is no longer displayed once it has been replaced by a different measured value” because of arguments made to overcome U.S. Patent Application Publication No. 2002/0082488 (Ex. 2038, “Al-Ali”). *Id.* at 14–18. Patent Owner contends that the prosecution history shows that Al-Ali merely switches the display to show both first and second parameters, reinforcing Patent Owner’s position that replacing one parameter value with another requires more than such switching. *See id.* at 15–18 (citing Ex. 2042 ¶¶ 74–78).

Petitioner argues that we should reject Patent Owner’s proposed construction and agrees with Patent Owner’s previous position that the claims “require no construction.” Pet. Reply 3 (quoting Prelim. Resp. 15). Petitioner takes issue with Patent Owner’s contention that the measured value of the first parameter must be “removed from the display” for several reasons: (1) doing so would render the “common display area” limitation superfluous because it calls for replacement within a subset of the display, i.e., the “common display area;” (2) Patent Owner’s construction imports one embodiment from the specification while ignoring the embodiment of Figures 11B and 11C, which retains the first parameter on the display after

replacement; and (3) the prosecution history does not aid Patent Owner because Al-Ali retains the first parameter in the same location after the alleged replacement, such that the allowance did not address whether the limitation requires removal of the parameter from the display. *Id.* at 4–6. According to Petitioner, the limitation “indicates only that the second parameter value is displayed in the place previously occupied by the first parameter and imposes no requirement on whether the first parameter is removed from display (it can, but does not have to), or whether the first parameter instead is displayed elsewhere on the display.” *Id.* at 7–8. Petitioner also objects to Patent Owner’s implicit narrowing of its construction by arguing, in the context of prior art arguments, that the measured value of the second parameter must not be displayed prior to the replacement of the measured value of the first parameter. *See id.* at 8–10.

In its Sur-reply, Patent Owner argues that merely moving the first parameter to another location on the screen involves “rearranging” rather than the required “replacing.” PO Sur-reply 3–4. Addressing the “common display area” claim language, Patent Owner contends that it merely defines where the replacement occurs on the display without suggesting mere rearrangement, and Patent Owner notes that claims 27 and 28 do not contain this language. *Id.* at 4–5. As to Figures 11B and 11C, which appear to show parameters swapping places on the display rather than removing any parameters, Patent Owner argues that (1) the claims need not be read to cover every embodiment, and these figures “are unclaimed embodiments;” (2) the specification does not describe the figures as in sequence; and (3) the figures do not show that the parameter movement occurs based on the occurrence of an event as the claims require. *Id.* at 5–8. Patent Owner also

asserts that the prosecution history shows that “the Examiner understood that replacement of a measured value entails removal of it from the display because replacement would result in the user not being able to see the patient’s full condition” as Al-Ali teaches. *Id.* at 8–9. As to Petitioner’s argument that Patent Owner implicitly argues that the claims require the second parameter to not be displayed at all prior to replacing the first parameter, Patent Owner agrees that it makes such an argument, which it deems consistent with the specification and prosecution history. *See id.* at 9–10.

b. Discussion

We begin our analysis by noting that the parties generally agree on what the term “replace” means in the abstract, e.g., “to take the place of” as Patent Owner puts it. *See* PO Resp. 12; Pet. Reply 3–4 (Petitioner agreeing with the portion of Patent Owner’s proposed construction that equates replacement with “displayed in place of”), 7–8 (arguing that the limitation requires “the second parameter value is displayed in the place previously occupied by the first parameter”).

The parties also agree that, although the wording of Patent Owner’s proposed claim construction only requires removal of the measured value of a parameter from the display after replacement, Patent Owner’s application of its proposed construction also requires the other parameter to be monitored but *not* displayed prior to replacement. *See* PO Resp. 18 (arguing for the following construction: “when a measured value of a first parameter is ‘replaced’ by the measured value of a second parameter, the measured value of the first parameter is removed from display and the measured value of the second parameter is displayed in its place”), 26 (“The proper

construction of the claim elements requires the device to measure two parameters, one of which is not currently being displayed.”), 27–28 (“[A] POSITA would understand that the claims require displaying the measured value of the first parameter and then replacing the value with a second measured value of a second parameter that the device is currently monitoring, but not displaying.”); Pet. Reply 8–10. In effect, Patent Owner’s construction does not allow the measured values of the first and second parameters to be displayed at the same time on the display, either before or after the claimed replacement. *See* PO Sur-reply 9 (arguing against Petitioner’s position that the claim allows for the display of the first and second parameter at “the same time”).

For the reasons that follow, we find Petitioner’s arguments more persuasive and reject Patent Owner’s argument that we should construe the limitation as requiring the absence of one parameter from the display prior to the replacement *and* the absence of the other parameter after the replacement. We do not view either requirement proposed by Patent Owner as justified based on our review of the claims, specification, and prosecution history.

i. Claim Language

Patent Owner argues independent claims 1, 15, 18, 21, and 27 as a group for the “replaced” limitation and its variants, and we follow the same approach here. *See* PO Resp. 11–12. Importantly, none of the language in these claims addresses the display (or lack of display) of the parameters before or after the replacement of one for the other. *See* Pet. vi–ix. Claim 1, for example, recites “the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured

values based on an occurrence of an event” without referring to the location of the replacement parameter prior to the replacement or the location of the replaced parameter after the replacement. *Id.* at vi. Although at least one parameter (the first parameter) must be displayed in order to be replaced by the second parameter, the claims do not address whether the second parameter must be displayed or not displayed prior to the replacement of the first parameter. The challenged claims include limitations focusing on the display’s capability of displaying the measured values of the parameters, and limitations focusing on the event that triggers the replacement, but nothing in the claim language supports Patent Owner’s position. *See id.*

Patent Owner only addresses the claim language when it argues (without opposition from Petitioner) that “replaced” means “take the place of,” which does not support the disputed portions of its proposed construction. PO Resp. 12. Patent Owner fails to point to any claim language in support of its position. *See id.* at 11–18. Although the claim language does not *require* both parameters to be displayed before or after replacement of one of the parameters, the claim language encompasses a situation where both parameters are be present on the display prior to one of the parameters replacing the other on the display, and where both parameters remain on the display after the replacement.¹⁰

¹⁰ For example, if two parameters swap positions on the display, perhaps to place a more relevant parameter in a more prominent position, that still satisfies the claim language requiring “the display of one of the measured values of the first or second physiological parameter is replaced with the other” because one parameter takes the place of the other parameter. *See* Pet. vi.

Petitioner contends that, for several independent claims reciting a “common display area”¹¹ where the replacement takes place, Patent Owner’s proposed construction makes little sense because the claims more explicitly allow for the replacement to occur in one area of the display (the “common display area”) without limiting what the display shows in other portions of the display. *See* Pet. 4–5. We agree with Petitioner that for these claims, the “common display area” language provides an additional reason to reject Patent Owner’s proposed construction, although the absence of this language does not suggest that the claims must be read as narrowly as Patent Owner proposes given the lack of any claim language supporting such a reading. As noted, Patent Owner points to no language in any of the claims, including those that lack the “common display area” language, that supports its construction. Patent Owner briefly notes the absence of the “common display area” language from some claims for the first time in its Sur-reply, and does not argue that claim differentiation or another argument supports its narrow reading for any of the claims. PO Sur-reply 5 (noting that claims 27 and 28 “do not contain the ‘common display area’ language” that Petitioner relies on). In addition, Patent Owner argues the claims as a group and contends that its proposed construction applies to all of the independent claims regardless of differences in claim language. *See* PO Resp. 11–18; PO Sur-reply 3–10.

¹¹ Claim 1, for example, recites “where the first display area and the second display area comprise at least some *common display area* capable of displaying information, wherein *in the common display area*, the display of one of the measured values of the first or second physiological parameter is *replaced* with the other of the measured values.” Pet. vi (emphasis added). Claims 13, 15, 18, and 21 contain similar language. *See id.* at vii–ix.

ii. Specification

We do not view the specification as supporting Patent Owner's narrow reading of the claims. The specification does not use the term "replace" or its variants at all when describing the display of measured values of the parameters. The only reference that Patent Owner identifies in the specification for "replace" relates to replacing batteries or sensor components, rather than replacing parameters on a display. *See* PO Resp. 12 (citing Ex. 1001, 8:1–2; 12:62–65; Ex. 2042 ¶ 66). Patent Owner correctly points out that Figures 4 and 5 show a display that changes from showing a value for "%SpO₂" to showing a value for "%HbCO" at the top of the display. *See* Ex. 1001, Figs. 4, 5; PO Resp. 12–13 (citing Ex. 1001, 14:45–46, 14:66–15:2, Figs. 4, 5; Ex. 2042 ¶ 67). These figures appear to show the claimed replacement even though the specification does not include text expressly describing the figures as showing a sequence of events or showing the "replacement" of the "%SpO₂" parameter with the "%HbCO" parameter. Ex. 1001, 14:39–15:21 (describing Figures 4 and 5). The specification does describe the figures as showing an "exemplary embodiment," which suggests that they are not meant to be limiting. *See id.* at 14:39–42, 14:60–62.

Although the exemplary embodiment shown in Figures 4 and 5 may show replacement of parameter values in a manner consistent with Patent Owner's construction, Petitioner persuasively argues that Figures 11B and 11C show replacement of one parameter with another without removing any parameters from the display and with both parameters shown on the display before and after the replacement. *See* Pet. Reply 5–6 (citing Ex. 1001, 17:18–20, Figs. 11B, 11C). When comparing Figures 11B and 11C, the

“3.25” value for “PI” replaces the “1.2” value for “%HbMet” in the same area of the display—the lower left-hand corner. Ex. 1001, Figs. 11B, 11C.

Patent Owner argues that Figures 11B and 11C do not show replacement of parameters triggered by the occurrence of an event as required by the claims and that they merely show “unclaimed embodiments,” but Patent Owner fails to point to persuasive evidence in the specification to support this argument. *See* PO Sur-reply 5–8 (citing Ex. 1001, 4:42–43, 5:20–25, 17:15–67, 19:24–26; Ex. 2042 ¶¶ 65–66). Instead, the description of replacing one parameter with another appears to be a general one that would apply to various embodiments in the specification. *See* Ex. 1001, 5:20–25 (describing switching display of parameters based on an “alarming parameter” without reference to any figures or specific embodiments). The specification also refers to “display 1000,” the same display shown in Figures 11B and 11C, as “advantageously employ[ing] enlargement or reorganization of parameter data based on, for example, the severity of the measurement,” which implies replacement based on the occurrence of an event, i.e., the “severity” indicated by a parameter. Ex. 1001, 19:24–26. In addition, the specification does not contain any language suggesting that the embodiments in Figures 4 and 5—which Patent Owner relies on to support its proposed construction—are covered by the claims but the embodiments shown in Figures 11B and 11C are not. *See id.* at 14:39–15:21. The fact that the specification does not use the term “replace” to describe Figures 11B and 11C or state that the figures are in sequence, as Patent Owner notes, does not distinguish the embodiment of Figures 11B and 11C from that in Figures 4 and 5 when the description of those figures lacks the same language. *See id.*; PO Sur-reply 6–7.

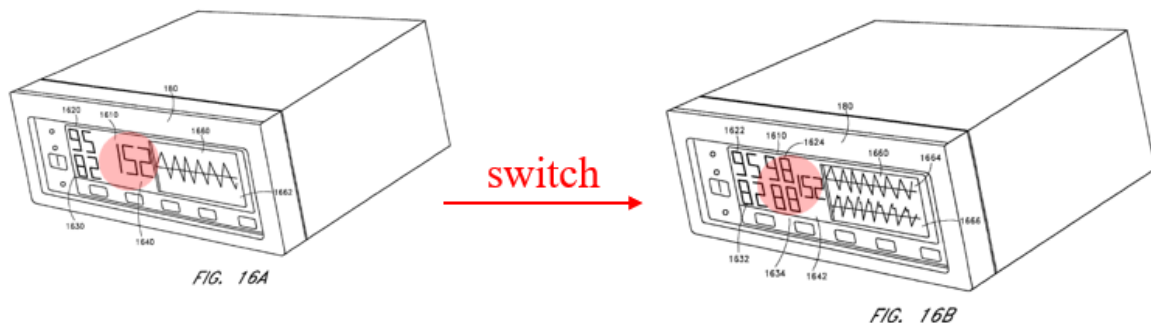
Patent Owner also asserts that the '223 patent emphasizes the goal of allowing the display of pertinent parameters while using limited display space and that this supports removing parameters from the display after replacing one parameter with another. *See* PO Resp. 13–14 (citing Ex. 1001, code (57), 3:10–14, 10:6–9; Ex. 2042 ¶ 68). Even so, the two passing references to removing parameters cited by Patent Owner does not mandate that every embodiment or the claims are so constrained. The displays shown in Figures 11B and 11C, for example, show many parameters at the same time, and neither the claim language nor specification demarcates a line between these embodiments and the embodiments that Patent Owner relies on. *See* Ex. 1001, Figs. 4, 5, 11B, 11C. Rather, the specification describes all of these embodiments as merely “exemplary” and therefore not intended to limit the scope of the claimed invention. *See id.* at 4:15–21 (describing Figures 4 and 5 as showing “an exemplary embodiment”), 4:39–43 (describing Figures 11A–11H as showing “exemplary” monitor and various screens of that monitor); *see also id.* at 1:54–57 (“field of disclosure,” not mentioning space-limited displays), 2:51–54 (“summary of the disclosure,” not mentioning space-limited displays); Pet. vi (claim 1 referring to “display,” not any type or size of display).

Finally, even if we did not agree with Petitioner that Figures 11B and 11C show that the claims encompass replacing one parameter with another in a manner directly at odds with Patent Owner’s proposed construction, the specification never uses the claim language in a manner that clearly limits that language to some embodiments or display sizes while excluding others. Nor does it consistently describe the claimed device in a manner that suggests we must read the claims in a narrow manner to remain consistent

with that intent. Instead, reading the claim language in light of the various descriptions of the displays in the specification, supports that the claims should not be read as narrowly as Patent Owner proposes.

iii. Prosecution History

As to the prosecution history involving Al-Ali, we do not read it as supporting Patent Owner's position. Patent Owner contends that Al-Ali's Figures 16A and 16B, reproduced below with Patent Owner's annotations, disclose "switching between displaying a measured value of a first parameter to displaying measured values of a first and second parameter" rather than the claimed replacement. PO Resp. 15–18.



The annotated versions of Al-Ali's Figures 16A and 16B above show a "single-site stereo pulse oximeter display screen" (Figure 16A) and a "multi-site stereo pulse oximeter display screen" (Figure 16B). *Id.* (citing Ex. 2038, Figs. 16A, 16B); Ex. 2038 ¶¶ 28–29. Patent Owner's annotations highlight number 152 in Figure 16A and numbers 98, 88, and 152 in Figure 16B in the same area of the display. PO Resp. 17. Patent Owner also adds the word "switch" above an arrow pointing from Figure 16A to 16B. *Id.* Figure 16B depicts the number "152" is smaller than the "152" in Figure 16A, where it fills the entirety of the area highlighted by Patent Owner, such that "152" appears in the same general place in both figures. *See id.*

We agree with Petitioner that the distinction of the claims over Al-Ali during prosecution, and the comments surrounding Al-Ali, bear little relevance here because Al-Ali does not disclose replacing parameters under either party's view. As shown in the figures, the parameter shown as a "pulse rate" of 152 in Figure 16A remains in Figure 16B and occupies some of the same position that it occupies in Figure 16A. *See* Ex. 2038, Figs. 16A, 16B, ¶¶ 94–95. Even Petitioner's broader view of the claims requires replacement of one parameter with another in the same position on the display, and would not cover the situation shown in Figures 16A and 16B of Al-Ali where the first parameter remains in the same position as its original position, only sized differently. *See* Pet. Reply 3–4 (agreeing with the aspect of Patent Owner's construction that requires second parameter "displayed in place of" the first parameter), 6–7. In the Examiner's statement of "reasons for patentability and/or confirmation," the Examiner states: "Al-Ali does not replace the first value, but switches from displaying the first value to displaying first and second values." Ex. 1020, 6. We agree. Displaying three numbers in an area previously occupied by one of the three numbers does not replace that number even under Petitioner's interpretation of "replace," and, therefore, Al-Ali does not show replacement. Thus, the Examiner's statement of reasons for patentability does not support Patent Owner's argument that "replacement" should be construed to require removal of the number from the display.

Patent Owner also relies on the Examiner's statement that there would have been no motivation to modify Al-Ali to "simply replace the first parameter with the second, as it would contradict the direct teaching [in Al-Ali] of allowing the user to see the entirety of the patient's condition." PO

Resp. 16 (citing Ex. 1020, 6–7; Ex. 2042 ¶ 76); *see also* PO Sur-reply 8–9. Patent Owner argues that this shows that the Examiner understood that “replacement of a measured value involves removing it from the display.” *See* PO Resp. 16; PO Sur-reply 8–9; Ex. 1020, 6–7. Although the Examiner’s statement shows the Examiner’s understanding that modifying Al-Ali to meet the “replacement” limitation could involve removal of the replacement parameter, this does not necessarily mean that the Examiner understood “replacement” to require “removal.” For example, the Examiner may have thought that *in the context of Al-Ali* replacement contemplated removal because Al-Ali’s display had no space available for the first parameter to remain on the display. Thus, the Examiner’s statement provides at best only modest support for Patent Owner’s position. *See* Ex. 1020, 6–7. And even if it does provide modest support for Patent Owner’s position, it manifestly does not show a clear disavowal of claim scope. *See Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1344–47 (Fed. Cir. 2005) (holding that the Examiner’s statements in reasons for allowance did not show clear disavowal of claim scope).

Given that Al-Ali does not disclose a device that replaces parameters under either party’s view of the claim, that the Examiner’s statement provides at best only modest support for Patent Owner’s position, and that Patent Owner does not point to any statement by the applicant that would amount to a clear disavowal of claim scope or that would support its construction here, we view the prosecution history as less relevant than the claim language and specification.

iv. Conclusion as to Replaced/Replaces/Replacing

Based on the foregoing, we decline to adopt Patent Owner’s proposed construction for “replaced,” “replaces,” or “replacing.” We agree with Petitioner that the limitation does not require removal. Rather, it requires “that the second parameter value is displayed in the place previously occupied by the first parameter” value. Pet. Reply 7–8.

2. Changes

Rather than use variants on the “replace” language, independent claims 13 and 28 recite a display that “changes” from displaying a measured value of one parameter to the measured value of another parameter. Pet. vii, x. Claim 13 recites a common display area that “*changes* from displaying one of the measured values of the first or second physiological parameter to displaying the other of the measured values,” while claim 28 recites a button that, when activated, “causes the display to *change* from displaying the measured value of the first blood parameter to displaying the measured value of the second blood parameter.” *Id.* (emphasis added).

Patent Owner argues that the “plain language of the claims confirms that ‘changes’ should be interpreted the same way as ‘replaced.’” PO Resp. 18 (citing Ex. 2042 ¶ 80). Patent Owner also cites to dictionary definitions defining “change” as “to replace with another.” *Id.* at 19 (citing Ex. 2039, 206; Ex. 2041, 146; Ex. 2042 ¶ 83). Patent Owner concludes that, based on the language of claims 13 and 28, “a POSITA would have understood ‘changes’ or ‘change’ to have a similar meaning as the ‘replaced,’ ‘replacing,’ and ‘replaces’ terms of Claims 1, 15, 18, 21, and 27.” *Id.* (citing Ex. 2042 ¶ 85).

Petitioner does not disagree with Patent Owner's view that the "changes" language in claims 13 and 28 should be interpreted the same way as "replaced" in the other independent claims or argue for a different construction. Pet. Reply 11. Petitioner notes Patent Owner's argument and concludes that since Patent Owner argues that the claims "should be interpreted the same way as 'replaced,'" Patent Owner's argument for claims 13 and 28 "suffer the same deficiencies" as Patent Owner's arguments for the claims employing the "replaced" language and its variants. *Id.*

In its Sur-reply, Patent Owner takes issue with Petitioner's implicit reliance on its arguments for the "replaced" limitation and argues that Petitioner fails to address the "distinct arguments and evidence for the 'changes' limitations." PO Sur-reply 10 (citing PO Resp. 18–19; Pet. Reply 11). Patent Owner also faults Petitioner for failing to address claim 28's "different language." *Id.*

We disagree with Patent Owner's argument in its Sur-reply that Petitioner somehow fatally errs by failing to separately address Patent Owner's argument as to the "changes" limitation. Patent Owner's Response advances the same construction for the same reasons as it had argued extensively for the "replaced" limitation. *See* PO Resp. 18–19. Patent Owner does not point out any substantive differences in the claim language or scope, or note any substantive differences in the language of claim 28 that it highlights for the first time in its Sur-reply. *See id.*; PO Sur-reply 10. Instead, Patent Owner notes the similarity of the claim language when discussing claim 28's language. PO Resp. 19 ("Similarly, Claim 28 recites As with Claim 13, a POSITA would understand the claim terms 'change from . . .to' to be consistent with the 'replaced' limitations" (second

alteration in original)). Patent Owner also relies on dictionary definitions in an attempt to equate “change” with “replace.” *Id.* The entire thrust of Patent Owner’s brief arguments as to the “changes” language in claims 13 and 28 was that it was tying the argument for this language to the argument for the “replaced” language in the other independent claims.

Under these circumstances, Petitioner was free to point out that Patent Owner’s arguments were flawed for the same reasons as its arguments directed to “replaced.” Pet. Reply 11. Patent Owner’s attempt to rely on alleged substantive differences in its arguments as to the “changes” language for the first time in its Sur-reply runs afoul of our admonition to include all arguments in its Patent Owner Response, and finding in Patent Owner’s favor as to these claims based on Petitioner’s alleged failure to respond would be unfairly prejudicial to Petitioner. *See* Paper 10, 9 (Scheduling Order) (“**Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.**” (emphasis in original)).

Moreover, the substance of Patent Owner’s arguments fail to persuade us that we should adopt Patent Owner’s narrow construction for “changes” even if we decline to do so for “replaced.” Patent Owner relies on dictionary definitions in an attempt to equate “change” with “replace,” but does not provide any additional substantive argument (beyond those advanced for the “replaced” limitation) to support its construction for “changes.” *See* PO Resp. 19. In addition, the cited declarant testimony largely repeats the arguments in the briefing. *See* Ex. 2042 ¶¶ 80–85; PO Resp. 18–19. Claims 13 and 28 do involve different claim language, but Patent Owner’s undeveloped argument does not provide a persuasive reason to treat these claims differently from the claims that use the term “relacing.” *See* PO

Resp. 18–19. Nor does Patent Owner provide any analysis of the specification or prosecution history that may apply to its argument for “changes,” lending further support to the view that Patent Owner was implicitly incorporating its analysis for “replaced” into its analysis for the “changes” claim language. The limited analysis by Patent Owner does not support the conclusion that the claims should be construed differently than the “replace” claims, which encompass the presence of both parameters on the display either before or after the changes are made, as Patent Owner implicitly proposes by asserting that we should interpret the “changes” language “the same way as ‘replaced.’” PO Resp. 18.

Based on the foregoing, we treat the “changes” language in claims 13 and 28 the same as “replaced” in the other independent claims. Accordingly, we decline to adopt Patent Owner’s proposed construction for the same reasons we provided above in our discussion of the dispute concerning the “replaced” limitation.

3. *Measured Value*

a. *The Parties’ Positions*

All of the independent claims recite a “measured value” for each of two parameters. *See* Pet. vi–x. For example, claim 1 recites a “monitor comprising a display capable of displaying a *measured value* of a first physiological parameter . . . or displaying a *measured value* of a second physiological parameter.” *Id.* at vi (emphasis added). Claim 1 further recites that “the display of one of the *measured values* of the first or second physiological parameter is replaced with the other of the *measured values* based on an occurrence of an event,” with “the event being the *measured value* of one of the first or second physiological parameters approaching one

or more threshold values indicative of a worsening state of a patient.”

Id.(emphasis added).

Neither party proposed a claim construction for “measured value” prior to our Institution Decision. *See* Pet. 3; Prelim. Resp. 15–16. Prior to Institution, Patent Owner noted that Petitioner offered a construction of “measured value” in the Delaware Litigation that means “actual numeric value of a measurement,” but Patent Owner disagreed with that construction and argued that “none of the terms require construction but rather should be given their ordinary and customary meaning.” Prelim. Resp. 15–16. Patent Owner also argued that Petitioner failed to show that the prior art discloses a “measured value” using Petitioner’s construction from the Delaware Litigation. *Id.* at 42–43. In our Institution Decision, we found Petitioner’s showing as to the “measured value” limitation sufficient even if we applied its construction from the Delaware Litigation, and we did not construe “measured value” at that time. *See* Inst. Dec. 23–24.

Patent Owner now argues that we should construe “measured value” to mean a “value of a parameter currently detected and determined by the monitor.” PO Resp. 10. Patent Owner argues that the “language of each claim shows that the ‘measured value’ must be currently detected and determined by the monitor” because “[e]ach claim recites replacing or changing the display of a measured value based on an ‘event’ or other occurrence.” *Id.* at 8 (citing Ex. 2042 ¶ 55). According to Patent Owner, for the monitor to make a determination based on an event, “the monitors must be currently monitoring the parameters.” *Id.* (citing Ex. 2042 ¶ 55). Patent Owner also relies on more detailed language in dependent claims to bolster its argument because they make clear that the values are “actually being

measured by the device.” *Id.* at 8–9 (citing Ex. 2042 ¶¶ 56–57). Patent Owner contends that the “specification also confirms this interpretation” because it describes sensors that produce data for calculating various measured parameters and “a display for displaying these values as they are measured.” *Id.* at 9–10 (citing Ex. 1001, 9:55–59, 10:6–9, 11:32–33, 11:59–60, 13:59, 15:22–23, 14:46, 14:54–55; Ex. 2042 ¶¶ 58–59). Patent Owner concludes that “a POSITA would understand that a ‘measured value’ refers to a parameter being detected and determined by a patient monitor, for example, from sensor data” and “is based on data being currently collected by the monitor.” *Id.* at 10 (citing Ex. 2042 ¶ 59).

Petitioner argues that we should reject Patent Owner’s construction due to its ambiguity and lack of support in the ’223 patent. Pet. Reply 11. Petitioner contends that Patent Owner fails to specify “what it means to be ‘currently detected and determined,’” rendering the construction unclear. *Id.* For example, according to Petitioner, Patent Owner’s construction provides no guidance as to the frequency of monitoring necessary to be “current” or when “the detection and determination must occur.” *Id.* at 11–12 (citing PO Resp. 10; Ex. 1025, 35:9–48:10). Petitioner also argues that Patent Owner’s cited support fails to provide a temporal component to the determination of all parameters, and at most the claims require monitoring one parameter to assess whether its value approaches a threshold. *Id.* at 12–13.

In its Sur-reply, Patent Owner argues that the “plain language” of the claims related to the replacement of one measured value of a parameter for another “requires there to be measured values from two parameters that are both being currently monitored by the patient monitoring device because the *display* of one measured value is replaced with or changed to the other.” PO

Sur-reply 10–11. As to the alleged ambiguity of the construction, Patent Owner contends that “a POSITA would understand that the monitor must determine the measured values frequently enough to make these determinations.” *Id.* at 11 (citing Ex. 2042 ¶ 55). Finally, Patent Owner asserts that both parameters must be currently monitored because “the claims recite displaying measured values from two parameters: (1) the parameter being displayed, and (2) the parameter that replaces it.” *Id.* According to Patent Owner, “[i]f one of the parameters is not being monitored, then there is no measured value to be displayed.” *Id.*

b. Discussion

Based on our review of the parties’ arguments and evidence, we decline to adopt Patent Owner’s proposed construction for “measured value” to mean the “value of a parameter currently detected and determined by the monitor.” Patent Owner relies on the claim language and specification to support its position, and we address each in turn. *See* PO Resp. 8–10.

As to the claim language, we disagree with Patent Owner’s argument that the language of the claims, standing alone, requires the adoption of Patent Owner’s construction. *See* PO Resp. 8 (“The language of each claim shows that the “measured value” must be currently detected and determined by the monitor.” (citing Ex. 2042 ¶ 55)); PO Sur-reply 10–11 (quoting the “replaced” limitation and concluding that the “plain language thus requires . . . parameters that are both being currently monitored by the patient monitoring device”). None of the claim language in the independent claims directly supports Patent Owner’s position because none of that language refers to “currently detected and determined” measured values or any similar language. *See* PO Resp. 10; Pet. vi–x. Instead, the first time the claims refer

to “measured values” of the parameters, they merely refer to a monitor capable of displaying measured values, with no mention of when the measured values are detected or determined. *See* Pet. vi–x. Patent Owner also refers to the “replaced” limitation as if the act of replacing the measured value of one parameter with another, standing alone, supports its position, but this limitation also lacks any reference to when the measured values are detected or determined. *See* PO Sur-reply 10–11.

The only claim limitations that relate to Patent Owner’s proposed temporal construction do not directly define the measured values, and instead refer to the events that trigger the replacement of one value for another. For example, claim 1 recites replacing one measured value with another “based on an occurrence of an event, the event being the *measured value* of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.” Pet. vi (emphasis added). This language arguably refers to a point in time when the event occurs, but Patent Owner’s construction improperly narrows the claim by imposing a temporal requirement that the measured value limitation in every claim “must be *measured currently*.” PO Resp. 8 (emphasis added). None of the independent claims impose such a temporal requirement. *See* Pet. vi–x. The claims do not define when or how the measured value must be deemed to be “approaching” the “threshold value” and would seemingly cover a situation where the monitor detects such a value just one time, at some undefined point in time.

Patent Owner’s construction also improperly narrows the claims by requiring the construction to apply to *both* parameters. Patent owner argues that for a parameter to be replaced when it crosses a threshold, it must be

currently monitored. But even crediting this argument, at most the value of only one parameter must be “currently detected and determined” in order to determine when one parameter approaches a threshold. *See* PO Sur-reply 10–11 (confirming its position that “both” parameters must be “currently monitored”). Patent Owner asserts that both parameters must be currently monitored because the claims recite a monitor that must be capable of displaying both parameters (not necessarily at the same time), and replacing one with the other. *See id.* But those requirements do not require that the value of the first parameter (i.e., the one being replaced) be “currently detected and determined.” For example, the value of the first parameter could still be displayed and replaced based on the value of the second parameter approaching a threshold, as required by claim 1, even if the value of the first parameter is not “currently detected and determined” and reflects a value that was detected and determined at some previous point in time that would not meet Patent Owner’s definition of “currently.” *See* Pet. vi. The scenario Patent Owner envisions, where the values of *both* parameters are constantly detected and displayed, may be a practical way to design the claimed monitor, but the claims do not *require* such a monitor and only speak to measured value conditions occurring with respect to *one* of the parameters. *See* Pet. vi–x.¹²

¹² Claims 1, 13, 15, and 18 refer to the measured value of “one of” the first or second parameters “approaching . . . threshold values” (claims 1 and 13), “alarming” (claim 15), or “more critical” (claim 18). *See* Pet. vi–viii. Claims 21, 27, and 28 refer to the measured value of the “second” parameter when it “indicates a worsening state” (claim 21) or “passes an alarm threshold” (claims 27 and 28). *Id.* at ix–x.

In addition, Patent Owner’s construction does not improve upon the seemingly clear language directed to the claimed “event.” We may not agree with Petitioner’s position that Patent Owner’s construction imposes fatal ambiguity, but we agree that the construction’s use of the term “currently” imposes potential ambiguity¹³ without adding anything helpful to the understanding of any claim terms.

Moreover, Patent Owner’s reliance on the language in the dependent claims does not aid its effort to impose its construction on “measured value” in the independent claims. *See* PO Resp. 8–9. Those dependent claims refer to measured values determined using “an output signal of a light sensitive detector” (claim 19), “an invasively measured value” (claims 5 and 23), “a non-invasively measured value” (claim 6), and “glucose” (claim 7). *See id.* These additional limitations narrow the scope of “measured value,” but they do not support importing the “currently detected and determined” language of Patent Owner’s construction of the term “measured value.” In addition, Patent Owner fails to explain how the additional narrowing language in these dependent claims imposes a temporal limitation on those claims. *See id.*

As to the specification, Patent Owner merely points to portions that describe “calculating the measured parameters from the data collected

¹³ “Currently” means “at the present time” or “now,” which in turn may require a continuously detected and determined measured value in order to satisfy Patent Owner’s construction, or a value determined immediately prior to some event. *See* <https://www.dictionary.com/browse/currently> (defining “currently” as “at the present time; now”). Determining what falls within the scope of “currently” in Patent Owner’s construction can lead to the ambiguity Petitioner notes as to how often the value must be detected and determined to meet the limitation. Pet. Reply 11–12.

by the monitor” and “a display for displaying these values as they are measured.” PO Resp. 9–10. Patent Owner does not point to any teachings from the specification that describe the measured values as “currently detected and determined,” or that stress the importance of imposing this requirement on the values of *both* of the claimed parameters. *See id.* Even assuming, *arguendo*, that a POSITA would have inferred from the specification that, in certain embodiments, the monitor displays “currently detected and determined” values, this does not justify reading those such a requirement into otherwise broad claim language that does not allude to these restrictions, and Patent Owner provides no authority for such an approach here. *See id.* (arguing that “a POSITA would understand” and “would have understood” teachings in line with its proposed construction upon reading about measured values in the specification).

Based on the foregoing, we decline to adopt Patent Owner’s proposed construction for “measured value.”

D. Obviousness Based on Naghavi, Hochstedler, and Burnes

Petitioner argues that the combination of Naghavi, Hochstedler, and Burnes renders claims 1–4, 6, 11–18, and 20–22 obvious. *See* Pet. 3–43. Patent Owner raises several arguments against this challenge. *See* PO Resp. 25–63. We first provide a brief overview of the prior art, and then address the parties’ arguments.

1. Naghavi

Naghavi relates to a flexible “healthcare management system” for “managing and risk stratifying of patients.” Ex. 1005 ¶ 24. Naghavi’s system acquires data from medical devices and sensors and displays the

results on “an enhanced health-specific graphical user interface (GUI).” *Id.*

¶ 11. Figure 1, reproduced below, illustrates Naghavi’s overall system.

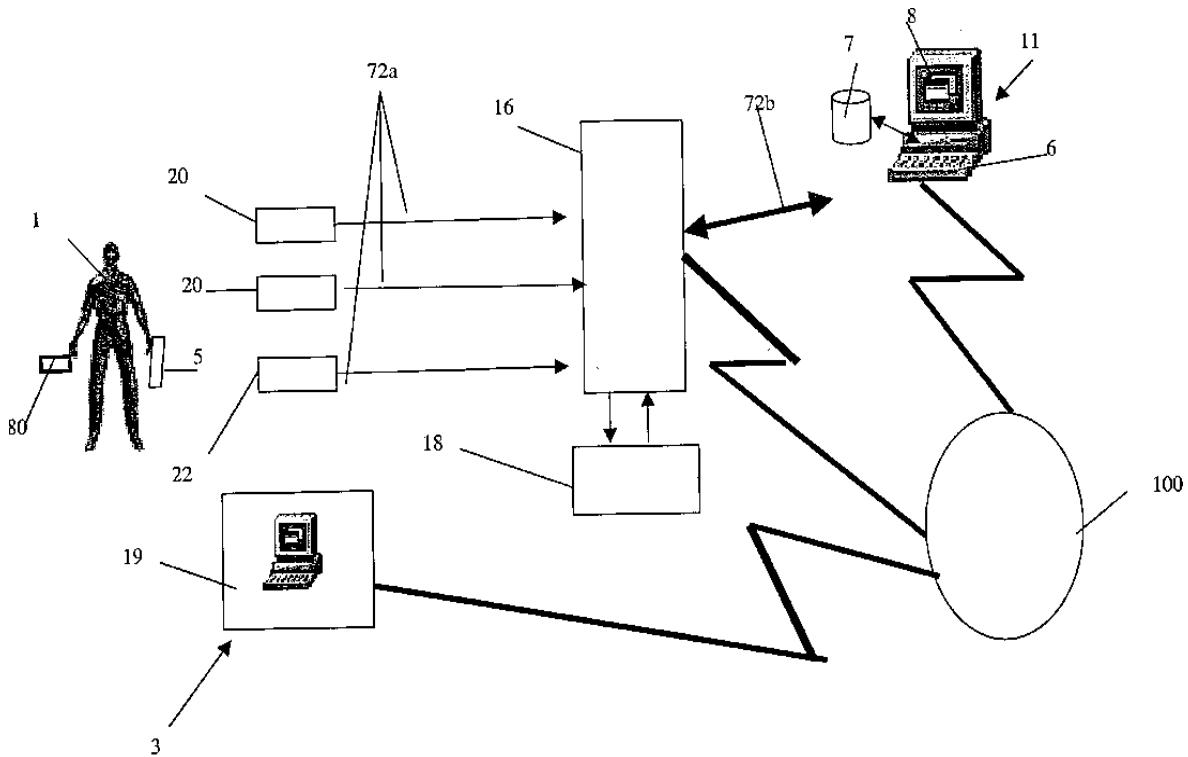


FIG. 1

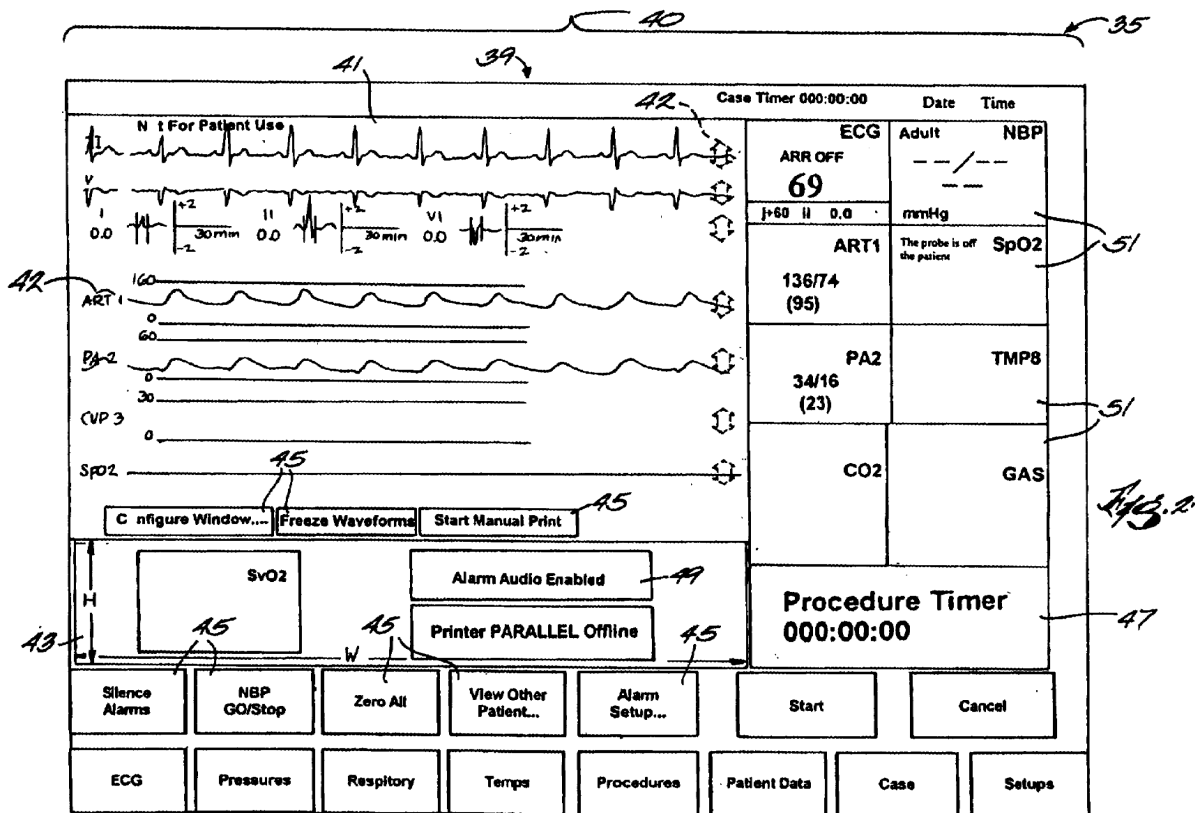
Naghavi’s Figure 1 shows a healthcare management system having “computer 11 comprising input device 6, . . . persistent data store 7 . . . , and output device 8 such as a monitor” having a display. Ex. 1005 ¶ 25. Display 8 includes a display area, and a “health-specific GUI 80” arranges icons and menus in the display area. *Id.* ¶¶ 56–57.

GUI 80 “dynamically changes and orders the display of icons, health objects, and menus according to a personal health condition and schedule.” Ex. 1005 ¶ 57. A patient “may then use GUI 80 to find those selectable items needed in a single visual display of displayed items comprising menus, health objects, icons, and options.” *Id.* ¶ 58. The icons and health objects

on the display “may change in color, shape, order, or other mutable attribute according to different time schedules and severity or degree of some of findings, e.g.,] the shape, size, color, and relative position of each icon can change according to a current health status and health plan” of the patient. *Id.* ¶ 59. Naghavi also states that “GUI 80 is interactive and dynamic, and may automatically detect changes in health status and health plan” for a patient and “automatically react and rearrange the available options to best suit the condition” of the patient. *Id.* ¶ 63.

2. *Hochstedler*

Hochstedler also relates to a GUI for a patient monitoring system. Ex. 1004, 1:49–55. The GUI includes components, and Hochstedler refers to the specific arrangement of components in the GUI as a “layout.” *Id.* at 1:16–19. In Hochstedler, the layout of the system changes when conditions of the system change. *Id.* at code (57). For example, a switch in the layout occurs if one of the available layouts “more closely corresponds to the currently used capabilities of the system than the current layout.” *Id.* Hochstedler’s Figure 2 is reproduced below.



Hochstedler's Figure 2 shows "an exemplary layout displayed on a monitor of the patient monitoring system" Hochstedler describes. Ex. 1004, 2:26–28. Figure 2 depicts information from sensors displayed in the GUI. *Id.* at 3:27–29.

Hochstedler monitors its system to "detect changes in the system's capabilities (e.g., an additional sensor is added) or changes in the system's environment (e.g., a switch is made from one medical procedure to another)." Ex. 1004, 1:55–60. "If an available layout more closely matches the changed system, then the system may implement an automatic change or switch of the layout or prompt the user to change the layout by presenting a selection of layout options." *Id.* at 1:63–67. In some situations, a user will be prompted to accept or reject a proposed change to the layout, or to replace

one portion of the layout within the GUI with another portion that shows the results of a different measured parameter. *Id.* at 8:30–65.

3. *Burnes*

Burnes relates to a patient monitoring system with a configurable GUI that provides summary data for multiple patients simultaneously. Ex. 1006, code (57), ¶¶ 5–6. Burnes categorizes parameter values for monitored patients “according to predefined thresholds or ranges” and a GUI “displays a summary table of categorized parameter values.” *Id.* at code (57). Burnes categorizes a parameter as “out of range” if its value “has crossed a predetermined threshold,” or as “near out of range” if “its value has come within some predetermined range or percentage of . . . the ‘out of range’ boundary.” *Id.* ¶¶ 38–40. Based on this categorization, Burnes can automatically change the GUI by sending an “[a]larm or warning messages” that “may be displayed based on summary parameter values.” *Id.* ¶ 43. In addition, Burnes describes “differentiat[ing] between categories” using “different symbols, color, font, highlighting, shading, or other formatting schemes” within its GUI. *Id.* ¶ 35. Burnes also describes using icons to indicate the overall status of the patient or parameter, such as an exclamation point for an alert indicating a need for clinical attention, a solid circle as a warning symbol, and an “OK” as a normal symbol. *Id.* ¶ 50.

4. *Claim 1*

We begin with Petitioner’s argument that independent claim 1 would have been obvious in view of Naghavi, Hochstedler, and Burnes. *See* Pet. 3–30. Petitioner first provides an overview of its proposed combination. Petitioner contends that the references disclose monitoring parameters using sensors and displaying the results on a GUI, with automatic changes made to

the display responsive to changes in the patient's health status. *Id.* at 10 (citing Ex. 1003 ¶¶ 34–35; Ex. 1005 ¶¶ 29–30, 32). Petitioner asserts that “Hochstedler offers examples of GUI configurations and changes consistent with those recited by the claims, and Burnes reinforces the obviousness of making such changes based on detected changes in patient condition, as contemplated by Naghavi.” *Id.* (citing Ex. 1003 ¶¶ 34–38; Ex. 1004, 1:54–60, 5:26–45; Ex. 1006 ¶¶ 35–40). Petitioner argues that “it would have been obvious to replace displayed GUI icons/health objects based on ‘changes in health status,’” as taught by Naghavi and Burnes, “to display different parameter blocks or sub-layouts (based on Hochstedler) when health changes are detected.” *Id.* at 12 (citing Ex. 1003 ¶¶ 35–38; Ex. 1004, 1:54–60, 5:26–45). Petitioner next provides a number of reasons to combine the references, and then addresses the limitations of claim 1. *Id.* at 13–30.

Patent Owner argues that the proposed combination fails to disclose replacing one currently measured value with another as claimed. PO Resp. 25–44. Patent Owner also contends that a POSITA would not have been motivated to combine the references as Petitioner proposes. *Id.* at 44–57. We address these arguments in the discussion below.

a. Disclosure of the Limitations in Claim 1

For each limitation in claim 1, Petitioner points to specific portions of the references that support its position and cites to declarant testimony addressing each limitation. *See* Pet. 17–30 (citing Ex. 1003 ¶¶ 58–82). For the preamble reciting a “patient monitor capable of measuring at least two physiological parameters,” Petitioner relies on Naghavi's display capable of displaying the results obtained from its sensors, which measure physiological parameters. *Id.* at 17–18 (citing Ex. 1003 ¶¶ 58–60; Ex. 1004,

3:14–18, 3:42–46; Ex. 1005 ¶¶ 25, 33). Patent Owner does not address Petitioner’s arguments as to the preamble. *See* PO Resp. 25–44. We find Petitioner’s arguments and evidence persuasive and sufficient to show that Naghavi discloses the preamble of claim 1, to the extent that it limits the claim, for the reasons provided by Petitioner, which we adopt as our own.¹⁴ *See* Pet. 17–18.

Limitation 1a recites “a display capable of displaying a measured value” of a first parameter “in a first display area or displaying a measured value” of a second parameter in “a second display area where the first display area and the second display area comprise at least some common display area capable of displaying information.” Pet. vi. For limitation 1a, Petitioner relies on Naghavi’s GUI using icons and health objects implemented based on Hochstedler’s configurable GUI having first display areas shown in its Figure 2. *Id.* at 18–21 (citing Ex. 1003 ¶¶ 61–65; Ex. 1004, code (57), 1:5–7, 1:19–23, 3:6–8, 3:21–23, 3:26–41, 4:7, Figs. 1–2, 8–13; Ex. 1005 ¶¶ 25, 27, 38, 44, 56–57, 69). Petitioner contends that a POSITA would have understood that “measured values” are displayed in each respective parameter block even though Hochstedler does not disclose

¹⁴ Aside from adopting Petitioner’s arguments and evidence as our own, we do not set forth separate formal findings as to Petitioner’s undisputed assertions. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations . . . are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); Paper 10, 9 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.” (emphasis removed)).

measured values for every parameter, or that it at least would have been obvious that Hochstedler was capable of displaying the measured values given the purpose of the blocks. *Id.* at 21 (citing Ex. 1003 ¶ 66; Ex. 1004, 1:19–23, Fig. 2; Ex. 1006 ¶ 7). Petitioner next relies on Hochstedler’s replacement of sub-layouts within its GUI to show that measured values for different parameters are displayed in a common display area. *Id.* at 22–25 (citing Ex. 1003 ¶¶ 67–71; Ex. 1004, 1:19–23, 1:49–66, 3:42–44, 5:26–37, 8:40–41, 8:64–65, Figs. 2, 9, 11, 13; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39). For example, Petitioner relies on changes to the common areas of Hochstedler’s layout when going from Figure 2 to Figure 9 (replacing “GAS” parameter with “CO” parameter in same area) and when going from Figure 2 to Figure 13 (replacing “SvO2” parameter with “CO2” parameter in same area). *See id.*

Although Patent Owner argues for a specific construction of “measured value” and “measured value” appears in limitation 1a, Patent Owner does not address limitation 1a or argue that Petitioner fails to establish that its proposed combination discloses the limitation. *See* PO Resp. 25–42. Instead, Patent Owner only relies on its “measured value” construction as part of its argument that the combination fails to disclose replacing one parameter value with another. *See id.* at 27–28. Even if Patent Owner explicitly argued that the combination fails to disclose the “measured value” limitation in limitation 1a, we would not find the argument persuasive because we decline to adopt Patent Owner’s construction for “measured value.”

Based on the foregoing, we find that Petitioner establishes that its proposed combination discloses limitation 1a, and we adopt Petitioner’s

arguments and evidence as our own. *See* Pet. 18–25. In fact, even using Patent Owner’s proposed construction for “measured value,” Petitioner’s showing as to limitation 1a remains persuasive. Under Patent Owner’s construction, “‘measured value’ refers to a ‘value of a parameter currently detected and determined by the monitor.’” PO Resp. 27. Limitation 1a merely requires a display “capable of” displaying such values in a common display area. *See* Pet. vi. As Petitioner correctly points out, Hochstedler’s GUI shows information from Hochstedler’s sensors in “parameter blocks” that “display real-time information about vital signs,” which establishes that Hochstedler’s display is at least capable of showing parameter values currently detected and determined by the monitor. *See id.* at 20–21 (citing Ex. 1003 ¶¶ 63–66; Ex. 1004, 1:19–23, 3:21–23, 3:40–41, 4:7, Fig. 2; Ex. 1006 ¶ 7).

Limitation 1b recites “wherein in the common display area, the display of one of the measured values of the first or second physiological parameter is replaced with the other of the measured values based on an occurrence of an event.” Pet. vi. Petitioner contends that, in its combination, “the layout changes responsive to a change in a monitored parameter; when this occurs, the display of the measured value of one parameter is replaced with the measured value of the other parameter.” *Id.* at 25 (citing Ex. 1003 ¶ 72; Ex. 1004, 1:54–60, 5:26–37; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39). Petitioner relies on Hochstedler’s changing of sub-layouts in common display areas and Naghavi and Burnes for replacing the parameters based on the change in health status of a patient. *See id.* at 25–29 (citing Ex. 1003 ¶¶ 73–78; Ex. 1004, 1:20–21, 1:54–60, 3:38–40, 5:26–45, 8:40–65, Figs. 2, 9, 13; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39,

43); *see also id.* at 9–13 (citing Ex. 1003 ¶¶ 34–40 (describing the combination of references)). Petitioner’s proposed combination includes Hochstedler’s display of its parameters as well as the detection and display of parameters as taught by Naghavi and Burnes using Hochstedler’s GUI. *See id.* at 9–13, 24–29; Pet. Reply 16–17.¹⁵

Patent Owner argues that Petitioner’s combination does not disclose replacing one measured value with another based on Patent Owner’s proposed claim constructions, which we decline to adopt. *See* PO Resp. 25–44. Patent Owner does not argue that the combination fails to disclose limitation 1b in the absence of Patent Owner’s proposed constructions. *See id.*; Tr. 73:23–74:11.

Based on the foregoing, we find Petitioner’s showing as to limitation 1b persuasive, and adopt Petitioner’s arguments and evidence as our own. *See* Pet. 25–29; Pet. Reply 14–22; *see also* Pet. 9–13, 24 (explaining replacement of parameter values in the proposed combination). The record amply supports Petitioner’s argument that its combination discloses the replacement of one parameter value with another based on the occurrence of an event. For example, both Naghavi and Burnes disclose changing a

¹⁵ Patent Owner suggests that because the Petition relies on Hochstedler for replacing one parameter value with another, Petitioner’s combination only involves the parameters Hochstedler employs on its display and Hochstedler’s reasons for changing its display. *See* PO Resp. 28–38, 41; PO Sur-reply 12–15. That analysis does not properly acknowledge aspects of the combination that contemplate Hochstedler’s GUI using detection of parameter values as taught by Naghavi and Burnes, i.e., using the parameters taught by Naghavi and Burnes within Hochstedler and changing the display of those parameters for the reasons taught by Naghavi and Burnes, not Hochstedler. *See* Pet. 9–13, 24–30; Pet. Reply 16–17.

display by visually highlighting or rearranging already-displayed health icons or information based on the health status, e.g., severity, of a patient as reflected by the parameter data. *See* Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39; Pet. 27–28 (citing Ex. 1003 ¶¶ 75–78; Ex. 1004, 5:31–37; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39, 43). The combination builds on these teachings by using Hochstedler’s GUI layout changes, which include replacing one parameter value with another in the same area of the display, as shown in its figures. *See* Ex. 1004, 5:26–37, 8:40–42, 8:64–65, Figs. 2, 9, 13; Pet. 25–27 (citing Ex. 1003 ¶¶ 72–74; Ex. 1004, 1:54–60, 5:26–37, 8:40–42, 8:64–65; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39, 43).

We also find Petitioner’s showing as to this limitation persuasive if we apply certain of Patent Owner’s proposed constructions. For example, because the combination employs continuously-monitored parameter values as taught by Naghavi and Burnes, and Hochstedler notes the monitoring of “real-time information” on its display, the combination performs the replacement using “currently detected and determined” “measured values” even under Patent Owner’s construction. *See* Pet. 9–13, 25–29; Ex. 1004, 1:20–21, 3:27–33; Ex. 1005 ¶¶ 56–57, 59, 63; Ex. 1006 ¶¶ 38–39, Fig. 7; PO Resp. 27. In addition, although the combination encompasses replacement of parameter values using already-displayed health icons that satisfies the “replaced” aspect of the claims, one example of Petitioner’s proposed combination goes further and describes monitoring parameters not shown on the display and using that parameter value as a basis to replace a displayed parameter value when the patient’s condition warrants.¹⁶ Burnes discloses

¹⁶ *See* Pet. 12 (“For example, in the combination, when a parameter that is not displayed in a current layout becomes (near) out of range, it would have

highlighting parameter values with warning symbols based on the patient's parameter approaching a near out of range or out of range condition, while Hochstedler teaches not displaying unused parameter values. *See* Ex. 1004, 1:20–21, 1:55–60, 5:26–45, 8:40–65; Ex. 1006 ¶¶ 38–39; Pet. 11–12, 28–29. Petitioner persuasively asserts that these teachings support replacement of a displayed parameter with a parameter not on the display, when the second parameter value becomes near out of range or out of range. *See* Pet. 11–12, 28–29; Ex. 1003 ¶¶ 38, 44, 49, 50.¹⁷

In summary, as to limitation 1b, we find that Petitioner proves that its proposed combination discloses the limitation when properly construed (in the absence of Patent Owner's proposed constructions), and if were to construe "measured value" as Patent Owner proposes and require replacement based on a monitored but not displayed parameter. Because we find that Petitioner shows that the combination discloses this limitation under several circumstances and because we do not adopt Patent Owner's proposed constructions, we need not reach Petitioner's alternative argument

been obvious to change the layout to include a block for that parameter, as shown by Hochstedler." (citing Ex. 1003 ¶¶ 38–39; Ex. 1005 ¶ 59; Ex. 1006 ¶¶ 38–39)); *see also id.* at 28–29 ("When a parameter that is not displayed in that initial layout (e.g., the second parameter) changes in severity, the layout changes such that the value of that second parameter is displayed, thus serving as an alarm bringing the parameter change to the attention of clinical staff." (citing Ex. 1003 ¶ 78; Ex. 1004, 1:54–60, 5:26–45, 8:40–65)).

¹⁷ Although Patent Owner asserts that none of the references when viewed in isolation teach currently monitoring a parameter not shown on the display, Petitioner's combination includes such a feature, and Petitioner provides a persuasive rationale based on the references and expert testimony for its inclusion. *See* Pet. 11–12, 28–29; PO Resp. 28–44; PO Sur-reply 15–16. We do not view the Petition as requiring this aspect of its combination in order to meet the claim limitations when properly construed.

that the combination discloses this limitation even accepting all of Patent Owner’s claim construction arguments, including the removal of the replaced parameter from the display. *See* Pet. Reply 25–27; *see also* PO Post-hearing 1–3, 5–10.

Claim limitation 1c recites that the “event” referred to in limitation 1b is “the measured value of one of the first or second physiological parameters approaching one or more threshold values indicative of a worsening state of a patient.” Pet. vi. For limitation 1c, Petitioner relies on Naghavi and Burnes to show that the “event” that triggers the display change occurs when a parameter approaches a threshold value (e.g., a parameter “near out of range” in Burnes). *Id.* at 29–30 (citing Ex. 1003 ¶¶ 79–82; Ex. 1005 ¶¶ 59, 63, claim 1; Ex. 1006 ¶¶ 37–39, 43, 48). Aside from its previous arguments we address above, Patent Owner does not address claim limitation 1c or argue that the proposed combination fails to teach this aspect of the claimed event. *See* PO Resp. 28–44. We find that Petitioner establishes that its proposed combination discloses limitation 1c because both Naghavi and Burnes teach changes in the display of parameters based on the worsening state of a patient. *See* Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 33–39, 43, 48. We incorporate Petitioner’s argument and evidence as to limitation 1c as our own. *See* Pet. 29–30.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that the combination of Naghavi, Hochstedler, and Burnes discloses all of the limitations in claim 1.

b. Motivation to Combine

After summarizing its proposed combination, Petitioner provides a number of reasons for combining the references. Pet. 9–17. Petitioner

breaks its motivation to combine arguments into three separate categories that we address below. *See id.* at 13–17.

Patent Owner raises a number of arguments in support of its contention that “a POSITA would not have been motivated to combine the references to replace a measured value of one parameter with the measured value of another parameter,” which we address in the context of Petitioner’s arguments below. *See* PO Resp. 44–57. Many of Patent Owner’s arguments rely on Patent Owner’s proposed claim constructions for “replaced” and “measured value,” which we do not adopt for the reasons discussed above. For example, the first sentence in Patent Owner’s argument contends that “Naghavi, Hochstedler and Burnes do not disclose using the same screen area to display two currently measured parameters,” but we do not read the claims as requiring the display of “two currently measured parameters” consistent with Patent Owner’s construction for “measured values.” *See id.* at 44 (citing Ex. 2042 ¶ 125). Such arguments lack weight given that we have rejected their premise, and although Patent Owner’s arguments are suffused with references to its claim constructions, we attempt to identify where Patent Owner does not rely on those constructions in our analysis below.

i. Display of icons and health objects according to layouts such as Hochstedler’s

Petitioner provides several motivations “to display icons/health objects in layouts” as described, for example, in Hochstedler, including (1) automatic replacement of a layout as taught by Hochstedler “advantageously allows ‘the layout of the GUI [to] change[] with the needs of users and the stage of medical treatment,’ thus helping ensure display of clinically relevant information;” (2) “automatic layout replacement provides

prioritized display of important information rather than other, less relevant information;” and (3) the implementation merely applies “known techniques (multiparameter display) by a known system (a medical monitoring system) to yield predictable results (multiparameter display in a medical monitoring system).” Pet. 13–14 (citing Ex. 1003 ¶¶ 41–45; Ex. 1004, 1:49–50; Ex. 1005 ¶¶ 59, 63, 69, 99); *see also id.* at 10–11 (explaining proposed combination of Hochstedler’s GUI configurations and changes with Naghavi’s automatically-changing display of health parameters (citing Ex. 1003 ¶¶ 34–38; Ex. 1004, 1:49–50, 5:26–45; Ex. 1005 ¶¶ 25, 29–30, 32, 35–40, 44, 56–57, 59, 63, 99)). Petitioner also contends that a “POSITA would have expected success because integration of display techniques with a medical monitoring device is predictable.” *Id.* at 14 (citing Ex. 1003 ¶ 46).

Patent Owner argues that Petitioner fails to support its argument that “a POSITA would have been motivated to combine Naghavi’s display icons and health objects with Hochstedler’s layouts,” but Patent Owner’s arguments on these points depend upon its flawed claim constructions. PO Resp. 44–48. For example, Patent Owner argues that Petitioner fails to “address why a POSITA would have *replaced a currently measured value of a parameter with a currently measured value of another parameter in the same screen area.*” *Id.* at 44–45, 47 (emphasis added) (citing Pet. 13–14; Ex. 1003 ¶¶ 41–46; Ex. 2042 ¶¶ 126–128). Patent Owner also faults Petitioner for failing to provide a motivation that would result in the *removal* of a parameter from a display, or monitoring an *undisplayed* parameter, as the claims require under Patent Owner’s proposed constructions. *See id.* at 45–48 (citing Ex. 2042 ¶¶ 127–132). We find these arguments unpersuasive because Patent Owner’s arguments on these points rely on claim

construction positions that we decline to adopt. *See* Pet. 13–14; PO Resp. 44–48. Petitioner was not required to provide a motivation to combine the references to result in a combination that includes unclaimed features. *See* Pet. Reply 22–24.

Patent Owner does not clearly set forth any arguments that Petitioner’s arguments lack merit when the claims are given their proper construction. Even if Patent Owner had contested these issues under the claims as properly construed, we still find Petitioner’s showing on these points persuasive because the references and cited expert testimony support it. For example, Hochstedler teaches automatic replacement of a layout based on “the needs of users and the stage of medical treatment,” which ensures the display of the most clinically relevant information as Naghavi teaches. Ex. 1004, 1:49–50, 5:42–45 (describing automatic layout switch); Ex. 1005 ¶¶ 59, 63, 69, 99; Pet. 13 (citing Ex. 1003 ¶¶ 42–44; Ex. 1004, 1:49–50; Ex. 1005 ¶¶ 59, 63, 99). Petitioner also persuasively argues, with expert support, that its combination merely applies known techniques using known systems to achieve predictable results, with an expectation of success due to the predictable medical monitoring technology involved. Pet. 14 (citing Ex. 1003 ¶¶ 45–52); PO Resp. 47–48 (arguing against portions of Petitioner’s contentions on these points based on Patent Owner’s constructions and not contesting Petitioner’s expectation of success argument).

ii. Change in severity of a parameter triggering a display layout change

Petitioner argues that a “POSITA would have been motivated to switch the layout responsive to a parameter value changing to become (near or) out of range” because such an implementation (1) “would provide a

display that ‘best suit[s] the condition of [the] patient;’” (2) “would ‘relieve the data analysis burden placed on the clinician while enabling the clinician to maintain thorough patient care;’” and (3) applies “known techniques (changing a parameter display responsive to a change in parameter status) by a known system (a multiparameter monitoring and display system) to yield predictable results (a multiparameter monitoring and display system in which the parameter display changes responsive to a parameter change).” Pet. 14–15 (citing Ex. 1003 ¶¶ 47–52; Ex. 1005 ¶ 63; Ex. 1006 ¶ 4); *see also id.* at 11–13 (explaining proposed combination and changes to Hochstedler’s GUI based on changes in patient condition as taught by Naghavi and Burnes) (citing Ex. 1003 ¶¶ 35–40; Ex. 1004, 1:20–21, 1:54–60, 3:27–33, 5:26–45, 8:28–41, 8:56–65, Figs. 2, 9, 13; Ex. 1005 ¶¶ 56–57, 59, 63, 99; Ex. 1006 ¶ 38–39, 50, 57). Petitioner contends that a “POSITA would have expected success because systems in which a parameter change triggers a display change were conventional, predictable technologies.” *Id.* at 15 (citing Ex. 1003 ¶ 52).

Petitioner provides several persuasive reasons in support of its proposed combination based on the argument that a POSITA would have been motivated to switch the layout responsive to a parameter value changing. Pet. 11–15 (citing Ex. 1003 ¶¶ 35–40, 47–52). For example, we agree with Petitioner that a motivation exists to change the layouts to “best suit the condition of [the] patient” because Naghavi expressly describes an “interactive and dynamic” GUI that “may automatically detect changes in health status . . . and automatically react and rearrange the available options to best suit the condition” of the patient. Ex. 1005 ¶ 63. The supporting expert testimony persuasively relies on this aspect of Naghavi when

concluding that “such a change in the severity of a parameter can indicate a change in the patient’s health that may require close monitoring” and a POSITA “would have been motivated to implement this approach of the combination in order to achieve” Naghavi’s objectives. Ex. 1003 ¶ 48 (citing Ex. 1005 ¶ 63); *see also* Pet. Reply 23 (“[T]he rearrangement of parameters, as already suggested by Naghavi and implemented according to Hochstedler, advantageously ensures an easy-to-use user interface, e.g., by highlighting information that has changed to warrant user attention.” (citing Pet. 13–14; Ex. 1003 ¶¶ 42–43)); Ex. 1003 ¶¶ 42–43.

Patent Owner takes issue with a sentence in this portion of the Petition where Petitioner argues that “automatic layout switching would enable caregiver monitoring of changing parameters even if they are *not displayed* on a main screen.” PO Resp. 48–49 (citing Pet. 14; Ex. 1003 ¶ 49; Ex. 2042 ¶ 134). Patent Owner faults Petitioner for failing to “explain a reason why a POSITA would modify Hochstedler to leave a currently measured parameter undisplayed in light of” Hochstedler’s teaching that it seeks to display all measured parameters. *Id.* at 49–50 (citing Ex. 2042 ¶¶ 136–137). Patent Owner also asserts that the Examiner rejected arguments similar to Petitioner’s during prosecution and that Dr. Cockburn’s testimony in support of automatic layout switching is unsupported by personal experience or evidence to support its argument that there would be no motivation to perform the replacement step using undisplayed parameters, given Hochstedler’s preference to display all parameters. *Id.* at 50–51 (citing Ex.

1003 ¶¶ 38, 43, 44, 49 50; Ex. 2042 ¶¶ 93–111, 138–141; Ex. 2043, 18:4–19:13).¹⁸

We find the portion of Patent Owner’s argument relating to monitoring parameters not on the display, based on Naghavi alone, potentially persuasive. *See* Pet. 14; Ex. 1003 ¶¶ 48–49; Ex. 1005 ¶ 63. Nevertheless, Petitioner proffers reasons to combine that do not depend on this argument, and, as discussed above, we find these reasons persuasive. Accordingly, even if we give even if were to give no weight to this one-sentence argument in the Petition, it fails to undermine Petitioner’s motivation to combine arguments we already found convincing. *See* Pet. 13–14.

Patent Owner also argues that Petitioner errs in relying on Burnes to support the argument that replacing and removing parameters will “relieve the data analysis burden placed on the clinician.” PO Resp. 51 (quoting Pet. 15) (citing Ex. 1003 ¶ 50; Ex. 2042 ¶ 142). Patent Owner asserts that “Burnes discloses simultaneously displaying all data using a well-organized and easy-to-understand chart,” which cuts against any suggestion that it teaches not displaying any parameter values. *Id.* at 52 (citing Ex. 1006 ¶ 5, Fig. 7; Ex. 2042 ¶ 143). Patent Owner also contends that Hochstedler suggests displaying even “redundant information” and “unused parameters” rather than removing them from the display, and that “none of the references

¹⁸ In its Sur-reply, Patent Owner contends that this same portion of its Response “explained that Hochstedler taught away” from the proposed combination. PO Sur-reply 18–19 (citing PO Resp. 37, 49–51). The Response, however, contains no express teaching away argument, and we find insufficient support for such an argument in the Response. *See* PO Resp. 37, 49–51.

disclose monitoring but not displaying a parameter.” *Id.* at 53–54 (citing Ex. 1003 ¶ 50; Ex. 1004, 6:61–7:5, Fig. 13; Ex. 2042 ¶¶ 144–146; Ex. 2043, 86:10–19); *see also* PO Sur-reply 21–22 (citing Ex. 2042 ¶¶ 135–136, 141) (arguing that removing parameters from the display is contrary to Hochstedler’s teaching and that neither Hochstedler nor Naghavi teaches removing less relevant parameters).

We disagree with Patent Owner’s assessment on this issue and its suggestion that Hochstedler requires displaying irrelevant information. As Patent Owner acknowledges elsewhere, Hochstedler teaches removing parameters from a display when the sensor providing data is removed from the system. PO Resp. 28 (“Hochstedler switches its display . . . by removing from display a parameter that is no longer measured.” (citing Ex. 2042 ¶ 94)), 30 (describing removal of parameters from display); *see also* Pet. 5–8; Ex. 1004, 1:49–60, 5:26–37, 8:40–41, 8:64–65, Figs. 2, 9. This teaching of omitting unnecessary data from the display, when possible, combined with the teaching of Burnes to “lessen the data analysis burden placed on the clinician,” supports Petitioner’s proposed rationale for the combination that includes not displaying every available parameter. *See* Pet. 15; Ex. 1003 ¶ 50 (citing Ex. 1004, 1:49–60; Ex. 1006 ¶ 4). As Dr. Cockburn puts it, “[b]y displaying these parameters only when necessary, the amount of information presented as a default to the clinician is maintained at a manageable level.” Ex. 1003 ¶ 50. The references persuasively support this rationale by stressing the need to visually prioritize the most relevant data, even if they do not expressly disclose removing parameters from the display or monitoring parameters not on the display. *See* Ex. 1006 ¶¶ 4 (Burnes stressing need to relieve data analysis burden on clinicians when viewing

large volumes of data), 38–39 (describing visual prioritization of data using “alert” and “warning” symbols to show parameter values that are “out of range” or “near out of range,” respectively).

In addition, even if we were to give no weight to this argument in the Petition, it forms only a part of Petitioner’s overall motivation to combine analysis, and other aspects of Petitioner’s argument support its proposed combination. Patent Owner suggests that Petitioner premises all of its motivation arguments “on parameters being displayed only when necessary,” but that overstates Petitioner’s position and ignores the arguments that do not depend on that theory that we address and find persuasive above. *See* PO Sur-reply 20 (citing Pet. 12, 14–15; Ex. 1003 ¶¶ 38, 44, 49, 50, 78; Ex. 2042 ¶¶ 120–121). In short, we do not view Petitioner’s proffer of evidence that a POSITA would have been motivated to keep some monitored parameters off the screen and only display them when clinically relevant as necessary to its motivation to combine argument, and as we stated in the claim construction analysis, the claims do not require monitoring a parameter not on the display.

Moreover, to the extent that Patent Owner argues that the display of all measured parameters in the references undermines Petitioner’s entire motivation to combine analysis, we disagree. As we noted in our Institution Decision, Naghavi and Burnes both recognize the value of changing the display of *already-displayed* parameter values or icons to emphasize the most clinically relevant parameters by rearranging them in a certain fashion or adding warning symbols to the parameter values to help them stand out to a clinician. *See* Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 35, 38–39; Inst. Dec. 26 (“Naghavi contemplates changing the order or relative position of *already-*

displayed icons, and supports Petitioner’s position that a POSITA would have been motivated to replace parameters as claimed and taught by Hochstedler based on Naghavi.” (citing Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 35, 38–39)). Accordingly, the references need not teach removing parameters from the display or monitoring parameters not on the display to support Petitioner’s proposed combination.

We also agree with Petitioner that its proposed combination involves the application of “known techniques (changing a parameter display responsive to a change in parameter status) by a known system (a multiparameter monitoring and display system) to yield predictable results (a multiparameter monitoring and display system in which the parameter display changes responsive to a parameter change).” *See* Pet. 15 (citing Ex. 1003 ¶ 51). The references support these broad assertions. *See id.* at 9–14. Petitioner’s motivation arguments have sufficient merit to find in favor of Petitioner on this issue without considering this additional argument, but we view it as supportive of Petitioner’s overall proposed combination.

Patent Owner argues against Petitioner’s assertion that its combination relies on known techniques by a known system to yield predictable results. PO Resp. 54 (citing Pet. 15; Ex. 1003 ¶ 51; Ex. 2042 ¶ 147). The bulk of Patent Owner’s argument here relies on its claim constructions that we decline to adopt. *See id.* at 54–55 (arguing that Petitioner fails to set forth a reason “to show two different currently measured parameters”), 56 (arguing that Petitioner fails to address what claim 1 “requires,” namely “*replacement* for two currently measured parameters”). Patent Owner also faults this aspect of Petitioner’s argument as “too generic” and lacking reference to specific prior art teachings, but we disagree. *See id.* at 55–56. Petitioner’s

argument builds on its previous assertions, which include more specific citations to the references, and are not fatally flawed for lack of specificity. *See* Pet. 13–14. All of the references disclose “known techniques” for “changing a parameter display responsive to a change in parameter status,” involve known systems for “multiparameter monitoring and display,” and would “yield predictable results” in which the display system “display[s] changes responsive to a parameter change,” and Patent Owner does not argue otherwise. *See* PO Resp. 54–57.

We also find that a POSITA would have had a reasonable expectation of success in making the combination because such display systems, with changes to the display based on certain parameter values, were well-understood and straightforward to implement in this predictable art. *See* Pet. 15 (citing Ex. 1003 ¶ 52). Patent Owner does not contest this aspect of Petitioner’s motivation to combine argument. *See* PO Resp. 48–57.

Finally, Patent Owner asserts that (1) Hochstedler’s replacement of measured values is merely based on “a change in the system’s capabilities” and (2) Burnes and Naghavi may disclose display changes based on a value approaching a threshold, but fail to disclose replacement as a result of that event. PO Resp. 57 (citing Ex. 2042 ¶ 151). Even if Patent Owner accurately describes the references, Patent Owner’s argument lacks merit because it attacks the references individuality and fails to address the reasons Petitioner provides for its proposed combination. *See id.*; *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually.”). Petitioner provides persuasive reasons to combine those teachings that these arguments fail to address.

iii. Colors or alert symbols to indicate parameter severity

Petitioner provides reasons why a POSITA would have been motivated to use colors or alert symbols, as taught by Burnes, to allow a parameter out of range or near out of range to be recognized, such as “making the GUI easier to understand.” Pet. 16–17 (citing Ex. 1003 ¶¶ 53–57). Petitioner also contends that a “POSITA would have expected success because display technology was predictable, and adjusting display characteristics to reflect parameter status was common and well-understood.” *Id.* at 17 (citing Ex. 1001, 17:22–32; Ex. 1003 ¶ 57). Patent Owner does not contest these aspects of Petitioner’s motivation to combine arguments. *See* PO Resp. 48–57. We find Petitioner’s arguments and evidence on these points persuasive, and adopt them as our own.

iv. Conclusion on Motivation to Combine

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that one of ordinary skill in the art would have been motivated to combine the references in the manner Petitioner proposes.

c. Conclusion as to Claim 1

Based on our review of the record, Petitioner proves by a preponderance of the evidence that the combination of Naghavi, Hochstedler, and Burnes discloses all of the limitations of claim 1 and that a POSITA would have been motivated to combine the references in the manner Petitioner proposes with a reasonable expectation of success. *See* Pet. 9–30. Accordingly, we determine that Petitioner proves by a preponderance of the evidence that claim 1 would have been obvious based on Naghavi, Hochstedler, and Burnes.

5. *Claim 4*

Claim 4 depends from claim 1 and recites “wherein the common display area is configured to default to displaying one of the measured values of the first or second physiological parameters.” Pet. vi. Petitioner relies on Hochstedler’s Figure 8 and argues that its proposed combination includes “a dialog box for layout selection” having “a default selection button.” *Id.* at 32–33 (citing Ex. 1004, 8:30–38, Fig. 8). According to Petitioner, “a POSITA would have understood, or at least found to be obvious, that the GUI has a default layout.” *Id.* (citing Ex. 1003 ¶ 86; Ex. 1004, 8:36–38). Petitioner contends that “[w]hen the layout displaying the measured value of the first or second parameter is the default, the common display area is configured to default to displaying the measured value of the first or second parameter, respectively.” *Id.* (citing Ex. 1003 ¶ 87).

Patent Owner argues that Petitioner’s combination fails to disclose all of the limitations of claim 4 because Hochstedler describes default *settings* rather than default *layouts*. PO Resp. 57–58 (citing Ex. 1004, 5:39–42, 7:63–8:3, 8:30–38, Fig. 8; Ex. 2042 ¶¶ 153–154). Patent Owner relies on Hochstedler’s teaching of an algorithm to recommend layouts based on “*default weights* for different components,” or a default setting that will not change the layout based on system changes. *Id.* at 58–59 (citing Ex. 1004, 5:39–42, 6:50–8:9, 8:36–38, Fig. 8; Ex. 2042 ¶¶ 153–155). According to Patent Owner, Hochstedler’s use of a weighted algorithm to recommend layouts “teaches against using a default layout” and selecting “layouts to match the system” does not describe “using a default layout.” *Id.* at 59 (citing Ex. 1004, 6:50–8:9; Ex. 2042 ¶ 155).

Petitioner portrays Patent Owner’s argument as “deficient” because Patent Owner fails to address its proposed combination that “is not limited solely” to the embodiment using a “default selection button,” which Patent Owner relies on in its argument. Pet. Reply 27 (citing Ex. 1003 ¶ 86; Ex. 1004, 8:36–38). Petitioner also argues that even if limited to that embodiment in Hochstedler, “a default layout does not exclude recommended layouts created by Hochstedler’s ‘weighted algorithm’” as Patent Owner suggests. *Id.* at 27–28. In Petitioner’s view,

a POSITA would have understood a default layout to be inclusive of “a selection automatically used by a program in the absence of a choice made by the user.” [Ex. 1022 ¶¶ 19–22; Ex. 1023, 3; Ex. 1024, 3]. That is, a recommended layout automatically created and selected by a system is yet another example of a default layout. [Ex. 1022 ¶¶ 19–22].

Id. at 28.

In its Sur-reply, Patent Owner contends that Petitioner never explains how the default selection button shown in Hochstedler’s Figure 8 discloses the limitations of claim 4. PO Sur-reply 24. According to Patent Owner, “Hochstedler does not ‘default’ to displaying one of the measured values because its algorithm dynamically recommends a layout based on connected components.” *Id.* Patent Owner also asserts that Petitioner relies on a new theory based on a layout called “Bedlayout1” in an effort to show that it describes a default layout automatically selected by the program absent a choice made by the user. *Id.* (citing Pet. Reply 27–28; Ex. 1022 ¶ 21). Patent Owner contends that this new argument does not aid Petitioner because Hochstedler still “requires the user to select the ‘OK’ button to switch to the recommended layout (Bedlayout1) or the ‘CANCEL’ button to

return to the current layout.” *Id.* (citing Ex. 1004, 8:30–39; Ex. 2044, 16:22–18:17).

We begin our analysis by noting that the Petition relies exclusively on Hochstedler’s Figure 8 and associated text as disclosing the limitations of claim 4, and, more specifically, the activation of “a default selection button.” *See* Pet. 32 (citing Ex. 1004, 8:30–38, Fig. 8). Although Petitioner alludes to the overall combination not being limited to the “default selection button” in Figure 8, Petitioner fails to point to any specific teachings from any of the references that explain how anything other than Hochstedler’s Figure 8 discloses the limitations of claim 4. *See id.*

We reproduce Hochstedler’s Figure 8 below.

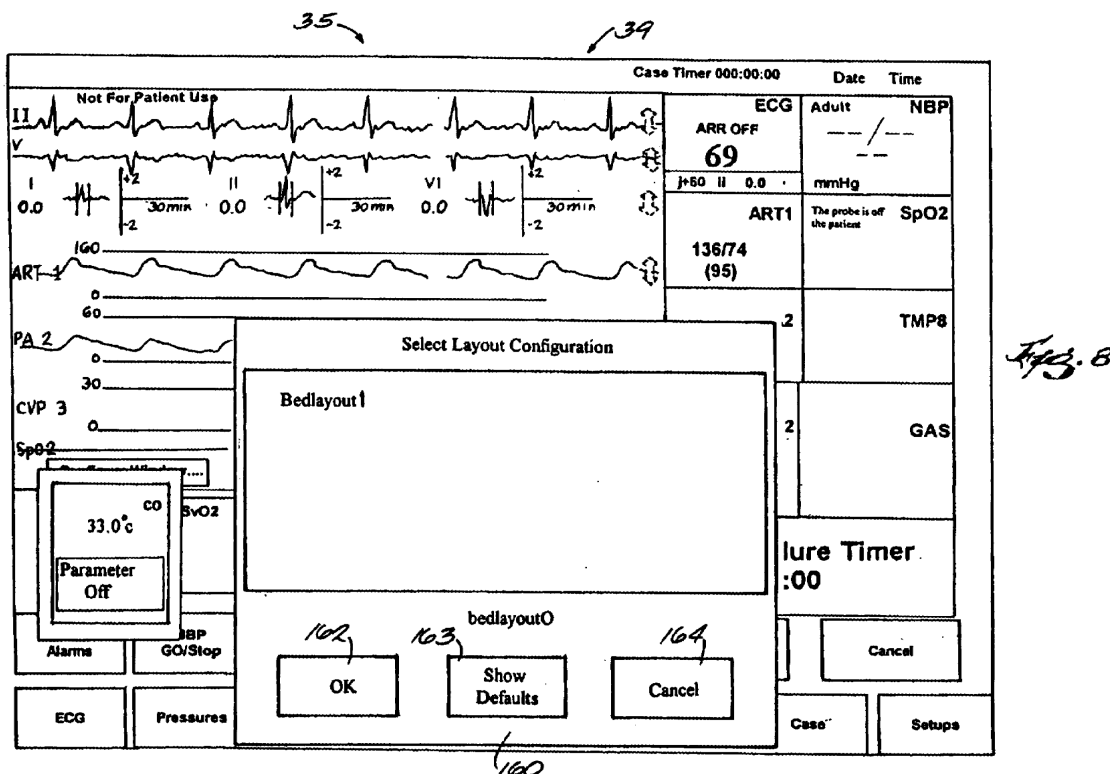


Figure 8 shows “a dialog box of proposed selections for switching the existing layout to a second layout.” Ex. 1004, 2:39–41. Figure 8 depicts a

dialog box with the title “Select Layout Configuration” at the top, and three buttons labelled “OK” 162, “Show Defaults” 163, and “Cancel” 164. *See id.* at Fig. 8. The text that Petitioner relies on from Hochstedler describes Figure 8 as follows:

FIG. 8 illustrates an implementation of Option 3 where a pop-up list or dialog box 160 is presented to the user showing the user that the overall layout is about to be changed to a new bed layout, Bedlayoutl. Generically, the layouts listed in the dialog box 160 and other choices listed in the dialog boxes discussed below are referred to as “selections.” The dialog box 160 includes an accept mechanism in the form of an OK button 162 to confirm the switch, a default selection button 163, and a CANCEL button 164 to cancel the layout switch.

Ex. 1004, 8:30–38.

Based on our review of the record, Petitioner fails to establish that Hochstedler discloses the limitations of claim 4, which require a common display area “configured to default to displaying one of the measured values of the first or second physiological parameters.” Pet. vi. The Petition suggests that the “default selection button” 163 itself discloses or renders obvious “that the GUI has a default layout.” *Id.* at 32. We find Patent Owner’s interpretation of the default selection button 163 more persuasive, which describes Hochstedler as disclosing default settings used in its algorithm rather than default layouts. PO Resp. 57–58 (citing Ex. 1004, 5:39–42, 7:63–8:3, 8:30–38, Fig. 8; Ex. 2042 ¶¶ 153–154). At best, the impact of activating default selection button 163 lacks sufficient clarity to support Petitioner’s argument because the text relied on by Petitioner fails to describe what happens when a user activates the default layout selection 163 button. *See* Ex. 1004, 8:30–38. Petitioner also fails to explain how a system

that requires user selection of a layout amounts to a system “configured to default” to the claimed layout.

Notably, in its Reply, Petitioner did not expressly defend its reliance on selection of the default layout selection button 163 as showing a default layout that meets the limitations of claim 4, or respond directly to Patent Owner’s arguments in its Response. *See* Pet. Reply 27–28. Instead, Petitioner shifted its argument to reliance on layouts recommended by Hochstedler’s algorithm. *See id.* This amounts to a new argument not clearly set forth in the Petition, which did not suggest a user activating the OK button 162 (the trigger for switching to another layout) as the key to disclosing a default layout. *See* Pet. 32 (citing Ex. 1004, 8:30–38); Ex. 1004, 8:30–38 (describing implementation of a layout switch to Bedlayout1 if a user selects the OK button 162). That notwithstanding, we find the argument unpersuasive because Hochstedler does not describe these layouts in sufficient detail to support Petitioner’s argument. *See* Ex. 1004, 8:30–38. It appears that such a layout depends upon a number of user-settable weights in the software, followed by a user activating a button to switch to such a layout (or not), as shown in Figure 8 on which Petitioner relies. *See id.* at 7:6–9, 7:48–51, 8:30–40, Fig. 8. As such, the layouts available in Figure 8 would not fall within the scope of Petitioner’s own view of the limitation as “a selection automatically used by a program *in the absence of a choice made by the user*” because they are based on user inputs and user selection of the layout. Pet. Reply 28 (emphasis added) (citing Ex. 1022 ¶¶ 19–22; Ex. 1023, 3; Ex. 1024, 3). Petitioner’s new and limited argument in its Reply fails to establish that Hochstedler’s Figure 8 shows a common display area “configured to default to displaying one of the

measured values of the first or second physiological parameters” as recited in claim 4. Pet. vi.

Based on the foregoing, we find that Petitioner does not establish that Hochstedler discloses the limitations of claim 4, and has not proven that claim 4 would have been obvious based on a combination of Naghavi, Hochstedler, and Burnes.

6. Claims 18 and 20

Independent claim 18 recites limitations similar to claim 1, but also requires replacement of one parameter value for another “automatically based on which is *a more critical one* of the measured values of the first or second physiological parameters.” Pet. viii (emphasis added). Claim 20 depends from claim 18 and further recites that “at least one of measured physiological parameters is determined noninvasively.” *Id.* Petitioner argues that replacement of one parameter value for another occurs when one parameter becomes “out of range” or “near out of range,” which “indicates that the second parameter is a more critical one of the parameters, e.g., compared to a parameter that has not changed.” Pet. 39 (citing Ex. 1003 ¶ 109; Ex. 1005 ¶¶ 59, 63; Ex. 1006 ¶¶ 38–39, 43). Petitioner also asserts that “the replacement is automatic.” *Id.* (citing Ex. 1003 ¶ 109; Ex. 1004, 5:42–45) (emphasis removed).

Patent Owner argues that its previous arguments as to claim 1 apply to claim 18, and further contends that Petitioner’s combination fails to disclose parameter values replaced based on which parameter “is a more critical one” as required by claim 18. PO Resp. 60–61 (citing Ex. 2042 ¶¶ 160–162). In Patent Owner’s view, “the fact that one parameter becomes out-of-range or near-out-of-range does not indicate whether that parameter is ‘more critical’

than another parameter.” *Id.* at 61 (citing Ex. 2042 ¶ 162). As an example, Patent Owner asserts that “if the currently displayed parameter is already out-of-range when the undisplayed parameter also becomes near-out-of-range, the undisplayed parameter could still be less critical.” *Id.* Patent Owner also contends that a “particular parameter could also be critical for a particular medical procedure, regardless of whether other parameters go out of range” and that “[n]one of the references disclose a comparison between two different parameters to determine which of the two parameters is more ‘critical’ than the other.” *Id.* at 61–62 (citing Ex. 2042 ¶¶ 162–163). Petitioner did not respond to these arguments in its Reply. *See* Pet. Reply 14–28; Tr. 39:12–40:3 (counsel for Petitioner stating that Petitioner’s arguments for claim 1 apply to claim 18, but not addressing the additional limitations in claim 18).

Based on our review of the record, we agree with Patent Owner that Petitioner fails to show that its proposed combination discloses the limitations of claim 18. When claim 18 refers to replacement “based on which is a more critical one of the measured values” it requires some sort of comparison between the criticality of the parameter values. Pet. viii. Petitioner appears to acknowledge this aspect of the claim when it argues that replacement of one parameter value for another occurs when one parameter becomes “out of range” or “near out of range,” which “indicates that the second parameter is a more critical one of the parameters, e.g., *compared to a parameter that has not changed.*” Pet. 39 (emphasis added). The problem with Petitioner’s argument stems from the assumption that the other parameter, i.e., the one being replaced, “has not changed.” *Id.* Petitioner fails to point to any aspect of the references that teaches a

comparison between the criticality of parameter values or a basis to assume that the replaced parameter has not changed. *See id.* Petitioner’s supportive expert testimony merely repeats the arguments from the Petition. *See* Ex. 1003 ¶ 109. In addition, Burnes, which Petitioner relies on to teach replacement based on a parameter value becoming near out of range or out of range, does not teach a comparison of the criticality between the second parameter and the first parameter being replaced because Burnes does not teach replacement of one parameter value for another. *See* Ex. 1006 ¶¶ 38–39, 43.

We also agree with Patent Owner’s unrebutted arguments in its Response that note situations where the first parameter may be considered more critical than the second, even when the second parameter may be considered already out of range. *See* PO Resp. 61–62 (citing Ex. 2042 ¶ 162). Accordingly, Petitioner fails to establish that its combination discloses replacing one parameter value with another “automatically based on which is a more critical one of the measured values of the first or second physiological parameters” as recited in claim 18. Pet. viii, 32.

Based on the foregoing, we find that Petitioner fails to prove that claim 18 would have been obvious based on Naghavi, Hochstedler, and Burnes. Claim 20 depends from claim 18, and Petitioner’s arguments as to claim 20 do not remedy the deficiencies discussed above. *See* Pet. 33, 40 (addressing claim 20 and incorporating analysis for similar dependent claim 6 at page 33 of the Petition). Accordingly, for the same reasons, we find that Petitioner fails to prove that claim 20 would have been obvious based on Naghavi, Hochstedler, and Burnes.

7. Claims 2, 3, 6, 11–17, 21, and 22

We have reviewed Petitioner’s challenges to claims 2, 3, 6, 11–17, 21, and 22. *See* Pet. 30–43. Patent Owner does not address Petitioner’s arguments and evidence as to these claims with the exception of continued reliance on its arguments as to claim 1, which we address above. *See* PO Resp. 25–63 (separately addressing claims 1, 4, 18, and 20, but relying on arguments for claim 1 for the remainder of challenged claims). We find Petitioner’s showing persuasive as to these claims, and adopt Petitioner’s arguments and evidence as our own. *See* Pet. 30–43. Based on our review of the record, Petitioner proves by a preponderance of the evidence that claims 2, 3, 6, 11–17, 21, and 22 would have been obvious based on Naghavi, Hochstedler, and Burnes.

E. Obviousness Based on Naghavi, Hochstedler, Burnes, and Hayashi

Petitioner argues that the combination of Naghavi, Hochstedler, Burnes, and Hayashi renders claims 19, 27, 28, 32, 34, 36, 37, 42, and 43 obvious. *See* Pet. 1, 43–68. Patent Owner relies on its previously-raised arguments and does not present any additional arguments as to these challenges beyond those we address above. *See* PO Resp. 63–65. As noted above, we find Patent Owner’s arguments persuasive as to independent claim 18 and that Petitioner fails to prove that claim 18 would have been obvious. Claim 19 depends from claim 18, and Petitioner’s arguments as to claim 19 do not remedy the deficiencies discussed above. *See* Pet. viii, 47–49. Accordingly, for the same reasons we discuss in the context of the analysis of claim 18, we find that Petitioner fails to prove that claim 19 would have been obvious based on Naghavi, Hochstedler, Burnes, and Hayashi.

We find Petitioner’s showing persuasive as to the remaining claims subject to this challenge, and adopt Petitioner’s arguments and evidence as our own. *See* Pet. 43–46, 49–68. Based on our review of the record, Petitioner proves by a preponderance of the evidence that claims 27, 28, 32, 34, 36, 37, 42, and 43 would have been obvious based on Naghavi, Hochstedler, Burnes, and Hayashi.

F. Obviousness Based on Naghavi, Hochstedler, Burnes, Hayashi, and Mortz

Petitioner argues that the combination of Naghavi, Hochstedler, Burnes, Hayashi, and Mortz renders claims 42–44 obvious. *See* Pet. 1, 69–75. Patent Owner relies on its previously-raised arguments and does not present any additional arguments as to these challenges. *See* PO Resp. 66.

We find Petitioner’s showing persuasive as to these claims, and adopt Petitioner’s arguments and evidence as our own. *See* Pet. 69–75. Based on our review of the record, Petitioner proves by a preponderance of the evidence that claims 42–44 would have been obvious based on Naghavi, Hochstedler, Burnes, Hayashi, and Mortz.

CONCLUSION¹⁹

¹⁹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–4, 6, 11–18, 20–22	103(a)	Naghavi, Hochstedler, Burnes	1–3, 6, 11–17, 21, 22	4, 18, 20
19, 27, 28, 32, 34, 36, 37, 42, 43	103(a)	Naghavi, Hochstedler, Burnes, Hayashi	27, 28, 32, 34, 36, 37, 42, 43	19
42–44	103(a)	Naghavi, Hochstedler, Burnes, Hayashi, Mortz	42–44	
Overall Outcome			1–3, 6, 11–17, 21, 22, 27, 28, 32, 34, 36, 37, 42–44	4, 18–20

ORDER

Accordingly, it is:

ORDERED that Petitioner has proven by a preponderance of the evidence that claims 1–3, 6, 11–17, 21, 22, 27, 28, 32, 34, 36, 37, and 42–44 of U.S. Patent No 8,190,223 B2 are unpatentable;

FURTHER ORDERED that Petitioner has not proven by a preponderance of the evidence that claims 4 and 18–20 of U.S. Patent No. 8,190,223 B2 are unpatentable;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this decision, or the termination of any

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such appeal, a certificate shall issue canceling claims 1–3, 6, 11–17, 21, 22, 27, 28, 32, 34, 36, 37, and 42–44 of U.S. Patent No 8,190,223 B2; 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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