

Filed on behalf of: ResMed Corp.

Filed: August 6, 2026

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESMED CORP.,

Petitioner,

v.

CLEVELAND MEDICAL DEVICES INC.,

Patent Owner.

Case No. IPR2025-00160
U.S. Patent No. 11,786,680

PETITIONER'S NOTICE OF APPEAL

Pursuant to 37 C.F.R. § 90.2(a), notice is hereby given that Petitioner Resmed Corp. ("Petitioner") appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered on June 5, 2026 (Paper 47) by the United States Patent and Trademark Office, Patent Trial and Appeal Board (the "Board") in Case No. IPR2025-00160, and from all underlying orders, decisions, rulings, and opinions. A copy of the Final Written Decision is attached as Exhibit A.

This appeal is timely under 35 U.S.C. § 142, 37 C.F.R. § 90.3, Federal Rule of Appellate Procedure 15(a)(1), and Federal Circuit Rule 15(a)(1).

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), the expected issues on appeal include, but are not limited to, the Board's ruling that Petitioner has not demonstrated, by a preponderance of the evidence, that the claims of U.S. Patent No. 11,786,680 are unpatentable over Toge, Kumar, and Burton (claims 1–5, 7, 8, 10–13, 15–18, and 20–31) and Toge, Kumar, Burton, and Kisner (claims 10, 15, and 20), and any findings of the Board's determination supporting or related to its Final Written Decision including, without limitation, the Board's construction and application of the claim language, the Board's interpretation of the evidence, and the Board's consideration of the arguments. Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the Board. In addition, the Notice of Appeal and the required fee are being filed electronically with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

Dated: August 6, 2026

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on August 6, 2026, a true and correct copy of the foregoing **PETITIONER'S NOTICE OF APPEAL** is being filed through P- TACTS and filed with the Director of the United States Patent and Trademark Office via overnight express mail to the address below:

Director of the United States Patent and Trademark Office
c/o Office of the Solicitor, Mail Stop 8
P.O. Box 1450
Alexandria, Virginia 22313-1450

The undersigned also certifies that a true and correct copy of this Notice of Appeal and the required fee were filed electronically via CM/ECF on August 6, 2026, with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

The undersigned further certifies that a true and correct copy of this Notice of Appeal was served by electronic mail on Patent Owner's counsel of record, pursuant to its Mandatory Notices:

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EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESMED CORP.,
Petitioner,

v.

CLEVELAND MEDICAL DEVICES, INC.,
Patent Owner.

IPR2025-00160
Patent 11,786,680 B1

Before SHERIDAN K. SNEDDEN, NEIL T. POWELL, and
CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

SNEDDEN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claim Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1–5, 7, 8, 10–13, 15–18, and 20–31 of U.S. Patent No. 11,786,680 B1 (“the ’680 patent,” Ex. 1001). We have jurisdiction under 35 U.S.C. § 6.

The petitioner has the burden of proving unpatentability of the challenged claims by a preponderance of the evidence. 35 U.S.C. § 316(e). Having reviewed the parties’ arguments and cited evidence, for the reasons discussed below, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–5, 7, 8, 10–13, 15–18, and 20–31 are unpatentable.

A. Background and Summary

ResMed Corp. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–5, 7, 8, 10–13, 15–18, and 20–31 of the ’680 patent. Paper 1 (“Pet.”). Cleveland Medical Devices, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7. With our authorization, Petitioner filed a Preliminary Reply, and Patent Owner filed a Preliminary Sur-reply, addressing discretionary denial issues. Paper 8; Paper 9.

We instituted trial on June 13, 2025. Paper 11. After institution, Patent Owner filed a Response. Paper 23 (“PO Resp.”). Petitioner filed a Reply. Paper 27 (“Reply”). Patent Owner filed a Sur-reply. Paper 35 (“Sur-reply”). Additionally, during trial, Patent Owner filed an authorized Motion to Terminate, alleging that Petitioner failed to name a real party in interest (namely, Petitioner’s corporate parent, Resmed Inc.). Paper 37. Petitioner filed an opposition. Paper 38. Patent Owner filed a reply. Paper 39. We denied the Motion to Terminate. Paper 44.

On March 19, 2026, we held an oral hearing, the transcript of which is of record. Paper 42 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies ResMed Corp. as the real party in interest for Petitioner. Pet. 76. Patent Owner identifies Cleveland Medical Devices, Inc. as the real party in interest for Patent Owner. Paper 5, 1.

C. Related Matters

The parties indicate that the ’680 patent is involved in *ResMed Corp. v. Cleveland Medical Devices, Inc.*, Case No. 1:23-cv-02221-BMB (N.D. Ohio) (the “Ohio case”). Pet. 76; Paper 5, 1.

Petitioner has filed a request for *ex parte* reexamination of the ’680 patent (90/019,705). Paper 5, 1.

Petitioner has also filed petitions for *inter partes* review of the following patents owned by Patent Owner: IPR2025-00157 against U.S. Patent No. 11,602,284; IPR2025-00158 against U.S. Patent No. 11,690,512; IPR2025-00159 against U.S. Patent No. 11,375,921; IPR2025-00246 against U.S. Patent No. 11,857,333; and IPR2025-00247 against U.S. Patent No. 11,872,029. Pet. 76.

D. The ’680 patent (Ex. 1001)

The ’680 patent is titled “Integrated Diagnostic and Therapeutic System and Method for Improving Treatment of Subject with Complex and Central Sleep Apnea.” Ex. 1001, code (54). The ’680 patent describes “an integrated [sleep] diagnosis and treatment device.” *Id.* at 3:7–9. According to the ’680 patent, none of the devices on the market (1) “can be used to adjust the air flow delivered to a subject based on the subject’s current

physiological state or the subject's current symptoms"; (2) "can use a rich data set to predict or detect apnea and provide appropriate treatment"; (3) "use a rich set of data over single or multiple nights to set the optimal pressure and other parameters"; (4) "can be used to automatically adjust a treatment device based on a comprehensive evaluation of the subject's physiological signals"; or (5) "can be used in the subject's home". *Id.* at 2:40–52. The '680 patent aims to accomplish these tasks. *Id.* at 2:53–3:3.

Figure 9 of the '680 patent is reproduced below.

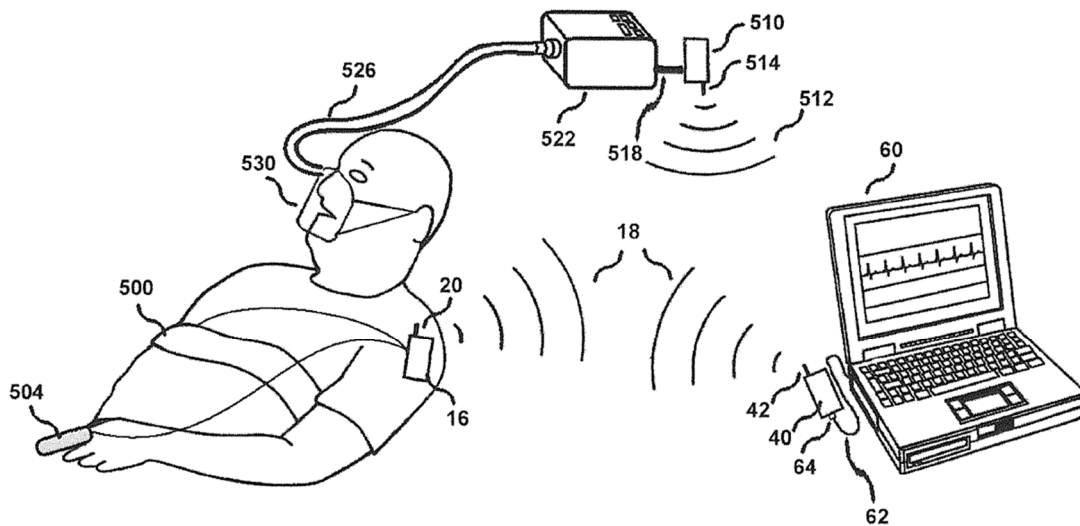


Fig. 9

Figure 9 depicts a schematic representation of an embodiment of the '680 patent's system "used with a subject to acquire EEG signals from the subject and then transmit them to the receiver and attached computer." Ex. 1001, 13:50–53. The system includes patient interface box 16, treatment device 522 (such as continuous positive air pressure device, "CPAP"), treatment device interface 518, base station 40, and external programming means 60. *Id.* at 54:30–56, 55:30–34. "[P]atient interface box 16 receives signals (not shown) from a respiratory belt 500 and a pulse oximeter 504 placed on the

subject” and “generates a wireless signal 18 encoded with data corresponding to the signals from the respiratory belt 500 and a pulse oximeter 504. The patient interface box 16 transmits the wireless signal 18 to base station 40” through module antenna 20. *Id.* at 54:31–44. “[B]ase station 40 receives the radio frequency signal 18 through base antenna 42, demodulates the radio frequency signal 18, and decodes the data.” *Id.* at 54:44–47. “[D]ata processing and calculation can be performed by the base station 40”, external programming means 60, or “can be distributed between the patient interface box 16, the base station 40, and the external programming means 60.” *Id.* at 55:25–29; *see also id.* at 55:4–7.

External programming means 60 “contains software that is used to program the patient interface box 16 and the base station 40 through data interface cable 62” or through “radio frequency (or other type) of signals transmitted between an external programming means 60 and a base station 40 and the patient interface box 16 or to another base station 40.” Ex. 1001, 54:53–63. External programming means 60 can monitor, analyze, and display data received by base station 40 from patient interface box 16 and can “calculate the next appropriate gas flow level to be delivered to the subject” by “us[ing] data originally collected from the respiratory belt 500 and the pulse 20 oximeter 504 to calculate the appropriate flow level.” *Id.* at 55:16–21; *see also id.* at 55:4–7. “After the appropriate flow level has been calculated, the external programming means 60 transmits a command signal to the treatment device interface 518, which then relays the command signal to the treatment device 522 via a connection 518.” *Id.* at 55:30–34. “Once the treatment device 522 receives the command signal the treatment device performs the command and changes the treatment provided to the subject.” *Id.* at 55:58–61.

E. The Challenged Claims

Petitioner challenges claims 1–5, 7, 8, 10–13, 15–18, and 20–31 of the '680 patent. Claim 1, the only independent claim, is reproduced below with bracketed notations added:¹

1. A system for remote internet server-based diagnostic monitoring with one or more positive airway pressure (PAP) device(s) for sleep disorder treatment comprising

[a] A. one or more PAP device(s);

[b] B. a first non-transitory computer readable medium comprising a first software stored on the first non-transitory computer readable medium, the first software adapted to be executed by a first processor when the first software is downloaded to a cell phone of a subject(s) receiving treatment, the cell phone requiring:

[b.i] 1) at least one first radio frequency wireless transceiver,

[b.ii] 2) the first processor,

[b.iii] 3) the first software, and

[b.iv] 4) a display,

[b.v] the first software further adapted for:

[b.v.A] i) receiving a PAP therapy efficacy data or a modified PAP therapy efficacy data based in part on the PAP therapy efficacy data both based on treatment of the subject and its efficacy in whole or in part, and

[b.v.B] ii) outputting one or more PAP therapy efficacy measures(s) on the display of the cell phone for viewing by the

¹ For ease of reference, we use the same bracketed notations Petitioner uses in the Petition. *See, e.g.*, Pet. 78–80.

subject based in whole or in part on the data received by the first software; and

[c] C. a second non-transitory computer readable medium comprising at least one second software for *a remote internet site and a database, the remote internet site and the database stored on a non-transitory computer readable medium and adapted to:*

[c.i] 1) *Be hosted on at least one server, and*

[c.ii] 2) be used for remote monitoring of multiple subjects receiving PAP therapy;

[d] wherein the one or more PAP device(s) that is each used for treating the sleeping disorder of the subject(s) or their symptoms, and further comprises:

[d.i] a blower having an air output,

[d.ii] a sensor for providing a sensor data to determine airflow, the sensor internal to the PAP device adapted for measuring or deriving the respiratory airflow of the subject while using the PAP,

[d.iii] a second processor adapted for generating the PAP therapy efficacy data based on a first data and a second data by receiving the sensor data, and calculating both i) the first data related to a quantitative measure of symptom severity during use of the PAP device and ii) the second data related to a usage of the PAP device by the subject,

[d.iv] at least one second radio frequency wireless transceiver for transmitting the PAP therapy efficacy data, and

[d.v] a mask or a nasal cannula; and

[e] the at least one second software for the remote internet site and the database is further adapted to receive the PAP therapy efficacy data, in whole or in part, generated by the PAP device and transmitted via the at least one second radio frequency wireless transceiver.

Ex. 1001, 62:56–63:42 (emphasis added). Challenged claims 2–5, 7, 8, 10–13, 15–18, and 20–31 depend from claim 1, either directly or indirectly, and recite additional features of the sleeping disorder treatment systems. *Id.* at 63:43–57; 63:62–64:11; 64:15–39; 64:43–65:3; 65:7–66:32.

F. Evidence

Petitioner relies upon information that includes the following.

Ex. 1044, Toge, P2002-291889A, published October 8, 2002 (“Toge”).²

Ex. 1008, Kumar et al., US 2002/0198473 A1, published December 26, 2002 (“Kumar”).

Ex. 1050, Burton et al., WO 2004/032719 A2, published April 22, 2004 (“Burton”).

Ex. 1051, Kisner et al., US 5,309,921, issued May 10, 1994 (“Kisner”).

Petitioner also relies on the Declaration of Jason Kirkness, Ph.D. (Ex. 1003) and the Declarations of Dr. Sandeep Chatterjee (Exs. 1005, 1069) to support its contentions.

Patent Owner supports its contentions with the Declarations of Michael T. Goodrich (Ex. 2015) and David A. Borkholder (Ex. 2016), among other evidence.

G. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–5, 7, 8, 10–13, 15–18, and 20–31 would have been unpatentable on the following grounds (Pet. 2):

² Ex. 1044 includes an English translation of Toge, the original Japanese version of Toge, and a Translation Certification for the English translation. *See generally* Ex. 1044. We cite to the English translation herein.

Ground	Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1	1–5, 7, 8, 10–13, 15–18, 20–31	103(a)	Toge, Kumar, Burton
2	10, 15, 20	103(a)	Toge, Kumar, Burton, Kisner

II. ANALYSIS

A. Principles of Law

“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 the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Moreover, a petitioner should not “place the burden on [the Board] to sift through information presented by the Petitioners, determine where each element [of the challenged claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]” *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9 at 25 (PTAB May 22, 2014).

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Here, Petitioner applies “an effective filing date of no earlier than November 4, 2005.” Pet. 7. Accordingly, we apply the pre-AIA version of § 103; however, our decision would be no different under the AIA version of the statute.

A patent claim is unpatentable for obviousness 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). In *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of nonobviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18; *KSR*, 550 U.S. at 407. An obviousness determination requires finding a reason to combine accompanied by a reasonable expectation of achieving what is claimed in the challenged patent. *See Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). “[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 419–20.

We analyze the asserted grounds of unpatentability in accordance with these principles to resolve the dispute between the parties.

B. Claim Construction

The challenged claims should be read in light of the Specification, as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). We generally give claim terms their ordinary and customary meaning. *See In re Translogic*

Tech., Inc., 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.” (internal quotation marks omitted)); *see also* 37 C.F.R. § 42.100(b) (stating that claims are construed in IPRs according to the same standard as used in federal court).

Petitioner states that the Board need not construe any terms, and that the “Petition establishes the prior art meets each of the claim limitation[s] under any reasonable construction.” Pet. 18.

Patent Owner asserts that “[n]o express construction is necessary for the Board to resolve the instant dispute and affirm patentability.” PO Resp. 7.

We determine that no express construction of any claim term is necessary to resolve the dispute between the parties. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). To the extent further discussion of the meaning of any claim term is necessary to our decision, we provide that discussion below in our analysis of the asserted grounds of unpatentability.

C. Level of Ordinary Skill in the Art

Petitioner proposes that a person of ordinary skill in the art (“POSITA”) at the time of the invention:

would have had at least a bachelor’s degree in mechanical engineering, electrical engineering, computer science, biomedical engineering, or a similar technical field, with at least two years of relevant product design experience working with diagnostic sensor systems and network data systems, such as

networked PAP machines. Additional experience could substitute for less education, and additional education could likewise substitute for less experience.

Pet. 17. Patent Owner “applies Petitioner’s proposed definition of POSITA in 2005.” PO Resp. 7.

We adopt Petitioner’s proposed level of ordinary skill in the art because it appears to be consistent with the cited prior art and is undisputed on this record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (indicating that the prior art itself may reflect an appropriate skill level).

D. Summary of the Asserted Prior Art

1. *Toge (Ex. 1044)*

Toge, titled “Remote monitoring method for a medical device,” is the October 8, 2002 publication of Japanese application P2001-96730. Ex. 1044, codes (21), (43), (54).

Toge “pertains to a remote monitoring method for monitoring the condition of a patient using a positive pressure artificial respiration assisting device remotely.” *Id.* ¶ 1. Toge aims to “[e]nabl[e] remote monitoring of the patient’s condition during the use of a positive pressure artificial respiration assisting device, or the condition of the positive pressure artificial respiration assisting device.” *Id.* at code (57); *see also id.* ¶ 5. According to Toge, its invention accomplishes this because it includes:

a positive pressure artificial respiration assisting device . . . connected to a relay device and a physician-side terminal device via a wireless or wired communication network to conduct remote monitoring of the positive pressure artificial respiration assisting device via the communication network, wherein the positive pressure artificial respiration assisting device requests treatment data from a patient using the device, it transmits the

requested treatment data to the relay device via the communication network, the relay device receives treatment data transmitted from the positive pressure artificial respiration assisting device, it transmits all or part of the received treatment data to the physician-side terminal device via the communication network, and the physician-side terminal device is configured to receive all or part of the treatment data transmitted from the relay device.

Id. ¶ 6. Toge explains further that the positive pressure artificial respiration assisting device it describes comprises:

a treatment data acquisition means for requesting treatment data on a patient using the device, a memory means for storing treatment data obtained by the treatment data acquisition means, and a transmitting means connected to a wireless or wired communication network for transmitting treatment data stored in the memory means via the communication network.

Id. ¶ 7.

Toge's Figure 1 is reproduced below.

[Figure 1]

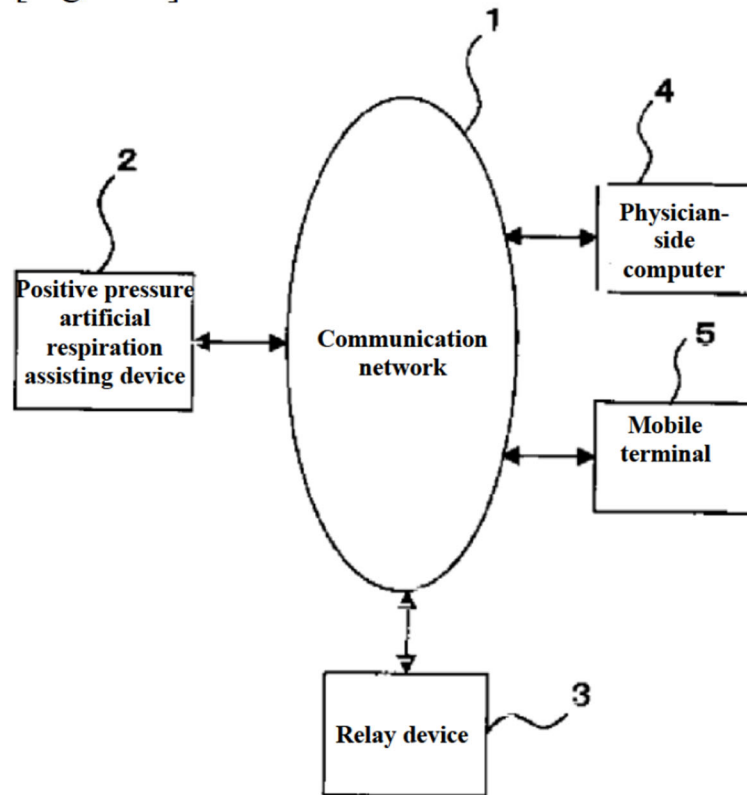


Figure 1 depicts “a block diagram illustrating the overall configuration of a remote medical (telemedicine) system” according to Toge’s invention.

Ex. 1044 ¶ 8. The “telemedicine system comprises a positive pressure artificial respiration assisting device 2, a relay device 3, and physician-side terminal devices, namely a physician-side computer 4 and a mobile terminal 5, all connected to communication network 1.” *Id.* Positive pressure artificial respiration assisting device 2 is a home medical device “designed to deliver positive pressure air to the nasal mask of a patient receiving home medical care (hereinafter referred to simply as ‘the patient’) to assist the patient’s breathing.” *Id.* ¶ 10.

Figure 1’s “relay device 3 is installed within the company providing the positive pressure artificial respiration assisting device or in a visiting

nursing station” and “receives data . . . transmitted from the positive pressure artificial respiration assisting device 2, transmitting all or part of said data to the physician-side computer 4.” Ex. 1044 ¶ 16. In some embodiments, the functionality of “relay device 3 can be incorporated into the positive pressure artificial respiration assisting device 2 (the control unit [] of the control device 25), allowing it to be configured as an integrated unit with the positive pressure artificial respiration assisting device 2”, which “directly transmits all or part of the treatment data to the physician-side computer 4 or mobile terminal 5 via the communication network 1.” *Id.* ¶¶ 60–61.

Figure 1’s “physician-side computer 4 is a computer installed at a medical institution (hospital, clinic, medical office, etc.) that receives data from a relay device 3 (namely, all or part of the data transmitted from the positive pressure artificial respiration assisting device 2 to the relay device 3)” and allows medical institution personnel to download and access the transmitted data and to “set the necessary data . . . for the positive pressure artificial respiration assisting device 2.” Ex. 1044 ¶¶ 17–18. Mobile terminal 5 may be a mobile phone, PHS, PDA, PocketBell, etc. and “is capable of being mobilized in emergencies by the physician-side computer 4, relay device 3, or other mobile terminals possessed by hospital personnel” in order “to set the necessary data . . . for the positive pressure artificial respiration assisting device 2.” *Id.* ¶ 19.

2. *Kumar (Ex. 1008)*

Kumar, titled “System and Method for Real-Time Monitoring, Assessment, Analysis, Retrieval, and Storage of Physiological Data Over a Wide Area Network,” is the December 26, 2002 publication of U.S. Application 10/109,958. Ex. 1008, codes (21), (43), (54).

Kumar “relates to remote monitoring of device over a wide area network,” and “to network-based transmission of data from a physiological collecting device.” *Id.* ¶ 2. We reproduce Kumar’s Figure 1A below.

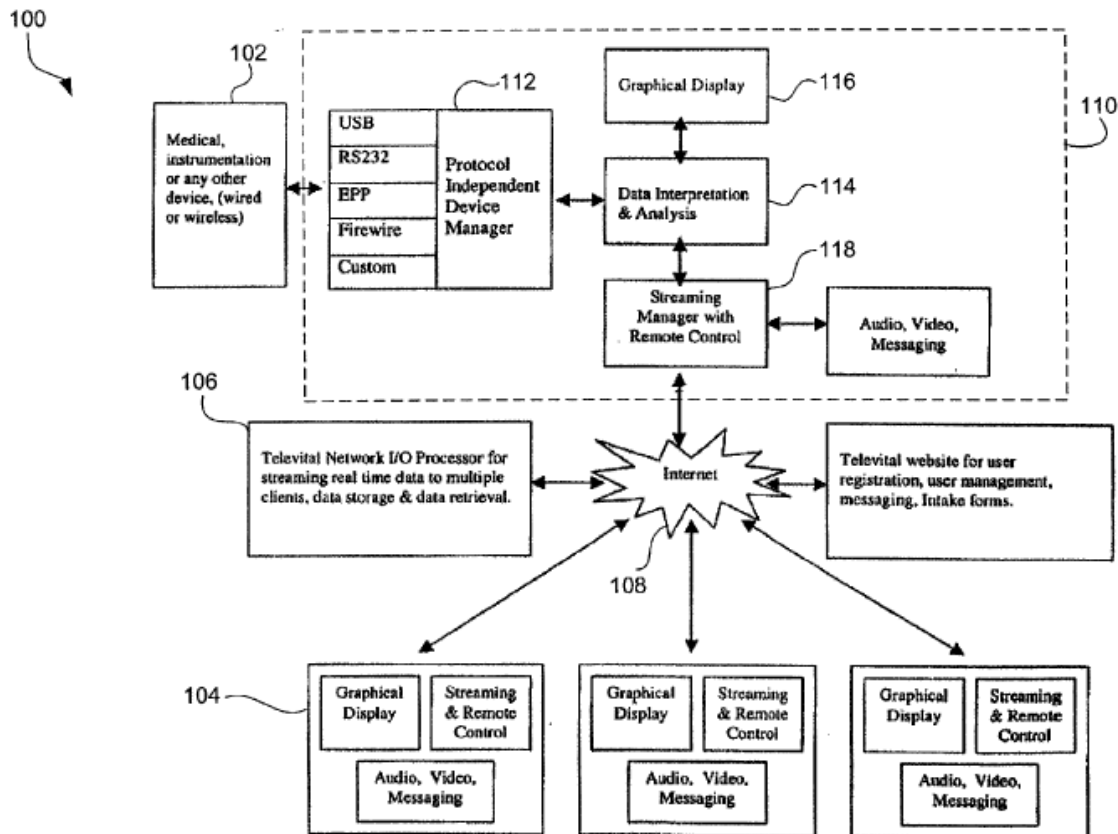


Fig. 1A

Figure 1A shows “a diagram of an exemplary system architecture for network-based monitoring of data from a patient-side physiological collecting device.” *Id.* ¶ 22. Architecture 100 includes patient-side devices 102 for collecting data from a patient/client, provider-side devices 104, and central server 106 that implements an engine. *Id.* ¶ 67. “The devices and engine are connected to a wide area network (WAN) 108 such as the Internet, intranet, or extranet,” and “[t]he system allows for the real-time Streaming of raw, interpreted, and/or processed physiological data

as well as textual/audio/video data from a patient to a health care provider.”
Id.

Patient-side devices 102 may “be connected via a computing device 110, such as a computer, handheld devices such as personal digital assistants (PDAs) and pocket PCs such as IPAQ with Windows CE operating System and Palm devices based on Palm OS[], wireless telephone, or any other computing device, to the WAN.” *Id.* ¶ 72. “A protocol independent device manager 112 running on the computing device establishes a two-way communication with a vast array of client-side devices.” *Id.*

Kumar teaches “a modular architecture in which the patient-side device and/or the computing device coupled to the patient-side device can send a request to the engine with an identifier of the patient-side device, and the engine will send the appropriate plug-in which allows the computing device to communicate with the patient-side device.” *Id.* ¶ 74. Therefore, Kumar’s system “may support both plug-and-play web device drivers and customized graphical user interfaces (GUIs) for the various devices.” *Id.*

“The system may be implemented using Apache [W]eb Server, MySQL on Linux, Oracle on Linux, Java servlets, Applets, HTML, JavaScript, Java, C#, Microsoft’s .NET etc.” and “the server may be implemented on the Internet, intranet, or an extranet.” *Id.* ¶ 87.

3. *Burton (Ex. 1050)*

Burton, titled “Method and Apparatus for Maintaining and Monitoring Sleep Quality During Therapeutic Treatments,” published on April 22, 2004, from PCT Application PCT/US2003/032170. Ex. 1050, codes (21), (43), (54).

Burton relates to “a method and apparatus for delivering therapeutic treatments to patients without adversely affecting their sleep.” *Id.* at 1:4–6. We reproduce Burton’s Figure 1 below.

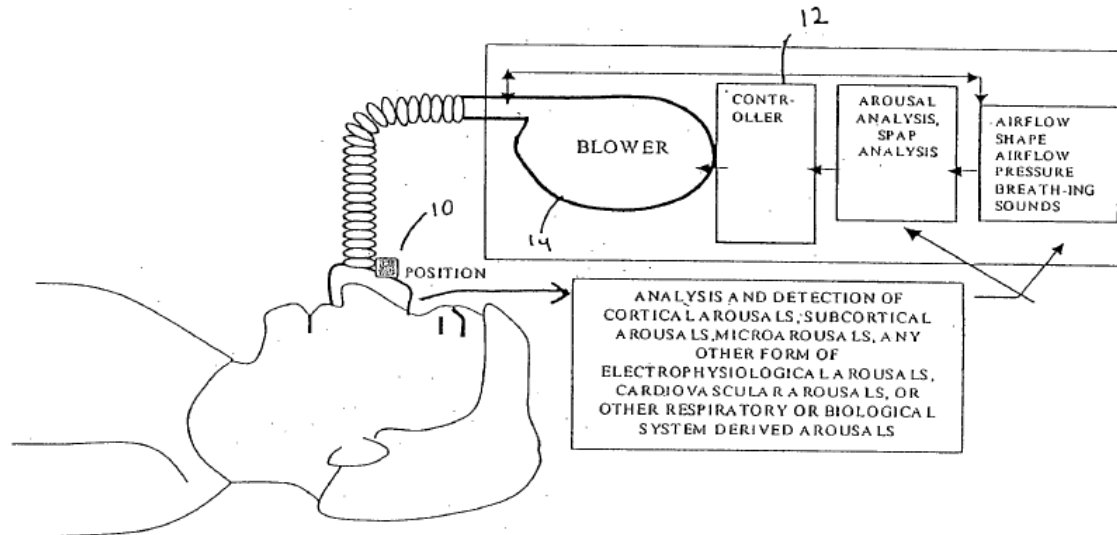


FIG. 1

Figure 1 shows Burton’s system, which “includes one or more sensors 10 which detect a patient’s physiological parameters, a controller 12 which monitors and determines arousal based on the physiological variables received from the sensor, and a gas delivery apparatus 14 which is controlled by the controller 12.” *Id.* at 6:12–15. Burton states that the system “is capable of maintaining the sleep quality of a patient undergoing a therapeutic treatment by sensitizing the therapeutic device to various physiological indicators which predict the onset of arousal and using an adaptive algorithm to modify a patient’s therapeutic treatment.” *Id.* at 3:21–24. The algorithm “has the capability to be adapted during real-time operation based on any combination of a) empirical clinical data, b) individual patient collected or alternative (to laboratory) collected data

(from diagnostic study within sleep laboratory or other alternative site) or c) real-time monitored and analyzed data.” *Id.* at 3:25–28.

Burton describes “an algorithm for detecting variation in airflow shape that could be indicative of the incidence or probable onset of upper airway resistance (UAR) or variations of UAR, respiratory event related arousals (RERA) or treatment event related arousals (TERA).” *Id.* at 4:24–27. For instance, Burton explains that the system “would record and note the likelihood of arousal or upper airway flow limitation by way of the shape characteristics of the airflow signal (as derived from a breathing mask circuit).” *Id.* at 4:18–20. According to Burton, “[t]his detection of waveshape characteristics could be achieved by detecting changes in the sequence (1 or more) breathing waveform shapes and then associating these changes with the onset probability or actual incidence of hypopnea, shallow breathing or UAR.” *Id.* at 4:20–23.

Burton teaches that a system using the techniques it describes “can predict the UAR, RERA and TERA events or the onset of such events and adjust the treatment to avoid such events.” *Id.* at 5:10–12. Burton further teaches that “[a]pnea events, shallow breathing, upper airway resistance and hypopnea events can also be detected and pre-empted by analysis of the change in shape of the high bandwidth monitoring of the airflow waveforms and pressure waveforms.” *Id.* at 13:23–26.

4. *Kisner (Ex. 1051)*

Kisner, titled “Apparatus and Method for Respiratory Monitoring,” issued on May 10, 1994, and is directed to “[a] passive, non-invasive, non-contacting apparatus and method for monitoring the respiration of a subject within a monitored environment.” Ex. 1051, codes (45), (54), (57).

We reproduce Kisner's Figure 11 below.

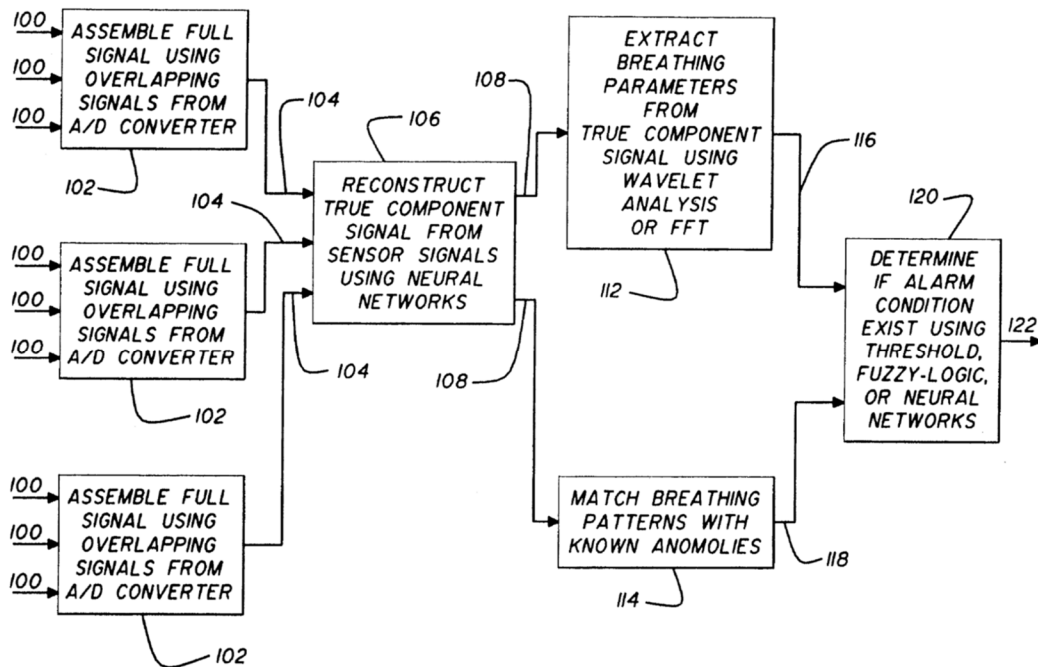


FIG. 11

Figure 11 depicts steps for signal processing conducted within Kisner's microprocessor system. *Id.* at 7:67–8:2. Kisner explains that overlapping signals 100 “are assembled into a full signal at 102, generating sensor signal 104.” *Id.* at 13:40–45. “Sensor signals 104 are reconstructed using neural networks or other processing algorithms to form true component signals 108 at 106.” *Id.* Kisner further explains:

Breathing parameters are extracted from true component signals 108 using wavelet analysis or similar means at 112 to generate signal 116. Breathing patterns from signal 108 are matched with known anomalies at 114 to generate signals 118. Signals 116 and 118 are processed using threshold, fuzzz-logic, neural networks or similar processing technique at 120 to determine if an alarm or other desired output condition exists which is expressed and communicated by signal 122.

Id. at 13:45–53.

E. Ground 1: Obviousness over Toge, Kumar, and Burton

Petitioner contends that claims 1–5, 7, 8, 10–13, 15–18, and 20–31 are unpatentable as obvious over Toge, Kumar, and Burton. Pet. 18–68. In support of its assertion, Petitioner provides a detailed discussion explaining how each claim limitation of claims 1–5, 7, 8, 10–13, 15–18, and 20–31 is disclosed by Toge, Kumar, and Burton. *Id.* Petitioner supports its contentions with the declarations of Dr. Kirkness (Ex. 1003 ¶¶ 137–290) and Dr. Chatterjee (Ex. 1005 ¶¶ 70–205).

Petitioner contends that a person of ordinary skill in the art would have been motivated to modify Toge’s physician-side computer to host Kumar’s browser-based engine (which Petitioner equates with the claimed “remote internet site”). Pet. 18 (“[A] POSITA would have improved the physician-side computer of Toge by implementing it with the browser-based engine accessible through web pages as taught by Kumar.”); *see also* Ex. 1005 ¶ 86 (“[m]odifying the physician-side computer to be a web server to allow others to access the data transmitted”); *id.* at ¶ 89 (“[T]he Kumar modification [implementing a web server] would be on the physician-side computer.”). Petitioner further contends that a person of ordinary skill in the art would have had “a reasonable expectation of success in implementing the Toge PAP device as a networked system as taught by Kumar and then incorporating Burton’s algorithm” (Pet. 21) because, “at the relevant time, it was common to have the client and server on the same computer, which was known as a ‘localhost’” (Reply, 2).

Patent Owner disputes that Petitioner has carried its burden regarding claim limitations [1.c] and [1.c.i] (directed to a “remote internet site” that is “hosted on at least one server”). PO Resp. 8–20. In particular, Patent

Owner’s rebuts the technical feasibility and desirability of placing both client and server on the same machine. *See, e.g.*, Sur-reply 3–4.

Having considered the parties’ positions and evidence of record, we determine that person of ordinary skill in the art would not have implemented Toge’s physician-side computer as a web server using a “localhost” architecture as proposed by Petitioner because such a configuration cannot communicate with external devices over the public internet, a deficiency that directly contradicts Petitioner’s stated motivations for the combination of permitting broad data access. Our analysis follows.

1. *Claim Limitations [1.c] and [1.c.1] (“remote internet site” that is “hosted on at least one server”)*

a) *Summary of Petitioner’s Obviousness Challenge*

Claim limitation [1.c] recites “a second non-transitory computer readable medium comprising at least one second software for a remote internet site and a database” stored on a non-transitory computer readable medium. Ex. 1001, 63:12–16. Claim limitation [1.c.1] requires the remote internet site and the database to be adapted to “[b]e hosted on at least one server.” *Id.* at 63:17.

In arguing limitation [1.c], Petitioner cites Kumar’s disclosure of a system architecture for network-based monitoring of medical data using a browser-based engine (“remote internet site”) that supports real-time streaming of information over a wide area network, where the data is stored in a secured storage device at a central server (“database”). Pet. 45–46 (citing Ex. 1008 ¶¶ 10, 18, 20, 67, 72, 83, 87). For limitation [1.c.1], Petitioner cites Kumar’s disclosure that the browser-based engine is “implemented on a central server 106” (Ex. 1008 ¶ 67) and that the “secured storage device [is] at the central server” (*id.* ¶ 83). Pet. 46 (citing Ex 1003

¶ 216; Ex. 1005 ¶ 133). Petitioner argues that in light of those disclosures, it would have been obvious to a person of ordinary skill in the art “to combine the teachings of Toge and Kumar to implement a networked PAP treatment system.” *Id.* at 18 (citing Ex. 1003 ¶ 137; Ex. 1005 ¶ 70–81). Petitioner asserts that a person of ordinary skill in the art “would have improved the physician-side computer of Toge by implementing it with the browser-based engine accessible through web pages as taught by Kumar” for various reasons, including convenience and efficacy, to provide health access for more people, to leverage advances in mobile computing and wireless communications, and in view of the general market trend to implement consumer devices into intelligent systems. *Id.* at 18–19 (citing Ex. 1003 ¶¶ 137–41; Ex. 1005 ¶¶ 70–81). Petitioner also asserts that a person of ordinary skill in the art would have been motivated to use Kumar’s browser-based engine with Toge’s PAP device because it would enable data storage in a secure device at a central server for later access and/or analysis. *Id.* at 29 (citing Ex. 1008 ¶¶ 83–84; Ex. 1003 ¶ 165).

According to Dr. Kirkness, a person of ordinary skill in the art “looking to improve the physician-side computer of Toge would have looked at known ways to improve a telemedicine system by providing better data access by implementing browser-based engine accessible through web pages as taught by Kumar.” Ex. 1003 ¶ 137. Here, a person of ordinary skill in the art “would have understood that the sensors of Toge would have been ideal to combine with the advances [in telemedicine systems disclosed by Kumar] in order to improve a patient’s treatment.” Ex. 1003 ¶ 141.

b) Patent Owner Response

Patent Owner first contends that Toge does not expressly or inherently disclose a “remote internet site and database” on “at least one server.” PO Resp. 8–11. According to Patent Owner, Toge’s architecture relies on a push protocol, where the PAP device automatically transmits crucial treatment data directly to the physician’s computer and mobile device without any request from those devices. *Id.* at 9–10. More specifically, “Toge’s system includes a relay device that pushes patient data to the doctor’s computer and mobile device without request.” *Id.* at 9 (citing Ex. 1004 ¶¶ [0050]–[0054]; Ex. 2001, 25–26). Because no web server or internet site intermediates this data flow, Toge contains no “remote internet site.” *Id.* at 10–11.

Patent Owner then argues that a POSITA would not have been motivated to combine Kumar’s web server teachings with Toge’s system for two reasons. PO Resp. 11–20. First, Patent Owner contends that Toge’s physician-side computer functions as a client device that presents data to the physician, and well-established principles of client-server architecture dictate that the client layer and the server/database layer should reside on separate machines for both security and performance reasons. *Id.* at 12–13 (citing Ex. 2015 ¶¶ 46–48). Placing a web server on the same machine that functions as the physician’s client workstation as proposed by Petitioner would introduce security vulnerabilities to sensitive patient data and create resource contention that degrades system performance. *Id.* at 13. Patent Owner notes also that Petitioner’s own experts failed to meaningfully address these constraints, with Dr. Kirkness disclaiming expertise in network architecture and Dr. Chatterjee offering only the conclusory assertion that the combination would work because “it’s not magic.” *Id.* at 14 (citing

Ex. 2019, 83:14–19 (Dr. Kirkness testifying that he is not a “specific expert in the field” of network architecture and does not know “all of the limitations”); Ex. 2018, 13:3–11, 18:15–19:2 (Dr. Chatterjee testifying that he only considered “what the combination would look like” because “[i]f you implement it that way, then you can. It’s not magic.”).

Second, Patent Owner argues that converting Toge’s physician-side computer into a web server would fundamentally interfere with Toge’s stated purpose. PO Resp. 15–20. Toge is designed so that physicians receive emergency data automatically, without needing to request it, enabling them to take immediate corrective action. *Id.* at 15 (citing Ex. 1044 ¶¶ 1–6, 46, 47, 54, and 57). By contrast, a web server operates on a pull protocol where data is transmitted only in response to an HTTP request. *Id.* at 16–17 (citing Ex. 1016 ¶ 54; Ex. 2016 ¶ 86). Patent Owner contends that a web server would require physicians to affirmatively log in and request data rather than receiving it passively. *Id.* at 16. Patent Owner contends that Petitioner’s alleged benefits of the combination do not outweigh this interference because: the “general market trend” rationale is too generic to support the specific combination proposed; the “convenience and efficiency” benefit is already achieved by Toge’s mobile device, which enables remote monitoring; and the “allowing anyone with an Internet browser” benefit is undermined by the fact that the resulting two-tier architecture would suffer from performance degradation and security limitations when exposed to a large user base. *Id.* at 17–19.

c) Petitioner’s Reply

Petitioner advances three main rebuttals to Patent Owner’s objections. First, Petitioner argues that there is no immutable “principle” preventing a

client and server from residing on the same machine. Reply, 2–3. Petitioner points to Patent Owner’s own cited reference, which states that “[i]n a typical client/server based application, the client process and server process can be on the same computer.” *Id.* at 3 (citing Ex. 2020, 4). Petitioner further notes that this configuration was so common it had a shorthand name, a “localhost,” which is defined in the Microsoft Computer Dictionary as representing communications from a client to a server located on the same machine. *Id.* at 2–3 (citing Ex. 1070, 316).

Second, Petitioner rebuts Patent Owner’s “security vulnerabilities” by arguing that all system architectures have security risks and that a POSITA, exercising ordinary creativity and common sense, would have considered known mitigation techniques. *Id.* at 3–4 (citing *Elektro Ltd. v. ZAP Surgical Sys., Inc.*, 81 F.4th 1368, 1374 (Fed. Cir. 2023)). Petitioner notes that Patent Owner’s proposed alternative of separating the user layer and database layer onto different machines introduces its own tradeoffs, including reduced accessibility if one machine fails, additional performance costs from inter-machine network communication, and additional access points exploitable by malicious actors. *Id.* at 4–5.

Third, Petitioner disputes that configuring the physician-side computer as a web server would interfere with Toge’s purpose of pushing data to physicians in emergencies, arguing that Patent Owner improperly narrows Toge’s purpose to a single emergency embodiment when Toge more broadly aims to “enable remote monitoring of the patient’s condition” and contemplates both real-time and periodic data transmission. *Id.* at 5–7 (citing Ex. 1044 ¶¶ 5, 7, 44, 46). Petitioner further argues that Kumar’s system was itself “designed for the type of real-time transmissions” that Patent Owner alleges would be destroyed, as Kumar expressly describes “a

browser-based engine [that] supports real-time streaming of raw, interpreted, and processed physiological data from a patient/client to a health care provider.” *Id.* at 6–7 (citing Ex. 1008 ¶¶ 9, 10, 14) (emphasis omitted).

Petitioner relies heavily on Dr. Chatterjee’s reply declaration (Ex. 1069) to support each of its positions. Notably, regarding the client-server architecture, Petitioner cites Dr. Chatterjee’s testimony that “[d]uring the relevant period, it was a well-known design option to use the same machine as both a client and server” (*id.* at ¶ 5) and his testimony that a “localhost” configuration was not merely possible but common (*id.* at ¶ 8). Dr. Chatterjee testifies further that “the physician-side computer 4 would have been a natural design option to implement the web server because it is the component in the system which would receive the data and could be updated the most quickly and cost-effectively,” and that system updates should be controlled by the physician and providers rather than by the patient. *Id.* at ¶ 10.

Moreover, regarding Toge’s purpose and the push/pull issue, Dr. Chatterjee opines that “there is nothing inherent about a machine serving as both a client and server that prevents it from pushing data as soon as it is received,” and that because “the physician-side computer and the web server are on one machine, the physician will receive the data at the same time as the web server, communicating the data to the physician more quickly.” *Id.* at ¶ 19. He further testified that even in a pull-only scenario, the system could be designed so that “the server could automatically push out such data” upon identifying an emergency, or the physician’s web client could “continuously query the server to see if new data has been received.” *Id.* at ¶ 20.

d) Patent Owner Sur-reply

Patent Owner acknowledges that Petitioner cites Ex. 2020 for the proposition that “the client process and server process can be on the same computer,” but argues that other evidence of record confirms this architecture “is rarely used today” because it cannot “take advantage of the distributed computing environment.” Sur-reply 4 (citing Ex. 2020, 4); *see also* Ex. 2038 at 20:2–20 (“Distributed computing environment” means “computing resources and functionality that’s distributed and connected by a network” and “allow[s] access to data from different devices.”); Ex. 2003, 4 (this architecture “is not suitable for a web application” because “it can only access data available in a single computer or server”); Ex. 2022, 3 (“[U]nlike more advanced systems, [one-tier architecture] cannot transmit information from one client machine to another.”).

Patent Owner further emphasizes that “a POSITA would not have modified a physician’s personal computer to operate as the web server and client because such arrangements were not suitable for web application[s]” because clients in such a configuration “cannot share information from one client machine to others.” Sur-Reply, 3 (citing Ex. 2003, 4–5). Patent Owner notes that Dr. Chatterjee himself admitted that communications using a “localhost” “do[] not actually go out to the Internet,” meaning that in Petitioner’s proposed configuration, the PAP device could not send data to the web server nor could other remote clients receive data from it. *Id.* at 3–4 (citing Ex. 1069 ¶ 8). Patent Owner argues this directly undermines Petitioner’s stated rationale for the combination of providing broad access so that “anyone with an Internet browser” can “access the data anywhere.” *Id.* at 3, 5 (quoting Pet. 19). Patent Owner also challenges Dr. Chatterjee’s credibility on this point, asserting that he improperly conflates one-tier

architecture (client and server on the same machine) with two-tier architecture (client and server on different machines) throughout his testimony. *Id.* at 4 n.1 (citing Ex. 1069 ¶ 7; Ex. 2020, 4).

e) Analysis

Having considered the parties' positions and evidence of record, summarized above, we determine that a person of ordinary skill in the art would not have implemented Toge's physician-side computer as a web server using a "localhost" architecture as proposed by Petitioner because such a configuration cannot communicate with external devices over the public internet, a deficiency that directly contradicts Petitioner's stated motivations for the combination of permitting broad data access. Petitioner's expert, Dr. Chatterjee, expressly acknowledged in his Reply Declaration that when a client and server reside on the same machine, the communications between them do not traverse the internet. Ex. 1069 ¶ 8. Specifically, Dr. Chatterjee cited the Microsoft Computer Dictionary's definition of "localhost" as "[t]he name that is used to represent the same computer on which a TCP/IP message originates," noting that "[a]n IP packet sent to localhost has the IP address 127.0.0.1 and does not actually go out to the Internet." *Id.* (citing Ex. 1070, 316). Accordingly, Petitioner's proposed configuration of placing both the client and web server on Toge's physician-side computer would create a closed loop of communication that does not reach the broader network. *Id.* As noted by Patent Owner, "[i]f 'the physician-side computer and the web server are on one machine,' the local web server would not communicate with other devices via the Internet." Sur-Reply, 3–4 (comparing Ex. 1069 ¶ 19 with *id.* at ¶ 8).

Thus, the consequence of Petitioner’s proposed Toge-Kumar configuration is that other devices in the system, such as the PAP device that generates the treatment data and any remote client devices that might need to access that data, would be unable to send data to or retrieve data from the localhost web server. Patent Owner persuasively argues, supported by evidence of record, that under Petitioner’s proposed configuration, “the PAP device could not send data thereto nor could other clients receive data therefrom, as only the local client browser can exchange data.” *Id.* (citing Ex. 1069 ¶ 8); *see* Ex. 2003, 4 (one-tier architecture “is not suitable for a web application” because “it can only access data available in a single computer or server” and therefore “is not suitable for a web application.”); Ex. 2022, 3 (Unlike more advanced multi-tier systems, a one-tier architecture “cannot transmit information from one client machine to another.”); Ex. 2020, 4 (While “the client process and server process can be on the same computer,” this architecture “is rarely used today” precisely because it cannot “take advantage of the distributed computing environment.”).

Such technical limitations negate Petitioner’s articulated motivations for combining Toge and Kumar. Specifically, Petitioner argues that a POSITA would have been motivated to implement a web server in Toge’s system specifically to enable broad, distributed access to patient data. *See* Pet. 19 (“access [to] the data anywhere using an Internet browser”); *id.* (“allow anyone with an Internet browser to access the data”); *id.* (“the market was looking for any consumer device to connect to the Internet”). Petitioner further asserts that the modification would allow data to be accessed “from anywhere in the world” via a remote internet connection. *Id.* at 53 (citing Ex. 1008 ¶ 83). Dr. Kirkness similarly testifies that the

combination would benefit the system because physicians “need not download particular software to access the data” and could instead access it remotely through web pages. Ex. 1003 ¶ 138. Dr. Chatterjee likewise asserts that implementing web pages would allow “anyone with an Internet-browser to access the data without downloading additional software.” Ex. 1005 ¶ 81. Finally, Petitioner argues that “the general market trend to implement consumer devices into intelligent systems” and connect them “to the Internet” to “enable communications between people and things and between things themselves.” Pet. 4 (citing Ex. 1005 ¶ 73).

The evidence of record, however, shows that a localhost configuration achieves none of Petitioner’s objectives. If the web server resides on the physician’s local machine and communications with that server “do[] not actually go out to the Internet” (Ex. 1069 ¶ 8), then no external device can transmit data to or retrieve data from the server over the internet.

Petitioner’s entire premise for combining Toge’s system with Kumar’s browser-based engine is that it operates as a “central server” accessible over “a wide area network (WAN) 108, e.g., the Internet,” enabling “real-time streaming of raw, interpreted, and/or processed physiological data as well as textual/audio/video data from a patient to a health care provider.” Ex. 1008 ¶ 67. Kumar’s system is specifically designed so that “[t]he embodiments presented herein contemplate connection of multiple patient-side devices, provider-side devices, and engines” over the internet. Ex. 1008 ¶ 12. A localhost web server confined to a single physician’s personal computer, as proposed by Petitioner, does not achieve this distributed functionality.

Consequently, as noted by Patent Owner, Petitioner’s “proposal to add Kumar’s web server to Toge’s physician-side computer would, therefore, undermine the very reasons for the modification in the first place, including

to provide broad access to data collection and analysis.” Sur-Reply, 5 (citing Ex. 2003, 5; Ex. 2023, 2–3; Ex. 2025, 2–3; PO Resp. 12). Thus, in view of the above, we determine that evidence of record shows that a POSITA would not have understood that a localhost configuration on a physician’s personal computer could serve as the “remote internet site” as proposed by Petitioner. Accordingly, we find that Petitioner has not carried its burden of demonstrating that a person of ordinary skill in the art would have modified Toge and Kumar in the manner proposed by Petitioner to result in a system that teaches or suggests claim limitations [1.c] and [1.c.i].

F. Ground 2: Obviousness over Toge, Kumar, Burton, and Kisner

Petitioner asserts that claims 10, 15, and 20 are unpatentable because they are allegedly obvious over Toge, Kumar, Burton, and Kisner. Pet. 69–74. Petitioner relies on its arguments for Ground 1, except “[t]o the extent that the prior art combination does not disclose claims 10, 15, and 20, reciting ‘wherein the signal from the sensor for providing the sensor data to determine airflow on the one or more PAP device(s) is processed, in whole or part, using one or more of the signal processing techniques from the group consisting of . . . a wavelet analysis.’” *Id.* at 71. For these limitations, Petitioner relies on Kisner. *Id.* at 69–74.

We agree with Patent Owner that Petitioner’s arguments for Ground 2 do not address the deficiencies discussed above for Ground 1. *See* PO Resp. 23. Accordingly, considering all of the arguments and evidence presented on the full trial record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 10, 15, and 20 are unpatentable as obvious over the combination of Toge, Burton, Kumar, and Kisner.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–5, 7, 8, 10–13, 15–18, 20–31 of the '680 patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 7, 8, 10–13, 15– 18, 20–31	103(a)	Toge, Kumar, Burton		1–5, 7, 8, 10– 13, 15–18, 20– 31
10, 15, 20	103(a)	Toge, Kumar, Burton, Kisner		10, 15, 20
Overall Outcome				1–5, 7, 8, 10– 13, 15–18, 20– 31

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–5, 7, 8, 10–13, 15–18, 20–31 of U.S. Patent No. 11,786,680 B1 are unpatentable; and

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

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Patent 11,786,680 B1

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