

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESIDEO TECHNOLOGIES, INC. and
CENTRAL SECURITY GROUP – NATIONWIDE, INC.,¹
Petitioner,

v.

UBIQUITOUS CONNECTIVITY, LP,
Patent Owner.

IPR2019-01335
Patent 8,064,935 B2

Before JEAN R. HOMERE, JOHN F. HORVATH, and
MELISSA A. HAAPALA, *Administrative Patent Judges*.

HORVATH, *Administrative Patent Judge*.

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

¹ Central Security Group – Nationwide, Inc., who filed a petition in IPR2019-01609, has been joined as a petitioner to this proceeding.

I. INTRODUCTION

A. *Background and Summary*

Resideo Technologies, Inc. (“Resideo”) filed a Petition requesting *inter partes* review of claims 1–22 (“the challenged claims”) of U.S. Patent No. 8,064,935 B2 (Ex. 1001, “the ’935 patent”). Paper 2 (“Pet.”), 3–4. Ubiquitous Connectivity, LP (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted *inter partes* review of all challenged claims on all grounds raised in the Petition. Paper 7 (“Dec. Inst.”). Subsequent to our Institution Decision, Central Security Group – Nationwide, Inc. (“CSG”) was joined with Resideo as Petitioner in this proceeding. Paper 10.

Patent Owner filed a Response to the Petition (Paper 23, “PO Resp.”), Petitioner filed a Reply (Paper 27, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 29, “PO Sur-Reply”). An oral hearing was held on October 27, 2020, and the hearing transcript is included in the record. Paper 37 (“Tr.”).

We have jurisdiction under 35 U.S.C. §§ 6, 318. This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find Petitioner has shown by a preponderance of evidence that claims 1–11 and 13–22 are unpatentable, but has failed to show by a preponderance of evidence that claim 12 is unpatentable.

B. *Real Parties-in-Interest*

Resideo identifies itself, the City of San Antonio, Texas, the City Public Service Board of San Antonio, Texas d/b/a CPS Energy, Ademco,

Inc., and Honeywell International, Inc. as real parties-in-interest.² Pet. 1. CSG identifies itself and Guardian Security Systems, Inc., CSG Holdco, Inc., Central Security Group Holdings, Inc., Central Security Group Holdco, Inc., and Central Security Group, Inc. as real parties-in-interest. Paper 10, 2. Patent Owner identifies itself as the real party-in-interest. Paper 3, 2.

C. Related Matters

The parties identify *Ubiquitous Connectivity, LP v. City of San Antonio d/b/a CPS Energy*, 5:18-cv-00718 (W.D. Tex.), *Ubiquitous Connectivity, LP v. TXU Energy Retail Co. LLC*, 3:18-cv-02084 (N.D. Tex.), *Ubiquitous Connectivity, LP v. Central Security Group – Nationwide, Inc.*, 4:18-cv-00368 (N.D. Okla.), and *Ubiquitous Connectivity, LP v. TXU Energy Retail Co. LLC*, 6:17-cv-00433 (E.D. Tex.) as district court proceedings that can affect or be affected by this proceeding. Pet. 1; Paper 3, 2; Paper 10, 2–3. The parties also identify IPR2019-01336, challenging related U.S. Patent No. 9,602,655 B2, as an *inter partes* review that can affect or be affected by this proceeding. Pet. 1; Paper 3, 2; Paper 10, 2–3. Patent Owner further identifies Application No. 16/503,883 as a pending application that can affect or be affected by this proceeding. Paper 3, 3.

D. The '935 Patent

The '935 patent relates to “a remote monitoring and control system for an environment.” Ex. 1001, 1:18–19. Such a system is shown in Figure 1 of the '935 patent, which is reproduced below.

² Honeywell International, Inc. disputes its identification as a real party-in-interest. Pet. 1, n. 1.

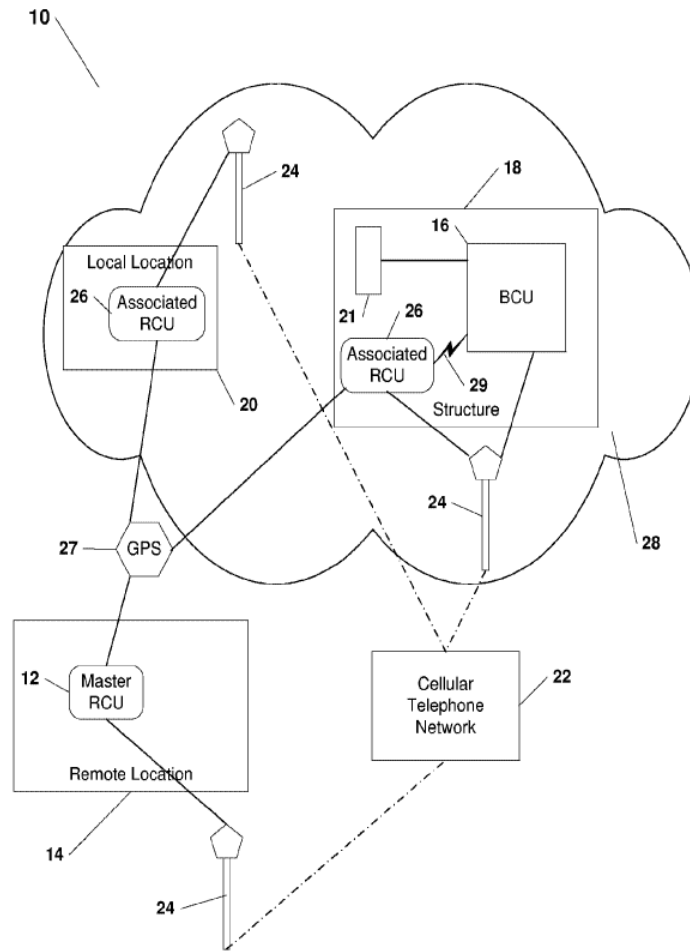


Figure 1 is a block diagram illustrating an environmental connectivity and control system. *Id.* at 3:36–38. The system includes base control unit 16, environmental devices 21, master remote control unit 12, associated remote control units 26, and cellular telephone network 22. *Id.* at 3:51–60, Fig. 1. Master remote control unit 12 interfaces with base control unit 16 to monitor and control devices 21 via “a short message and/or the data bearer cellular telephone network 22.” *Id.* at 3:51–57. Associated remote control units 26 also interface with base control unit 16 to monitor and control devices 21 when in proximity of base control unit 16. *Id.* at 3:57–60.

Controlled devices 21 may include HVAC (heating, ventilation, and air conditioning) units, refrigerators, water heaters, security systems,

cameras, lights and other devices. *Id.* at 11:46–53, 12:1–6. Environmental conditions monitored by the system may include utility and power status, humidity, door and window condition, temperature, smoke or toxic gas presence, structural and security integrity, and others. *Id.* at 11:32–39, 12:6–12. Base control unit 16 “consists [of] a wireless module 70 communicating with a microcontroller 106 for operating a number of separate subsystems” and “communicates status information to the remote control unit either on a periodic or event-driven basis.” *Id.* at 4:46–48, 9:1–3. For example, base control unit 16 communicates various alarms to remote control unit 12, such as burglar and fire alarms, or temperature threshold alarms for an HVAC or freezer. *Id.* at 9:6–12.

Remote control unit 12 can be a “conventional cellular telephone handset[] . . . equipped with a programming kernel, such as Java or J2ME.” *Id.* at 6:65–7:1. Remote control unit 12 “communicates with the base control unit 16 to affect the operational aspects thereof and peripheral equipment operatively attached thereto.” *Id.* at 6:50–52. Remote control unit 12 executes application software to “communicate[] . . . command[s] to the base control unit 16 through the cellular telephone network 22.” *Id.* at 6:58–60. “The data path between the remote control unit and the base control unit is SMS (‘simple message service’).” *Id.* at 7:9–11. SMS messages are “processed within the cellular telephone’s application software” and “by the base control unit applications software.” *Id.* at 7:39–41, 11:7–9.

E. Illustrative Claims

Claim 1 of the ’935 patent is illustrative of the claimed subject matter, and is reproduced below.

1. A wireless system comprising:
 - an environmental device;
 - a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device;
 - a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and
 - a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,
- wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,
- wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and
- wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.

Ex. 1001, 13:37–58.

Claims 11 and 18–22 are also independent claims that, although directed to different systems and system components, are substantially similar in scope to claim 1. For example, claims 1, 11, 19, and 20 are all directed to a wireless system having a wireless base unit (e.g., a base unit and wireless module) configured to exchange SMS messages with a remote unit to monitor and control an environmental device. *Compare id.* at 13:37–58, *with id.* at 14:19–38, *id.* at 15:9–27, and *id.* at 15:28–16:4. Claims 19 and 20 further require the base unit to include a transmitter, receiver, and controller. *Id.* at 15:9–27, 15:28–16:4. Claims 18, 21, and 22 are directed to

a component of the system of claims 1, 11, 19, and 20, namely, to a base unit having a communication interface, wireless module, and microcontroller that is configured to exchange SMS messages with a remote unit to monitor and control an environmental device. *Compare id.* at 14:59–15:8, *with id.* at 16:5–22 and *id.* at 16:23–38. The remaining challenged claims depend directly or indirectly from claim 1 or claim 11.

*F. Evidence*³

Reference		Effective Date	Exhibit
Oinonen	US 6,275,710 B1	Aug. 14, 2001	1016
Bielski ⁴	EP 1391861 A2	Feb. 25, 2004	1017
Chi-Hsiang Wu and Rong-Hong Jan, <i>System integration of WAP and SMS for home network system</i> , 42 Computer Networks 493–502 (2003) (“Wu”)		July 15, 2003 ⁵	1018
Sears	US 2002/0069263 A1	June 6, 2002	1019
Menard	US 2002/0177428 A1	Nov. 28, 2002	1020
Antila	US 6,583,770 B1	June 24, 2003	1021
Ehlers	US 2004/0117330 A1	July 28, 2003 ⁶	1022
Whitley	WO 99/49680	Sept. 30, 1999	1023

³ Petitioner also relies upon the Declarations of Kevin Jeffay (Ex. 1003), Rupert Lee (Ex. 1028), and Sylvia D. Hall-Ellis, Ph.D. (Ex. 1029). Patent Owner relies upon the Declaration of Ivan Zatkovich (Ex. 2004).

⁴ Bielski is a certified translation of a European Patent Application originally published in German. *See* Ex. 1017, 20–39.

⁵ Petitioner relies upon the Lee and Hall-Ellis Declarations to establish the public availability of Wu on the effective date. *See* Pet. 12–13; Paper 11. Patent Owner does not challenge the public availability of Wu. *See* PO Resp. 45–62.

⁶ Petitioner relies on the filing date of Ehlers to establish its availability as prior art under 35 U.S.C. § 102(e). *See* Pet. 14.

G. Instituted Grounds

We instituted *inter partes* review on the following grounds:

Ground	Claims	35 U.S.C. §	References
1A	1–3, 7, 11–15, 17–19, 21	103(a)	Oinonen, Whitley
1B	4–6, 16	103(a)	Oinonen, Whitley, Sears
1C	8	103(a)	Oinonen, Whitley, Antila
1D	9, 10	103(a)	Oinonen, Whitley, Antila, Ehlers
1E	20, 22	103(a)	Oinonen, Whitley, Menard
2A	1–4, 7–9, 11–15, 17–19, 21	103(a)	Bielski, Wu
2B	5, 6, 16	103(a)	Bielski, Wu, Sears
2C	10	103(a)	Bielski, Wu, Ehlers
2D	20, 22	103(a)	Bielski, Wu, Menard

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner’s declarant, Dr. Jeffay, identifies a person of skill in the art (“POSITA”) as someone with “at least a bachelor’s degree in electrical engineering or computer science and at least two years of industry experience in the field of embedded systems and/or process control.”

Ex. 1003 ¶ 10. Patent Owner proposes a similar definition, namely, a person having “at least a bachelor’s degree in electrical engineering or computer science, and at least two years of industry experience in the fields of computers and communications.” PO Resp. 4 (citing Ex. 2004 ¶ 29). Patent Owner proposed the same definition pre-institution, and we adopted that definition in our Institution Decision finding “little difference between [Petitioner’s] and Patent Owner’s assessment of the level of skill in the art.” Dec. Inst. 7–8. Neither party disputes that decision. *See* PO Resp. 4; Pet. Reply. Therefore, we maintain our decision to adopt Patent Owner’s definition of the level of skill in the art.

B. Claim Construction

In *inter partes* reviews, we interpret a 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) (2019). Under this standard, a claim is construed “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.* Only claim terms which are in controversy need to be construed and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

1. Environmental Device, Base Unit, Cellular/Remote Unit, Communications Interface

Petitioner requests these terms be construed to have their plain and ordinary meaning, and provides express constructions “[i]f necessary.” Pet. 7–10. In our Institution Decision, we declined to expressly construe these terms because Patent Owner did not argue that they required express construction and did not dispute any of Petitioner’s conditionally proposed constructions. *See* Dec. Inst. 8–9. Neither party disputes that decision, which we maintain here. *See* PO Resp. 4–14; Pet. Reply.

2. Microcontroller

Patent Owner argues a “microcontroller” is “a special-purpose computing device including at least a CPU [Central Processing Unit], main memory, timing circuits, and I/O [Input/Output] circuitry designed for a minimal quantity of chips and then programmed to handle a particular task.” PO Resp. 11 (citing Ex. 2004 ¶ 48). Patent Owner argues this construction is supported by the Microsoft Computer Dictionary, the Comprehensive Dictionary of Electrical Engineering, and the ’935 patent. *Id.* at 7–11.

The Microsoft Computer Dictionary defines the term “microcontroller” to mean:

A special-purpose, single-chip computer designed and built to handle a particular, narrowly defined task. In addition to the central processing unit (CPU), a microcontroller usually contains its own memory, input/output channels (ports), and timers. When part of a larger piece of equipment, such as a car or a home appliance, a microcontroller is an embedded system.

Ex. 2006, 337. The Comprehensive Dictionary of Electrical Engineering defines the term to mean:

An integrated circuit chip that is designed primarily for control systems and products. In addition to a CPU, a microcontroller typically includes memory, timing circuits, and I/O circuitry. The reason for this is to permit the realization of a controller with a minimal quantity of chips, thus achieving maximal possible miniaturization. This in turn, will reduce the volume and the cost of the controller. The microcontroller is normally not used for general purpose computation as is a microprocessor.

Ex. 2007, 439.

Patent Owner argues the microcontroller disclosed in the '935 patent is consistent with these definitions. *See* PO Resp. 10–11 (citing 1001, 3:44–45, 4:62–66, Fig. 4; Ex. 2004 ¶¶ 45–47); PO Sur-Reply 1–2. In particular, Patent Owner argues a person skilled in the art would have understood microcontroller 106 shown in Figure 4 of the '935 patent is consistent with these definitions because it (1) “includes I/O circuitry components to interact with the subsystems given that no external I/O circuitry is illustrated between the microcontroller and the subsystems,” (2) “works in conjunction with an LCD, keypad, wireless module, and power supply, but . . . does not include separate memory or timing circuits,” and (3) “is specifically designed and then programmed for ‘remote control and remote monitoring

of the various subsystems within the residential environment.” PO Resp. 10–11 (quoting Ex. 1001, 4:62–66).

Petitioner argues a “microcontroller” is “a microcomputer, microprocessor, or other equipment used for process control, for example, processing a message and sending a command.” Pet. Reply 2–8. Petitioner argues Patent Owner’s proposed construction is too narrow and “finds no support in the specification or in the claims of the 935 Patent.” *Id.* at 3 (emphasis omitted). For example, Petitioner argues the claims “broadly describe a ‘microcontroller’ that . . . is responsible only for ‘process[ing]’ and send[ing]” messages and do not describe “any particular components that a microcontroller must comprise.” *Id.* Petitioner further argues the ’935 patent describes a microcontroller as “a component responsible for basic processing” such as “communicating with other components, ‘operating a number of separate subsystems,’ and containing application software for ‘provid[ing] for autonomous control.’” *Id.* at 5 (quoting Ex. 1001, 4:46–52, 10:18–21).

Petitioner also argues that Patent Owner’s dictionary definitions have been cherry-picked to support Patent Owner’s narrow construction and that other contemporaneous dictionaries define “microcontroller” more broadly. *Id.* For example, the Dictionary of Electrical and Computer Engineering defines “microcontroller” to mean:

A microcomputer, microprocessor, or other equipment used for precise process control in data handling, communication, and manufacturing.

Ex. 1039, 14. Petitioner argues “[t]his definition makes clear that a ‘microcontroller’ is a device that ‘controls’ and can be a microprocessor . . . programmed for a particular process.” Pet. Reply 6.

In rebuttal, Patent Owner argues Petitioner's expert, Dr. Jeffay, "contrasted microcontrollers from microprocessors, saying that a microprocessor only becomes a computer (and therefore a microcontroller) when associated with memory and I/O circuitry," and that a "microcontroller is more of a system . . . whereas the microprocessor would be just a component of the system." PO Sur-Reply 3 (citing/quoting Ex. 2015, 55:9–56:14, 68:3–18).

Upon consideration of all of the evidence and argument presented by Petitioner and Patent Owner, we construe the term "microcontroller" to mean "a microcomputer, microprocessor, or other equipment used for process control." The '935 patent does not define "microcontroller" and neither the '935 patent nor its prosecution history contains statements that limit or disclaim any part of its plain and ordinary meaning. *See Teleflex, Inc. v. Ficosa N. America Corp.*, 299 F.3d 1313, 1327 (Fed. Cir. 2002) ("[C]laim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from [that] meaning . . . by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

The dictionary definitions provided by the parties are consistent insofar as they all require a "microcontroller" to include a central processing unit (CPU) that has been programmed to perform a control function. For example, the Dictionary of Electrical and Computer Engineering defines a "microcontroller" as a "microcomputer, microprocessor or other equipment used for precise process control," where a "microcomputer" is a digital computer whose CPU is "a microprocessor." Ex. 1039, 14. Likewise, the Microsoft Computer Dictionary defines a "microcontroller" as "[a] special-

purpose, single-chip computer designed . . . to handle a particular . . . task.” Ex. 2006, 337. Although the definition indicates “a microcontroller *usually* contains its own memory, input/output channels (ports), and timers,” it does not *require* the microcontroller to contain anything more than a CPU. *Id.* (emphasis added). Similarly, the Comprehensive Dictionary of Electrical Engineering defines a “microcontroller” as “an integrated circuit chip that is designed primarily for control systems and products.” Ex. 2007, 439. Although the definition indicates “a microcontroller *typically* includes memory, timing circuits, and I/O circuitry,” it does not *require* the microcontroller to contain anything more than a CPU. *Id.* (emphasis added).

For the reasons discussed above, we construe “microcontroller” to mean “a microcomputer, microprocessor, or other equipment used for process control.”

C. Obviousness over Oinonen and Whitley

Petitioner argues claims 1–3, 7, 11–15, 17–19, and 21 are unpatentable as obvious over Oinonen and Whitley. Pet. 15–35. Patent Owner disagrees. PO Resp. 14–31. For the reasons discussed below, Petitioner demonstrates by a preponderance of evidence that claims 1–3, 7, 11, 13–15, 17–19, and 21 are unpatentable over Oinonen and Whitley, but has failed to demonstrate by a preponderance of evidence that claim 12 is unpatentable over Oinonen and Whitley.

1. Oinonen

Oinonen discloses telemetric “applications in which the state of a peripheral device is monitored and the peripheral device is controlled via a telecommunication network, preferably at least partly via a mobile communication network.” Ex. 1016, 3:22–26. Examples of telemetric applications include “a real estate alarm system for monitoring real estate for

fire, leakage, [or] burglary” and a heating system “in which the heating of an apartment can be set by telephone . . . so that the heating can be switched from a lower output to a higher output, or vice versa, by calling a certain telephone number.” *Id.* at 3:27–29, 3:66–4:3.

Oinonen’s invention is described as follows:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.

Id. at 4:52–61.

Figure 4 of Oinonen, reproduced below, is an example of such a system.

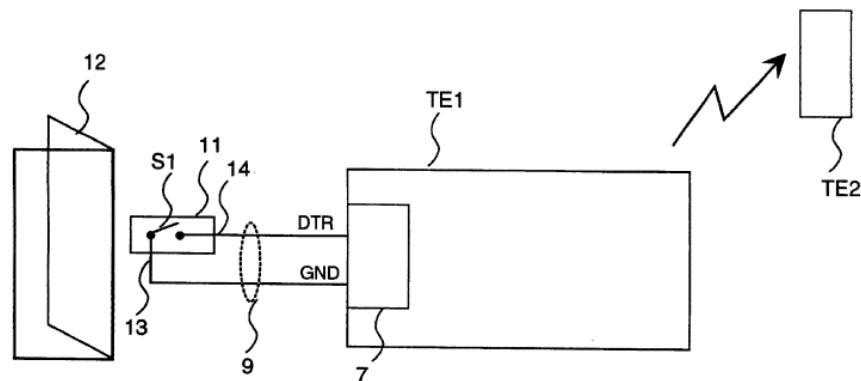


Figure 4 of Oinonen is a block diagram illustrating peripheral device 11 (i.e., switch S1) connected to door 12 to indicate whether door 12 is open or closed. *Id.* at 9:26–28. Switch S1 is connected to mobile terminal TE1 via ground (GND) and data terminal ready (DTR) lines of connection interface 7. *Id.* at 9:28–34. When door 12 is open, 5V appears between DTR and

GND, and when door 12 is closed, 0V appears between DTR and GND. *Id.* at 9:38–44.

Mobile terminal TE1 includes microprocessor 1 running application software for “examining the logical states of the input lines of . . . connection interface 7 and for setting the logical states of the different output lines to the value (0/1) required at the time.” *Id.* at 7:12–26, 9:44–49, Fig. 3.⁷ The application software transmits “the states of all input lines at the moment of examination, advantageously as a short message to the second telecommunication terminal TE2.” *Id.* at 10:38–42. The application software includes a message interpreter that allows TE1 and TE2 to interpret received messages. *Id.* at 8:33–37. Thus, TE1 can send standard texts to TE2 such as “door is closed” or “door is open” instead of logical states 0 or 1, respectively. *Id.* at 10:48–54. When a mobile terminal is unable to interpret such a message, it transmits an error message “as a short message to the telecommunication terminal TE1, TE2 that sent the control message.” *Id.* at 8:50–55.

In addition to monitoring the open/closed status of door 12, Oinonen discloses applications that monitor the status of a real estate alarm system, control the luminosity in a room, and control the locking/unlocking of a door. *Id.* at 10:63–66, 11:12–14, 11:46–57, 12:13–15, Figs. 5–7.

2. Whitley

Whitley discloses “a system and method for gathering and sending data over an existing wireless network remotely to control and monitor various gateways and the devices coupled to those gateways.” Ex. 1023,

⁷ Mobile station TE2 has a similar structure. *See* Ex. 1016, 7:52–54.

2:19–21. Such a system is shown in Figure 1 of Whitley, which is reproduced below.

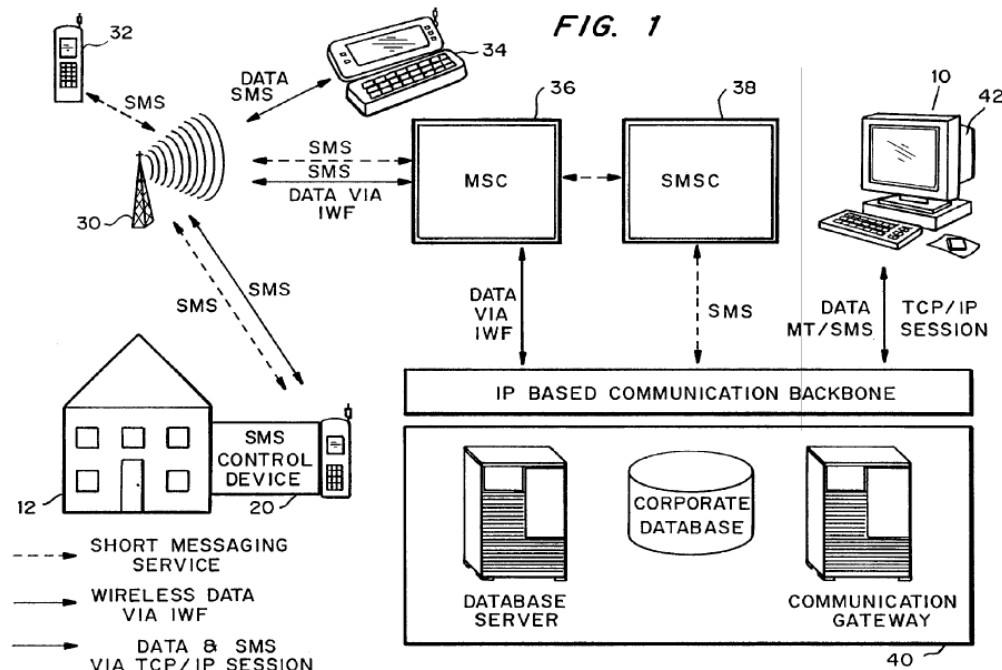


Figure 1 of Whitley is a block diagram of a system that “implements various methods for receiving and sending data from and to a selected gateway.” *Id.* at 7:13–15. The system includes facility 12, gateway 20 (e.g., an SMS control device), and cellular handset 32. *Id.* at 7:26–8:10.

Gateway 20 provides a physical interface between devices internal to facility 12 and external networks and can “monitor and control various devices within the facility 12, such as lights, security sensors, an answering machine, [or] a home computer.” *Id.* at 8:27–9:3. Gateway 20 is uniquely addressable, and includes a processor and “a wireless transceiver for sending and receiving communications via a digital wireless network.” *Id.* at 8:3–8. The digital network allows gateway 20 “to send data [to] and receive commands directly from [a] customer, which could own or manage the facility.” *Id.* at 2:23–25. This allows the customer to “control lights within

a facility according to a pre-programmed pattern that the user may change by communicating new commands” and to have “remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” *Id.* at 3:8–12.

In one implementation, gateway 20 “formulates messages to other terminals into a short message format” (i.e., SMS), and “transmit[s] the message . . . to a network element” such as a customer’s mobile terminal. *Id.* at 5:18–28. Because gateway 20 is uniquely addressable (e.g., via its phone number), “the customer can formulate messages or commands that will be routed directly from the customer’s mobile station . . . to the gateway.” *Id.* at 6:10–14. Thus, Whitley “provide[s] a method for allowing customers to remotely monitor and control devices located in the customer’s facility.” *Id.* at 6:19–21. In particular, customers can “receive monitoring information about activities at their facility via a mobile station” and “control the gateway and devices coupled to the gateway from their mobile station.” *Id.* at 6:22–26. For example, customers can “monitor[] facility 12 for energy usage data or alarms indicating a security breach,” and control “various electronic devices, such as an electronic thermostat or lights.” *Id.* at 12:21–25. Other types of devices that can be monitored and controlled include a “refrigerator, water heater, and [a] washer/dryer.” *Id.* at 16:21–23. Monitoring the energy usage of facility 12 allows a remote customer “to adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy.” *Id.* at 17:2–4.

3. Reasons to Combine the Teachings of Oinonen and Whitley

Petitioner argues Oinonen “does not expressly articulate how its telecommunications device would be configured to monitor and/or control

multiple devices,” whereas Whitley “specifically discloses a data collection and control device (a ‘gateway’) that is connected to multiple devices.”

Pet. 15–16 (citing Ex. 1003 ¶¶ 184–187). Therefore, Petitioner argues, a person of ordinary skill in the art would have combined the teachings of Oinonen and Whitley because Whitley teaches (1) using SMS to “provide remote monitoring and control of multiple distributed gateways,” (2) using a gateway “to remotely monitor and control multiple devices,” and (3) “monitoring . . . activities over time, which allows the user to control devices *and* save energy.” *Id.* at 16 (citing Ex. 1003 ¶¶ 186–188). Petitioner further argues a person skilled in the art would have combined the teachings of Oinonen and Whitley “to ‘provide a method for allowing customers to receive monitoring information about activities at their facility,’ and to ‘provide a method that allows customers to control the gateway and devices coupled to the gateway from their mobile station.’” *Id.* at 17 (quoting Ex. 1023, 6:22–26).

Patent Owner argues “Petitioner[] fail[s] to establish that Oinonen and Whitley can be properly combined for two reasons.” PO Resp. 14. First, Patent Owner argues Petitioner’s reasoning for combining the two references is not “relevant to the elements of the challenged claims,” i.e., because “none of the challenged claims recites multiple devices—they only require ‘an environmental device.’” *Id.* at 16. Second, Patent Owner argues “Petitioner did not sufficiently explain what Oinonen fails to disclose or why a [person of ordinary skill in the art] would turn to Whitley.” *Id.* at 14. That is, Patent Owner argues that because “Petitioner[] assert[s] that Oinonen itself discloses all of the elements of [the] independent claims . . . it is unclear why they contend a [person of ordinary skill in the art] would be motivated to turn to Whitley for the claimed features.” *Id.*

Upon considering Petitioner's and Patent Owner's evidence and arguments, we find Petitioner has set forth sufficient and persuasive reasoning with rational underpinning to combine the teachings of Oinonen and Whitley. Oinonen teaches a system for monitoring and controlling a single device, and Whitley teaches an improvement that would allow Oinonen's system to monitor and control multiple devices via a gateway. *Compare* Ex. 1016, 4:41–61, *with* Ex. 1023, 6:19–21. This improvement supports the combination because “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007) (“*KSR*”).

We are not dissuaded from this finding by Patent Owner's argument that the combination would not have been obvious because the claims recite controlling a single environmental device. First, the claims are open ended and do not prohibit controlling multiple environmental devices. *See* Ex. 1001, 13:37–58. Second, *KSR* does not require the reason to combine to directly relate to any claim element. Indeed, *KSR* expressly states the reason to combine “analysis *need not seek out precise teachings directed to the specific subject matter of the challenged claim.*” *KSR*, 550 U.S. at 418 (emphasis added). The reason for that is simple. Doing so would invite hindsight reasoning, which *KSR* expressly rejects. *See id.* at 421 (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”). Replacing Oinonen's terminal with Whitley's gateway to allow Oinonen to monitor and control multiple devices would fall under many of the reasons to combine expressly endorsed in *KSR*, including the reasoning identified

above, i.e., using a technique “used to improve one device. . . [to] improve similar devices in the same way.” *Id.* at 417.

We are also not dissuaded by Patent Owner’s argument that Petitioner’s reasoning is defective because Petitioner asserts that Oinonen itself discloses all of the elements of the independent claims. *See* PO Resp. 14–16. Patent Owner cites several Board decisions in support of this argument, none of which are precedential and binding on this panel, and all of which pre-date the Federal Circuit’s *Polygroup* and *Realtime Data* decisions. In *Polygroup*, the Federal Circuit stated “when a petition sets forth a ground with multiple references, but the petitioner’s primary arguments rely on a single reference, the Board should consider those arguments irrespective of a motivation to combine references.” *Polygroup Ltd MCO v. Willis Elec. Co.*, 759 F. App’x. 934, 943 n.3 (Fed. Cir. 2019). Indeed, the “Board err[s] when it refuse[s] to consider these arguments.” *Id.* at 943; *see also Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (finding the Board “did not err when it concluded that claim 1 was invalid under § 103” based on the teachings of a single reference in a combination of references and “did not violate 35 U.S.C. § 312(a)(3) or other notice requirements” in doing so because “it is well settled that ‘a disclosure that anticipates under § 102 also renders the claims invalid under § 103’”) (internal citations omitted).

4. *Claim 1*

Claim 1 recites a wireless system comprising an environmental device. Ex. 1001, 13:37–38. Petitioner demonstrates how Oinonen teaches such a wireless system. *See* Pet. 17 (citing/quoting Ex. 1016, 1:16–22, 11:62–12:4). For example, Oinonen teaches using a mobile phone to

remotely control an electronic door lock.⁸ *See* Ex. 1016, 1:16–22, 11:62–12:4. Petitioner also demonstrates how Whitley teaches such a wireless system. *See* Pet. 17–18 (citing/quoting Ex. 1023, 12:21–23, 15:21–23, 17:2–10). For example, Whitley teaches using a mobile phone to monitor/control an electronic thermostat. *See* Ex. 1023, 12:21–23, 15:21–23, 17:2–10. Patent Owner does not dispute these contentions. *See* PO Resp. 18–25.

Claim 1 requires the wireless system to include a base unit interfaced with and configured to control the environmental device. Ex. 1001, 13:39–41. Petitioner demonstrates how Oinonen’s TE1 is such a base unit. *See* Pet. 18 (citing Ex. 1016, 6:60–64). For example, Oinonen’s TE1 is a “telecommunications terminal to which the peripheral [environmental] device to be controlled or monitored is connected by means of the V.24 connection interface.” Ex. 1016, 6:60–64. Petitioner further demonstrates how Whitley’s gateway is such a base unit. *See* Pet. 18 (citing/quoting Ex. 1023, 3:7–13, 8:27–9:1). For example, Whitley’s gateway “provides a physical interface between internal devices associated with a particular facility 12 and external networks” and “monitor[s] and control[s] various devices within the facility 12, such as lights, security sensors, an answering machine, a home computer, etc.” Ex. 1023, 8:27–9:3. Patent Owner does not dispute Petitioner’s contentions. *See* PO Resp. 18–25.

Claim 1 further requires the wireless system to include a remote unit having wireless connectivity and configured to send and receive SMS messages. Ex. 1001, 13:42–44. Petitioner demonstrates how Oinonen’s TE2 is such a remote unit. *See* Pet. 19 (citing Ex. 1016, 4:67–5:6, 6:64–7:4).

⁸ The ’935 patent identifies an electronic door monitoring system as an environmental device. *See* Ex. 1001, 6:19–26, 11:47–53.

For example, Oinonen's TE2 is "a telecommunication terminal carried along by the user, whereby the user can control the peripheral [environmental] device" and "whereby a message-based data transmission connection can be set up to the first telecommunication terminal [TE1]." Ex. 1016, 6:64–7:4. Oinonen further teaches "the state of the peripheral device coupled with the mobile station [TE1] is monitored," and upon a change in state, "a short message is arranged to be transmitted [to] and received by a second mobile station [TE2]." *Id.* at 4:67–5:6. Moreover, "the control of the peripheral device can be arranged," whereby the user of TE2 "selects or writes a message which corresponds to the desired control operation and [the message] is transmitted to the mobile station [TE1] coupled with the peripheral device." *Id.* at 5:6–11.

Petitioner also demonstrates how Whitley's mobile station is a remote unit configured to wirelessly send and receive SMS messages. *See* Pet. 19 (citing Ex. 1023, 8:6–14, 12:21–13:2, 16:9–12). For example, Whitley teaches "rout[ing] messages from various gateways 20 [base units] to terminals," one of which may be "a mobile station" (remote unit). Ex. 1023, 8:4–10. Gateway 20 can "transmit . . . a[n] SMS message" to the mobile terminal, and the user of the mobile terminal can "input commands to be forwarded to various devices at the facility 12" that are sent "as an SMS message . . . to a particular gateway 20." *Id.* at 12:21–13:2, 16:9–12. Patent Owner does not dispute Petitioner's contentions. *See* PO Resp. 18–25.

Claim 1 further requires the wireless system to include a wireless module interfaced with the base unit and configured to provide wireless connectivity between the base and remote units. Ex. 1001, 13:45–47. Petitioner demonstrates how Oinonen's TE1 (base unit) includes such a wireless module. *See* Pet. 20 (citing Ex. 1016, 4:52–62, 7:12–21). For

example, Oinonen's TE1 includes radio element 6 and "transmits short messages . . . to another telecommunication terminal [TE2] preferably via a mobile communication network." Ex. 1016, 4:52–62, 7:12–21, Fig. 3.

Petitioner also demonstrates how Whitley's gateway (base unit) includes such a wireless module. *See* Pet. 20 (citing Ex. 1023, 3:13–25). For example, Whitley's "gateway includes a transceiver capable of communicating over a wireless network" with a mobile station (remote unit). Ex. 1023, 3:13–25. Patent Owner does not dispute Petitioner's contentions. *See* PO Resp. 18–25.

Claim 1 further requires the base unit be configured to send a first SMS message that includes current environmental information to the remote unit through the wireless module. Ex. 1001, 13:48–50. Notwithstanding Patent Owner's arguments to the contrary, discussed *infra*, Petitioner demonstrates how Oinonen's TE1 (base unit) sends SMS messages to TE2 (remote unit) containing current environmental information (e.g., alarms). *See* Pet. 20 (citing Ex. 1016, 4:67–5:6, 10:38–42). For example, Oinonen teaches "the state of the peripheral device coupled with the mobile station [TE1] is monitored," and when a change in state occurs, "a short message is . . . transmitted [to] and received by a second mobile station [TE2]." Ex. 1016, 4:67–5:6. The change in state can be a change in the data lines on the V.24 interface between TE1 and the environmental device. *Id.* at 10:38–42, Figs. 3, 4.

Petitioner also demonstrates how Whitley's gateway (base unit) sends the mobile terminal SMS messages containing current environmental information. *See* Pet. 21 (citing Ex. 1023, 8:1–5, 12:21–13:2). For example, Whitley teaches gateway 20 (base unit) receives data "from various devices within and associated with facility 12" and routes that data as messages "to

terminals” such as “a mobile station.” Ex. 1023, 8:1–6. The messages can include current environmental information such as “alarms indicating a security breach” and can be transmitted as “SMS message[s] indicating a breach in security.” *Id.* at 12:21–29.

Patent Owner argues that although “Oinonen and Whitley mention SMS messaging, they would not have enabled a [person skilled in the art] to implement the claimed SMS messaging in a base unit without undue experimentation.” PO Resp. 18. Relying on the testimony of Mr. Zatkovich, Patent Owner argues “Oinonen and Whitley fail to disclose . . . at least two technical requirements for a solution enabling a computing device sending/receiving SMS messages using an associated cellular phone.” *Id.* at 19 (citing Ex. 2004 ¶¶ 58–59). First, Patent Owner argues, the references fail to disclose a base unit having “a hardware and software interface” enabling the base unit to send/receive SMS messages. *Id.* at 19–20 (citing Ex. 2004 ¶ 60). Second, Patent Owner argues, the references fail to disclose a mobile phone having “a software interface (API) for the SMS functions” that enables the mobile phone to send/receive SMS messages. *Id.* at 20 (citing Ex. 2004 ¶ 61).

Petitioner characterizes Patent Owner’s non-enablement argument as disingenuous because “the 935 Patent does not describe either of these [two] solutions” that are allegedly required for sending SMS messages. Pet. Reply 21. Moreover, Petitioner argues, a § 103 reference is prior art for all it discloses and need not be enabling. *Id.* at 22 (quoting *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1357 (Fed. Cir. 2003)). Patent Owner responds that the “enablement of the ’935 patent is not at issue in this proceeding” and that because Petitioner has “applied Oinonen and Whitley

as anticipating references, they absolutely need to enable the claimed functionality.” PO Sur-Reply 6.

As discussed above, Petitioner has demonstrated how Oinonen and Whitley, separately, and therefore in combination, teach a base unit that sends/receives SMS messages to/from a remote unit. Patent Owner’s argument that neither reference is enabled does not dissuade us from this finding. To the contrary, both Oinonen and Whitley are enabling. Oinonen discloses base/remote units TE1/TE2 are “*conventional mobile stations equipped with the option for transmitting short messages.*” Ex. 1016, 4:63–67, 6:60–67 (emphasis added). In particular, TE1/TE2 use “the short message system of the GSM mobile communication system” to send/receive SMS messages, where GSM (Global System for Mobile) is an industry standard published by the “European Telecommunication Standards Institute ETSI.” *Id.* at 2:60–61, 13:15–17. Similarly, Whitley discloses that gateway 20 (base unit) and mobile terminal (remote unit) use conventional GSM networks to send/receive SMS messages. Ex. 1023, 3:15–25, 5:15–6:14, 7:28–8:10. Gateway 20 is “an *integrated GSM enabled communications device programmed to format and manage data packets sent and received via the short messaging service provided by a GSM network.*” *Id.* at 9:9–12 (emphases added). The mobile terminal includes a commercially available front-end client application that “enables end users to input a text message . . . and send the message . . . for distribution across the GSM network.” *Id.* at 10:16–22. The ’935 patent similarly discloses (1) use of “the cell phone network’s short message service (‘SMS’) in which text messages are sent to and received from a controlled system,” (2) “the remote control units are conventional cellular telephone handsets” and (3) the “base control unit 16 uses a cellular telephone module.” Ex. 1001, 3:1–4, 6:65–67, 11:6–7; *see*

also id. at 3:51–67, Fig. 1 (showing base control unit (BCU) 16 communicating with remote control units (RCUs) 12/26 via cell towers 24 of a conventional cellular network 22). *See In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994) (“the Board’s observation that appellant did not provide the type of detail in his specification that he now argues is necessary in prior art references supports the Board’s finding that one skilled in the art would have known how to implement the features of the references.”)

Claim 1 further requires the remote unit be configured to send to the base unit a second SMS message that includes a command for the environmental device. Ex. 1001, 13:51–54. Petitioner demonstrates how Oinonen’s TE2 (remote unit) sends such a second SMS message to TE1 (base unit). *See* Pet. 21–22 (citing Ex. 1016, 4:52–61, 11:62–12:12). For example, Oinonen teaches “control signals can be transmitted as short messages from the second telecommunication terminal [TE2] to the first telecommunication terminal [TE1], where the device coupled therewith is controlled on the basis of the short messages.” Ex. 1016, 4:57–61. The control signals can be commands to lock/unlock an electronic door lock connected to TE1. *Id.* at 11:62–12:12. Petitioner also demonstrates how Whitley’s mobile station (remote unit) sends such a second SMS message to gateway 20 (base unit). *See* Pet 22 (citing Ex. 1023, 6:12–14, 10:14–17, 16:9–12, 17:2–7). For example, Whitley teaches a customer can send “commands . . . from the customer’s mobile station . . . to the gateway,” where the commands are packaged as “SMS message[s]” that can instruct the gateway to “adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20.” Ex. 1023, 6:12–14, 16:9–12, 17:2–7. Patent Owner does not dispute these contentions. *See* PO Resp. 18–25.

Finally, claim 1 requires the base unit to be configured to receive the second SMS message and send the command to the environmental device to control the operation of the environmental device. Ex. 1001, 13:55–58. Notwithstanding Patent Owner’s non-enablement argument to the contrary, discussed *supra*, Petitioner demonstrates how Oinonen’s TE1 (base unit) is so configured. See Pet. 22–23 (citing Ex. 1016, 5:6–13, 11:64–12:12); PO Resp. 18–25. For example, Oinonen teaches “the control of the peripheral device can be arranged easily by means of short messages, wherein . . . a message which corresponds to the desired control operation [] is transmitted to the mobile station [TE1] coupled with the peripheral device.” Ex. 1016, 5:6–11. In response, TE1 changes the state of a control line on its interface to the peripheral device and, “[a]s a result, the peripheral device conducts the desired operation.” *Id.* at 5:11–16. For example, when TE2 (remote unit) sends the SMS message “lock the door” to TE1, TE1 interprets the message and sets a voltage on the DSR (data set ready) line of its V.24 interface to an electronic door lock to instruct it to lock the door. *Id.* at 11:64–12:4.

Petitioner also demonstrates how Whitley’s gateway (base unit) is so configured. See Pet. 23 (citing Ex. 1023, 6:12–14, 6:19–21, 7:29, 8:27–9:1). For example, Whitley teaches a customer can send “commands . . . from the customer’s mobile station . . . to the gateway” in order to “remotely monitor and control devices located in the customer’s facility that communicate with [the] gateway.” Ex. 1023, 6:12–14, 6:19–21. The gateway “acts as a . . . control device” that can “monitor and control various devices within the facility 12, such as lights, security sensors, an answering machine, a home computer, etc.” *Id.* at 7:29, 8:27–9:3.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen and Whitley and how the combination teaches every limitation of claim 1. Thus, Petitioner demonstrates by a preponderance of evidence that claim 1 is unpatentable as obvious over Oinonen and Whitley.

5. *Claim 11*

Independent claim 11 is substantially similar in scope to claim 1. *Compare* Ex. 1001, 13:37–58, *with id.* at 14:19–38. Both claims are directed to wireless systems having an environmental device, a wireless base unit, and a remote unit. *Id.* Claim 11, however, recites additional limitations that are not expressly recited in claim 1. For example, claim 11 expressly requires (a) the environmental device to send environmental information and to receive commands, (b) the base unit to receive environmental information, and (c) the remote unit to receive the first SMS message containing the environmental information and to notify a user of its receipt. *Id.* at 14:19–38.

Petitioner relies on its analysis of claim 1 to demonstrate how Oinonen and Whitley, separately and in combination, teach most of the limitations of claim 11. *See* Pet. 26–29. Petitioner further demonstrates how Oinonen and Whitley teach the additional limitations expressly recited in claim 11. *Id.* For example, Oinonen’s electronic door lock (environmental device) sends information to/receives commands from TE1 (base unit) by setting/monitoring the state of the DTR/DSR lines on the V.24 interface between the devices. *See* Ex. 1016, 4:26–36, 4:67–5:13, 9:38–44, 11:62–12:4. Oinonen’s TE2 (remote unit) receives an SMS message from TE1 “informing the user of the mobile station [TE2] preferably as a message

displayed on the display of the mobile station.” *Id.* at 4:67–5:6. Similarly, Whitley’s gateway 20 (base unit) receives data from environmental devices within facility 12, and the environmental devices receive commands from gateway 20. *See* Ex. 1023, 3:7–10, 8:1–4, 12:21–27. Whitley’s mobile station (remote unit) “receive[s] monitoring information about activities at their facility” in SMS formatted messages, and “send[s] a message [] to the handset 32 in order to alert the owner of the facility 12.” *Id.* at 5:18–20, 6:22–25, 17:12–13. Patent Owner argues claim 11 is patentable for the same reasons as claim 1. *See* PO Resp. 25–26. We are not persuaded by these arguments for the reasons discussed in § II.C.4, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen and Whitley and how the combination teaches every limitation of claim 11. Thus, Petitioner demonstrates by a preponderance of evidence that claim 11 is unpatentable as obvious over Oinonen and Whitley.

6. *Claims 2, 7, 13, 15, 17*

Claims 2 and 13 depend from claims 1 and 11, respectively, and require the environmental device to include electronic and electromechanical switching portions interfaced with the environmental device. Ex. 1001, 13:59–62, 14:45–47. Petitioner demonstrates how Oinonen and Whitley disclose these limitations. *See* Pet. 23–24, 31. For example, the ’935 patent explains that “[i]n a conventional thermostat, a temperature sensor and switch automatically control a heating or cooling appliance when the sensed temperature is beyond a preset value.” Ex. 1001, 12:13–15. Oinonen teaches it was well known to remotely control heating systems, and Whitley teaches adjusting the temperature setting of a thermostat connected to

gateway 20. *See* Ex. 1016, 3:66–4:3; Ex. 1023, 16:21, 17:2–7. Patent Owner argues claims 2 and 13 are patentable for the same reasons as claims 1 and 11, respectively. *See* PO Resp. 25–26. We are not persuaded by Patent Owner’s arguments for the reasons discussed in §§ II.C.4 and II.C.5, *supra*.

Claim 7 depends from claim 1 and requires the wireless connection between the base and remote units to include transmitting and receiving modules in the base and remote units that communicate over a cellular network. Ex. 1001, 14:5–9. Claim 15 depends from claim 11 and requires the remote unit to be a cellular handset. *Id.* at 14:51–52. Claim 17 depends from claim 11 and further requires a cellular network. *Id.* at 14:57–58. Petitioner demonstrates how Oinonen teaches these limitations. *See* Pet. 25–26, 31. For example, Oinonen teaches TE1 (base unit) and TE2 (remote unit) are mobile terminals having radio element 6 (transmitting/receiving modules) for transmitting and receiving SMS messages over GSM (cellular) network. *See* Ex. 1016, 2:29–31, 4:58–60, 4:67–5:6, 7:12–21, 7:52–54. Similarly, Whitley teaches gateway 20 (base unit) includes a transceiver (transmitting/receiving module) to allow it to send/receive SMS messages to/from a mobile station (remote unit) over a GSM (cellular) network. *See* Ex. 1023, 2:26, 3:13–25, 8:6–14. Patent Owner argues claims 7, 15, and 17 are patentable for the same reasons as claims 1 and 11. *See* PO Resp. 25–26. We are not persuaded by Patent Owner’s arguments for the reasons discussed in §§ II.C.4 and II.C.5, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen and Whitley and how the combination teaches every limitation of claims 2, 7, 13, 15, and 17. Thus, Petitioner

demonstrates by a preponderance of evidence that claims 2, 7, 15, and 17 are unpatentable as obvious over Oinonen and Whitley.

7. *Claims 3, 14, 18, 19, 21*

Claim 3 depends from claim 1 and requires the base unit to be a microcontroller-based processing unit having customizable application specific software. Ex. 1001, 13:63–65. Claim 14 depends from claim 11 and requires the base unit to include the same microcontroller-based processing unit. *Id.* at 14:48–50. Claim 18 is an independent claim for a base unit that is substantially similar to the base unit required in system claim 3. *Compare id.* at 14:59–15:8, *with id.* at 13:37–58, 13:63–65. Claim 19 is an independent claim for a system having a base unit that is substantially similar to the base unit required in system claim 3 and that also includes the transmitter and receiver required in system claim 7. *Compare id.* at 15:9–27, *with id.* at 13:37–58, 13:63–65, 14:5–9. Claim 21 is an independent claim for a base unit that is substantially similar to the base unit required in system claim 3. *Compare id.* at 16:5–22, *with id.* at 13:37–58, 13:63–65.

Notwithstanding Patent Owner’s arguments to the contrary, discussed *infra*, Petitioner demonstrates how Oinonen and Whitley teach the base unit required by claims 3, 14, 18, 19 and 21.⁹ *See* Pet. 24–25 (citing Ex. 1016, 7:12–26, 8:33–37, 9:44–49). For example, Oinonen teaches TE1 (base unit) includes a microprocessor having application software “necessary for implementing the mobile station functions.” Ex. 1016, 7:12–26. The

⁹ Relying on its analysis of claims 1, and 7, Petitioner further demonstrates how Oinonen and Whitley teach the remaining limitations required by claims 18, 19, and 21 for the reasons discussed in §§ II.C.4 and II.C.6, *supra*. *See* Pet. 31–35.

application software includes programs “for examining the logical states of the input lines” of the V.24 interface between TE1 and the environmental device, “for setting the logical states of the different output lines to the value (0/1) required at the time,” and for examining “received [SMS] messages and, on the basis of this, control[ling] certain operations.” *Id.* at 8:33–37, 9:44–49. Similarly, Whitley teaches gateway 20 (base unit) is a GSM enabled device having a processor that is “programmed to format and manage data packets sent and received via the short messaging service provided by a GSM network.” Ex. 1023, 9:3–13.

Patent Owner argues Oinonen’s microprocessor and Whitley’s 386 processor are not microcontrollers because “microcontrollers and microprocessors are distinctly different devices” and a microprocessor “is not a computer in and of itself programmed for a particular task.” PO Resp. 27, 29–30. Patent Owner’s arguments rely on its proposed construction of “microcontroller.” *Id.* at 27, 30. For the reasons discussed in § II.B.2, *supra*, we construe “microcontroller” to mean “a microcomputer, microprocessor, or other equipment used for process control.” Consequently, Oinonen’s microprocessor and Whitley’s 386 processor are microcontrollers because they are programmed to (a) receive information from an environmental device, (b) send SMS messages containing that information to a remote device, (c) receive SMS messages containing a command from the remote device, and (d) control the environmental device as commanded.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen and Whitley and how the combination teaches every limitation of claims 3, 14, 18, 19, and 21. Thus, Petitioner

demonstrates by a preponderance of evidence that claims 3, 14, 18, 19, and 21 are unpatentable as obvious over Oinonen and Whitley.

8. *Claim 12*

Claim 11 is an independent claim to a wireless system that includes a remote unit having wireless connectivity that exchanges SMS messages with a wireless base unit. *See* Ex. 1001, 14:19–38. Claim 12 depends from claim 11 and requires the wireless connectivity to comprise “a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing *between the first wireless connection and the second wireless connection.*” *Id.* at 14:39–44 (emphasis added).

Petitioner characterizes claim 12 as “describ[ing] network connections to/from the base unit and the remote unit, and *a non-wireless connection between the base unit and the environmental device.*” Pet. 29 (emphasis added). Petitioner argues Oinonen teaches the limitations required by claim 12 by disclosing “wireless connections between various stations (e.g., the base unit and the remote unit) and various wired connections thereafter.” *Id.* at 30. Petitioner argues Figure 1 of Whitley teaches the limitations by disclosing “a variety of wired and wireless connections.” *Id.* Petitioner further argues that “Oinonen and Whitley also disclose interfaces between the base unit and environmental device.” *Id.*

In our Institution Decision, we found Petitioner had failed to sufficiently demonstrate that the combination of Oinonen and Whitley taught the limitations required by claim 12 for two reasons. *See* Dec. Inst. 26. First, Petitioner failed to identify the location of Oinonen’s “various wired connections” and Whitley’s “variety of wired . . . connections” with sufficient particularity and, in particular, failed to indicate they were located

“between the first wireless connection and the second wireless connection.”

Id. Second, Petitioner failed to sufficiently explain how Oinonen and Whitley’s disclosure of interfaces between a base unit and environmental device is a “connection interfacing *between the first wireless connection and the second wireless connection.*” *Id.*

Patent Owner agrees with that reasoning. *See* PO Resp. 26. Petitioner did not challenge our preliminary finding that the plain language of claim 12 requires the non-wireless connection to be an interface *between* the first/second wireless connections associated with the base/remote units, which we maintain here. *See* Pet. Reply 27–32. Instead, Petitioner argues that Oinonen and Whitley disclose such a non-wireless connection because they “disclose cellular networks, such as GSM” and cellular networks contain “wires in the central office.” *Id.* at 31. Patent Owner argues we should reject this argument because it “present[s] an entirely new invalidity theory regarding claim 12.” PO Sur-Reply 7.

We are persuaded by Patent Owner’s arguments. Although our rules allow “the petitioner, in its reply brief, to address issues discussed in the institution decision,” they prohibit Petitioner from “submit[ting] new evidence or argument in reply that it could have presented earlier, e.g., to make out a prima facie case of unpatentability.” Consolidated Trial Practice Guide¹⁰ at 73; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019). Petitioner never argued in the Petition that Oinonen and Whitley disclose a non-wireless connection between the first wireless connection and the second wireless connection because they both use GSM cellular networks having wires in their central offices. *See* Pet. 29–30. Petitioner’s Reply is not an

¹⁰ Available at <http://www.uspto.gov/TrialPracticeGuideConsolidated>

opportunity to present that argument for the first time. *See* Consolidated Trial Practice Guide at 73; *see also Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1368 (Fed. Cir. 2015) (“The Board must make judgments about whether a Petition identified the specific evidence relied on in a Reply and when a Reply contention crosses the line from the responsive to the new.”). Therefore, we do not consider this argument.

Accordingly, on this record and for the reasons stated above, Petitioner has failed to demonstrate that claim 12 is unpatentable over the combination of Oinonen and Whitley.

D. Obviousness over Oinonen, Whitley, and Sears

Petitioner argues claims 4–6 and 16 are unpatentable as obvious over Oinonen, Whitley, and Sears. Pet. 35–38. Patent Owner disputes this. *See* PO Resp. 31–35. For the reasons discussed below, Petitioner demonstrates by a preponderance of evidence that claims 4–6 and 16 are unpatentable as obvious over Oinonen, Whitley, and Sears.

1. Sears

Sears discloses a system and method for disseminating Java code to networked devices. Ex. 1019 ¶ 24. Sears teaches that “Java technology enables developers to write rich dynamic personalized services and applications . . . on mobile devices,” and that Java-enabled devices “offer dynamic and secure delivery of multiple applications and services.” *Id.* ¶¶ 7, 32. Sears further teaches that J2ME (Java 2 Micro Edition) is a “modular, scalable architecture to support the flexible deployment of technology to devices with diverse features, functions, and . . . capabilities.” *Id.* ¶ 32.

2. Reasons to Combine the Teachings of Oinonen, Whitley, and Sears

Petitioner argues that Oinonen and Whitley disclose running customized applications on mobile devices and a person skilled in the art

would have known that the applications could have been written using JAVA or J2ME as taught by Sears. Pet. 35–36 (citing Ex. 1003 ¶¶ 393–394). Petitioner argues Sears teaches several advantages to writing mobile device applications in JAVA or J2ME. *Id.* at 36. These advantages include the ability to (1) “create, dynamic, personal, and functionality-rich applications,” (2) provide “content-rich graphics and faster interaction,” and (3) “process the SMS commands of Oinonen/Whitley for transmission even when offline.” *Id.* (citing Ex. 1003 ¶¶ 394–397; Ex. 1019 ¶¶ 7, 8, 32).

In our Institution Decision, we found Petitioner articulated sufficient reasoning to combine the teachings of Sears with the teachings of Oinonen and Whitley. In particular, we found Petitioner’s proposed modification was the simple substitution of one element (Oinonen/Whitley’s run-time environment) for another known in the field (Sears’ JAVA or J2ME run-time environment) to achieve a predictable result. Dec. Inst. 28 (citing Ex. 1016, 8:33–37; Ex. 1019 ¶¶ 7, 32; Ex. 1023, 10:20–23; *KSR*, 550 U.S. at 416). Patent Owner does not dispute that finding, which we maintain here. *See* PO Resp. 31–35.

3. *Claims 4–6 and 16*

Claim 4 depends from claim 1 and requires the remote unit to be a cellular telephone handset with custom programmability. Ex. 1001, 13:66–67. Claims 5 and 6 depend from claim 4 and, respectively, require the custom programmability to be a JAVA and a J2ME programming kernel. *Id.* at 14:1–4. Claim 16 depends from claim 15 and requires the cellular telephone handset (remote unit) to include at least one of a customizable JAVA or J2ME programming kernel. *Id.* at 14:51–56.

Notwithstanding Patent Owner’s arguments to the contrary, discussed *infra*, Petitioner demonstrates how the combination of Oinonen, Whitley,

and Sears teaches the limitations of claims 4–6 and 16. *See* Pet. 37–38. For example, Oinonen’s TE2 (remote unit) is a cellular handset running a custom application (SMS message interpreter), and Sears teaches using JAVA or J2ME virtual run-time environments to “provide[] an open platform for mobile Internet device applications.” *See* Ex. 1003 ¶¶ 398–409; Ex. 1016, 8:33–37; Ex. 1019 ¶¶ 6, 30, 33, 34. Similarly, Whitley’s mobile station (remote unit) is a cellular handset running applications, and Sears teaches the applications can be written to run in a JAVA or J2ME based run-time environment. *See* Ex. 1003 ¶¶ 398–409; Ex. 1019 ¶¶ 6, 30, 33, 34; Ex. 1023, 3:19–25, 8:6–10.

Patent Owner argues that claims 4–6 and 16 are patentable for the same reasons as claims 1 and 11. *See* PO Resp. 31–32, 35. We are not persuaded by these arguments for the reasons discussed in §§ II.C.4 and II.C.5, *supra*. Patent Owner also argues claims 4–6 are patentable because a person skilled in the art would understand “custom programmability” means adding an “app” and the combination of Oinonen, Whitley, and Sears does not disclose “permitting a user to add an ‘app’ to his or her cell phone that utilize[s] the phone’s built-in SMS capability to send application data to a base unit and receive data from the base unit.” *Id.* at 32–33. This is so, Patent Owner argues, because Oinonen teaches using “custom software” rather than an app, Whitley does not teach using custom software at all, and although Sears describes “what could be called an ‘app’ store,” nothing in Sears “discloses or suggests SMS messaging, much less implementation details for a custom application to implement SMS messaging.” *Id.* at 33–34.

We are not persuaded by Patent Owner’s arguments for two reasons. First, nothing in claims 4–6 or 16 requires downloading a custom “app”

from an “app store” as Patent Owner contends. *See* Ex. 1001, 13:66–14:5, 14:53–56. Second, Patent Owner improperly attacks the individual teachings of Oinonen, Whitley, and Sears, and fails to consider their combined teachings. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (“Non-obviousness cannot be established by attacking references individually where the [challenge] is based upon the teachings of a combination of references.”); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (The test for obviousness “is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”). Oinonen teaches using a custom application (message interpreter) to interpret SMS messages and Sears teaches custom applications can be written to run in JAVA and/or J2ME run-time environments. Ex. 1016, 8:33–37; Ex. 1019 ¶¶ 6, 30, 33, 34. Moreover, as Patent Owner admits, Sears describes providing custom applications on “what could be called an ‘app’ store.” PO Resp. 34. Namely, Sears discloses “a server . . . used as a central point of focus for users of mobile devices” that provides applications that are “customized prior to dissemination of the applications to users and/or devices in the network.” Ex. 1019 ¶ 12. Thus, even if claims 4–6 and 16 required downloading an “app” from an “app store,” doing so would have been obvious to a person skilled in the art based on the combined teachings of Oinonen, Whitley, and Sears.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, and Sears and how the combination teaches every limitation of claims 4–6 and 16. Thus, Petitioner demonstrates by a preponderance of evidence that claims 4–6 and 16 are unpatentable as obvious over Oinonen, Whitley, and Sears.

E. Obviousness over Oinonen, Whitley, and Antila

Petitioner argues claim 8 is unpatentable as obvious over Oinonen, Whitley, and Antila. Pet. 38–39. Patent Owner disputes this. See PO Resp. 35. For the reasons discussed below, Petitioner demonstrates by a preponderance of evidence that claim 8 is unpatentable as obvious over Oinonen, Whitley, and Antila.

1. Antila

Antila is directed to “a double-sided display element . . . using a liquid crystal display as an example.” Ex. 1021, 4:19–21. Antila teaches “[l]iquid crystal displays (LCD[s] . . .) are at present very common especially in small size devices” and that a common construction for such displays “is the so called twisted nematic . . . LCD-display.” *Id.* at 1:15–21. Antila further teaches the Nokia 9000 Communicator has a reasonably small LCD-display “of the so called super twisted nematic . . . type.” *Id.* at 5:1–5.

2. Reasons to Combine the Teachings of Oinonen, Whitley, and Antila

Petitioner argues Oinonen’s TE2 (remote unit) is a GSM enabled mobile device and Whitley’s mobile terminal (remote unit) is a GSM-enabled Nokia 9000 Communicator. Pet. 38. Therefore, Petitioner argues, a person skilled in the art would have considered the teachings of “Antila, which provide[] technical and design information for the Nokia 9000 communicator,” when seeking “additional details regarding the types of mobile devices used to control environmental devices.” *Id.* (citing Ex. 1003 ¶¶ 410–412).

In our Institution Decision, we found Petitioner articulates sufficient reasoning to combine the teachings of Oinonen, Whitley, and Antila because Oinonen teaches using a remote unit (TE2) to monitor and control a peripheral (environmental) device, Whitley teaches the remote unit can be a

Nokia 9000 Communicator, and Antila teaches the Nokia 9000 Communicator has an LCD display. DI 30–31 (citing Ex. 1016, 6:64–7:4, 13:15–20; Ex. 1021, 4:65–5:5; Ex. 1023, 6:22–29, 8:6–14). Thus, Petitioner’s proposal is a “combination of familiar elements according to known methods [and] is likely to be obvious when it does no more than yield predictable results.” *Id.* at 31 (quoting *KSR* 550 U.S. at 416). Neither party disputes this finding, which we maintain here. *See* PO Resp. 35; Pet. Reply 9–27.

3. *Claim 8*

Claim 8 depends from claim 1 and requires the remote unit to include a liquid crystal display module. Ex. 1001, 14:10–11. Petitioner demonstrates how the combination of Oinonen, Whitley, and Antila teaches this limitation. *See* Pet. 39. For example, Oinonen teaches using a remote unit (TE2) to monitor and control a peripheral device, Whitley teaches the remote unit can be a Nokia 9000 Communicator, and Antila teaches the Nokia 9000 Communicator has an LCD display. *See* Ex. 1016, 6:64–7:4, 13:15–20; Ex. 1021, 4:65–5:5; Ex. 1023, 6:22–29, 8:6–14. Patent Owner does not dispute this, but argues claim 8 is patentable for the same reasons as claim 1. *See* PO Resp. 35. We are not persuaded by these arguments for the reasons discussed in § II.C.4, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, and Antila, and how the combination teaches every limitation of claim 8. Thus, Petitioner demonstrates by a preponderance of evidence that claim 8 is unpatentable as obvious over Oinonen, Whitley, and Antila.

F. Obviousness over Oinonen, Whitley, Antila, and Ehlers

Petitioner argues claims 9 and 10 are unpatentable as obvious over Oinonen, Whitley, Antila, and Ehlers. Pet. 39–44. Patent Owner disputes this. PO Resp. 35. For the reasons discussed below, Petitioner demonstrates by a preponderance of evidence that claims 9 and 10 are unpatentable as obvious over Oinonen, Whitley, Antila, and Ehlers.

1. Ehlers

Ehlers discloses “a system and method for managing the delivery and usage of a commodity such as electricity, natural gas, steam, water, chilled or heated water, or potable or recycled water.” Ex. 1022 ¶ 2. Ehlers’ system allows a customer to access and control portions of the system through GUI (graphical user interface) 1.14 on a device linked to the system via a wireless data network. *Id.* ¶ 69. The various windows of GUI 1.14 are shown in Figures 4A–4R of Ehlers and can be displayed on a mobile phone. *Id.* ¶¶ 30–47, 311. Figure 4C of Ehlers is reproduced below.

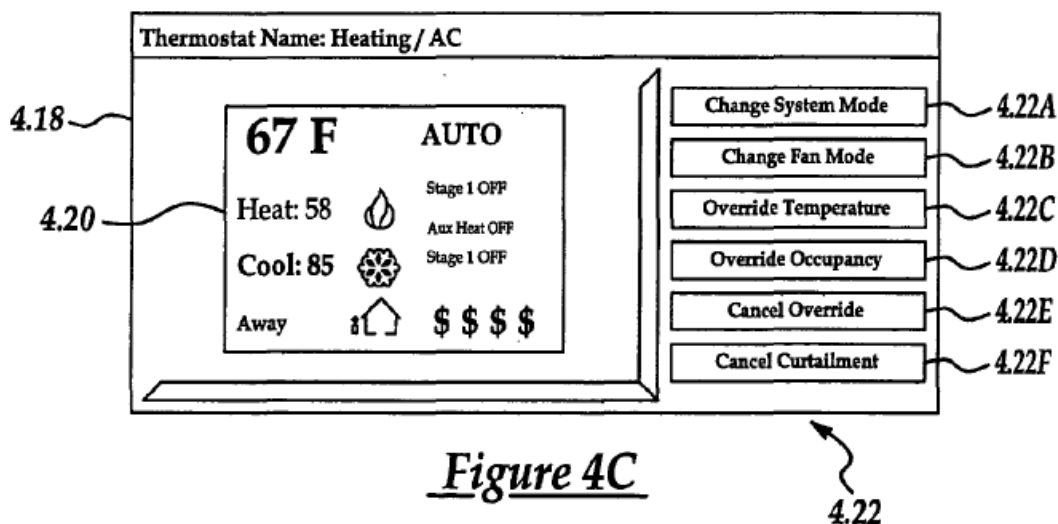


Figure 4C of Ehlers illustrates virtual thermostat 4.18 containing current information 4.20 for a remotely monitored HVAC system (temperature, heating and cooling set-points, and operating mode) and control buttons

4.22. *Id.* ¶ 316. Using buttons 4.22, a customer can change the HVAC system’s operating parameters such as the heating and cooling set-points. *Id.* Ehlers system includes pre-defined alerts (e.g., temperature out of range), and allows a customer to “select or designate . . . who gets notified for each alert, and how they are notified.” *Id.* ¶ 327.

2. *Reasons to Combine the Teachings of Oinonen, Whitley, Antila, Ehlers*

Petitioner argues Oinonen and Whitley teach the ability to monitor and control remote devices via SMS messages, and Whitley teaches monitoring remote devices for energy usage. Pet. 39–40. Petitioner argues a person skilled in the art would have incorporated the teachings of Ehlers into the combination of Oinonen, Whitley, and Antila in order “[t]o enhance the energy monitoring functionality of Whitley.” *Id.* at 40. Petitioner argues Ehlers’ user interface would improve upon the Oinonen, Whitley, Antila combination by allowing a user “to precisely control his/her own preferences” and by providing “improved customer usability.” *Id.*

Patent Owner argues a person skilled in the art would not have combined the teachings of Ehlers with the combined teachings of Oinonen, Whitley, and Antila because “Oinonen and Whitley disclose mobile devices with small screens” and “Ehlers disclose[s] a rich user interface realizable only on a large display” and “not realizable on the mobile device displays disclosed by Oinonen and Whitley.” PO Resp. 36.

We find Petitioner has articulated sufficient and persuasive reasoning to combine the teachings of Oinonen, Whitley, Antila, and Ehlers. Oinonen teaches using TE2 (remote unit) to monitor and control an environmental device, Whitley teaches the remote unit can be a Nokia 9000 Communicator, Antila teaches the Nokia 9000 Communicator has an LCD display, and Ehlers teaches using a GUI displayed on a mobile device to monitor and

control an environmental device. *See* Ex. 1016, 6:64–7:4, 13:15–20; Ex. 1021, 5:1–5; Ex. 1022 ¶ 116; Ex. 1023, 6:22–29, 8:6–14. Petitioner’s proposed combination is one of “familiar elements according to known methods [and] is likely to be obvious when it does no more than yield predictable results.” *KSR* 550 U.S. at 416.

We are not persuaded by Patent Owner’s arguments that Ehlers’ GUI could not be implemented on mobile devices available at the time and could not have been used to control monitored parameters. *See* PO Resp. 35–38. To the contrary, Ehlers expressly discloses “the customer may access the GUI 4.02 through a remote device, such as a mobile phone.” Ex. 1022 ¶ 311. GUI 4.02 includes all the tabs shown in Figures 4A through 4R, including the virtual thermostat shown in Figure 4C. *Id.* ¶¶ 30–47, 311. The virtual thermostat displays the current temperature and temperature set point at a remote site, and allows the user to change the temperature set point. *Id.* ¶ 316, Fig. 4C.

3. Claim 9

Claim 9 depends from claim 8 and requires the liquid crystal module to include selectable graphic icons corresponding to current environmental information being monitored or controlled. Ex. 1001, 14:12–15. Petitioner demonstrates how the combination of Oinonen, Whitley, Antila, and Ehlers teaches this limitation. *See* Pet. 41–43. For example, Whitley teaches using a Nokia 9000 Communicator (remote unit) to monitor and control an environmental device (thermostat), Antila teaches the Nokia 9000 includes an LCD display, and Ehlers teaches displaying a GUI having selectable icons (buttons 4.22) corresponding to remotely monitored or controlled environmental information (temperature) on a mobile device. Ex. 1021, 1:15–25, 4:65–5:5; Ex. 1022 ¶¶ 116, 316; Ex. 1023, 6:22–29, 8:6–14, 12:21–

23. Patent Owner argues claim 9 is patentable for the same reasons as claim 1. *See* PO Resp. 35. We are not persuaded by these arguments for the reasons discussed in § II.C.4, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, Antila, and Ehlers and how the combination teaches every limitation of claim 9. Thus, Petitioner demonstrates by a preponderance of evidence that claim 9 is unpatentable as obvious over Oinonen, Whitley, Antila, and Ehlers.

4. Claim 10

Claim 10 depends from claim 1 and requires the remote unit to be configured to selectively disable SMS message transmissions from the base unit. Ex. 1001, 14:16–18. Petitioner demonstrates how the combination of Oinonen, Whitley, Antila, and Ehlers teaches this limitation. *See* Pet. 43–44 (citing Ex. 1022 ¶ 327, Fig. 4J). For example, Oinonen and Whitley teach remotely monitoring environmental devices (receiving alerts) via SMS messages, and Ehlers teaches using a GUI to selectively control which alerts get sent to which remote devices. *See* Ex. 1022 ¶ 327, Fig. 4J; Ex. 1023, 6:22–29, 8:6–14, 12:21–23. Patent Owner argues claim 10 is patentable for the same reasons as claim 1. *See* PO Resp. 35. We are not persuaded by these arguments for the reasons discussed in § II.C.4, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, Antila, and Ehlers and how the combination teaches every limitation of claim 10. Thus, Petitioner demonstrates by a preponderance of evidence that claim 10 is unpatentable as obvious over Oinonen, Whitley, Antila, and Ehlers.

G. Obviousness over Oinonen, Whitley, and Menard

Petitioner argues claims 20 and 22 are unpatentable as obvious over Oinonen, Whitley, and Menard. Pet. 44–48. Patent Owner disputes this. PO Resp. 39–45. For the reasons discussed below, Petitioner demonstrates by a preponderance of evidence that claims 20 and 22 are unpatentable as obvious over Oinonen, Whitley, and Menard.

1. Menard

Menard discloses a system and method for remote notification of a monitored condition. Ex. 1020 ¶ 16. The notification can be a burglar alarm, a fire alarm, or an alarm from a sensor that monitors any type of mechanical, environmental, maintenance, usage, or access system. *Id.* The alarm can be sent to an RP (responsible party) via facsimile, email, SMS, or WAP (wireless application protocol). *Id.* ¶¶ 18, 20. When an RP responds to the notification to manage alarm processing, Menard’s system “executes the process which may include further notification.” *Id.* ¶ 68. Thus, “after instructions from [the] RP are completed, another round of notification may occur” so that “RPs are informed as to the outcome of the event.” *Id.* ¶ 179.

2. Reasons to Combine the Teachings of Oinonen, Whitley, and Menard

Petitioner argues Oinonen, Whitley, and Menard all teach remotely monitoring and controlling an alarm system through the exchange of SMS messages. Pet. 45. Petitioner demonstrates how Oinonen and Whitley also teach confirming the receipt of SMS messages. *Id.* For example, Oinonen teaches an SMS service center receives a confirmation when a receiving mobile station “has received [a] short message.” Ex. 1016, 2:24–28. Likewise, Whitley teaches an SMS service center “returns a message indicating the delivery status of [an] outgoing [SMS] message.” Ex. 1023, 10:3–5. Petitioner argues a person skilled in the art would have been

motivated to confirm not only the receipt of an SMS command, as taught by Oinonen and Whitley, but that the received SMS command containing “[a] monitoring/control request had been performed,” as taught by Menard, in order to provide “extra comfort and/or security to [the] user.” Pet. 45–46 (citing Ex. 1003 ¶¶ 444–445; Ex. 1020 ¶¶ 69, 179).

Petitioner articulates sufficient and persuasive reasoning to combine the teachings of Oinonen, Whitley, and Menard. Oinonen and Whitley teach an alarm system that sends an alarm via SMS, receives a command in response to the alarm, and confirms receipt of the received command. *See* Ex. 1016, 2:24–28, 6:60–7:4, 10:63–11:11; Ex. 1023, 6:22–29, 10:3–5, 12:21–23. Menard teaches an alarm system that sends an alarm to a remote user, receives a response to manage or control the alarm, and notifies the remote user of the outcome of processing the response. Ex. 1020 ¶¶ 68, 179. Confirming not only receipt of a command as taught by Oinonen and Whitley, but execution of the command as taught by Menard, is a simple “combination of familiar elements according to known methods” to achieve a predictable result. *See KSR*, 550 U.S. at 416.

3. Claim 20

Claim 20 is substantially similar in scope to claim 19, which as discussed in § II.C.7, *supra*, is substantially similar to claims 1, 3 and 7. *Compare* Ex. 1001, 15:28–16:4, *with id.* at 15:9–27, *and with id.* at 13:37–58, 13:63–65, *and* 14:5–9. Claim 20 differs from claim 19 in that it requires the transmitter to send a message to the remote unit indicating that a received command has been executed. *Id.*

Given the similarity between claims 1, 19, and 20, Petitioner’s analysis of claim 20 largely relies on and refers back to its analysis of claims 1 and 19. *See* Pet. 46–47. For the reasons discussed in §§ II.C.4 and II.C. 7,

supra, Petitioner demonstrates how the combination of Oinonen and Whitley disclose the limitations in claim 20 that are substantially similar to limitations in claims 1 and 19. Petitioner further demonstrates how Menard teaches the additional limitation of a base unit transmitting a message indicating a received command has been executed. *See* Pet. 46–47 (citing Ex. 1020 ¶¶ 68, 179). For example, Menard discloses an alarm system that sends an alarm to an RP (responsible party), receives a response from the RP to “manag[e] the alarm processing,” and executes the received response, which “may include further notification . . . based upon executing the instructions for the particular RP.” Ex. 1020 ¶ 68. Menard further discloses “after instructions from an RP are completed . . . selected RPs may be notified of the outcome of the process.” *Id.* ¶ 179.

Patent Owner argues Petitioner’s analysis of this limitation is flawed for several reasons. *See* PO Resp. 39–44. First, Patent Owner argues “[t]he ‘command’ referenced in this claim element is ‘a command for the environmental device’” and “Petitioners do not assert that Oinonen or Whitley disclose this claim element but instead assert that it is taught by Menard.” *Id.* at 39. Next, Patent Owner argues, the “command” executed by Menard is received by “a monitoring service remote from [a monitored] house or business” and, therefore, Menard’s notification that the command has been executed is not a notification that “an *environmental device in a monitored home* execut[ed] instructions.” *Id.* at 39, 42.

We are not persuaded by Patent Owner’s arguments, which improperly attack the teachings of the individual references rather than their combined teachings. *See Merck*, 800 F.2d at 1097 (“Non-obviousness cannot be established by attacking references individually where the [challenge] is based upon the teachings of a combination of references.”).

First, Petitioner relies on Oinonen and Whitley rather than Menard for teaching a base unit interfaced with an environmental device having a receiver that receives a command for the environmental device. *See* Pet. 46 (indicating the base unit “is similar to 1B and is likewise disclosed” and the receiver “is similar to 19C and is likewise disclosed”); *id.* at 18–19 (limitation 1B analysis identifying Oinonen’s TE1 and Whitley’s gateway 20 as base units interfaced with an environmental device); *id.* at 34 (limitation 19C analysis referring to limitation 1D–1F analysis); *id.* at 19–22 (limitation 1D–1E analysis identifying TE1’s radio element 6 and gateway 20’s transceiver as receivers that receive a command for an environmental device). Next, Petitioner demonstrates that both Oinonen and Whitley confirm receiving SMS messages (commands). *Id.* at 45. For example, Oinonen teaches confirming a mobile station “has received [a] short message.” Ex. 1016, 2:24–28. Likewise, Whitley teaches receiving a message “indicating the delivery status of [an] outgoing [SMS] message.” Ex. 1023, 10:3–5. Next, Petitioner demonstrates how Menard receives and executes a command, and transmits a confirmation that the command has been executed. *See* Pet. 47. For example, Menard teaches sending an alarm, receiving a response to “manag[e] the alarm processing,” and sending “further notification . . . based upon executing the instructions” contained in the received response. Ex. 1020 ¶ 68. Thus, when combined with Oinonen and Whitley, Menard teaches transmitting, via the transmitter in Oinonen’s TE1 and Whitley’s gateway 20, a message indicating when a received command has been executed.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, and Menard and how the

combination teaches every limitation of claim 20. Thus, Petitioner demonstrates by a preponderance of evidence that claim 20 is unpatentable as obvious over Oinonen, Whitley, and Menard.

4. *Claim 22*

Claim 22 is substantially similar in scope to claim 3, which depends from claim 1. *Compare* Ex. 1001, 16:22–37, *with id.* at 13:37–58 *and* 13:63–65. Claim 22 differs from claim 3 in that it requires a wireless module configured to send a wireless message to the remote unit indicating that a received command has been executed. *Id.* That is, claim 22 adds to claim 3 the same limitation that claim 20 adds to claim 19.

Given the similarity between claims 1, 19, 20, and 22, Petitioner’s analysis of claim 22 largely relies on and refers back to its analysis of claims 1, 19, and 20. *See* Pet. 47–48. For the reasons discussed in §§ II.C.4 and II.C.7, *supra*, Petitioner demonstrates how the combination of Oinonen and Whitley disclose the limitations in claim 22 that are substantially similar to the limitations in claims 1 and 19. For the reasons discussed in § II.G.3, *supra*, Petitioner demonstrates how the combination of Oinonen, Whitley, and Menard disclose the limitation in claim 22 that is substantially similar to the claim 20 limitation of transmitting a message indicating a received command has been executed. Patent Owner argues Petitioner fails to demonstrate the unpatentability of claim 22 over Oinonen, Whitley, and Menard for the same reasons as claim 20. *See* PO Resp. 44–45. We are not persuaded by these arguments for the reasons discussed in § II.G.3, *supra*.

For the reasons discussed above, Petitioner demonstrates by a preponderance of evidence why a person skilled in the art would have combined the teachings of Oinonen, Whitley, and Menard and how the combination teaches every limitation of claim 22. Thus, Petitioner

demonstrates by a preponderance of evidence that claim 22 is unpatentable as obvious over Oinonen, Whitley, and Menard.

H. Grounds based on Bielski and Wu

Petitioner argues claims 1–4, 7–9, 11–15, 17–19, and 21 are unpatentable over Bielski and Wu; claims 5, 6, and 16 are unpatentable over Bielski, Wu, and Sears; claim 10 is unpatentable over Bielski, Wu, and Ehlers; and claims 20 and 22 are unpatentable over Bielski, Wu, and Menard. Pet. 49–85. Patent Owner disputes this. PO Resp. 45–62.

For the reasons discussed above, Petitioner has demonstrated by a preponderance of evidence that claims 1–11 and 13–22 of the ’935 patent are unpatentable over Oinonen and Whitley alone or in combination with one or more of Sears, Antila, Ehlers, and Menard. *See* §§ II.C–II.G, *supra*. Consequently, we need not consider whether Petitioner has also demonstrated that claims 1–11 and 13–22 are unpatentable over Bielski and Wu alone or in combination with Sears, Ehlers, or Menard. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (finding an administrative agency is at liberty to reach a decision based on a single dispositive issue). However, on the record presented and for the reasons discussed above, Petitioner has failed to demonstrate that claim 12 is unpatentable over Oinonen and Whitley. Therefore, we do need to consider whether Petitioner has demonstrated that claim 12 is unpatentable over Bielski and Wu.

I. Bielski

Bielski discloses “a communication system and a method for . . . the monitoring, control and/or regulation of one or more devices.” Ex. 1017 ¶ 1. Bielski allows “the user of a mobile phone[] to monitor devices . . . over long distances, and/or to actively control or regulate them by means of the

mobile phone.” *Id.* ¶ 8. Bielski identifies each of “a stove, a refrigerator, a fuse box, a light, a roller blind, a garage door, [and] an alarm system of a video surveillance system,” as a device that can be remotely monitored and controlled. *Id.* Bielski’s system is illustrated in Figure 1, which is reproduced below.

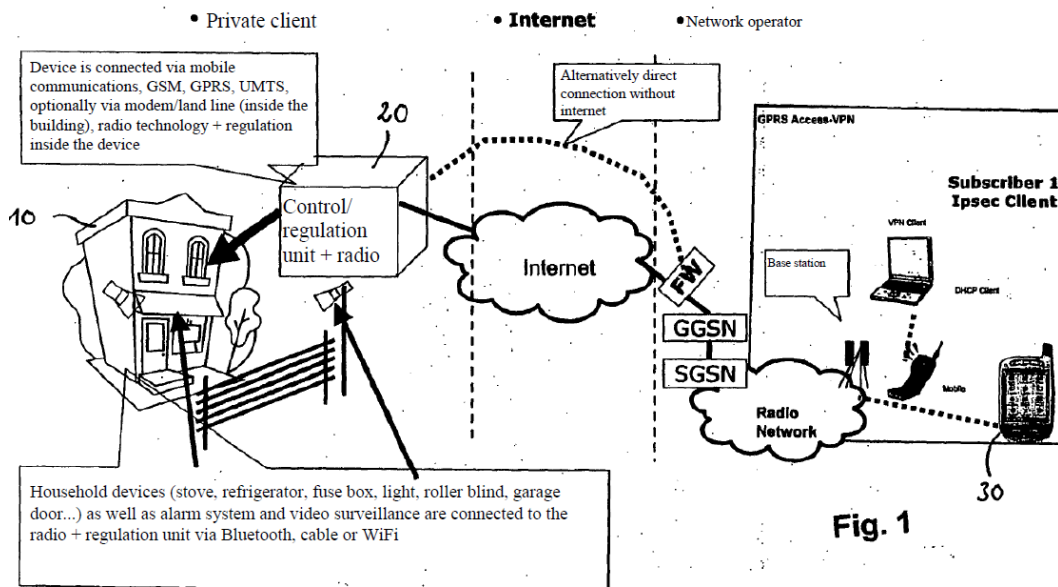


Figure 1 of Bielski is a schematic illustration of a system for “the monitoring, control, or regulation of household devices by means of a mobile terminal.” *Id.* ¶ 53. The system includes monitored/controlled devices 10, check and communication unit 20, and mobile device 30. *Id.* ¶ 54, Fig. 1.

Check and communication unit 20 represents separate units that are “wired together for purposes of data exchange.” *Id.* ¶ 54. The check unit can be “a monitoring unit which receives data from the device(s),” and also “a control unit which transfers data for the purpose of control to the one or more devices.” *Id.* ¶ 14; *see also id.* ¶¶ 5, 40. The check unit communicates with the controlled devices over a wired or wireless connection. *Id.* ¶¶ 5, 13, 40. The communication unit includes a “sending and/or receiving unit by

means of which data can be sent and/or received by mobile communications . . . according to the GSM, GPRS, or UMTS standard.” *Id.* ¶ 57; *see also id.* ¶¶ 5, 21, 22, 26, 40.

Mobile terminal 30 can also operate according to the GSM, GPRS, or UMTS standards. *Id.* ¶ 30. Users of “mobile terminal 30 can be informed about the operation conditions of the devices . . . or can themselves influence the devices by controlling or regulating them.” *Id.* ¶ 63. For example, users can enter “commands, such as on/off conditions or temperatures . . . into the mobile terminal and send this information. . . . to the control and communication unit 20 via the telecommunications network.” *Id.* From control and communication unit 20, an issued command “is transmitted to the devices inside the building 10 or serves as a nominal value which is required for regulation of the devices.” *Id.* Mobile terminal 30 can execute “an application with a corresponding user interface with which the user can . . . activate special features using buttons and various control panels . . . for the control/regulation unit” of a controlled device. *Id.* ¶ 81. The application, for example, allows the user “to specify a room temperature with a slider inserted onto the user interface, wherein the exact temperature values would be shown on a separate display, and the user . . . moves the slider to a desired value.” *Id.* A corresponding application on check and communication unit 20 “effect[s] control and regulation processes in the direction of the controlling/regulation devices.” *Id.* ¶ 82.

Bielski’s system includes “means [i] by means of which data can be transferred from the network operator to the mobile terminal on the basis of the data transferred from the communication unit . . . and/or [ii] by means of which data can be transferred from the mobile terminal to the network operator on the basis of which data are transferred to the communication

unit.” *Id.* ¶ 5. Bielski further discloses the means by which the mobile terminal can be informed about the status of monitored/controlled devices 10 can “be in the form of an SMS or by means of a voice mail.” *Id.* ¶ 69.

2. *Wu*

Wu discloses “a Home Network System (HNS) architecture integrated with . . . Short Message Service to support the connectivity between the home and Internet/Global System for Mobile Communication (GSM) networks.” Ex. 1018, 493. “The main objective of the integrated system is to remotely monitor and control the devices in the HNS via laptop computer or a GSM mobile terminal.” *Id.* Wu’s HNS is depicted in Figure 1, which is reproduced below.

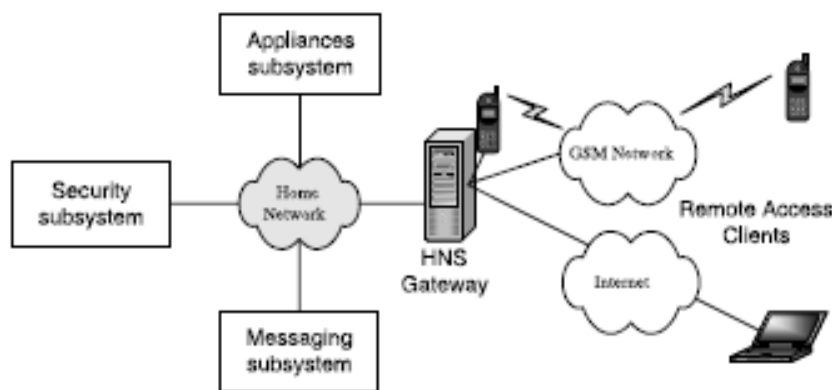


Fig. 1. Home network system architecture.

Figure 1 of Wu is a schematic illustration of a Home Network System. *Id.* at 494–495. The system includes an HNS gateway that “connects to home devices and runs a home automation management application that supervises home devices.” *Id.* at 494. Home network devices, such as refrigerators, air-conditioners, televisions, surveillance systems, burglar alarm systems, fax and answering machines, are organized into appliance, security, and messaging subsystems. *Id.* at 494–495 (Table 1).

Wu's HNS allows remote users "to monitor home appliances and control them" from either a mobile terminal executing WAP (wireless access protocol) or SMS, or a computer executing HTTP (hypertext transfer protocol). *Id.* at 495. This is shown in Figure 2 of Wu, which is reproduced below.

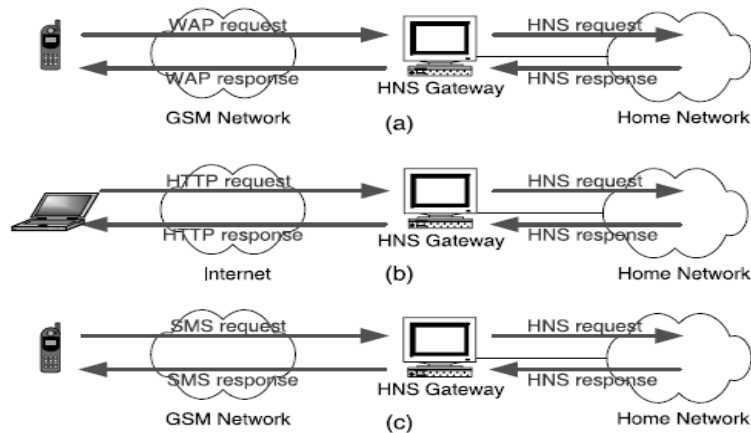


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Figure 2 of Wu is a schematic illustration of three methods for communicating with home devices from a remote location, including via (a) WAP, (b) HTTP, and (c) SMS. *Id.*

3. Claim 12

Claim 12 depends from independent claim 11 and requires the remote unit's wireless connectivity to comprise "a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing *between the first wireless connection and the second wireless connection.*" Ex. 1001, 14:19–44 (emphasis added).

Petitioner provides a detailed analysis of independent claim 11 that relies upon its analysis of independent claim 1 and its articulated reasoning for combining the teachings of Bielski and Wu. *See* Pet. 49–59, 67–72.

Patent Owner alleges this analysis is erroneous because: (a) Petitioner has not articulated sufficient reasoning to combine the teachings of Bielski and Wu, (b) Petitioner has not identified a limitation that is missing in Bielski that would have prompted a person skilled in the art to consider the teachings of Wu, (c) Bielski fails to disclose a remote unit sending SMS messages to a base unit, and (d) Bielski does not enable the base unit sending SMS messages to the remote unit. *See* PO Resp. 45–53, 56. For the reasons that follow, we need not consider the merits of Petitioner’s analysis of claim 11 or Patent Owner’s arguments opposing that analysis to consider the merits of Petitioner’s analysis of claim 12.

Petitioner characterizes claim 12 as requiring “a non-wireless connection between the base unit and the environmental device.” Pet. 72. Petitioner argues the combination of Bielski and Wu teaches or suggests this limitation because “Bielski discloses a variety of cellular network connection networks, such as ‘SGSN/GGSN system which connects the GPRS system’ and GSM,” and “Bielski and Wu further disclose connections between the base unit and environmental unit.” *Id.* (quoting Ex. 1017 ¶ 60).

In our Institution Decision, we determined that claim 12 requires a non-wireless connection *between* first/second wireless connections associated with the base/remote units, and we made a preliminary finding that Petitioner was not likely able to demonstrate the combination of Bielski and Wu teaches the limitation because “Petitioner fails to sufficiently explain how Bielski and Wu’s ‘connections *between the base unit and environmental unit*’ . . . constitute a connection ‘interfacing *between the first wireless connection and the second wireless connection*,’ as required by claim 12.” Dec. Inst. 52–53.

Patent Owner agrees with the preliminary analysis in our Institution Decision. *See* PO Resp. 56. Petitioner does not challenge our finding that the plain language of claim 12 requires the non-wireless connection to be an interface *between* the first/second wireless connections associated with the base/remote units, which we maintain here. *See* Pet. Reply 27–32. Instead, Petitioner argues that Bielski and Wu disclose such a non-wireless connection because they both “disclose use of the GSM [cellular] network” to send/receive SMS messages and the “wires in the central office switch” of the GSM network “allow[] messages from the remote unit to be sent to the base unit to control various environmental devices.” *Id.* at 31. Patent Owner argues we should reject Petitioner’s Reply argument because it “relies entirely on improper new arguments.” PO Sur-Reply 23.

We are persuaded by Patent Owner’s arguments. Although our rules allow “the petitioner, in its reply brief, to address issues discussed in the institution decision,” they prohibit Petitioner from “submit[ting] new evidence or argument in reply that it could have presented earlier, e.g., to make out a prima facie case of unpatentability.” Consolidated Trial Practice Guide at 73. Petitioner never argued in the Petition that Bielski and Wu disclose a non-wireless connection between the first wireless connection and the second wireless connection because they both use GSM cellular networks that have wires in their central offices. *See* Pet. 72. Petitioner’s Reply is not an opportunity to present that argument for the first time. *See* Consolidated Trial Practice Guide at 73; *see also Ariosa Diagnostics*, 805 F.3d at 1368 (“The Board must make judgments about whether a Petition identified the specific evidence relied on in a Reply and when a Reply contention crosses the line from the responsive to the new.”). Therefore, we do not consider this argument.

Accordingly, on this record and for the reasons stated above, Petitioner has failed to demonstrate that claim 12 is unpatentable over the combination of Bielski and Wu.

I. Constitutional Challenges

Patent Owner argues we should decline to consider the patentability of the challenged claims on two constitutional grounds. *See* PO Resp. 62–63. First, Patent Owner argues “the retroactive application of *inter partes* review to patents that were applied for before the America Invents Act (as the ’935 patent was) violates the Fifth Amendment of the United States Constitution.” *Id.* at 62. Second, Patent Owner argues “the Administrative Patent Judges (‘APJs’) presiding over the proceeding were unconstitutionally appointed.” *Id.* at 62–63.

We decline to consider Patent Owner’s constitutional challenge based on the appointments clause because the Federal Circuit has already addressed this issue in *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019), *cert. granted sub nom. United States v. Arthrex, Inc.*, 2020 WL 6037206 (Oct. 13, 2020), and determined that APJs are constitutionally appointed as of the date of that decision. We also decline to consider Patent Owner’s Fifth Amendment challenge because the Federal Circuit has already addressed this issue in *Celgene Corp. v. Peter*, 931 F.3d 1342 (Fed. Cir. 2019) *cert. denied* 141 S.Ct. 132 (2020) (Takings Clause) and *Sound View Innovations, LLC v. Hulu, LLC*, 818 F. App’x, 1009 (Fed. Cir. 2020) (Due Process Clause), and determined the retroactive application of *inter partes* review to patents applied for prior to the enactment of the American Invents Act does not violate the Fifth Amendment.

III. CONCLUSION

We have reviewed the Petition, Patent Owner Response, Petitioner Reply, and Patent Owner Sur-Reply. We have considered all of the evidence and arguments presented by Petitioner and Patent Owner, and have weighed and assessed the entirety of the evidence as a whole.

We find, on this record, Petitioner has demonstrated by a preponderance of evidence that claims 1–11 and 13–22 of the '935 patent are unpatentable, but has failed to demonstrate on this record by a preponderance of evidence that claim 12 is unpatentable.¹¹

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 7, 11–15, 17–19, 21	103(a)	Oinonen, Whitley	1–3, 7, 11, 13–15, 17–19, 21	12
4–6, 16	103(a)	Oinonen, Whitley, Sears	4–6, 16	
8	103(a)	Oinonen, Whitley, Antila	8	
9, 10	103(a)	Oinonen, Whitley, Antila, Ehlers	9, 10	
20, 22	103(a)	Oinonen, Whitley, Menard	20, 22	
12	103(a)	Bielski, Wu		12

¹¹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 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).

Overall Outcome			1–11, 13–22	12
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IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–11 and 13–22 are unpatentable;

FURTHER ORDERED that Petitioner has failed to show on this record that claim 12 is unpatentable under 35 U.S.C. § 103(a) over Oinonen and Whitley;

FURTHER ORDERED that Petitioner has failed to show on this record that claim 12 is unpatentable under 35 U.S.C. § 103(a) over Bielski and Wu; and

FURTHER ORDERED that this Decision is final, and a party to this 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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