

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

IAPARTMENTS, INC.,
Petitioner,

v.

EDST, LLC,
Patent Owner.

IPR2022-01469
Patent 10,803,685 B2

Before ST. JOHN COURTENAY III, KEVIN W. CHERRY, and
MICHELLE N. WORMMEESTER, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

On August 30, 2022, iApartments, Inc. (“Petitioner”) filed a Petition to institute *inter partes* review of claims 1, 2, 5–11, 15, 15, 17, 18, 20, 22, and 23 (“the challenged claims”) of U.S. Patent No. 10,803,685 B2 (Ex. 1001, “the ’685 patent”). Paper 1 (“Pet.”). EDST, LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

We have authority under 35 U.S.C. § 314 to determine whether to institute an *inter partes* review. The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” The Supreme Court has held that the Board, in a decision to institute under 35 U.S.C. § 314(b), may not institute review on less than all claims challenged in the petition. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018). Moreover, in accordance with our rules, “[w]hen instituting inter partes review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a) (2020); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Applying those standards, and upon considering the Petition, the Patent Owner’s Preliminary Response, and the evidence of record, we determine the information presented shows a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of the challenged claims of the ’685 patent on any of the four grounds of

unpatentability proposed in the petition. Pet. 3. Accordingly, for the reasons set forth *infra*, we institute an *inter partes* review of all challenged claims of the '685 patent and all asserted grounds of unpatentability.

II. BACKGROUND

A. *Related Matters*

Both parties identify as related litigation *EDST, LLC and Quext IoT, LLC v. iApartments, Inc.*, No. 8:22-cv-00272 (M.D. Fla.). Pet. 1; Paper 4, 2. Patent Owner also identifies as related litigation that involves the '685 patent *EDST, LLC et al v. Huarifu Technology Co., Ltd. et al*, No. 2:22-cv-00365 (E.D. Tex.). Paper 4, 2. Further, Patent Owner identifies an ITC case as related: *Certain Smart Thermostat Hubs, Systems Containing the Same, and Components of the Same*; Inv. No. 337-TA-364 (Violation). *Id.* at 3. The parties indicate that two related patents, US 10,825,273 B2 and US 11,189,118 B2, are the subjects of petitions in IPR2022-01468 and PGR2022-00059, respectively. Pet. 1–2; Paper 4, 1.

B. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest. Pet. 1. Patent Owner identifies itself and Quext IoT, LLC as real parties in interest. Paper 4, 1.

C. *Overview of the '685 patent*

The '685 patent is entitled “Smart Thermostat Hub,” and “is directed to an intelligent thermostat that can function as a hub having multi-band/multi-radio communication capabilities and can be implemented in a

system for controlling and securing offline door locks and other smart devices within a multifamily property.” Ex. 1001, code (54), 1:13–19. The patent describes high costs to implement wireless network infrastructure to use online keyless locks, and security shortcomings for use of offline keyless locks. *Id.* at 1:23–2:20. The ’685 patent describes that:

Online door locks may be controlled (e.g., locked and unlocked) remotely through an Internet-accessible network connection and locally by a device (e.g., a fob, smartphone, smartcard, etc.) that is placed in proximity to a sensor of the online door lock, while offline door locks can only be controlled (e.g., locked and unlocked) by a device (e.g., a fob, smartphone, smartcard, etc.) that is placed in proximity to a sensor of the offline door lock.

Id. at 1:44–52.

Figure 1, reproduced below, is a diagram of the system for managing and securing access credentials for accessing a multi-family residential property using smart devices, described in embodiments of the ’685 patent.

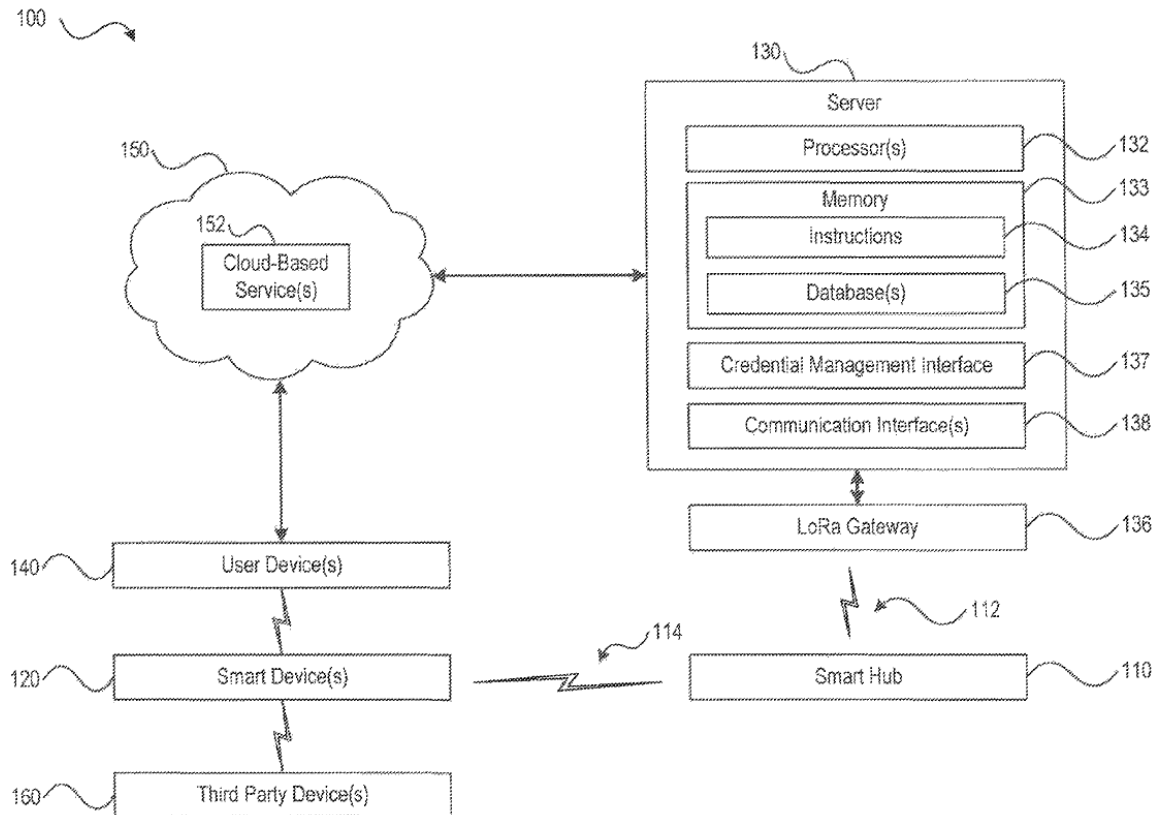


Figure 1, showing user devices 140, smart devices 120, server 130, communication interface 138, LoRa Gateway 136, communication link 112, smart hub 110, and non-LoRa WAN communication links 114. *Id.* at 4:21–7:6.

The '685 patent describes coupling server 130 to a LoRa gateway 136, which may communicate information to and from smart hub 110, using LoRa WAN communication link 112, which could use another low-power technology. *Id.* at 6:12–19. Smart hub 110 may be a smart thermostat hub. *Id.* at 6:45–46. In addition, another communication interface “may communicatively couple smart hub 110 to one or more smart devices 120 via non-LoRa WAN communication links 114, such as a Wi-Fi communication link, a ZigBee communication link, a Bluetooth communication link (e.g., a Bluetooth low energy (BLE) communication

link), and the like.” 6:32–40. The smart hub may provide “improvements with respect to security and property management through utilization of smart devices, such as an offline door lock, a thermostat, lights fixtures, and the like.” *Id.* at 9:5–11. The patent also describes that “server 130 may provide a property management platform that may be utilized to manage various aspects of a multi-family residential property.” *Id.* at 14:1–4.

The ’685 patent provides an example, where,

upon receiving the control information from server 130, smart hub(s) may identify one or more smart devices (e.g., one or more offline door locks) and may derive one or more commands for controlling the one or more identified smart devices in accordance with the control information, such as commands to disable access credentials specified in the control information at the identified offline door lock. Having determined the one or more smart devices to which the received control information pertains and deriving appropriate commands for controlling the one or more smart devices in accordance with the control information, smart hub(s) may initiate transmission of the derived commands to the smart devices via communication links provided by second communication interface (e.g., the non-LoRaWAN communication interface), and the smart devices may execute the commands. For example, upon receiving the commands, an offline door lock may disable the identified access credentials.

Id. at 14:30–48.

The patent also describes that “property management platform,” on server 130, may provide user interfaces and databases, and perform functions “to control and automate various property management tasks. For example, the property management platform may periodically (e.g., daily, weekly, monthly, etc.) analyze the resident databased to identify move out dates.” *Id.* at 15:59–16:5

D. The Challenged Claims

Petitioner challenges claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 of the '685 patent. Pet. 1. Of the challenged claims, claims 1, 15, and 20 are independent. Claim 1, reproduced below, is illustrative of the subject matter recited in the challenged claims (bracketing added).

[1-PRE] A system for securing smart devices within an apartment of a multi-family residential property, the system comprising:

[1-a] an offline door lock comprising:

[1-b] a locking mechanism;

[1-c] a sensor configured to receive access credential information from a credential device placed in proximity to the sensor;

[1-d] a first memory storing access credential validation information;

[1-e] a lock processor configured to:

determine validity of the received access credential information based on the stored access credential validation information; and

selectively engage the locking mechanism if the received access credential information is determined to be valid; and

[1-f] a smart thermostat hub comprising:

one or more processors;

a second memory communicatively coupled to the one or more processors;

[1-g] a first interface configured to communicatively couple the one or more processors to a property management platform via a Long Range (LoRa) wide area network (LoRaWAN) communication link; and

[1-h] a second interface configured to communicatively couple the one or more processors to the offline door lock via a non-LoRaWAN communication link;

[1-i] where the one or more processors are configured to: receive control information associated with the offline door lock from the property management platform

via the LoRaWAN communication link where the control information identifies one or more access credentials to be disabled with respect to the offline door lock,
generate a command configured to disable the one or more access credentials identified in the control information; and
transmit the command to the offline door lock via the non-LoRa WAN communication link,
[1-j] where the lock processor is configured to receive the command via the non-LoRa WAN communication link and to modify the stored access credential validation information to disable the one or more access credentials based on the command.

Ex. 1001 at 28:8–52; Pet. 28–44.

E. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Declaration of Philip C. Dumas	1002
Cahill, US 2019/0043289 A1 (published Feb. 7, 2019, filed Jan. 7, 2017)	1005
Kraus, et al., US 2010/0282579 A1 (published Nov. 11, 2010, PCT filed Dec. 31, 2008) (“Kraus”)	1006
Deros, et al., US 2018/0110093 A1 (published Apr. 19, 2018, filed Oct. 25, 2017) (“Deros”)	1007
Ho, et al., US 2021/0319639 A1 (published Oct. 14, 2021, PCT filed June 13, 2019) (“Ho”)	1008
Michael McCole, “How to Make Nest’s Thermostat Your Smart-Home Hub,” Wired, Feb. 11, 2016 (“Wired”) ¹	1013

¹ Last retrieved from <https://www.archive.org/web/20160211091034/https://www.wired.com/2016/02/iotcookbook-nest/> on Aug. 10, 2022.
Ex. 1014, 2, 4.

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1, 2, 5–11, 14, 15, 17, 18, 20, 22, 23	103 ²	Cahill, Deros
8	103	Cahill, Deros, Kraus
1, 2, 5–11, 14, 15, 17, 18, 20, 22, 23	103	Cahill, Wired, Ho
1, 2, 5–11, 14, 15, 17, 18, 20, 22, 23	103	Kraus, Wired, Ho

Pet. vii, 3. Patent Owner disputes Petitioner’s asserted grounds of unpatentability. *See generally* Prelim. Resp.

III. PATENTABILITY ANALYSIS

Petitioner contends that claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 of the ’685 patent are unpatentable under 35 U.S.C. § 103 as obvious over at least one of three grounds, over combinations from among the Cahill, Deros, Kraus, Wired, and Ho references. Pet. 3. Petitioner additionally contends that claim 8 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Cahill, Deros, and Kraus. *Id.*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. The ’685 patent claims benefit of an October 16, 2018, filing date, which is after the effective date of the applicable AIA amendments. Ex. 1001, (63). Thus, we refer to the AIA version of 35 U.S.C. § 103.

subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.³ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

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

We organize our patentability analysis into four sections. First, we address the level of ordinary skill in the art. Second, we address claim construction. Third, we provide an overview of the asserted references. And fourth, taking account of the information presented, we consider whether the Petition satisfies the threshold requirement for instituting an *inter partes* review under 35 U.S.C. § 314(a).

³ Patent Owner does not present arguments or evidence of secondary considerations in its Preliminary Response. Therefore, secondary considerations do not constitute part of our analysis herein.

A. Level of Ordinary Skill in the Art

We consider the asserted grounds of unpatentability in view of the understanding of a person of ordinary skill in the art. In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

Relying on the declaration testimony of Mr. Dumas, Petitioner contends that an ordinarily skilled artisan for the ’685 patent “would have had a Bachelor’s degree in Electrical Engineering, Computer Science, or an equivalent field, and two or more years of experience working in home or commercial security and automation systems and/or smart home or smart buildings technology.” Pet. 22 (citing Ex. 1002 ¶¶ 10–16). Patent Owner does not dispute this definition of a person of ordinary skill. *See generally* Prelim. Resp.

Based on this record, we adopt Petitioner’s articulation of the level of ordinary skill in the art, which is consistent with the ’685 patent and the asserted prior art, and we have applied it in our obviousness evaluations below. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art, itself, can reflect appropriate level of ordinary skill in art).

B. Claim Construction

Next, we turn to claim construction. In interpreting the claims of the '685 patent, we “us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b).” *See* 37 C.F.R. § 42.100(b) (2020). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (*en banc*).

Petitioner contends two terms require construction: “offline door lock,” and “credential device.” Pet. 21–22.

1. Offline door lock

Citing the specification, Petitioner proposes that “offline door lock,” as recited in each independent claim, should be construed as a “door lock that can only be controlled (e.g., locked and unlocked) by a device (e.g., a fob, smartphone, etc.) that is placed in proximity to a sensor of the offline door lock.” Pet. 21–22 (citing Ex. 1001, 1:44–52).

2. Credential device

Petitioner proposes that the claimed “credential device” should be construed as “a device that includes credential information to open an offline door lock when placed in proximity a sensor of the offline door lock.” Pet. 22 (citing Ex.1001 at 1:46–48, 23:27–32).

With the exception of the claim term “property management platform” (addressed *infra*), Patent Owner does not propose other claim terms for construction. *See generally* Prelim. Resp.

However, Patent Owner argues that “the plain meaning of the claim term ‘property management platform’ is revealed by its words. Simply put, there must be a platform that facilitates property management tasks or functions, a fact confirmed by the ’685 Patent’s specification.” Prelim. Resp. 7–8. We address Patent Owner’s functional claim construction of the claim term “property management platform” *infra*.

Having considered the record, we determine that no express claim construction is necessary for any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. The Prior Art

Before turning to Petitioner’s asserted grounds of unpatentability, we provide brief summaries of the asserted references:

1. Cahill (Ex. 1005)

Cahill is a published U.S. patent application entitled “Offline Lock System And Method Thereof,” and relates to an offline lock system. Ex. 1005, code (54), ¶ 2. Cahill “provides an offline lock system having functionality of an online lock system, while maintaining efficiency and cost-effectiveness of a conventional offline lock system.” *Id.* ¶ 14.

Figure 1, reproduced below, is a schematic of Cahill's system.

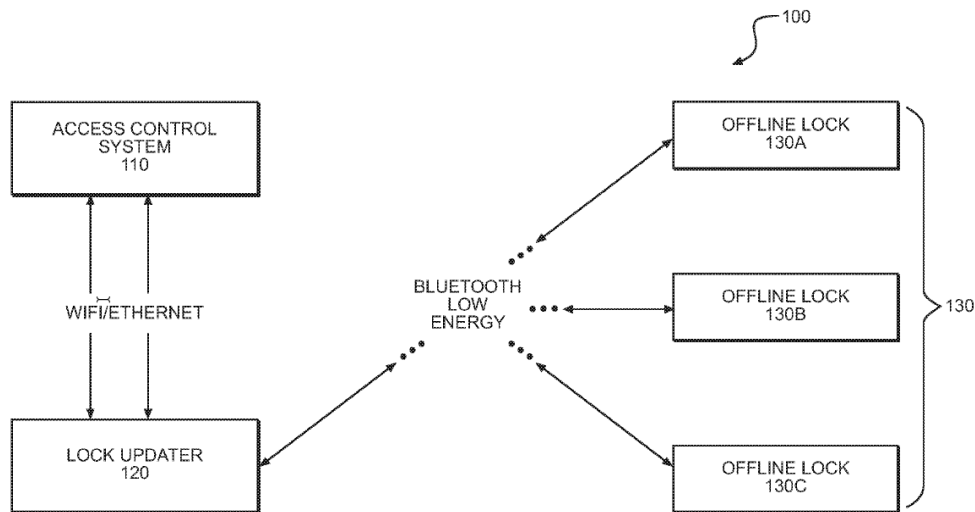


Figure 1, shows an access control system (ACS) 110, lock updater 120, and offline locks 130. *Id.* ¶ 41. The ACS is a computer with network communication capabilities, which “[receives] commands to access the offline lock 130, to control the offline lock 130, to update the offline lock 130, to monitor the offline lock 130, or perform any function desired regarding the offline lock 130.” *Id.* ¶¶ 42–43, 45. Lock updater 120 receives commands from ACS 110, and sends commands to the offline locks 130, using Bluetooth Low Energy (BLE). *Id.* ¶ 49. The offline lock 130 can also send information to lock updater 120. *Id.* ¶ 73.

2. *Kraus (Ex. 1006)*

Kraus is titled “Method and System for Remotely Controlling Access to an Access Point,” and “relates to radio frequency mesh networks for controlling security and other devices in homes, to a door lock that can be monitored and controlled remotely through a mobile device or via a

computer network using a radio frequency mesh network.” Ex. 1006, code (54), ¶ 2.

Figure 2, reproduced below, is a diagram of Kraus’s system:

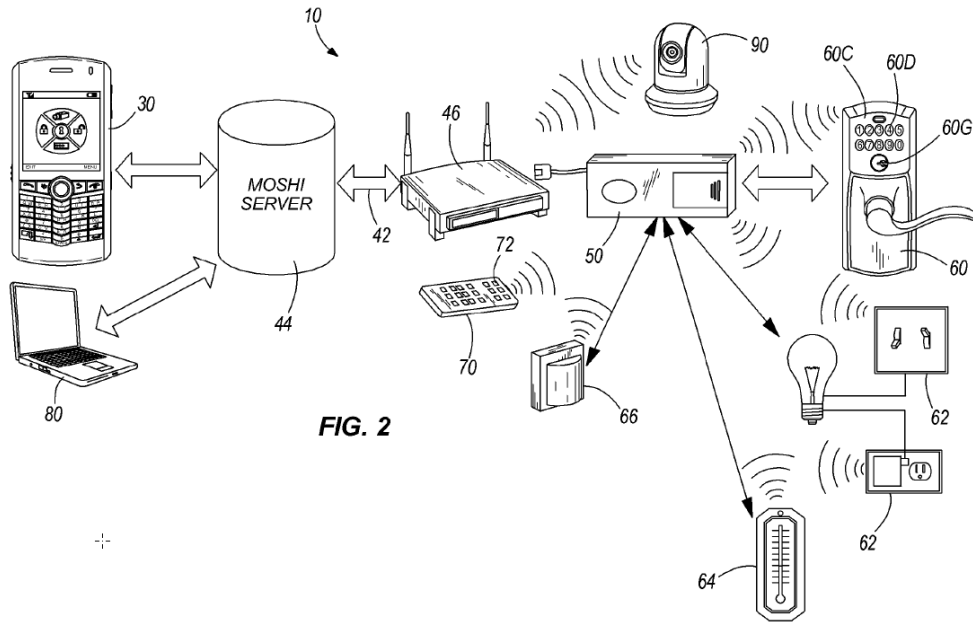


Figure 2, shows a computer server 44, networked computer 80, mobile device 30, router 46, gateway device 50, door lock 60, electrical controller 62, and thermostat 64. *Id.* ¶¶ 59, 64, 80.

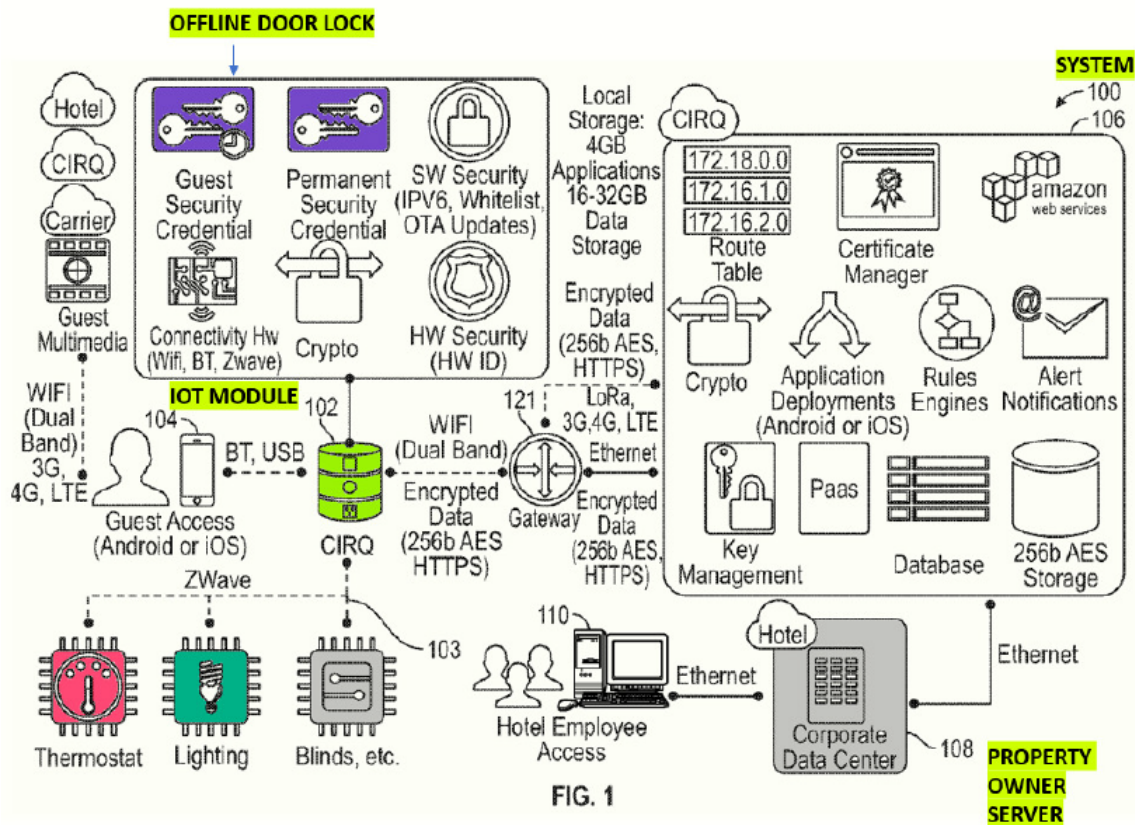
In one embodiment, door lock 60 is controlled by a keypad. *Id.* ¶ 71. In other embodiments, a smart card may be used instead of the keypad. *Id.* In yet another embodiment, the door lock can be part of networked system 10, and communicate with other devices via the network. *Id.* ¶ 73.

3. Deros (Ex. 1007)

Deros is titled “Systems and Methods for Conserving Guest Room Resources and Utilities Using Internet of Things Devices.” Ex. 1007, code (54). Deros relates to “a Platform as a Service (PaaS) solution that

includes a modular electronics system for interfacing with and controlling internet-of-things (IOT) devices in a hotel room, timeshare or rental property to improve guest experiences while reducing energy and resource consumption.” *Id.* ¶ 2.

Figure 1 of Deros, annotated by Petitioner (Pet. 40) and reproduced below, shows a schematic of the Deros system.



Annotated Figure 1, showing a schematic of the Deros system.

Figure 1 of Deros shows enterprise server 106, including a PaaS platform, property owner server 108, configured to communicate with facilities controller 110, and IOT module 102, which is “configured to communicate with the enterprise server 106 through a gateway 121 (such as the internet) using Wi-Fi, LoRa, 3G, 4G, LTE, Ethernet, or any suitable wired or wireless

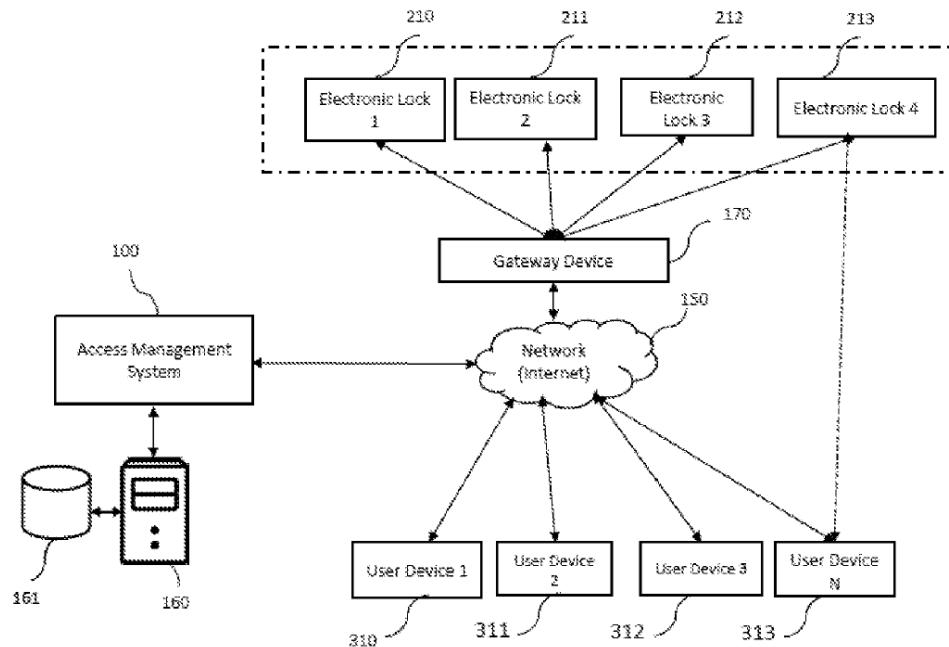
protocol.” *Id.* ¶¶ 37, 38. The “in-room IOT module may be configured to remotely control an access feature such as a door lock,” and “the hotel facilities manager can remotely lock, unlock, check the locked status, or change the access code for IOT connected room door locks.” *Id.* ¶¶ 74–75.

4. *Ho (Ex. 1008)*

Ho is a published U.S. patent application entitled “System and Method for Managing Electronic Locks.” Ex. 1008, code (54). Ho “relates to access management systems and methods and electronic locking devices with multi-factor authentication.” *Id.* ¶ 1. Ho “provides for an access management system for controlling multiple entry points each secured by an electronic lock with an associated number of authorized users.” *Id.* ¶ 42.

Ho describes a system that includes an application server 160 that communicates over a network 150, with several software modules “accessible by administrators and authorized users via a mobile application or web application for configuration, provisioning and deprovisioning of multiple authorized users for multiple entry points each secured by an electronic lock.” *Id.* ¶¶ 48, 50.

Figure 3, reproduced below, is a diagram of one embodiment of the Ho system.



Ho's Figure 3 shows a high-level overview of the access management system, with access management system 100, executing on application server 160, electronic locks 210–213, gateway 170, network 150, and user devices 310–313. *Id.* ¶ 62.

The electronic locks 210–213 include sensors or transceivers that are capable of connecting to the network 150 via low power wireless transmission standards such as ZWave, Zigbee or Bluetooth low energy. The electronic locks 210–213 include sensors equipped with such low power wireless technology, and are connected to the network 150 via the gateway device 170.

Id. Network 150 may be a Low Power Wide Area Network (LPWAN), and the electronic locks may be capable of using LP-WAN technologies such as “Lora” to connect to the network 150 with the advantage of lower cost, longer battery life and higher connection density. *Id.* ¶ 61.

5. *Wired (Ex. 1013)*

Wired is an online article that describes the Nest Learning Thermostat, titled “How to Make Nest’s Thermostat Your Smart-Home Hub.” Wired, 1. The article describes how the device is not only a thermostat, but also connects to other devices to control them, by being “interoperable with compatible devices.” Wired, 2. Described is a “service called If This Then That (IFTTT) has pre-made recipes that can connect your devices. You can use the service to program your devices to run routines, react to triggers, or pass commands to other devices in your home.” *Id.* at 2.

D. Alleged First Ground of Unpatentability Challenge Over Cahill and Deros

Petitioner contends that claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 of the ’685 patent are unpatentable under 35 U.S.C. § 103 over Cahill in view of Deros. Pet. 23–57. Patent Owner opposes. Prelim. Resp. 7–32. Having considered the arguments and evidence before us, we determine that the record establishes a reasonable likelihood that Petitioner would prevail on at least the first asserted ground of unpatentability over at least claim 1 for the following reasons.

Motivation to Combine Cahill with Deros under Ground 1 (and Ground 2)

In support of the motivation for an artisan to modify Cahill with Deros’s LoRa communications link (Fig. 1, ¶ 38), Petitioner notes:

Deros discloses that “IOT module 102 is configured to communicate with the enterprise server 106 through a gateway 121 (such as the internet) using Wi-Fi, LoRa, 3G, 4G, LTE,

Ethernet, or any suitable wired or wireless protocol.” (Ex. 1007 ¶¶0038].)

Pet. 24.

Given the teachings of Deros (e.g., at paragraph 38), Petitioner contends:

It would have been obvious to a POSA to provide Cahill’s smart hub with a ***LoRa*** (long range) ***WAN*** communications gateway as expressly taught by Deros ***to be one of many suitable communications protocols.***

Indeed, ***LoRa*** networks use frequency ranges within the range expressly disclosed in Cahill of 0.001-3000 MHz, namely ***LoRaWAN*** operates in the Sub-GHz frequency in North America, ranging from 902MHz – 928MHz. (Ex. 1002 ¶¶112-115.)

Using a known LoRaWAN protocol, as disclosed in Deros, would be ***a simple substitution*** of one long range communication protocol (e.g., satellite, broadcast radio, and/or microwave) for another and would obtain predictable results of wide area long range communications. (*Id.* ¶116.)

Pet. 24 (citing to Ex. 1002 (“Dumas Declaration”) ¶¶ 112–115) (emphasis added).

Petitioner essentially restates the same motivation on pages 39–40 of the Petition:

Cahill discloses a non-exhaustive list of short range and long range smart hub communication protocols including “wi-fi, wi-fi direct, infrared (IR) wireless communication, satellite communication, broadcast radio communication, Microwave radio communication, Bluetooth, Bluetooth Low Energy (BLE), Zigbee, near field communication (NFC), and radio frequency (RF) communication, USB, Firewire, Ethernet, etc., but are not limited thereto,” to communicate with the ACS. (Ex. 1005 ¶¶0046].)

It would have been obvious to a POSA to provide Cahill's smart hub with a LoRa WAN link, as taught by Deros as described in §X.A.1.a as a type of communication protocol between the smart thermostat hub and property management platform. Deros' IoT module 102 (smart hub) is "configured to communicate with the enterprise server 106 through a gateway 121 (such as the internet) using Wi-Fi, **LoRa**, 3G, 4G, LTE, Ethernet, or any suitable wired or wireless protocol." (Ex.1007 ¶[0038].) **LoRa gateway 121** is used for **LoRa WAN network communications**.

Pet. 39–40.

Petitioner then reproduces Figure 1 of Deros and contends:

Thus, Cahill in view of Deros discloses a first interface configured to communicatively couple the one or more processors to a property management platform (ACS 110) via a **LoRa WAN** communication link.

Pet. 40 (emphasis added).

Patent Owner disagrees, and contends:

Cahill's listing of satellite, broadcast radio, and microwave is nothing more than *a disclosure of different frequency bands. They are not types of "protocols," as Petitioner's "simple substitution" theory assumes*. Regardless, Petitioner's "simple substitution" theory also fails because it is not substantiated with evidence and reasoning. Petitioner does not demonstrate or explain why it would have been a "simple" substitution to modify Cahill's system by employing a **LoRaWAN** in place of satellite, broadcast radio, and/or microwave transmissions.

Prelim. Resp. 16 (emphasis added).

However, turning to the evidence relied upon by Petitioner (Pet. 39), we find paragraph 43 of Cahill describes both a frequency range and various well-known protocols, such as Wi-Fi and Bluetooth:

The ACS 110 may include a device capable of wireless or wired communication between other wireless or wired devices. Wireless and wired communications of the

ACS 110 may include wi-fi, wi-fi direct, infrared (IR) wireless communication, satellite communication, broadcast radio communication, Microwave radio communication, Bluetooth, Bluetooth Low Energy (BLE), Zigbee, near field communication (NFC), and radio frequency (RF) communication, USB, Firewire, Ethernet, etc., but are not limited thereto. The ACS 110 may communicate at frequencies ranging from 0.001 MHz through 3000 MHz, but is not limited thereto.

Ex. 1005 (Cahill '289) ¶ 43.

And we understand the claim term “**LoRaWAN**” (Long-Range Wide Area Network)⁴ according to its plain meaning as a term of art and an industry standard communication protocol in the context of connecting and controlling devices that are communicatively coupled as an “Internet of Things” (IOT).

We note Petitioner (Pet. 40) additionally cites to Deros at paragraph 38 that expressly describes:

More particularly, the **IOT module 102** is configured to communicate with the guest device 104 using Wi-Fi, Bluetooth, wired or wireless Ethernet, VPN, USB, Zippy, Z-Wave, cellular (3G, 4G), **or any other suitable wired or wireless protocol**. The IOT module 102 is configured to communicate with the devices which comprise the IOT network 103 using ZWave, Bluetooth, **or any suitable wired or wireless protocol**. The IOT module 102 is configured to communicate with the enterprise server 106 through a gateway 121 (such as the internet) using Wi-Fi, **LoRa**, 3G, 4G, LTE, Ethernet, **or any suitable wired or wireless protocol**. Similarly, the enterprise server 106 is configured to communicate with the property owner server 108 using Wi-Fi, **LoRa**, 3G, 4G, LTE, Ethernet, **or any suitable wired**

⁴ See Patent Owner's '685 patent, at column 6, lines 5–6: “Long Range (LoRa) wide area network.”

or wireless protocol.

Ex. 1007 (Deros '093, ¶ 38 (emphasis added)).

The Supreme Court provides legal guidance we find is applicable here: Where the claimed subject matter is no more than “the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement,” and the combination of such known “elements according to known methods . . . does no more than yield predictable results,” the claim is unpatentable under 35 U.S.C. § 103. *KSR*, 550 U.S. at 401.

We note Patent Owner’s contention that “Petitioner’s further allegation that a [person of ordinary skill in the art] would have been motivated to use a LoRaWAN in Cahill ‘*to improve battery life*’ of the connected smart devices such as *smart locks*’ is wrong and misguided in multiple respects.” Prelim. Resp. 17. Even if *arguendo* (without deciding) this were true, we still find Petitioner’s simple substitution argument sufficient for institution for the reasons given above. *See* Pet. 24.

However, Patent Owner also argues that the proposed Cahill and Deros combination relied upon for Petitioner’s proposed grounds of unpatentability 1 and 2 relies upon impermissible hindsight. *See* Prelim. Resp. 23.

But on the record before us, we are not persuaded that combining the teachings of Cahill and Deros in the manner proffered by the Petitioner would have been “uniquely challenging or difficult for one of ordinary skill in the art” or would have “represented an unobvious step over the prior art.” *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418). Nor are we persuaded that

Petitioner is relying upon any knowledge gleaned only from the '685 patent that was not within the level of ordinary skill at the time of the effective filing date of the '685 Patent.⁵ *See In re McLaughlin*, 443 F.2d 1392 (CCPA 1971). Nor is there any objective evidence of record establishing secondary considerations (e.g., long felt but unmet need, unexpected results, or commercial success with a nexus to the claim), which our reviewing court guides “operates as a beneficial check on hindsight.” *Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013).

Accordingly, we determine that Petitioner has established a reasonable likelihood of being successful in showing:

Using a known LoRaWAN protocol, as disclosed in Deros, would be *a simple substitution* of one long range communication protocol (e.g., satellite, broadcast radio, and/or microwave) for another and would obtain predictable results of wide area long range communications. (*Id.* ¶116.)

Pet. 24 (citing to Ex. 1002 ¶¶ 112–115) (emphasis added).

We also determine that Petitioner (Pet. 23) has established a reasonable likelihood of being successful in establishing that combining the thermostat module 710 of Deros (Fig. 7) with Cahill’s purported smart hub (“lock updater 120” – Fig. 1) to control other wireless or wired devices such as a thermostat in an “Internet of Things” (IoT) implementation, as depicted by Deros (Figs. 1, 7), would have merely been a combination of familiar

⁵ Patent Owner’s ‘685 patent is a continuation of application No. 16/162,262, filed on Oct. 16, 2018. Thus, the effective filing date of the ‘685 patent is Oct. 16, 2018.

prior art elements according to known methods to yield a predictable result.⁶ See Pet. 27 (citing Ex. 1002 ¶¶ 121–122). See also Ex. 1007 (Deros Fig. 7).

Limitations of Claim 1

With respect to the currently undisputed limitations of claim 1, we have reviewed Petitioner’s contentions, and find them sufficient at this stage of the proceeding. See Pet. 28–45. We address the principal limitations currently in dispute below.

Regarding the claim construction of the disputed term “property management platform” recited in Patent Owner’s ’685 patent claim 1, Patent Owner urges that “[t]he plain meaning of the claim term ‘property management platform’ is revealed by its words. Simply put, there must be a platform that facilitates property management *tasks* or *functions*, a fact confirmed by the ’685 Patent’s specification.” Prelim. Resp. 8 (citing Ex. 1001, 2:40–59, 8:26–31, 8:43–49, 9:5–11, 9:36–42) (emphasis added).

However, given that the specific *structure* of the ’685 claim term “property management platform” is not defined within the claim, nor within the non-limiting, exemplary descriptions⁷ found at column 14 of Patent

⁶ “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416.

⁷ The scope of the claims is not limited to the preferred embodiments described in the Specification. See *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015) (“This court has repeatedly ‘cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.’” (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1328 (Fed. Cir. 2002))); see also *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc) (“[C]laims may embrace ‘different subject matter than is illustrated in the specific

Owner's '685 patent (Ex. 1001), nor within Patent Owner's citations *supra* to the '685 patent's every mention of property management *tasks* or *functionalities* (Ex. 1001, 2:40–59, 8:26–31, 8:43–49, 9:5–11, 9:36–42), we determine that Petitioner has a reasonable likelihood of being successful in establishing that the scope of the claimed “property management platform” encompasses Cahill's “Access Control System 110.” See Pet. 40 (citing Ex. 1005, Fig. 1, i.e., “Access Control System 110” being communicatively linked with Lock Updater 120).

Regarding the disputed “smart thermostat hub” of claim 1, Patent Owner urges that “[e]ven setting aside its flawed motivation analysis, Petitioner's obviousness argument also fails because it lacks any rationale for deviating from Deros's teaching of providing LoRa functionality in a gateway that is separate and distinct from the IOT module (Petitioner's alleged smart hub).” Prelim. Resp. 20 (citing Ex. 1007 Fig. 1, ¶ 38).

But “it is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.” *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983). The relevant inquiry is whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the combined teachings of those references. See *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). “Combining the teachings of references does not involve an ability to combine their specific structures.” *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973).

This legal guidance is applicable here. Therefore, we determine that Petitioner has established a reasonable likelihood of being successful in

embodiments in the specification.”) (citations and internal quotation marks omitted).

establishing that the scope of Patent Owner’s claimed “smart thermostat hub” encompasses at least Cahill’s lock updater 120 (Fig. 1) (having a storage unit 121, Fig. 3) which is combined with IOT control module 702, as depicted in Deros’ Figure 7, and with the thermostat depicted in Figure 1 of Deros, and/or the thermostat contained within sensor module 710 (Fig. 7), that is described as including a “remote thermostat module” in paragraph 45 of Deros. *See* Pet. 38–40 (citing Ex. 1005, Fig. 1; Ex. 1007, Figs. 1 and 7).

And we note that offline locks (i.e., corresponding to the “offline door locks” recited in Patent Owner’s claim 1) are expressly depicted to the right of both Cahill’s Figures 1 and 7. *See* Ex. 1005, Figs. 1, 7. Although Patent Owner (Prelim. Resp. 27) reproduces Figure 7 of Cahill and urges that “the Cahill-Ho combination would eliminate the device from Cahill—lock updater 220—that Petitioner maps to ’685 Patent’s smart hub” we again emphasize that “[c]ombining the teachings of references does not involve an ability to combine their specific structures.” *Nievelt*, 482 F.2d at 968.

We thus determine that Petitioner has established a reasonable likelihood of being successful in establishing that the scope of the claimed “offline door lock” encompasses Cahill’s offline lock system updater 100. *See* Pet. 30 (citing Ex. 1005, Fig. 1).

Accordingly, based upon our review of the Petition and the Patent Owner’s Preliminary Response, we find Petitioner has established a reasonable likelihood of success in showing that at least Patent Owner’s claim 1 would have been obvious over the collective teachings and suggestions of Cahill and Deros.

E. Alleged Second Ground of Unpatentability Challenge Over Cahill, Deros, and Kraus

Petitioner’s proposed second ground of unpatentability pertains only to dependent claim 8 of the ’685 patent:

8. The system of claim 7 where the locking mechanism comprises a deadbolt and a rotatable member where rotation of the rotatable member in a first direction drives the deadbolt to a first position corresponding to the locked state and rotation of the rotatable member in a second direction drives the deadbolt to a second position corresponding to the unlocked state.

Ex. 1001, col. 28.

Petitioner notes: “Kraus’s offline door lock (60) may ‘include a locking device such as a sliding deadbolt, or other suitable locking mechanism coupled to a door handle or knob and/or to a key mechanism.’ (Id. ¶[0072].)” Pet. 58.

Given the teachings of Kraus (*id.*), Petitioner contends:

It would be obvious to a POSA to modify Cahill’s locking mechanism to include a sliding deadbolt as disclosed in Kraus. A deadbolt is a standard feature of door locks that is widely used. (Ex.1002 ¶ 193.) Adding a deadbolt movable to a locked and unlocked state as disclosed in Kraus to Cahill’s locking mechanism is a simple addition of a standard door lock feature, which adds further safety and results in obvious and predictable results. (*Id.*).

Pet. 58–59.

However, Patent Owner does not separately rebut the Petitioner’s proposed second ground of unpatentability for dependent claim 8. *See* Prelim. Resp. 7–29 (covering grounds 1–3).

Accordingly, based upon our review of the Petition and the Patent Owner’s Preliminary Response, we find Petitioner has established a

reasonable likelihood of success in showing that Patent Owner's dependent claim 8 would have been obvious under the proposed second ground of unpatentability, over the collective teachings and suggestions of Cahill, Deros, and Kraus.

F. Alleged Third Ground of Unpatentability Challenge Over Cahill, Wired, and Ho

Regarding the proposed third ground of unpatentability, Patent Owner contends that the Petitioner makes no effort in the Petition to establish that Ho is available as prior art. *See* Prelim. Resp. 45. We agree, because Petitioner has not provided an English language translation of a certified copy of the foreign priority document: Singapore application number 10201805051P, filed June 13, 2018.

Accordingly, based upon our review of the Petition and the Patent Owner's Preliminary Response, we find Petitioner has not established a reasonable likelihood of success in showing that Patent Owner's claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 would have been obvious under the proposed third ground of unpatentability, over the collective teachings and suggestions of Cahill, Wired, and Ho.

The question of whether Ho is available as prior art will be considered after institution.

G. Alleged Fourth Ground of Unpatentability Challenge Over Kraus, Wired, and Ho

Regarding the proposed fourth ground of unpatentability, Patent Owner contends that Petitioner makes no effort in the Petition to establish

that Ho is available as prior art. *See* Prelim. Resp. 45. We agree, because Petitioner has not provided an English language translation of a certified copy of the foreign priority document: Singapore application number 10201805051P, filed June 13, 2018.

Accordingly, based upon our review of the Petition and the Patent Owner's Preliminary Response, we find Petitioner has not established a reasonable likelihood of success in showing that Patent Owner's claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 would have been obvious under proposed ground of unpatentability 3, over the collective teachings and suggestions of Kraus, Wire, and Ho.

The question of whether Ho is available as prior art will be considered after institution.

IV. CONCLUSION

After considering the arguments presented in the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has demonstrated at least a reasonable likelihood of success in proving that at least one claim of the '685 patent is unpatentable. Thus, we institute an *inter partes* review of all challenged claims (i.e., claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23) on all grounds set forth in the Petition. Our determinations at this stage of the proceeding are based on the evidentiary record currently before us. This decision to institute trial is not a final decision as to patentability of any claim for which we have instituted an *inter partes* review. *See TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that “there is a significant difference between a petitioner's burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the

evidence at trial”). We will base any final decision on the full record developed during trial.

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an institution of *inter partes* review for claims 1, 2, 5–11, 14, 15, 17, 18, 20, 22, and 23 of the ’685 patent on the unpatentability grounds asserted in the Petition.

PETITIONER:

Gregory S. Gewirtz
Jonathan A. David
Wilfred V. Patrick
David G. Leach
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK, LLP
litigation@lernerdavid.com
ggewirtz@lernerdavid.com
jdavid@lernerdavid.com
wpatrick@lernerdavid.com
dleach@lernerdavid.com

FOR PATENT OWNER:

Joshua A. Griswold
Kenneth Darby
Kim Leung
FISH & RICHARDSON P.C.
griswold@fr.com
kdarby@fr.com
leung@fr.com

Eagle H. Robinson
Robert Greeson

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Patent 10,803,685 B2

Erik Janitens
Lu Ling
NORTON ROSE FULBRIGHT US LLP
eagle.robinson@nortonrosefulbright.com
robert.greenson@nortonrosefulbright.com
erik.janitens@nortonrosefulbright.com
lu.ling@nortonrosefulbright.com