

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS INC.,
Petitioner,

v.

KCG TECHNOLOGIES LLC,
Patent Owner.

IPR2019-01536
Patent 9,671,955 B2

Before KALYAN K. DESHPANDE, BARBARA A. BENOIT, and
GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

DESHPANDE, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable
Denying Patent Owner's Revised Motion to Amend
35 U.S.C. § 318(a), 35 U.S.C. § 316(d)(1)

I. INTRODUCTION

A. Background

Unified Patents Inc.¹ (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–13 of U.S. Patent No. 9,671,955 B2 (Ex. 1001, “the ’955 patent”). Paper 1 (“Pet.”). KCG Technologies LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

On February 14, 2020, we instituted *inter partes* review of claims 1–13 of the ’955 patent. Paper 9 (“Dec.”). After institution, Patent Owner filed a Patent Owner’s Response (Paper 12, “PO Resp.”) and a Patent Owner’s Contingent Motion to Amend (Paper 13, “Motion” or “MTA”). In response, Petitioner filed a Petitioner’s Reply to Patent Owner’s Response (Paper 15, “Pet. Reply”) and a Petitioner’s Opposition to Motion to Amend (Paper 16, “Pet. Opp. to MTA”). Patent Owner did not file a Sur-Reply to Petitioner’s Reply to Patent Owner’s Response.

Upon Patent Owner’s request in its Motion, we issued a Preliminary Guidance as to Patent Owner’s Motion to Amend in accordance with the Board’s pilot program concerning motion to amend practice and procedures. Paper 19 (“Prelim. Guidance”) (citing Mot. 4; Notice Regarding a New Pilot Program Concerning Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board, 84 Fed. Reg. 9,497 (Mar. 15, 2019) (providing a patent owner with the option to receive preliminary guidance from the Board on its motion to amend) (“Notice”)). Thereafter, Patent Owner filed a Patent Owner’s Contingent Revised Motion to Amend (Paper 20, “Revised Motion” or “RMTA”). In reply, Petitioner filed a

¹ Petitioner informed the Board that Unified Patents Inc. changed its name to Unified Patents, LLC. Paper 7, 2.

Petitioner’s Opposition to Patent Owner’s Contingent Revised Motion to Amend (Paper 22, “Pet. Opp. to RMTA”). Patent Owner did not file a Reply to Petitioner’s Opposition to Patent Owner’s Contingent Revise Motion to Amend. In support of its obviousness challenges to the ’955 patent, Petitioner filed an expert declaration (Ex. 1002, “First Wilson Declaration”), which Petitioner updated after Patent Owner filed its Motion (Ex. 1034, “Second Wilson Declaration”).

Petitioner requested oral argument (Paper 24), which we held by video on December 11, 2020. Paper 27 (“Tr.”). Patent Owner was present at the oral hearing, but did not present arguments. Tr. 28:5–11.

The Board has jurisdiction under 35 U.S.C. § 6. In this Final Written Decision, after reviewing all relevant evidence and arguments, we determine Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–13 of the ’955 patent are unpatentable. We further determine Petitioner has met its burden of showing, by a preponderance of the evidence, that proposed substitute claims 14–26 are unpatentable.

B. Related Proceedings

The parties indicate that the ’955 patent was involved in *KCG Technologies LLC v. CarMax Auto Superstores, Inc., et al.*, No. 1:19-cv-11101-LTS (D. Mass.). Pet. 1; Paper 4, 3. The district court concluded that the claims of the ’955 patent were not directed to patent-eligible subject matter and, therefore, granted CarMax’s motion to dismiss for failure to state a claim on that basis. *See* Ex. 1033. The Federal Circuit affirmed the district court’s decision. *See* Ex. 1035.

C. The ’955 Patent (Ex. 1001)

The ’955 patent discloses a virtual smart phone that “facilitates accessing the features, functions, resources and the like of [a] smart phone through an image of

the smart phone that is projected on a touch screen.” Ex. 1001, 3:45–48. Specifically, virtual smart phone 100 may access handheld device 102 through communication means 108. *Id.* at 3:51–52. The virtual smart phone may include touch screen 104 that displays image 110 of the handheld device, and may include “physical buttons 120 that may emulate functionalities of physical buttons present on the handheld device 102.” *Id.* at 3:58–4:2.

In a vehicular deployment, the virtual smart phone may include an automotive touch screen that is configured into the automobile such as “on a stereo system, dashboard, glove box, console . . . and the like.” *Id.* at 4:27–31. Alternatively, the automotive touch screen “may be detachable and may be placed anywhere, such as within the vehicle.” *Id.* at 4:31–33. An image on the automotive touch screen “may emulate substantially all of the features of the separate handheld device,” including “volume controls, messages, emails, Internet browser, radio, music player, calendar, games, timer, Global Positioning System (GPS), contacts, applications, clock, maps, and camera.” *Id.* at 4:63–5:5. The automotive touch screen may further include physical buttons that emulate physical buttons of a handheld device to perform functions such as “volume control, power on/off, home button . . . and the like.” *Id.* at 5:9–12.

D. Illustrative Claim

Petitioner challenges claims 1–13 of the ’955 patent. Pet. 9–85. Independent claims 1 and 3 are illustrative of the challenged claims and are reproduced below:

1. A virtual smart phone, comprising:
a screen mounted in an automobile;
a processor, a non-transitory memory, and a power port mounted in the automobile;

a software application executing on the processor to control image display on the screen and emulate features of a handheld device;

a visual representation of a plurality of features of the handheld device on the screen; and

an interactive element, wherein the interactive element allows access to the plurality of features of the handheld device,

wherein the plurality of features of the handheld device comprises volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts and maps.

Ex. 1001, 12:54–13:2.

3. A method of accessing features of a smart phone in an automobile, comprising:

receiving at a processor in an automobile information representative of a smart phone user interface, including features thereof;

receiving at a processor in an automobile information representative of data associated with the smart phone;

displaying an image representative of the smart phone including actionable elements based on the data; and

facilitating, with the processor, access to at least one feature of the smart phone in response to a user interacting with at least one of the actionable elements independent of access to the smart phone,

wherein the actionable elements comprise volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts, and maps.

Id. at 13:5–21.

II. ANALYSIS

A. Prior Art and Asserted Challenges to Patentability

Petitioner challenges claims 1–13 as obvious under 35 U.S.C. § 103(a) as follows:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 4–10	§ 103(a)	Vanderwall, ² Furukawa ³
3	§ 103(a)	Vanderwall
1, 2, 4–13	§ 103(a)	Dybalski, ⁴ Hu, ⁵ Eich, ⁶ Furukawa
3	§ 103(a)	Dybalski, Hu, Eich

Pet. 3–4.

*B. Claim Construction*⁷

We apply the claim construction standard used to construe the claims in a civil action under 35 U.S.C. § 282(b) articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2019). Under the *Phillips* standard, claim terms must be given “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” 415 F.3d at 1313.

1. Virtual Smart Phone

The preamble of independent claim 1 recites a “virtual smart phone.” Patent Owner first argues that the preamble is limiting because the term “virtual smart phone” “breathes life in to the claim.” PO Resp. 8 (citing *Pitney Bowes, Inc. v.*

² WO 2008/079891 A2, published July 3, 2008 (“Vanderwall,” Ex. 1003).

³ U.S. Pat. App. No. 2005/0159881 A1, published July 21, 2005 (“Furukawa,” Ex. 1007).

⁴ U.S. Pat. App. No. 2009/0195513 A1, published Aug. 6, 2009 (“Dybalski,” Ex. 1004).

⁵ U.S. Pat. App. No. 2006/0262103 A1, published Nov. 23, 2006 (“Hu,” Ex. 1005).

⁶ WO 2008/079889 A2, published July 3, 2008 (“Eich,” Ex. 1006).

⁷ Both Patent Owner and Petitioner agree that the limitation “[a] software executing on the processor to control image display on the screen and emulate features of a handheld device” is not a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6. Dec. 6; PO Resp. 20; Pet. 7 (citing *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F. 3d 696, 703–04 (Fed. Cir. 1998)).

Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999); *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002)). Patent Owner specifically argues that if the preamble is not limiting, then “there would be no understanding as to what features were being emulated or what the handheld device is.” *Id.*

We find the preamble of claim 1 does not limit the scope of claim 1. “Whether to treat a preamble term as a claim limitation is determined on the facts of each case in light of the claim as a whole and the invention described in the patent.” *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (quoting *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed. Cir. 2003) (internal quotation marks omitted). “Absent clear reliance on the preamble in the prosecution history, or in situations where it is necessary to provide antecedent basis for the body of the claim, the preamble generally is not limiting.” *Symantec Corp. v. Computer Assoc. Int'l, Inc.*, 522 F.3d 1279, 1288 (Fed. Cir. 2008) (internal quotation marks omitted). When the limitations in the body of the claim rely upon or derive essential structure from the preamble, then the preamble acts as a necessary component of the claimed invention and is limiting. *See Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003). A claim preamble also is limiting if the preamble is “necessary to give life, meaning, and vitality” to the claim. *Pitney Bowes, Inc.*, 182 F.3d at 1305.

We disagree with Patent Owner. Specifically, we do not agree that limitations in the body of the claims require the preamble to serve as an antecedent basis nor do they derive essential structure from the preamble. Rather, all of the elements recited in the body of claim 1 comprise a “virtual smart phone.” That is, we do not discern, and Patent Owner fails to persuasively point us to, any structure imparted by the preamble’s recitation of a “virtual smart phone.” *See* Pet. Reply

1–2. We similarly do not agree that the without the term “virtual smart phone” there would be no understanding of the “emulating” or “handheld device” limitations. Rather, the recited “software application executing on the processor” limitation provides the structure and meaning for the “emulating” of the “handheld device” features. Furthermore, we agree with the Petitioner that there is no evidence in the record that the prosecution history requires that the preamble is limiting, and the claims were distinguished during prosecution based on the recitation of a “virtual” smart phone. *Id.* at 2–3. Accordingly, we do not agree with Patent Owner that the preamble is limiting.

Assuming, *arguendo*, that the preamble is limiting, Patent Owner argues that a “virtual smart phone” means “an emulation of a smart phone or handheld device.” PO Resp. 18. Petitioner argues that “if the preamble is limiting, *virtual smart phone* should either be given its plain and ordinary meaning or be construed as ‘a device for accessing a separate handheld device, e.g. a smart phone, using an image.’” Pet. Reply 4. Specifically, Petitioner argues that Patent Owner’s proffered definition replaces “virtual” with “emulation,” which requires further construction. We agree with Petitioner that a person with ordinary skill in the art would, in light of the ’955 patent specification, understand “virtual smart phone” to include “‘a visual representation of the user-specific handheld device,’ which may be ‘a smart phone, a Personal Digital Assistant (PDA), a mobile phone, an iPad, a computer note book, and the like.’” *Id.* (quoting Ex. 1001, 2:15–21; citing Ex. 1034 ¶ 19).

Accordingly, we determine that the recitation of “virtual smart phone” in the preamble of independent claim 1 is not limiting. Additionally, we agree with Petitioner that a “virtual smart phone” includes “‘a visual representation of the user-specific handheld device,’ which may be ‘a smart phone, a Personal Digital

Assistant (PDA), a mobile phone, an iPad, a computer note book, and the like.”
Id. (quoting Ex. 1001, 2:15–21; citing Ex. 1034 ¶ 19).

2. *Emulate*

Independent claim 1, for example, recites “a software application executing on the process to . . . *emulate* features of a handheld device.” Ex. 1001, 12:58–60 (emphasis added). Patent Owner argues that the term “‘emulate’ has a meaning in the art that is common and understood to mean ‘to imitate.’” PO Resp. 18. Patent Owner provides a dictionary definition to support its contention. Ex. 2004 (defining “emulate” as “to imitate in an effort to equal or surpass”). Patent Owner contends the use of “emulate” in claim 1 comports with its commonly understood meaning as “to imitate,” as does the use of the term “emulate” in the written description. Pet. 18–20 (citing Ex. 1001, 1:66–2:3, 2:6–3:5, 12:54–13:2 (claim 1)).

Petitioner argues that the term “emulate” should be given its plain and ordinary meaning and does not contest Patent Owner’s construction of the term “emulate” as “to imitate.” Pet. 6–7; Pet. Reply 7. Petitioner, however, contests Patent Owner’s application of that construction to the asserted prior art. Pet. Reply 4–7 (citing Ex. 1034 ¶¶ 24–26). Petitioner specifically argues that Patent Owner implies that “(1) the imitation must be an exact duplicate in display and manner of input . . . or (2) the imitation relates only to the display and touch screen aspects.” Pet. Reply 4–5.

In support of its position that Patent Owner’s interpretation of “to imitate” improperly narrows the meaning of “emulate,” Petitioner contends the written description discloses “less than full replication as emulation” and “controlling the handheld device th[r]ough control of a projected image using a variety of control input mechanisms provides emulation.” Pet. Reply 5–6 (citing Ex. 1001, 2:2–5, 3:57–61, 4:63–66, 6:24–42). Petitioner also notes that the dictionary definition

Patent Owner proffered indicates that an exact duplication is not required. Pet. Reply 7 (“The complete definition of emulate [as] ‘to imitate *in an effort to equal or surpass.*’ Ex. 1004, 3”).

We conclude that a preponderance of evidence supports the construction of the term “emulate” to mean “to imitate,” without any further restriction such as exact duplication or only display or touch screen aspects. Accordingly, we construe the term “emulate” as “to imitate.”

C. Obviousness

1. Legal Standard and Ordinary Level of Skill in the Art

“Section 103(a) forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) if in the record, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Petitioner asserts that a person of ordinary skill in the art at or before the priority date of the ’955 patent “would have had a bachelor’s degree in electrical engineering, computer science, computer engineering, physics, or a related subject, and two to three years of work experience in the field of automotive information systems.” Pet. 6 (citing Ex. 1002 ¶¶ 38–39); Ex. 1034 ¶ 14 (Petitioner’s expert reiterating the same level of ordinary skill in the art). Patent Owner does not propose an ordinary level of skill in the art. We agree with and adopt the level of

ordinary skill in the art as articulated by Petitioner.

2. *Alleged Obviousness of claims 1, 2, and 4–10 over Vanderwall and Furukawa*

Petitioner contends that claims 1, 2, and 4–10 of the '955 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Vanderwall and Furukawa. Pet. 9–34. For the reasons discussed below, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, and 4–10 of the '955 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Vanderwall and Furukawa.

a. *Vanderwall (Ex. 1003)*

Vanderwall is directed to a vehicle control system that reproduces on a vehicle display system images associated with applications executed on a “remote source.” Ex. 1003 ¶ 40. Vanderwall’s vehicle control system may “use vehicle user interface elements to command and control the one or more user interface features of the remote source.” *Id.*

Specifically, in-vehicle control system 106 may include output display 108, which may be a touch-screen display, or “one or more knobs 110, one or more pushbuttons 112, and one or more tactile user inputs or pushbuttons 114, which facilitate controlling various vehicle and media functions.” *Id.* ¶ 42.

Pushbuttons 114 may be used for “command and control mapping,” where “command and control mapping menu interfaces may be used to map vehicle UI elements to features or commands of a remote source.” *Id.* ¶ 43. The remote source may be “a mobile phone 144, a personal digital assistant (PDA) 146 . . . a personal navigation device (PND) 150 . . . or various other remote sources.” *Id.* ¶ 56. For example, “[r]emote source 116 may be a GPS-capable remote source configured to access navigational data and to use this navigational data to at least

partially generate a[n] image.” *Id.* ¶ 57. The remote source may communicate an image of displayed graphics to the in-vehicle control system over a communications link. *Id.*

b. Furukawa (Ex. 1007)

Furukawa is directed to managing navigation information in a motor vehicle through the use of an On-Board Unit that includes a central unit for communicating with a wireless communications network. Ex. 1007 ¶ 11. For example, “[c]entral unit 302 can include a number of ports that facilitate the input and output of information and power.” *Id.* ¶ 70, Fig. 3. Specifically, “power port 332 can connect central unit 302 to a power supply 334.” *Id.* ¶ 74.

c. Analysis

As discussed below, Petitioner demonstrates by a preponderance of the record that claims 1, 2, and 4–10 are obvious over Vanderwall and Furukawa. *See* Pet. 9–34.

i. Petitioner’s arguments

The preamble of claim 1 recites a “virtual smart phone.” Ex. 1001, 12:54. Petitioner contends Vanderwall discloses “a ‘vehicle control system’ for ‘reproducing or duplicating’ a display from ‘a remote source,’ such as a mobile phone.” Pet. 11 (quoting Ex. 1003 ¶ 40; citing *Id.* ¶ 118, Figs. 5, 18). Petitioner also argues Vanderwall’s mobile phone is a “smart phone.” *Id.* (citing Ex. 1002 ¶¶ 59–60; Ex. 1003 ¶¶ 43, 46, 56, 76, 108, 128).

Claim 1 further recites “a screen mounted in an automobile.” Ex. 1001, 12:55. Petitioner argues Vanderwall discloses an “[i]n-vehicle control system 106 generally includes an output display 108, e.g., a touch-screen display” and the “display may be mounted on the vehicle.” Pet. 13–14 (quoting Ex. 1003 ¶ 42) (citing Ex. 1002 ¶¶ 62–63) (emphasis omitted, alteration in original).

Claim 1 also recites “a processor, a non-transitory memory, and a power port mounted in the automobile.” Ex. 1001, 12:56–57. Petitioner contends that the combination of Vanderwall and Furukawa teaches this limitation. *Id.* at 14–18. Specifically, Petitioner argues that Vanderwall discloses processing system 122, which discloses the claimed “processor,” and memory device 132 that includes non-volatile memory 142, which disclose the claimed “non-transitory memory.” *Id.* at 14–15 (citing Ex. 1003 ¶¶ 45, 47, 50, 55, 128, 132; Ex. 1002 ¶ 65).

Petitioner argues Vanderwall discloses that “the in-vehicle control system can be connected to a DC-BUS . . . [and] [t]his type of bus provides data over the lines; thus, this connection provides power through the DC-BUS port.” *Id.* at 16 (citing Ex. 1003 ¶¶ 55, 119; Ex. 1002 ¶ 67). Petitioner further argues to the extent that Vanderwall does not disclose a power port, Furukawa discloses “central unit 302 ‘can include a number of ports that facilitate the input and output of information and power.’” *Id.* at 17 (quoting Ex. 1007 ¶ 70) (emphasis omitted). Petitioner argues Furukawa discloses power port 332 on central unit 302. *Id.* at 17 (citing Ex. 1007 ¶ 74, Fig. 3). Petitioner argues that a person of ordinary skill in the art “would have been motivated to supply power via a power port (e.g., connecting to the vehicle’s battery) based on market forces (the device would be cheaper to produce with a simple connection to the available car battery rather than supplying its own power source).” *Id.* at 16–17 (citing Ex. 1002 ¶¶ 68–70). Petitioner contends that a person with ordinary skill in the art would have found it obvious to combine Vanderwall’s in-vehicle control system with Furukawa’s power port to connect to the vehicle’s power source for use when the vehicle is in operation in order to eliminate the need of an “internal battery separate from the vehicle’s power supply,” which would “require frequent replacement, especially with a high-power consuming touch screen.” *Id.* at 18 (citing Ex. 1002 ¶¶ 71–73).

Petitioner argues this combination would have provided predictable results with a reasonable expectation of success. *Id.*

Claim 1 additionally recites “a software application executing on the processor to control image display on the screen and emulate features of a handheld device.” Ex. 1001, 12:58–60. Petitioner contends Vanderwall discloses “an algorithm executed on the processor to (1) receive data related to features of the remote source at the in-vehicle control system . . . (2) display an image on the screen of the in-vehicle control system representative of the remote source . . . and (3) enable access to the features of the remote device.” Pet. 20 (citing Ex. 1003 ¶¶ 42–46, 71, 76, 83, 103–108, 114, 128; Ex. 1002 ¶¶ 75–80).

Claim 1 further recites “a visual representation of a plurality of features of the handheld device on the screen.” Ex. 1001, 12:61–62. Petitioner argues that Vanderwall discloses output display 108, which displays features of remote device 116, such as “menus for the control of media playback, contact information, a calendar application, the GPS, making and receiving phone calls, making and receiving text messages, making and receiving e-mails, and accessing the Internet.” Pet. 21–22 (citing Ex. 1003 ¶¶ 42–46, 49, 71, 76, 83, 103–108, 114, 128; Ex. 1002 ¶¶ 81–83).

Claim 1 also recites “an interactive element, wherein the interactive element allows access to the plurality of features of the handheld device.” Ex. 1001, 12:63–65. Petitioner argues Vanderwall discloses “a variety of interactive elements of the in-vehicle system that allow access to the plurality of features of the handheld device,” for example, “tactile controls (e.g., buttons, joystick, scroll wheel, or touchpad), a touch screen, and a microphone.” Pet. 22–24 (citing Ex. 1003 ¶¶ 42, 43, 49, 62, 65, 69, 83, 91, 95, 98; Ex. 1002 ¶¶ 84–87).

Claim 1 additionally recites “wherein the plurality of features of the handheld device comprises volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts, and maps.” Ex. 1001, 12:66–13:2. Petitioner contends Vanderwall’s “in-vehicle control system includes a display showing a plurality of features of the remote device,” including “control of ‘playback of media files over the sound system,’” “text messaging,” “dialing a phone number from a ‘phonebook or contact information,’ and ‘one-touch dialing,’” “e-mail,” “web services,” “media decoding elements,” “calendar and world clock,” and “nav/maps.” Pet. 24–29 (citing Ex. 1003 ¶¶ 43, 57, 83, 103–108, 114, Figs. 5, 11B, 13). In particular, Petitioner provides a mapping of the claimed features, and supporting arguments, to various disclosures in Vanderwall. *See id.* at 25–28 (also citing Ex. 1003 ¶¶ 42–44, 53, 54, 57, 60, 76, 83, 99–108, 114, 120, Figs. 5, 11B, 13; Ex. 1002 ¶¶ 88–97).

Petitioner similarly asserts arguments for dependent claims 2 and 4–10. *Id.* at 29–34.

ii. Patent Owner’s arguments

Patent Owner first argues that Vanderwall fails to disclose a “virtual smart phone,” as claimed. PO Resp. 22–26. Patent Owner specifically argues that “the virtual smart phone emulates a smart phone, not just any handheld device, and emulates a smart phone by emulating the features of the smart phone.” *Id.* at 24.

We do not agree with Patent Owner. As discussed above, we determine that the recitation of a “virtual smart phone” in the preamble is not limiting to the claims. *See* Section II.B.1. Assuming, *arguendo*, that the preamble is limiting, we agree with Petitioner that Vanderwall discloses an “in-vehicle system [that] is ‘an emulation of a smart phone or handheld device.’” Pet. Reply 8. As Petitioner points out, the ’955 patent specification provides context to the term “virtual smart

phone,” disclosing that “a ‘virtual smart phone includes a touch screen, a software application, and a configuration of a user-specific handheld device that is separate from the virtual smart phone.’” *See* Pet. 11 (citing Ex. 1001, 1:52–54). As discussed above, Vanderwall discloses a touch screen, an algorithm executed on a processor, and a virtual display that replicates the display of a remote source. *See* Ex. 1003 ¶¶ 40, 42, 47. Moreover, the claim 1 preamble only recites a “virtual smart phone” comprises the elements of claim 1. Accordingly, the preamble is met when the elements recited in the body of the claim are met.

We similarly do not agree with Patent Owner’s argument that Vanderwall discloses “Output Knobs 110 and pushbuttons 112 and 114” control functions and the vehicle system merely reproduces or duplicates the display of a remote source because this argument improperly applies an unduly narrow interpretation of “emulate.” PO Resp. 23–24. Specifically, we construe “emulate” to mean “to imitate” without any further restriction such as exact duplication or only display or touch screen aspects. *See* Section II.B.2. As such, we do not agree with Patent Owner’s argument that Vanderwall merely discloses the display of images and the control of the remote device using knobs and pushbuttons, but fails to disclose a virtual smart phone that emulates the features of a handheld device. PO Rep. 25.

Patent Owner further argues that Vanderwall fails to teach “a software application executing on the process to . . . emulate features of a handheld device.” PO Resp. 26–28. Patent Owner specifically argues that “Vanderwall merely teaches that the various in-vehicle controls can replace the controls of the handheld device,” but “[i]mitating to equal the features of the handheld device is not controlling using the in-vehicle control system controls as a replacement for the controls on the remote device.” *Id.* at 27. We do not agree with Patent Owner. As discussed above, Patent Owner’s argument is premised on an unduly narrow

application of the term “emulate” to the prior art with which we do not agree. *See* Section II.B.2. Rather, Vanderwall teaches an algorithm executed on a processor to receive data related to features of a remote source. Ex. 1003 ¶¶ 42–48, 51, 76, 78. Vanderwall further discloses that the user interface features of a remote source are available to the vehicle control system and that the in-vehicle control system can be configured to command and control the features of the remote source. *Id.* ¶¶ 40, 83, 114, 103–108. As such, we do not agree with Patent Owner that Vanderwall fails to disclose “a software application executing on the processor to control image display and emulate features of a handheld device.”

Patent Owner also argues that Vanderwall fails to disclose dependent claim 10, which recites “the virtual smart phone is adapted to emulate features from handheld devices of different operating systems.” PO Resp. 29. Patent Owner specifically argues Vanderwall only teaches that Vanderwall “captures an image from various devices” but does not disclose that “it imitates features of different operating systems.” *Id.* We disagree with Patent Owner. Vanderwall discloses remote sources such as mobile phones, PDAs, media players, and the like. Ex. 1003 ¶¶ 118, 128. Additionally, based on the evidence of record, we agree with Petitioner that a person with ordinary skill in the art “would have understood that this variety of devices would have different operating systems.” Pet. 33 (citing Ex. 1002 ¶¶ 110–113). We credit the testimony of Mr. Christopher K. Wilson, who explains that a person with ordinary skill in the art would have understood that Vanderwall discloses a “Motorola flip phone” that would be operating on “proprietary Motorola OS at the time” and Vanderwall further discloses a “Palm device” that would have been operating on “Palm operating system.” Ex. 1002 ¶¶ 110–111. Mr. Wilson further explains that Vanderwall discloses a handheld device that is an “iPod” that would have been operating on “Apple’s iOS.” *Id.*

¶ 112. Accordingly, we agree with Petitioner and credit the testimony of Mr. Wilson that a person with ordinary skill in the art would have understood that Vanderwall’s variety of devices would have been operating on different operating systems, and, therefore, we find Vanderwall discloses “the virtual smart phone is adapted to emulate features from handheld devices of different operating systems.”

iii. Analysis and Conclusion

On the complete record, based on a plain reading of the cited passages and well-reasoned explanation and analysis adequately supported by declaration testimony by Mr. Wilson, we agree with Petitioner that the combination of Vanderwall and Furukawa discloses the limitations of claims 1, 2, and 4–10 of the ’955 patent. Specifically, we agree with Petitioner that the combination of Vanderwall and Furukawa teaches or suggests the limitations of claims 1, 2, and 4–10 for the reasons argued in the Petition, and we find Petitioner’s arguments are supported by substantial evidence. Pet. 9–34. We further determine Petitioner has established that a person with ordinary skill in the art would have been motivated to combine Vanderwall and Furukawa. Accordingly, notwithstanding Patent Owner’s arguments, which we address above, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, and 4–10 are unpatentable as obvious over Vanderwall and Furukawa.

3. Alleged Obviousness of claim 3 over Vanderwall

Petitioner contends claim 3 of the ’955 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Vanderwall. Pet. 34–45. For the reasons discussed below, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 3 of the ’955 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Vanderwall.

a. Petitioner's arguments

Independent claim 3 recites accessing the same features of the virtual smart phone of independent claim 1, except claim 1 further recites the elements of “a non-transitory memory” and “a power port mounted in the automobile.” Ex. 1001, 13:5–21. Petitioner presents similar arguments that Vanderwall discloses the same features recited in independent claim 3 as discussed above with respect to independent claim 1. *See* Pet. 34–45. As discussed above, Petitioner argues that Furukawa discloses both “a non-transitory memory[] and a power port mounted in the automobile,” the elements that are recited in independent claim 1 but not recited in independent claim 3. *Id.* at 14–18. As discussed above, these are the only limitations Petitioner relies on Furukawa.

b. Patent Owner's arguments

As an initial matter, Patent Owner raises the same arguments in support of independent claim 3 as it does for independent claim 1. PO Resp. 31–40. We do not agree with those arguments for the same reasons discussed above. *See* Section II.C.2.c.ii.

Patent Owner further argues that independent claim 3, similar to the features recited in independent claim 1, requires “displaying an image representative of the smart phone including actionable elements based on the data” and “facilitating, with the processor, access to at least one feature of the smart phone in response to a user interacting with at least one of the actionable elements independent of access to the smart phone.” PO Resp. 33–34. Patent Owner then argues that Vanderwall does not disclose “the actionable elements are in the image and a user operates the smart phone by interacting with the displayed actionable element.” *Id.* at 34.

We do not agree with Patent Owner's argument. As argued by Petitioner, Vanderwall discloses a vehicle control system for reproducing a display from a

remote source. Pet. 41 (citing Ex. 1003 ¶¶ 40, 43, 57, 71, 83, 103–108, 114, 128, Figs. 5, 11B, 13). Vanderwall’s menu items are selectable by tactile controls (e.g., buttons, joystick, scroll wheel, or touchpad), touch screen, or microphone. *Id.* at 42. Petitioner argues that because the user interacts with the tactile controls, touch screen, or microphone to select items, the selection of the menu items are “‘actionable elements’ on the display to control the plurality of features of the remote source.” *Id.* (citing Ex. 1002 ¶¶ 131–132). Similar to our analysis of independent claim 1, we are not persuaded that “interacting with the displayed actionable element,” as recited by independent claim 3, requires only display and touch screen aspects, or that the interaction must be exactly the same manner of input. *See* Sections II.B.2, II.C.2.c.ii.

c. Analysis and Conclusion

On the complete record, we find that Vanderwall teaches or suggests the limitations of claim 3 of the ’955 patent. Specifically, we agree with Petitioner that the Vanderwall teaches or suggests the limitations of claim 3 for the reasons argued in the Petition, and we find Petitioner’s arguments are supported by substantial evidence. Pet. 34–45. Accordingly, notwithstanding Patent Owner’s arguments, which we address above, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 3 is unpatentable as obvious over Vanderwall.

4. Alleged Obviousness of claims 1, 2, and 4–13 over Dybalski, Hu, Eich, and Furukawa

Petitioner contends claims 1, 2, and 4–13 of the ’955 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, Eich, and Furukawa. Pet. 45–77. For the reasons discussed below, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that

claims 1, 2, and 4–13 of the '955 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, Eich, and Furukawa.

a. Dybalski (Ex. 1004)

Dybalski is directed to “operating a portable electronic device with an interactive control module,” where the “interactive control module is in communication with the portable electronic device, and includes a touch screen display.” Ex. 1004 ¶ 5.

Specifically, Dybalski discloses that “interactive control module 20” may include “a “controller 24 having a memory and a touch screen display 26.” *Id.* ¶ 15. The interactive control module 20 may be connected to portable electronic devices 22 through communication system 28, where the portable electronic devices include “mobile phones . . . personal handheld computers . . . or some other similar portable electronic device 22.” *Id.* ¶¶ 15–16. A “virtual image 30 of the portable electronic device 22” displayed on the touch screen 26 “includes the virtual control features 32 replicating the actual control features on the portable electronic device 22.” *Id.* ¶ 21.

b. Hu (Ex. 1005)

Hu is directed to controlling a cellular phone within a vehicle. Ex. 1005 ¶ 8. Specifically, a human machine interface includes multifunction switches 20 and touchpad input device 14 mounted on steering wheel 12. *Id.* ¶ 23. Cellular phone operations that may be controlled by the human machine interface include receiving and making calls, viewing a calendar, and surfing the Internet. *Id.* ¶ 49.

c. Eich (Ex. 1006)

Eich is directed to providing route information calculated by a remote source on a display in a vehicle. Ex. 1006 ¶ 7. Specifically, in-vehicle control system 106 may include output display 108, such as a touch-screen display. *Id.* ¶ 28. Upon

receiving information requested from the remote source, processing system 122 may provide the information to the display so as to provide a detailed representation of the information, for example, “a complete map showing a highlighted route, a map showing various points of interest, a map detailing more than one turn, etc.” *Id.* ¶¶ 54–55.

d. Analysis

Petitioner contends claim 1, 2, and 4–13 of the ’955 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, Eich, and Furukawa. Pet. 45–77. For the reasons discussed below, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, and 4–13 of the ’955 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, Eich, and Furukawa.

i. Petitioner’s arguments

The preamble of claim 1 recites “a virtual smart phone.” Ex. 1001, 12:54. Petitioner argues Dybalski discloses “an ‘interactive control module’ in a vehicle for communicating with and operating ‘one or more portable electronic devices’ and displaying ‘a virtual image [] identical to the portable electronic device’ on a touch screen display.” Pet. 48 (citing Ex. 1004, Abstract, ¶¶ 5, 6, 14) (alteration in original). Petitioner further argues Dybalski’s portable electronic device may be a mobile phone that, in addition to making calls, “is capable of sending and receiving emails, playing music files, playing video files, etc.” *Id.* at 48–49 (citing Ex. 1004 ¶¶ 20–23; Ex. 1002 ¶¶ 146–151).

Claim 1 further recites “a screen mounted in an automobile.” Ex. 1001, 12:55. Petitioner argues Dybalski discloses “the ‘interactive control module includes a touch screen display that displays a virtual image of the portable electronic device,’ which is ‘integrated into an instrument panel of a vehicle.’”

Pet. 49–50 (citing Ex. 1004, Abstract, ¶¶ 8, 15, Fig. 2) (emphasis omitted).

Petitioner further asserts that a person with ordinary skill in the art “would have understood that such an integration of the touch screen display constitutes the screen being mounted in the vehicle.” *Id.* at 50 (citing Ex. 1002 ¶ 152).

Claim 1 also recites “a processor, a non-transitory memory, and a power port mounted in the automobile.” Ex. 1001, 12:56–57. Petitioner argues that Dybalski discloses an “interactive control module, which is mounted in a vehicle (*see* element [1.1]), [that] ‘includes a controller 24 having a memory.’” Pet. 50 (citing Ex. 1004 ¶¶ 8, 15, Fig. 2) (emphasis omitted). Petitioner further argues that “[t]he controller 24 preferably includes a computer including . . . a processor for operating a software program thereon.” *Id.* at 51 (citing Ex. 1004 ¶ 15) (emphasis omitted). Petitioner’s expert, Mr. Wilson, opines that a person with ordinary skill in the art “would have understood that the memory of controller 24 would be, at least in part, non-transitory so its software is maintained when power to the vehicle is interrupted.” *Id.* (citing Ex. 1002 ¶ 154). Petitioner argues that a person with ordinary skill in the art “would have understood that *Dybalski*’s interactive control module receives power to operate.” *Id.* (citing Ex. 1004 ¶¶ 8–11; Ex. 1002 ¶¶ 156–61). As discussed above, Petitioner asserts that Furukawa discloses “central unit 302 ‘can include a number of ports that facilitate the input and output of information and power.’” *Id.* at 17 (quoting Ex. 1007 ¶ 70) (emphasis omitted). Petitioner argues Furukawa discloses power port 332 on central unit 302. *Id.* at 17 (citing Ex. 1007 ¶ 74, Fig. 3). As discussed above with respect to the combination of Vanderwall and Furukawa, Petitioner argues that a person of ordinary skill in the art “would have been motivated to supply power via a power port (e.g., connecting to the vehicle’s battery) based on market forces (the device would be cheaper to produce with a simple connection to the available car batter rather than

supplying its own power source).” *Id.* at 16–17 (citing Ex. 1002 ¶¶ 68–70); *see id.* at 52. Petitioner contends that a person with ordinary skill in the art recognized would have found it obvious to combine Vanderwall’s in-vehicle control system with Furukawa’s power port to connect to the vehicle’s power source for use when the vehicle is in operation in order to eliminate the need of an “internal battery separate from the vehicle’s power supply,” which would “require frequent replacement, especially with a high-power consuming touch screen.” *Id.* at 18 (citing Ex. 1002 ¶¶ 71–73). Petitioner argues this combination would have provided predictable results with a reasonable expectation of success. *Id.*

Claim 1 additionally recites “a software application executing on the processor to control image display on the screen and emulate features of a handheld device.” Ex. 1001, 12:58–60. Petitioner argues Dybalski discloses “[t]he controller 24 [that] preferably includes a computer . . . and a processor for operating a software program thereon.” Pet. 52 (citing Ex. 1004 ¶ 15) (emphasis omitted). Petitioner further asserts that the “software causes interactive module 20 to ‘display[] a virtual image of the portable electronic device on the touchscreen display, wherein the virtual image includes a virtual control feature replicating a control feature on the portable electronic device.’” *Id.* (citing Ex. 1004 ¶ 5; Ex. 1002 ¶ 164) (alteration in original). Petitioner argues that “Dybalski discloses an algorithm executed on the processor to . . . enable access to the features of the remote device through interaction with control module 20” *Id.* at 52–53 (citing Ex. 1002 ¶ 166).

Claim 1 further recites “a visual representation of a plurality of features of a handheld device on the screen.” Ex. 1001, 12:61–62. Petitioner asserts that “Dybalski discloses that the virtual image displayed on the touch screen display is ‘identical to the portable electronic device’ and ‘includes a look and feel that

mimics that of the actual portable electronic display 22” Pet. 54 (citing Ex. 1004 ¶¶ 6, 14–16, 21) (emphasis omitted). Petitioner further argues that Dybalski discloses displaying a plurality of features as “a virtual representation of a plurality of shortcuts 40 [] on touch screen display 26 . . . shown in annotated Figure 5” *Id.* at 55 (citing Ex. 1004 ¶ 28; Ex. 1002 ¶¶ 169–174).

Claim 1 also recites “an interactive element, wherein the interactive element allows access to the plurality of features of the handheld device.” Ex. 1001, 12:63–65. Petitioner argues “Dybalski discloses a ‘touch screen display’ including ‘a virtual control feature replicating a control feature on the portable electronic device.’” Pet. 57 (citing Ex. 1004, Abstract, ¶ 5, Fig. 2) (emphasis omitted). Petitioner further asserts that “[v]irtual control features 32 replicate the actual control features on portable electronic device 22, allowing control of portable electronic device 22 through the touch screen display in a similar manner to directly interacting with portable electronic device 22.” *Id.* (citing Ex. 1004 ¶¶ 6, 19, 21, 26; Ex. 1002 ¶ 176).

Claim 1 additionally recites “wherein the plurality of features of the handheld device comprises volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts, and maps.” Ex. 1001, 12:66–13:2. Petitioner contends that Dybalski in combination with Hu and Eich render obvious this limitation. Pet. 58–66. Specifically, Petitioner argues Dybalski discloses downloading information from the portable electronic device “including ‘any other information that is stored on the portable electronic devices 22 that is desirable to be accessed to the user.’” *Id.* at 58 (citing Ex. 1004 ¶ 20) (emphasis omitted). Petitioner asserts “[t]his information is then ‘used by the interactive control module 20 to execute a command’ by ‘transmitting the command to the portable electronic device 22.’” *Id.* (citing Ex. 1004 ¶¶ 20, 26).

Petitioner also asserts that Dybalski discloses at least six of the ten claimed features, and Hu and Eich disclose the remaining claimed features. *Id.* at 58, 62–65. Petitioner further asserts that Dybalski discloses “virtual control features 32 replicating the actual control features on the portable device,” “text messages,” “call” functionality, “e-mails,” “new songs or music files,” and “meeting notices” and “calendar entry for Jan. 1.” *Id.* at 59 (citing Ex. 1004 ¶¶ 20, 21, Fig. 5).

Petitioner then asserts that Eich discloses “an in-vehicle system receiving route information calculated by a remote source (e.g., a mobile phone),” and, therefore, discloses “Global Positioning System.” *Id.* at 59, 63 (citing Ex. 1006 ¶¶ 7, 42, 54). Petitioner also asserts that Hu discloses “using a cell phone interface in a vehicle” with the features of “receiving calls; making calls using a contact list, muting and unmuting the audio system; viewing and sending text messages; synchronizing address books; controlling an mp3 player on a cell phone; viewing, sending, and searching emails; searching contact list; and viewing the calendar and task list,” and further discloses “maps.” *Id.* at 59, 61–63 (citing Ex. 1005, Abstract, ¶¶ 7–8, 42, 48, 49, 54–55; Ex. 1002 ¶¶ 192–193).

Petitioner argues that a person with ordinary skill in the art would have understood “that it would have been beneficial to control additional features of the portable device.” *Id.* at 64 (citing Ex. 1004 ¶ 20). Petitioner argues that a person with ordinary skill in the art would have been motivated to incorporate the teachings of Hu and Eich to improve the convenience and lower the costs associated with in-vehicle GPS systems. *Id.* at 65 (Ex. 1002 ¶ 196). Petitioner further argues that a person with ordinary skill in the art would have found that incorporating the features from Hu and Eich to Dybalski would increase the capabilities of the mobile device of Dybalski. *Id.* at 65–66 (citing Ex. 1002 ¶¶ 179–198).

Petitioner asserts similar arguments for dependent claims 2 and 4–10.
Pet. 66–77.

ii. Patent Owner’s arguments

Patent Owner first argues that Dybalski does not disclose a “virtual smart phone” for the same reasons asserted towards the combination of Vanderwall and Furukawa (ground 1). PO Resp. 42. We do not agree this argument for the same reasons discussed above in ground 1. *See* Sections II.B.1, II.B.2, II.C.2.c.ii. Namely, we do not agree with Patent Owner’s argument because Patent Owner’s argument is premised on an unduly narrow application to the asserted prior art of the claim construction of emulate. *Id.*

Patent Owner further contends the “only phone described in Dybalski is a ‘flip phone,’” and Petitioner further points to Dybalski’s disclosure of a portable electronic device as disclosing the claimed “smart phone.” PO Resp. 42 (citing Ex. 1004 ¶ 15). We do not agree. Rather, we find Dybalski discloses an interactive control module that has a memory, a touch screen display, a controller, and a processor that are connected to a portable device. Ex. 1004 ¶ 15. The portable device may include mobile phones. *Id.* Although Dybalski discloses that the mobile device may include “flip-phones,” we are not persuaded that the scope of a “handheld device” as recited in independent claim 1 precludes “flip-phone[s].” Patent Owner does not provide sufficient evidence to establish that a “flip-phone” is not a “handheld device,” and merely presents attorney argument in support of this contention. Furthermore, Dybalski provides “flip-phones” as an example, and discloses that the portable electronic device includes content such as “images, screen savers, ring tones, e-mails, text messages, reminders, meeting notices, general notices, new songs or music files, movie files, videos or games.” *Id.* ¶ 20. As such, we do not agree with Patent Owner’s argument that the portable

electronic device disclosed by Dybalski is not the same as contemplated as a “danger” of using a smart phone while operating an automobile in the ’955 patent specification. PO Resp. 43–44.

Patent Owner further argues that the Petition “fails to explain how Dybalski teaches the emulation of features of the handheld device.” *Id.* at 44. Patent Owner asserts Dybalski does not teach the “emulation features and the virtual representation of a plurality of features of the handheld device enable the virtual smart phone to emulate” a smart phone. *Id.* We do not agree with Patent Owner. As Petitioner points out, Dybalski discloses “a virtual control feature replicating a control feature on the portable electronic device.” Pet. 52 (citing Ex. 1004 ¶ 5). Petitioner also points out Dybalski discloses a processor that controls the virtual control features on the screen and emulates features of a portable device. *Id.* at 53–54 (citing Ex. 1004 ¶¶ 6, 15, 17–21). Accordingly, we find Petitioner has sufficiently identified disclosures in Dybalski teaching a virtual representation of features that enable Dybalski’s device to emulate the functions of a smart phone.

Patent Owner contends “Dybalski’s image of the device is an unnecessary and inefficient intermediary device.” PO Resp. 45. Patent Owner argues that “[i]nstead of providing a virtual representation of a plurality of features, Dybalski provides an image of the device . . . [which] is cumbersome and inefficient.” *Id.* We do not agree with Patent Owner. As an initial matter, Patent Owner’s argument is merely attorney argument that is unsupported by evidence in the record. Furthermore, Patent Owner’s argument is inconsistent with the scope of the claims. Claim 1 requires “a visual representation of a plurality of features of the handheld device on the screen” and “an interactive element, wherein the interactive element allows access to the plurality of features of the handheld device.” Dybalski discloses that a user “knows how to operate the interactive

control module because *the virtual image is identical to the portable electronic device* with which the user is already familiar with.” Ex. 1004 ¶ 6 (emphasis added). Dybalski further discloses that the “virtual image 30 that is displayed on the touch screen display 26 includes a look and feel that mimics that of the actual portable electronic device 22, so that the usability of the portable electronic device 22 is familiar to the user.” *Id.* ¶ 17. Dybalski also discloses “displaying a shortcut 40 on the touch screen display 26 of commonly inputted commands.” *Id.* ¶ 28. That is, Dybalski’s image is a visual representation of the handheld device and further includes shortcuts to commonly used features of the handheld device. Patent Owner’s arguments towards Dybalski’s image as inefficient and cumbersome are misplaced as such features are not recited by claim 1.

Patent Owner argues that Hu, Eich, and Furukawa “do not cure the deficiencies of Dybalski.” PO Resp. 46–47. We do not agree this argument. First, as discussed above, we do not agree with Patent Owner’s arguments that Dybalski is deficient. Second, Petitioner does not rely on Hu, Eich, and Furukawa as disclosing these features. *See* Pet. 52–53. As such, Patent Owner’s argument is not commensurate with the arguments of unpatentability raised by Petitioner.

Patent Owner further contends “Petitioner fails to provide a convincing motivation to combine the Dybalski, Hu, Eich, and Furakawa [sic] references.” PO Resp. 49–50. Patent Owner argues that Petitioner incorrectly asserts that Hu and Eich disclose “emulating features of existing mobile phones through a vehicle control system,” whereas “Hu does not relate or discuss smart phones.” *Id.* at 49 (quoting Pet. 65). Similarly, Patent Owner argues that Eich and Furukawa “both are in the navigation and route calculation spaces.” *Id.* at 50. Patent Owner argues that a “[person of ordinary skill in the art] would not have [had] a motivation to

combine Eich or Furakawa [sic] with Dybalski with a reasonable expectation of success of arriving at the instant claims.” *Id.*

We do not agree with Patent Owner’s arguments. Rather, we agree with Petitioner and find that Dybalski, Hu, and Eich “all disclose features in technologically analogous contexts to that of the ’955 patent; each disclose methods of controlling a portable device from a vehicle and each share the common characteristic of being directed to in-vehicle device.” *See* Pet. Reply 21 (citing Pet. 63–64). We further agree with Petitioner that “each provide solutions to operating [a] handheld device while driving a vehicle.” *Id.* at 21–22 (citing Ex. 1004, Abstract; Ex. 1005, Abstract, ¶ 22; Ex. 1006, Abstract, ¶¶ 80, 87–89). Accordingly, we find that a person with ordinary skill in the art at the time of the invention would have been motivated to combine the additional features disclosed by Hu and Eich to Dybalski in order to improve the convenience and lower the costs associated with in-vehicle GPS systems. *See* Pet. 65 (citing Ex. 1002 ¶ 96).

Petitioner only relies on Furukawa for disclosing a power port. Pet. 17 (citing Ex. 1007 ¶ 70); Pet. Reply 22. As discussed above, Petitioner contends a person with ordinary skill in the art “would have been motivated to supply power via a power port (e.g., connecting to the vehicle’s battery) based on market forces (the device would be cheaper to produce with a simple connection to the available car battery rather than supplying its own power source).” Pet. 52 (citing Pet. 16–17; Ex. 1002 ¶¶ 68–70). We agree with Petitioner’s reasoning that is adequately supported by well-reasoned declarative testimony of Mr. Wilson, and determine that a person with ordinary skill in the art would have been motivated to combine the teachings of Furukawa with that of Dybalski.

Patent Owner further argues that claims 2 and 4–13 ultimately depend from independent claim 1, and because the combination of Dybalski, Hu, Eich, and

Furukawa fails to teach or suggest claim 1, the combination also fails to teach or suggest dependent claims 2 and 4–13. PO Resp. 48. We do not agree with Patent Owner’s arguments in support of claim 1. Additionally, we do not agree that the combination of Dybalski, Hu, Eich, and Furukawa fails to teach or suggest claims 2 and 4–13 for the same reasons.

iii. Analysis and Conclusion

On the complete record, based on a plain reading of the cited passages and well-reasoned explanation and analysis adequately supported by declaration testimony by Mr. Wilson, we agree with Petitioner that the combined disclosures of Dybalski, Hu, Eich, and Furukawa teaches or suggests the limitations of claims 1, 2, and 4–13 of the ’955 patent. Specifically, we agree with Petitioner that the combination of Dybalski, Hu, Eich, and Furukawa teaches or suggests the limitations of claims 1, 2, and 4–13 for the reasons argued in the Petition, and we find Petitioner’s arguments are supported by substantial evidence. Pet. 45–77. Furthermore, we determine Petitioner has established that a person with ordinary skill in the art would have been motivated to combine the teachings of Dybalski, Hu, Eich, and Furukawa. Accordingly, notwithstanding Patent Owner’s arguments, which we address above, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, and 4–13 are unpatentable as obvious over Dybalski, Hu, Eich, and Furukawa.

5. Alleged Obviousness of claim 3 over Dybalski, Hu, and Eich

Petitioner contends claim 3 of the ’955 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, and Eich. Pet. 77–85. For the reasons discussed below, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 3 of the ’955

patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Dybalski, Hu, and Eich.

a. Petitioner's arguments

As discussed above, independent claim 3 recites accessing the same features by the virtual smart phone of independent claim 1, except for the elements of “a non-transitory memory” and “a power port mounted in the automobile.” Ex. 1001, 13:5–21; *see* Section II.C.3. Petitioner presents similar arguments towards independent claim 3 as it has to independent claim 1. *See* Pet. 77–85. As discussed above, Petitioner argues that Furukawa discloses “a power port mounted in the automobile.” Pet. 14–18, 51–52.

b. Patent Owner's arguments

Patent Owner first argues, “[a]s mentioned above with respect to Ground 3,” that Dybalski is “markedly different from the claimed virtual smart phone.” PO Resp. 52–53. Patent Owner further argues that Hu and Eich “do not cure the deficiencies of Dybalski.” *Id.* at 53. Patent Owner also argues that “Petitioner fails to provide a convincing motivation to combine the Dybalski, Hu, and Eich references.” *Id.* at 55. We, however, do not agree with Patent Owner's arguments for the same reasons discussed above with respect to Petitioner's challenge to claims 1, 2, and 4–13 as unpatentable as obvious over Dybalski, Hu, Eich, and Furukawa. *See* Section II.C.4.ii.

c. Analysis and Conclusion

On the complete record, we agree with Petitioner and find that the combined disclosures of Dybalski, Hu, and Eich teaches or suggests the limitations of claim 3 of the '955 patent. Specifically, we agree with Petitioner that the combination of Dybalski, Hu, and Eich teaches or suggests the limitations of claim 3 for the reasons argued in the Petition, and we find Petitioner's arguments are supported by

substantial evidence. Pet. 77–85. Accordingly, notwithstanding Patent Owner’s arguments, which we address above, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 3 is unpatentable as obvious over Dybalski, Hu, and Eich.

III. PATENT OWNER’S CONTINGENT REVISED MOTION TO AMEND

Pursuant to 35 U.S.C. § 316(d)(1) and 37 C.F.R. § 42.121(a), Patent Owner moved to replace claims 1–13 of the ’955 patent with proposed substitute claims 14–26, contingent on our determination that claims 1–13 are unpatentable. MTA 1, 4–5. Patent Owner also requested preliminary guidance in accordance with the Pilot Program. *Id.* at 4; *see* Notice, *supra*. We issued our non-binding Preliminary Guidance, advising Patent Owner that, on the contingent motion to amend record, Patent Owner demonstrated a reasonable likelihood that it had satisfied the procedural requirements imposed by 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121(a) for its Motion. Prelim. Guidance 3–5. We further advised Patent Owner that, on the contingent motion to amend record, Petitioner demonstrated a reasonable likelihood that proposed substitute claims 19 and 24 were unpatentable as indefinite under 35 U.S.C. § 112, second paragraph, and that proposed substitute claims 14–26 were unpatentable as obvious under 35 U.S.C. § 103(a). *Id.* at 7–15.

In its Revised Motion, Patent Owner now moves to replace claims 1–13 of the ’955 patent—contingent on our determination that claims 1–13 are unpatentable—with revised proposed substitute claims 14–26. RMTA 1. As discussed above, we determine that original claims 1–13 of the ’955 patent have been shown to be unpatentable by a preponderance of the evidence. *See* Section II.C. Therefore, we proceed to address Patent Owner’s Contingent Revised Motion to Amend.

A. Applicable Law

In an *inter partes* review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d). The Board must assess the patentability of proposed substitute claims “without placing the burden of persuasion on the patent owner.” *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017) (en banc); see *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 3–4 (PTAB Feb. 25, 2019) (precedential) (“*Lectrosonics*”). Subsequent to the issuance of *Aqua Products*, the Federal Circuit issued a decision in *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017) (“*Bosch*”), as well as a follow-up Order amending that decision on rehearing. See *Bosch Auto. Serv. Sols., LLC v. Iancu*, No. 2015-1928 (Fed. Cir. Mar. 15, 2018) (Order on Petition for Panel Rehearing).

In accordance with *Aqua Products*, *Bosch*, and *Lectrosonics*, a patent owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claims presented in the motion to amend. Rather, ordinarily, “the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the evidence.” *Bosch*, 878 F.3d at 1040 (as amended on rehearing); see *Lectrosonics*, Paper 15 at 3–4. In determining whether a petitioner has proven unpatentability of the substitute claims, the Board focuses on “arguments and theories raised by the petitioner in its petition or opposition to the motion to amend.” *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51 (Fed. Cir. 2020).

B. Proposed Substitute Claims

Patent Owner submitted the following proposed substitute claims 14–26 in the Motion to Amend, with proposed added limitations underlined (as compared to claims 1-13, respectively) and proposed deleted language struck through:

14. [a] A virtual smart phone, configured to connect to and emulate a

smart phone, comprising:

[b] a screen mounted in an automobile;

[c] a processor, a non-transitory memory, and a power port mounted in the automobile;

[d] a software application executing on the processor to control image display on the screen and emulate features and a user interface of a smart phone handheld device;

[e] a visual representation of a plurality of features of the smart phone handheld device on the screen, wherein the visual representation comprises an emulation of the user interface of the smart phone; and

[f] an interactive element, wherein the interactive element allows access to the plurality of features of the smart phone handheld device,

[g] wherein the plurality of features of the smart phone handheld device comprises volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts, and maps.

15. The virtual smart phone of claim 14, wherein the screen is a touch screen

16. [h] A method of accessing features of a smart phone through a screen mounted in an automobile, comprising:

[i] receiving at a processor in an automobile information representative of a smart phone user interface, including features thereof;

[j] receiving at a processor in an automobile information representative of data associated with the smart phone;

[k] displaying an image representative of the smart phone including actionable elements based on the data and based on the user interface of the smart phone; and

[l] facilitating, with the processor, access to at least one feature of the smart phone in response to a user interacting with at least one of the actionable elements independent of access to the smart phone,

[m] wherein the actionable elements comprise volume control, messages, phone call, email, internet browser, music player, calendar, Global Positioning System, contacts, and maps.

17. The virtual smart phone of claim 15, wherein the interactive element

is the touch screen.

18. The virtual smart phone of claim 14, wherein the interactive element is a button.

19. The virtual smart phone of claim 18, wherein the button is configured to emulate functionalities of physical buttons on the handheld device.

20. The virtual smart phone of claim 19, wherein the functionalities are selected from the group consisting of volume control, ring/silent, power on/off, sleep mode/wake mode, home, and speed dialing.

21. The virtual smart phone of claim 14, wherein the interactive element is selected from the group consisting of a remote control, a mouse, a touch pad, and a track ball.

22. The virtual smart phone of claim 14, wherein the interactive element is a microphone configured to receive voice commands.

23. The virtual smart phone of claim 14, wherein the virtual smart phone is adapted to emulate features from handheld devices of different operating systems.

24. The virtual smart phone of claim 14, wherein data on the handheld device is synchronized in the virtual smart phone.

25. The virtual smart phone of claim 24, wherein the data comprises configuration data.

26. The virtual smart phone of claim 25, wherein the configuration data is stored in the non-transitory memory.

MTA 21–25. In response to our Preliminary Guidance, Patent Owner filed its Revised Motion, wherein Patent Owner resubmitted proposed substitute claims 14–18 and 20–26 as recited above and revised proposed substitute claim 19 as follows:

19. The virtual smart phone of claim 18, wherein the button is configured to emulate functionalities of physical buttons on the smart phone ~~[handheld device]~~.⁸

⁸ Though Patent Owner acknowledges the formatting requirements of 37 C.F.R. § 1.121(c)(2), Patent Owner fails to identify that it revised proposed substitute

RMATA 29. Patent Owner revised proposed substitute claim 19 to cure a lack of antecedent basis. *Id.* at 15.

C. Procedural Requirements

“Before considering the patentability of any substitute claims, . . . the Board first must determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.” *See Lectrosonics*, Paper 15 at 4.

First, we consider whether the motion to amend proposes a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B) (2018). “There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.” *Lectrosonics*, Paper 15 at 4–5 (citing 37 C.F.R. § 42.121(a)(3)). Petitioner challenges thirteen claims. The Revised Motion proposes thirteen substitute claims. RMATA 1. We determine that the number of proposed substitute claims is reasonable.

Second, we consider whether the proposed substitute claims respond to a ground of unpatentability involved in this trial. *Lectrosonics*, Paper 15 at 5–6. In the original Motion, Patent Owner argued that proposed substitute claims responded to each of the trial grounds set forth in our Institution Decision. MTA 15–18. In the Revised Motion, Patent Owner again asserts that proposed substitute claims 14–26 are responsive to grounds set forth in our Institution Decision. RMATA 13. Petitioner did not dispute Patent Owner’s initial arguments on this point, nor does Petitioner dispute Patent Owner’s current arguments. *See generally* Pet. Opp. to RMATA. We agreed with Patent Owner in our Preliminary Guidance because the amendments proposed to add features to further distinguish the claims

claim 19 to replace the term “handheld device” with “smart phone.” We include the appropriate formatting to indicate that such a revision was made.

as patentable over the challenges to patentability asserted in the Petition. Prelim. Guidance 4. We again agree with Patent Owner now for the same reason and we accordingly determine that the proposed substitute claims respond to the unpatentability grounds involved in this trial.

Third, we consider the breadth of the substitute claims. “A motion to amend may not present substitute claims that enlarge the scope of the claims of the challenged patent or introduce new subject matter.” *Lectrosonics*, Paper 15 at 6–8 (citing 35 U.S.C. § 316(d)(3); 37 C.F.R. § 41.121(a)(2)(ii)). Proposed substitute claims 14–26 include narrowing limitations. RMTA 5–7, App. A. Petitioner did not dispute Patent Owner’s initial arguments on this point, nor does Petitioner dispute Patent Owner’s current arguments. *See generally* Pet. Opp. to RMTA. Also, Patent Owner provides citations to the application from which the ’955 patent issued, as well as the parent application and a provisional application, to demonstrate written description support for each limitation in the proposed substitute claims. RMTA 8–12 (citing Exs. 2005,⁹ 2006,¹⁰ 2007¹¹). Patent Owner did the same in its original Motion. MTA 8–15. Patent Owner’s sole revision, after our Preliminary Guidance, cured a lack of antecedent basis in proposed substitute claim 19. RMTA 15, 29; *see* Prelim. Guidance 7–8. Petitioner did not dispute Patent Owner’s initial arguments on this point, nor does Petitioner dispute Patent Owner’s current arguments. *See generally* Pet. Opp. to RMTA. We,

⁹ Exhibit 2005 refers to U.S. App. No. 14/088,361 (now the ’955 patent), which was filed on Nov. 23, 2013.

¹⁰ Exhibit 2006 refers to U.S. App. No. 13/087,426, which was filed on Apr. 15, 2011.

¹¹ Exhibit 2007 refers to U.S. Prov. App. No. 61/324,614, which was filed Apr. 15, 2010.

therefore, determine that the proposed substitute claims do not enlarge the scope of the original claims or introduce new subject matter.

Finally, the Revised Motion includes a claim listing, as required by 37 C.F.R. § 42.121(b). RMTA 27–31; *see Lectrosonics*, Paper 15 at 8.

In view of the above, we determine Patent Owner’s Revised Motion meets the statutory and regulatory requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121 in a manner sufficient to proceed with the issue of whether Petitioner has met its burden of persuasion with respect to unpatentability.

D. Claim Construction

For the proposed substitute claims, Patent Owner and Petitioner repeat the same claim construction arguments as those raised for the original claims discussed above. RMTA 13–14; Pet. Opp. to RMTA 9, 13, 21. We apply the same claim constructions discussed above to Patent Owner’s Revised Motion to Amend. *See supra* Section II.B.

E. Indefiniteness

After Patent Owner filed its original Motion, Petitioner argued proposed substitute claim 19 was indefinite. Pet. Opp. to MTA 23–24.¹² Though Patent Owner amended the term “handheld device” from claim 1 to “smart phone” in proposed substitute claim 14, Petitioner contended Patent Owner failed to include the “smart phone” amendment for proposed substitute claim 19 leaving the term “the handheld device” without antecedent basis, and, therefore, is indefinite. *Id.*

In our Preliminary Guidance, we advised Patent Owner that, on the then existing record, Petitioner demonstrated a reasonable likelihood that proposed substitute claim 19 was unpatentable under 35 U.S.C. § 112, second paragraph, as

¹² Petitioner did not present arguments regarding claim 24 in its original Opposition to Patent Owner’s MTA.

indefinite for lacking an antecedent basis for the term “handheld device.” Prelim. Guidance 7–8. We also advised Patent Owner that proposed substitute claim 24 suffered from the same lack of antecedent basis. *Id.* at 8.

Patent Owner’s Revised Motion includes a single amendment to the proposed substitute claims—curing the indefiniteness of proposed substitute claim 19 by omitting the term “handheld device,” which lacks antecedent basis, and replacing it with the term “smart phone,” which has antecedent basis in proposed substitute claim 14. RMTA 29. Patent Owner explains that it “corrected substitute claim 19” in response to our indefiniteness conclusion in our Preliminary Guidance. *Id.* at 15. Though our Preliminary Guidance reached the same conclusion as to proposed substitute claim 24, Patent Owner does not similarly amend proposed substitute claim 24. *Id.* at 31.

Referring to our Preliminary Guidance, Petitioner argues proposed substitute claim 24 is indefinite because it recites “the handheld device” without antecedent basis. Pet. Opp. to RMTA 25. Petitioner further argues proposed substitute claims 25 and 26 equally are indefinite due to their dependency on proposed substitute claim 24. *Id.*

We agree with Petitioner. Proposed substitute claim 24 recites “the handheld device” without antecedent basis. This lack of antecedent basis renders proposed substitute claim 24 indefinite, as we noted in our Preliminary Guidance. Pet. Opp. to RMTA 25; Prelim. Guidance 8 (“Proposed substitute claim 24 also recites ‘the handheld device’ and also suffers from the lack of antecedent basis). Despite having the opportunity to correct its error and amend proposed substitute dependent claim 24 when independent claim 14 was amended to remove the recitation of “a handheld device,” Patent Owner did not do so in its Contingent Revised Motion to Amend. RMTA 31. Proposed substitute claim 24 is indefinite

because the claim “fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014); *see* USPTO Memorandum on the Approach to Indefiniteness Under 35 U.S.C. § 112 in AIA Post-Grant Proceedings (Jan. 6, 2021)¹³; *see* MPEP 2173.05(e) (9th ed., Rev. 08.2017, June 2020). This is because “the handheld device” is only recited in proposed substitute claim 24, and the proposed substitute claim fails to inform one skilled in the art the scope of invention related to synchronizing “data on the handheld device” “in the virtual smart phone.”

Because proposed substitute claims 25 and 26 depend from proposed substitute claim 24, we similarly agree with Petitioner that claims 25 and 26 also are indefinite for lacking an antecedent basis for the term “handheld device.” Pet. Opp. to RMTA 25.

Accordingly, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 24–26 are unpatentable under 35 U.S.C. § 112 as indefinite.

F. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art at or before the priority date of the '955 patent “would have had a bachelor’s degree in electrical engineering, computer science, computer engineering, physics, or a related subject, and two to three years of work experience in the field of automotive information systems.” Pet. 6 (citing Ex. 1002 ¶¶ 38–39); Ex. 1034 ¶ 14 (Petitioner’s expert reiterating the same level of ordinary skill in the art). Patent Owner does not propose an ordinary level of skill in the art. We agree with and adopt the level of

¹³ Available at <https://go.usa.gov/xAzHB>.

ordinary skill in the art as articulated by Petitioner in analyzing Patent Owner’s proposed substitute claims.

G. Challenges to Patentability Based on Obviousness

Petitioner argues the proposed substitute claims are unpatentable as obvious based on ten challenges combining various references, with the first four grounds mirroring the challenges asserted against the original claims in the Petition as applied to the corresponding proposed substitute claims. Pet. Opp. to RMTA 8. These challenges are as follows:

Proposed Substitute Claims Challenged	35 U.S.C §	Reference(s)/Basis
14, 15, 17–23	§ 103	Vanderwall, Furukawa
16	§ 103	Vanderwall
14, 15, 17–26	§ 103	Dybalski, Hu, Eich, Furukawa
16	§ 103	Dybalski, Hu, Eich
14, 15, 17–23	§ 103	Vanderwall, Furukawa, Dybalski
16	§ 103	Vanderwall, Dybalski
14, 15, 17–23	§ 103	Vanderwall, Furukawa, Zilka ¹⁴
16	§ 103	Vanderwall, Zilka
14, 15, 17–26	§ 103	Dybalski, Hu, Eich, Furukawa, Zilka
16	§ 103	Dybalski, Hu, Eich, Zilka

Because we have determined already that Petitioner has demonstrated by a preponderance of the evidence that claims 1–13 of the ’955 patent are unpatentable, we rely on our analysis from above with respect to the limitations in the original claims and we focus our analysis on the new limitations in the proposed substitute claims. *See supra* Section II.C. As noted above, the new limitations in proposed substitute claim 14, as compared to claim 1, comprise: adding to the preamble [a] that the virtual smart phone is “configured to connect to

¹⁴ US 8,078,397 B1, issued Dec. 13, 2011 (“Zilka,” Ex. 1029).

and emulate a smart phone”; adding to limitation [d] that the software application emulates features “and a user interface”; adding to limitation [e] that “the visual representation comprises an emulation of the user interface of the smart phone”; and changing the term “handheld device” in limitations [d], [e], [f], and [g] to “smart phone.” RMTA 27–28; *see supra* Section III.A.

1. Alleged obviousness of proposed substitute claim 14

a. Alleged obviousness over Vanderwall and Furukawa

Petitioner first relies on Vanderwall to teach the new limitations in proposed substitute claim 14. Pet. Opp. to RMTA 9–11.

Petitioner contends Vanderwall teaches a virtual smart phone “configured to connect to and emulate a smart phone,” as recited in the preamble [a], because Vanderwall discloses an in-vehicle control system that connects to and emulates a remote source that may be a smart phone. *Id.* (citing Ex. 1003 ¶ 40; Ex. 1002 ¶¶ 56–61, 75–87; Ex. 1034 ¶¶ 61–62). Petitioner argues that this system “establishes a data connection (wired or wireless) with a remote source.” *Id.* at 10 (citing Ex. 1003 ¶ 40) (emphasis omitted). According to Petitioner, through this connection, the system receives images displayed on the remote source in conjunction with [one or more] applications.” *Id.* (citing Ex. 1003 ¶ 40). Petitioner asserts the system “reproduc[es] or duplicat[es] displayed [sic] generated and displayed on a remote source.” Ex. 1003 ¶ 40. Petitioner further asserts “command and control mapping menu interfaces may be used to map vehicle UI elements to features or commands of a remote source.” *Id.* ¶ 43. Accordingly, Petitioner concludes the system disclosed by Vanderwall emulates (or imitates) the remote source by reproducing and duplicating the remote source’s display and mapping features of the remote source onto the system’s interface.

Petitioner asserts that Vanderwall teaches the term “smart phone” in

limitations [a], [d], [e], [f], and [g] by disclosing a remote source that may be a smart phone. Pet. Opp. to RMTA 9–11 (citing Ex. 1002 ¶¶ 56–61, 75–87); *id.* at 12 (citing Ex. 1002 ¶¶ 59–60, 149); *id.* at 20 (citing Ex. 1002 ¶¶ 59–60, 149); *id.* at 23 (citing Ex. 1002 ¶¶ 59–60, 149).

Petitioner further asserts that Vanderwall teaches emulation of a smart phone user interface, as recited in limitation [d], by disclosing a touch screen display of an in-vehicle system that replicates the display of the remote source. *Id.* at 12–14 (citing Ex. 1003 ¶¶ 40, 42–43, 46, 49, 56–57, 62, 65–69, 71, 76, 83, 91, 93, 95, 98, 108, 113–118, 128, Figs. 5, 11B, 13, 14, 18; Ex. 1002 ¶¶ 59–60, 131–132, 139; Ex. 1034 ¶¶ 65–67). For example, Petitioner points out that Vanderwall discloses that the in-vehicle control system configures its displayed interface by directly mapping corresponding user interface input from remote source. *Id.* at 13 (citing Ex. 1003 ¶ 114; Ex. 1034 ¶ 66).

Petitioner then asserts that Vanderwall teaches a visual representation as the emulation of a smart phone user interface, as recited in limitation [e], by disclosing the replication of an image from the remote source on the touch screen display of the in-vehicle control system. *See id.* at 20–21 (citing Ex. 1003 ¶¶ 40, 42–43, 46, 56, 62, 71, 76, 83, 98, 108, 128, Figs. 5, 11B; Ex. 1034 ¶¶ 80–81). According to Petitioner, Vanderwall discloses an exemplary programmable control whereby the system maps its own interface elements to features of the remote source’s user interface. *Id.* (citing Ex. 1003 ¶ 83, Fig. 11B; Ex. 1034 ¶¶ 80–81).

Patent Owner asserts that the combination of Vanderwall and Furukawa does not teach a “virtual smart phone” because “[n]either Vanderwall nor Furukawa relate [sic] to smart phones.” RMTA 18. We disagree. When

describing embodiments, Vanderwall discloses a broad range of devices and functionalities for the remote source:

According to an exemplary embodiment, remote source 116 may be any suitable remote source that includes a transceiver and is able to interface with in-vehicle control system 106 over communications link 118 (either wireless or wired). In various exemplary embodiments, remote source 116 may be one or more of a mobile phone 144, a personal digital assistant (PDA) 146, a media player 148, a personal navigation device (PND) 150, a pager 152, a remote server 154 that may be coupled to the Internet, or various other remote sources. Remote source 116 may have a storage device, one or more processing devices, and one or more communications devices. According to an exemplary embodiment, remote source 116 is a global positioning system capable remote source. According to various exemplary embodiments, remote source 116 may connect to the Internet or any other remote source with a first communications device while communicating with the control system using a second communications device.

Ex. 1003 ¶ 56. That is, Vanderwall discloses several devices that are a “virtual smart phone,” including mobile phone 144 and personal digital assistant (PDA) 146. *Id.* The diversity of the remote source’s forms and functions also appears in Vanderwall’s figures depicting these embodiments. *See id.* at Fig. 18, ¶¶ 118, 128. A similar list of devices appears in the ’955 patent’s description of the device emulated by the virtual smart phone. Ex. 1001, 2:18–21 (“In an embodiment, the user specific handheld device may be a smart phone, a Personal Digital Assistant (PDA), a mobile phone, an iPad, a computer note book, and the like.”). Accordingly, we find the combination of Vanderwall and Furukawa discloses a “virtual smart phone.”

Patent Owner additionally argues that although Vanderwall teaches the “*display*” of images from a remote device and “*control*” of the remote device, Vanderwall does not teach “a virtual smart phone that *emulates* (that is, imitates)

the features of a smart phone.” RMTA 19 (citing Ex. 1003, ¶¶ 40–46, 128) (bolding omitted). We disagree with Patent Owner’s characterization of Vanderwall. Rather, Vanderwall discloses that the in-vehicle control system emulates the features and interface of the remote source. Ex. 1003 ¶¶ 40, 43 (describing that the system reproduces and duplicates the remote source’s display and maps the remote source’s features onto its interface); *see* RMTA 19.

Moreover, we determine that the individual steps disclosed in Vanderwall to ultimately achieve emulation is the same as disclosing “emulating” as recited by the claims. Patent Owner does not explain why an in-vehicle system performing these steps does not emulate the remote source, but instead unpersuasively focuses the in-vehicle system using pushbuttons, knobs, or other features. RMTA 19 (citing Ex. 1003 ¶¶ 71–72). We agree with Petitioner that the in-vehicle system need not apply the same manner of input of the remote source and that the controls disclosed in Vanderwall still emulate the remote source by corresponding to or modifying such controls in an effort to make equal or surpass them. Pet. Opp. to RMTA 10–11 (citing Ex. 1003 ¶¶ 40–43, 48, 57, 62, 65, 69, 71, 83, 98, 113, 126, 128, Figs. 11B, 13–18; Ex. 1034 ¶¶ 31–35).

Finally, Patent Owner argues that a person of ordinary skill in the art “would not have [had] a reason to combine Vanderwall with Furukawa.” RMTA 20. This argument is conclusory and unpersuasive. Specifically, Patent Owner fails to provide sufficient persuasive argument or direct us to evidence that a person with ordinary skill in the art would not have combined the teachings of Vanderwall and Furukawa, but instead simply provides this mere assertion. For the reasons discussed above in connection with the original claims, we find that a person with ordinary skill in the art at the time of the invention would have had a reason to combine the teachings of Vanderwall and Furukawa. *See supra* Section II.C.2.

Based on the foregoing, we determine Petitioner has demonstrated by a preponderance of the evidence that Vanderwall discloses each of the new limitations of claim 14. Petitioner’s challenge incorporates its challenge to the original limitations of claim 1, as discussed above, and, therefore, provides substantial evidence that the combination of Vanderwall and Furukawa teaches or suggests the limitations of proposed substitute claim 14 as a whole. Because we determined that the combined teachings of Vanderwall and Furukawa disclose the original limitations of claim 1 recited by proposed substitute claim 14 and that a person with ordinary skill in the art would have been motivated to combine Vanderwall and Furukawa, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claim 14 would have been unpatentable as obvious. *See supra* Section II.C.2.

b. Alleged obviousness over Dybalski, Hu, Eich, Furukawa

For the challenge to the proposed substitute claims based on Dybalski, Hu, Eich, and Furukawa, Petitioner specifically relies on Dybalski to teach the new limitations in proposed substitute claim 14. Pet. Opp. to RMTA 9, 11–12.

Petitioner asserts that Dybalski teaches a virtual smart phone “configured to connect to and emulate a smart phone,” as recited in the preamble [a], because Dybalski discloses an in-vehicle interactive control system that emulates a portable electronic device that may be a smart phone. *Id.* (citing Ex. 1004 ¶¶ 16, 18–21; Ex. 1002 ¶¶ 146–151, 163–178; Ex. 1034 ¶ 45). Petitioner asserts that this system “and the portable electronic device 22 may be connected by hard wires to communicate therebetween, but preferably communicate through a wireless communication system 28.” *Id.* at 11 (citing Ex. 1004 ¶ 16). This communication system permits the control system to receive information related to the portable device’s “type and model[1]” which “permits the interactive control module 20 to

display a virtual image 30 of the portable electronic device 22 on the touch screen display 26.” Ex. 1004 ¶ 18.

Petitioner asserts that Dybalski teaches the claim term “smart phone” in limitations [a], [d], [e], [f], and [g] by disclosing a remote source that may be a smart phone. Pet. Opp. to RMTA 9 (citing Ex. 1034 ¶¶ 61–63); *id.* at 11 (Ex. 1004 ¶¶ 16, 18–21; Ex. 1002 ¶¶ 146–151, 163–178); *id.* at 12 (citing Ex. 1002 ¶¶ 59–60, 149); *id.* at 20 (citing Ex. 1002 ¶¶ 59–60, 149); *id.* at 23 (citing Ex. 1002 ¶¶ 59–60, 149).

Petitioner asserts that Dybalski teaches emulation of a smart phone user interface, as recited in limitation [d]. *Id.* at 14 (citing Ex. 1004 ¶ 21; Ex. 1034 ¶ 68). According to Petitioner, Dybalski’s system emulates the portable electronic device by “includ[ing] a look and feel that mimics that of the actual portable electronic device 22, so that the usability of the portable electronic device 22 is familiar to the user.” *Id.* (citing Ex. 1004 ¶ 21, Figs. 1–4). Petitioner argues that Dybalski’s system display also includes “virtual control features 32 replicating the actual control features on the portable electronic device 22, thereby allowing the user to operate the buttons in a similar manner to those on the actual portable device 22.” *Id.* (citing Ex. 1004 ¶ 21). Moreover, Petitioner asserts that the system’s display adapts to the specific electronic device and, when multiple devices are present, the system will display “a virtual image 30 of each of the plurality of portable electronic devices 22 detected.” *Id.* (citing Ex. 1004 ¶ 21). In essence, according to Petitioner, the system adopts the portable electronic device’s interface, thereby “eliminat[ing] an additional ‘middle-ware’ software interface that can be confusing to the user.” Pet. Opp. to RMTA 14 (quoting Ex. 1004 ¶ 21).

Petitioner further contends that Dybalski teaches a visual representation as the emulation of a smart phone user interface, as recited in limitation [e], by

disclosing the replication of an image from the remote source on the touch screen display of the in-vehicle control system. *See id.* at 22 (citing Ex. 1004 ¶ 21, Figs. 1–4; Ex. 1034 ¶ 82). Petitioner notes the interface of Dybalski’s system emulates the portable electronic device by including a “look and feel” that imitates the interface of the portable electronic device and also including virtual control features replicating the control features of the portable electronic device. *Id.* (citing Ex. 1004 ¶ 21, Figs. 1–4).

Patent Owner asserts that the combination of Dybalski, Hu, Eich, and Furukawa does not teach a “virtual smart phone” because none of the references relates “to smart phones or the dangers and problems of using smart phones will [sic] driving.” RMTA 20–21. We disagree. As Patent Owner recognizes, Dybalski discloses a control module that displays a virtual image from a portable electronic device. *Id.* at 21 (citing Ex. 1004 ¶ 5). But then Patent Owner asserts Dybalski “only teaches flip phones” as the portable electronic device. *Id.* (citing Ex. 1004 ¶ 15). Yet Dybalski teaches that “[t]he portable electronic devices 22 may include: mobile phones; security devices, such as key fobs, I.D. cards, or I.D. tags; mobile entertainment devices; personal handheld computers; satellite radios; MP3 players; gaming devices, or some other similar portable electronic device 22.” Ex. 1004 ¶ 15. As noted above by Petitioner, the ’955 patent specification includes a similar list of devices emulated by the virtual smart phone, including a mobile phone. Ex. 1001, 2:18–21.

Finally, Patent Owner argues that a person of ordinary skill in the art “would not [have] combine[d] the control module of Dybalski with the human machine interface of Hu.” RMTA 21. That argument is conclusory and unpersuasive. Specifically, Patent Owner fails to provide sufficient persuasive argument or direct us to evidence that a person with ordinary skill in the art would not have combined

Dybalski, Hu, Eich, and Furukawa, but instead simply provides this conclusory assertion. For the reasons discussed above in connection with the original claims, we find that a person with ordinary skill in the art would have had reason to combine the teachings of Dybalski, Hu, Eich, and Furukawa. *See supra* Section II.C.4.

Based on the foregoing, we determine Petitioner has demonstrated by a preponderance of the evidence that Dybalski discloses each of the new limitations of claim 14. Petitioner's challenge incorporates its challenge to the original limitations of claim 1, as discussed above, and, therefore, provides substantial evidence that the combination of Dybalski, Hu, Eich, and Furukawa teaches or suggests the limitations of proposed substitute claim 14 as a whole. Because we determined that the combination of Dybalski, Hu, Eich, and Furukawa discloses the original limitations of claim 1 recited by proposed substitute claim 14 and a person with ordinary skill in the art would have had reason to combine the teachings of Dybalski, Hu, Eich, and Furukawa, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claim 14 would have been unpatentable as obvious. *See supra* Section II.C.4.

c. Conclusion

In summary, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claim 14 is unpatentable as obvious under Vanderwall and Furukawa, and Dybalski, Hu, Eich, and Furukawa.

2. Obviousness of proposed substitute dependent claims 15 and 17–26

Proposed substitute claims 15 and 17–26 depend from proposed substitute claim 14. Proposed substitute claims 15 and 17–26 recite the same limitations as original claims 2 and 4–13. As such, proposed substitute claims 15 and 17–26 only amend original claims 2 and 4–13 based on the amendments to original

claim 1 that results in proposed substitute claim 14. As noted above, Patent Owner's sole change to the original dependent claims is changing the term "handheld device" to "smart phone" in proposed substitute claim 19 to overcome an indefiniteness issue we identified in the preliminary guidance. RMTA 29; *see supra* Section III.E.

Patent Owner asserts that the features of the proposed substitute dependent claims "combine additional novel and non-obvious features with the features of substitute independent claim 14." RMTA 24. Patent Owner, however, does not provide sufficient persuasive analysis or direct us to evidence to support the argument that the proposed substitute claims include novel or non-obvious features.

Accordingly, we agree with Petitioner and determine that proposed substitute claims 15 and 17–26 are unpatentable as obvious for the same reasons discussed with respect to proposed substitute claim 14. Pet. Opp. to RMTA 25. Thus, for the reasons stated above with respect to proposed substitute claim 14, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 15 and 17–26 are obvious under *Vanderwall* and *Furukawa*, and *Dybalski*, *Hu*, *Eich*, and *Furukawa*.

3. Obviousness of proposed substitute claim 16

As noted above, the new limitations in proposed substitute claim 16, as compared to claim 3, comprise: adding to the preamble [h] that the smart phone features are accessed "through a screen mounted" in an automobile; and adding to limitation [k] that the displayed actionable elements are also based on "the user interface of the smart phone." RMTA 28–29; *see* Section III.B.

Petitioner asserts that each of *Vanderwall* and *Dybalski* discloses a screen mounted in an automobile as recited in limitation [h]. Pet. Opp. to RMTA 23

(citing Ex. 1002 ¶¶ 62–63, 152–153). Petitioner also asserts, based on the assertions for limitations [d] and [e] of proposed substitute claim 14, that each of Vanderwall and Dybalski discloses or would have rendered obvious accessing the features of a smart phone through such a screen as recited in limitation [h]. *Id.* (first citing Ex. 1002 ¶¶ 84–87, 98–99, 130–134 (in turn citing Ex. 1003 ¶¶ 42–46, 49, 57, 62, 65, 69, 71, 76, 83, 89, 91, 95, 98, 103–108, 113–118, 128, Figs. 5, 11B, 13–17); also citing Ex. 1002 ¶¶ 175–178, 199–200, 244–250 (in turn citing Ex. 1004, Abstract, ¶¶ 5, 6, 8, 15, 19, 20, 21, 24, 25, 26, 28, Figs. 2, 3, 5); Ex. 1034 ¶ 86).

Petitioner asserts that each of Vanderwall and Dybalski discloses displaying an image representative of the smart phone including actionable elements based on the data as recited in in limitation [k]. *Id.* at 23–24 (citing Ex. 1002 ¶¶ 130–134 (citing Ex. 1003 ¶¶ 42–46, 49, 57, 62, 65, 71, 76, 83, 103–108, 114, 116, 128, Figs. 5, 11B, 13), 244–250 (citing Ex. 1004 ¶¶ 6, 20, 21, 28, Figs. 2, 3, 5)). Petitioner also asserts, based on the assertions for limitations [d] and [e] of proposed substitute claim 14, that each of Vanderwall and Dybalski discloses or would have rendered obvious that the actionable elements are based on the user interface of the smart phone. *Id.* at 24 (citing Ex. 1034 ¶ 87).

Patent Owner does not advance arguments in its Revised Motion to Amend in support of the patentability of proposed substitute independent claim 16. *See generally* RMTA.

We agree with Petitioner and find that the teachings of each of Vanderwall and Dybalski , with respect to the new limitations, would have rendered proposed substitute independent claim 16 obvious.

In conclusion, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claim 16 is unpatentable as obvious under

Vanderwall and Furukawa, and Dybalski, Hu, Eich, and Furukawa.

4. Remaining Obviousness Challenges

Because we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 14–26 are unpatentable according to Petitioner’s challenges above (*see* Sections III.G.1–3), we need not reach the remaining challenges proposed by Petitioner.

5. Conclusion

In summary, we determine Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 14–26 are unpatentable as obvious.

H. Patent Eligibility

Because we have already determined that the proposed substitute claims are unpatentable under 35 U.S.C. §§ 103 and 112, we need not reach whether the proposed substitute claims recite patent-eligible subject matter under 35 U.S.C. § 101. As noted above, the Court of Appeals for the Federal Circuit affirmed a district court’s determination that the original claims of the ’955 patent are directed to patent ineligible subject matter. *See supra* Section I.B.

IV. CONCLUSION

Based on the information presented, we conclude Petitioner has shown, by a preponderance of the evidence, that claims 1–13 of the ’955 patent are unpatentable. We also deny Patent Owner’s Revised Motion to Amend because Petitioner has shown, by a preponderance of the evidence, that proposed substitute claims 14–26 are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 4–10	§ 103(a)	Vanderwall,	1, 2, 4–10	

		Furukawa		
3	§ 103(a)	Vanderwall	3	
1, 2, 4–13	§ 103(a)	Dybalski, Hu, Eich, Furukawa	1, 2, 4–13	
3	§ 103(a)	Dybalski, Hu, Eich	3	
Overall Outcome			1–13	

Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	14–26
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	14–26
Substitute Claims: Not Reached	

V. ORDER

After due consideration of the record before us, and for the foregoing reasons, it is:

ORDERED that claims 1–13 of the '955 patent are held unpatentable;

FURTHER ORDERED that Patent Owner's Contingent Revised Motion to Amend is denied as to proposed substitute claims 14–26;

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

IPR2019-01536
Patent 9,671,955 B2

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