

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROKU, INC.,
Petitioner,

v.

UNIVERSAL ELECTRONICS, INC.,
Patent Owner.

IPR2021-00455
Patent 10,325,486 B2

Before PATRICK M. BOUCHER, MINN CHUNG, and
RUSSELL E. CASS, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

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

In response to a Petition (Paper 2, “Pet.”) filed by Roku, Inc. (“Petitioner”), we instituted an *inter partes* review of claims 1–9 of U.S. Patent No. 10,325,486 B2 (Ex. 1001, “the ’486 patent”). Paper 7 (“Dec.”). During the trial, Universal Electronics, Inc. (“Patent Owner”) filed a Response (Paper 14, “PO Resp.”), to which Petitioner filed a Reply (Paper 18, “Reply”) and Patent Owner filed a Sur-reply (Paper 22, “Sur-reply”). An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 26 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has not shown, by a preponderance of the evidence, that claims 1–9 are unpatentable.

I. BACKGROUND

A. *The ’486 Patent*

1. *Overview*

The ’486 patent generally describes using devices to control various appliances, and illustrates specific systems that “may enable a single controlling device to command the operation of all appliances in a home theater system while coordinating available methods of controlling each particular appliance in order to select the best and most reliable method for issuing each command to each given device.” Ex. 1001, 2:33–38. Figure 1 of the ’486 patent is reproduced below.

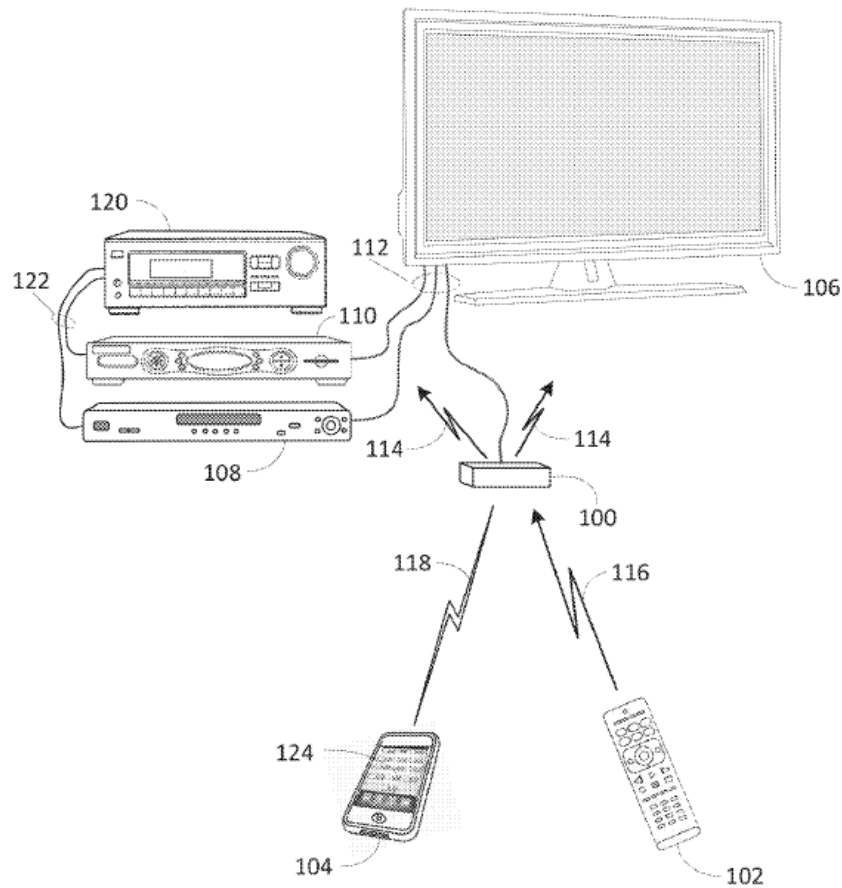


Figure 1

Figure 1 illustrates an exemplary system in which a “Universal Control Engine” (“UCE”) is used to command operation of several appliances. *Id.* at 3:1–3. In the illustration, UCE 100 may be used to control television 106, combined cable set-top box and digital video recorder 110, DVD player 108, and AV receiver 120. *Id.* at 3:42–47. Appliance commands may be issued by UCE 100 in response to infrared request signals 116 received from remote control device 102 or radio-frequency request signals 118 received from software app 124 resident on smart device 104. *Id.* at 3:54–61.

Transmission of the requested appliance commands from UCE 100 to the various appliances may take the form of infrared signals 114 or Consumer Electronic Control (“CEC”) commands issued over wired HDMI interface 112, “as appropriate to the capabilities of the particular appliance to which each command may be directed.” *Id.* at 3:61–66. For instance, UCE 100 might transmit infrared commands to AV receiver 120, but transmit CEC commands to television 106. *Id.* at 3:67–4:14. During an initial setup procedure, UCE 100 uses various identification queries to the appliances to build a linked “command matrix,” such as illustrated in Figure 7 of the ’486 patent (not reproduced here), with data cells corresponding to specific commands for specific appliances. *Id.* at 8:49–10:19.

UCE 100 may support “activity selection,” in which “receipt of a single user request from a smart device may cause a series of commands to be issued to various appliances in order to configure a system appropriately for one or more user activities, such as ‘watch TV,’ ‘watch movie,’ ‘listen to music,’ etc.” *Id.* at 14:6–11. Figure 15 of the ’486 patent illustrates a method for setting up such macro command functionality, and is reproduced below.

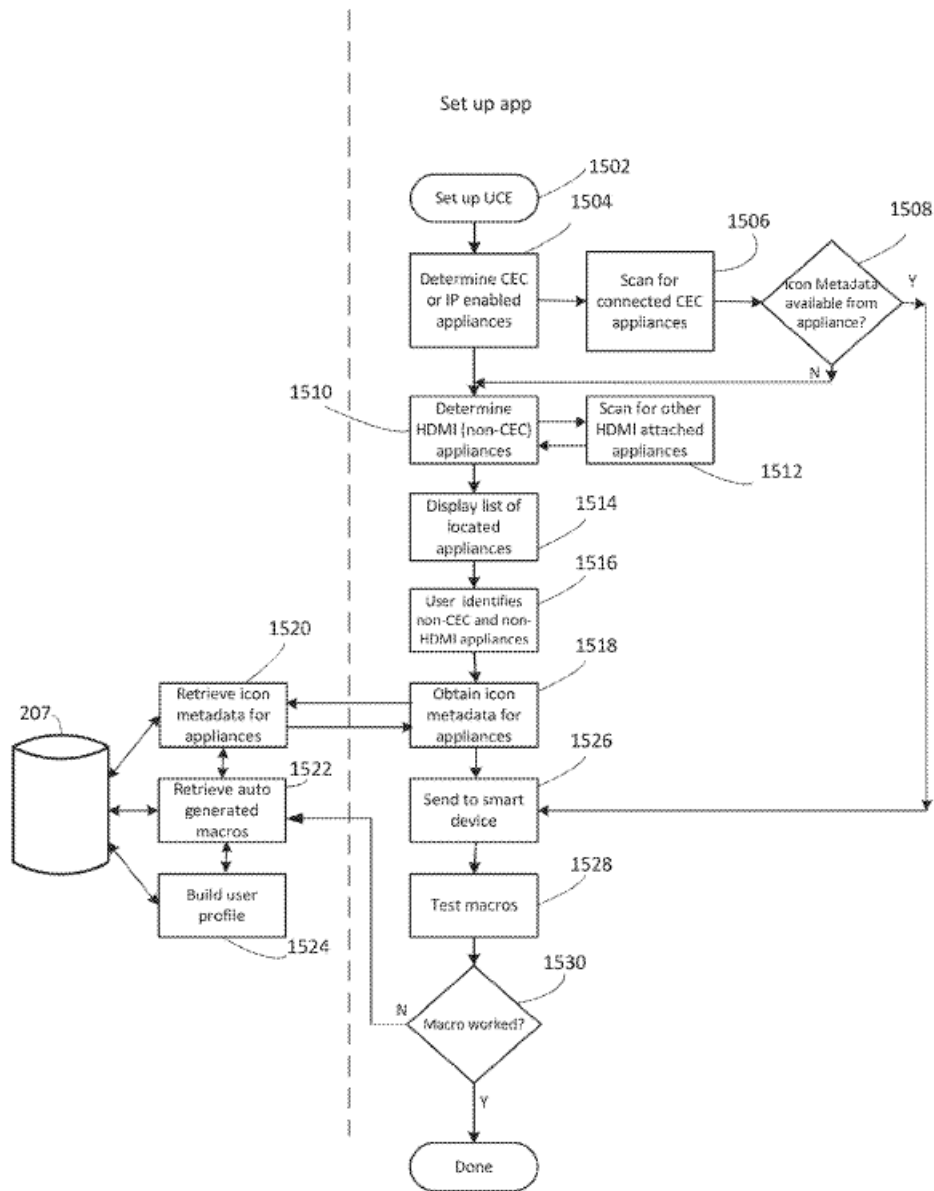


Figure 15

The setup method of Figure 15 may be performed by a smart device upon invocation of a “setup app” at step 1502. *Id.* at 14:14–19. Various scans may be conducted to discover appliances connected in various ways, including CEC-connected appliances at step 1506 and HDMI appliances at step 1510, as well as appliances using other types of connections not

explicitly identified in the drawing (“Ethernet, USB, Bluetooth, RF4CE, WiFi etc.”). *Id.* at 14:19–15:10. The scan information may be supplemented by user-provided identifying information for the connected appliances at step 1516. *Id.* at 15:11–30.

Icons may be added to a user interface of the smart device to provide a user with access to command and control functionalities of the identified appliances. For example, the setup app may determine at step 1508 whether the identified appliances have “any associated icon information . . . as well as information related to interface connection types, e.g. WI-FI, HDMI input/output, for use in the creation of supported macros.” *Id.* at 14:30–35. In addition, at step 1518, the setup app communicates the identifying information, whether obtained by scanning or provided by a user, to a database server so that icon information may be retrieved at step 1520. *Id.* at 15:31–41. The setup app sends the icon information to a smart device at step 1526, such that an icon is automatically added to a user interface of the smart device. *Id.* at 14:39–46. Accordingly, “activation of the added icon may be used to provide access to command and control functionalities associated with the corresponding controllable device, including commands in the form of a listing of automatically generated macros available for that controllable device.” *Id.* at 14:41–46.

2. *Illustrative Claim*

Independent claim 1 (the ’486 patent’s only independent claim) is illustrative of the challenged claims and is reproduced below.

1. A method for configuring a user interface that is caused to be presented by a home theater device in a display device associated with the home theater device, comprising:

receiving at the home theater device from a controllable appliance in communication with the home theater device via use of a high definition multimedia (“HDMI”) connection data that functions to identify a controllable function of the controllable appliance;

automatically adding by the home theater device to the user interface an icon representative of the controllable function of the controllable appliance that was identified by the data received from the controllable appliance;

in response to the home theater device receiving from a controlling device a command transmission that is indicative of a selection of the added icon from the user interface when the user interface is displayed in the display device associated with the home theater device;

causing the home theater device to issue a command to at least the controllable appliance to control at least the controllable function of the controllable appliance that was identified by the data received from the controllable appliance.

Ex. 1001, 17:2–24.

3. Prosecution History

a. Overview¹

The application that matured into the '486 patent was initially filed with 13 claims, of which claim 1 was independent:

1. A method for configuring a user interface that is caused to be presented by a smart device in a display device associated with the smart device, comprising:
 - receiving at the smart device from a controllable appliance data that functions to identify a controllable feature of the controllable appliance;
 - automatically adding by the smart device to the user interface an icon representative of the controllable feature of the controllable appliance as identified by the data;
 - in response to the smart device receiving from a controlling device a first command transmission that is indicative of a selection of the added icon from the user interface when the user interface is displayed in the display device associated with the smart device, causing the smart device to modify the user interface as displayed in the display device associated with the smart device whereby at least one user interface element for use in controlling at least one controllable function of the controllable appliance is caused to be newly displayed in the display device associated with the smart device, wherein the at least one user interface element that is caused to be newly displayed in the display device of the

¹ In the Institution Decision, and based on the preliminary record at that time, we accorded the '486 patent an effective filing date of May 22, 2013. Dec. 11–15. The parties do not contest that determination and treat Petitioner's asserted art as prior art. *See* Tr. 7:9–13 (Petitioner stating at oral hearing that "it's our understanding that patent owner is not currently challenging Chardon's status as prior art to the '486 patent claims, even though it did so in its preliminary response"), 25:7–8 (Patent Owner agreeing at oral hearing that "the petitioner is right that we are not challenging that at this point"). We accordingly do not address further herein the effective filing date of the challenged claims or the status of the asserted art as prior art to those claims.

smart device in response to the added icon being selected is predetermined as a function of the controllable feature of the controllable appliance; and

in response to the smart device receiving from a controlling device a second command transmission that is indicative of a selection of the at least one user interface element that was caused to be newly displayed in the display device associated with the smart device, causing the smart device to issue a command to at least the controllable appliance to control the at least one controllable function of the controllable feature of the controllable appliance.

Ex. 1002, 33:3–34:2. In a first Office Action, the Examiner rejected all claims on three independent bases: (1) under 35 U.S.C. § 112(a) as failing to comply with the enablement requirement; (2) under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. Publ. No. 2007/0229465 (Ex. 2006, “Sakai”); and (3) under the doctrine of nonstatutory double patenting. Ex. 1002, 190–202.

To address the enablement rejection, the Applicant made certain amendments that were ultimately accepted by the Examiner, notably including amending the phrase “smart device” to the phrase “home theater device,” which the Applicant contended found support in an incorporated patent application. *See id.* at 469, 534 (Examiner stating that “[t]he 35 U.S.C. 112(a) rejections of claims 1-13 have been withdrawn in view of the amendment to the claims/remarks filed on 09/18/2018.”).

The anticipation rejection was overcome through a combination of amendment to independent claim 1 and Applicant argument that Sakai does not disclose certain features thereby recited in the claim. *See id.* at 470–471 (Applicant argument), 534–536 (Examiner’s reasons for allowance). We summarize Sakai, this amendment, the Applicant’s argument, and the Examiner’s reasons for allowance further below. *Infra* §§ II.A.3.b., II.A.3.c.

b. Sakai

Sakai “relates generally to remote controllers and more particularly to remote control systems controlling a plurality of devices.” Ex. 2006 ¶ 1.

Figure 3 of Sakai is reproduced below.

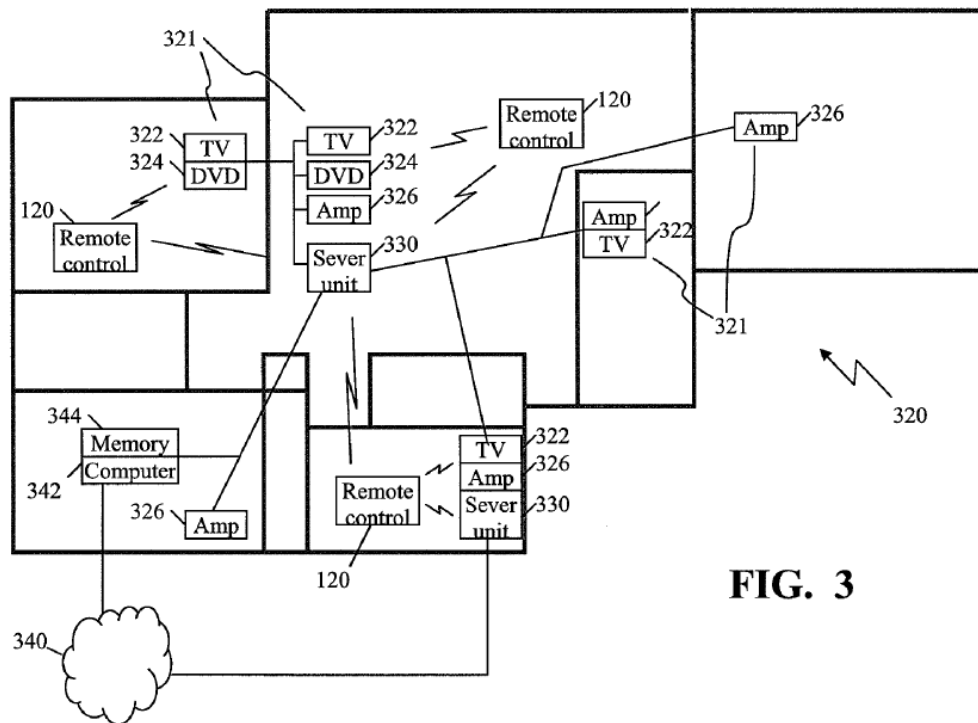


FIG. 3

Figure 3 depicts a local home or office floor plan with multiple consumer electronic devices distributed throughout the floor plan that can be controlled through one or more remote control devices. *Id.* ¶ 11. The home or office may include multiple televisions 322, DVD players 324, radios / tuners / amplifiers 326, and CD players, collectively referred to as “consumer electronic devices.” *Id.* ¶ 43. Each remote control 120 may communicate wirelessly with server units 330 and consumer electronic devices 321 “to determine states of operation of the server unit(s) 330 and consumer electronic devices, and control the operation of the consumer electronic devices.” *Id.* ¶ 44. Notably, function buttons displayed on remote

control 120 “change depending on the consumer electronic device being controlled, the state of operation of the device being controlled, the state of operation of the server unit 330 and/or remote control device 120, and other factors.” *Id.*

Sakai explains that, in some implementations, server unit 330 communicates with a consumer electronic device 321 and provides display parameters such that the consumer electronic device 321 displays a graphical user interface (“GUI”) menu. *Id.* ¶ 55. Similarly, server unit 330 communicates with remote control 120 to control the displaying of views “based on the state of the menu and the consumer device being controlled.” *Id.* As a user makes selections of function buttons, remote control 120 transmits a selection function signal associated with the selected function button. *Id.* Server unit 330 “determines how the selection is to be interpreted, and adjusts the menu displayed on the [consumer electronics device] when appropriate and similarly returns one or more control signals to the remote control when the control view [] is to change based on the selection.” *Id.*

c. Evaluation of Sakai During Prosecution

In responding to the Examiner’s initial rejection of the claims as anticipated by Sakai, the Applicant amended the “automatically adding” and “causing” limitations of independent claim 1 to reiterate specifically that the “data that functions to identify a controllable function of the controllable appliance” recited in the “receiving” limitation is “the data received from the controllable appliance.” Ex. 1002, 466–467. In addition, the Applicant drew a related distinction with what is disclosed by Sakai. *See id.* at 470.

In particular, the Applicant noted that “in Sakai, the user interface is determined based upon a state of a device within the system, e.g., determined based upon the state of the menu that is displayed on the [consumer electronics device].” *Id.*; see Ex. 2006 ¶ 55. In doing so, the Applicant emphasized that

in Sakai the controllable device, e.g., the TV, DVD player, radio/amplifier, does not function to provide to the server unit 330 data indicative of *such controllable functions* and, furthermore, the function buttons 130 are not used to transmit a command to control *the state of the device within the system that was reported to [be] determined by the server unit 330*, i.e., in Sakai the server unit 330 does not issue a command to at least the controllable appliance to control at least *the state of the controllable appliance that may have been identified by data received from the controllable appliance*.

Ex. 1002, 470. That is, the Applicant specifically distinguished Sakai by observing that “the state data that is used in the system of Sakai is not, and would not be considered by one of skill in the art to be, the claimed data indicative of a controllable function of a controllable appliance.” *Id.*

In allowing the amended claims, the Examiner agreed with this distinction:

[I]t is clear that the server unit of Sakai does not itself use the data that functions to identify a controllable function of the controllable appliance as received from the controllable appliance to automatically add to the user interface an icon representative of the controllable function of the controllable appliance that was received from the controllable appliance, as required by claim 1, let alone in response to the home theater device receiving from a controlling device a command transmission that is indicative of a selection of the added icon from the user interface when the user interface is displayed in the display device associated with the home theater device,

causing the home theater device to issue a command to at least the controllable appliance to control at least the controllable function of the controllable appliance that was identified by the data received from the controllable appliance, as further recited in claim 1.

Id. at 535–536 (portion of Examiner’s Reasons for Allowance)

B. Evidence

Petitioner relies on the following references:

Chardon US 9,239,837 B2 Jan. 19, 2016 Ex. 1005

HDMI Licensing, LLC, High-Definition Multimedia Interface, Specification Version 1.3a (November 10, 2006) (Ex. 1010) (“HDMI 1.3a”)

In addition, Petitioner relies on Declarations by Samuel H. Russ, Ph.D. Exs. 1003, 1052. Dr. Russ was cross-examined by Patent Owner, and a transcript of his deposition was entered into the record. Ex. 2005. Patent Owner relies on a Declaration by Don Turnbull, Ph.D. Ex. 2003. Dr. Turnbull was cross-examined by Petitioner, and a transcript of his deposition was also entered into the record. Ex. 1051.

C. Instituted Ground of Unpatentability

Petitioner challenges claims 1–9 on the following ground. Pet. 4.

Claim(s) Challenged	35 U.S.C. §	References
1–9	103	Chardon, HDMI 1.3a

D. Real Parties in Interest

The parties identify only themselves as real parties in interest.
Pet. 68; Paper 24, 1.

E. Related Matters

Both parties identify *Universal Electronics, Inc. v. Roku, Inc.*, No. 8:20-cv-00701 (C.D. Cal.) as involving the '486 patent. Pet. 68; Paper 24, 1. Patent Owner additionally identifies the following district court proceedings as related matters: (1) *Universal Electronics, Inc. v. Roku, Inc.*, No. 8:18-cv-01580 (C.D. Cal.); (2) *Universal Electronics, Inc. v. TCL Electronics Holdings Ltd.*, No. 8:20-00704 (C.D. Cal.); (3) *Universal Electronics, Inc. v. Hisense Co., Ltd.*, No. 8:20-00696 (C.D. Cal.); and (4) *Universal Electronics, Inc. v. Funai Electric Company, Ltd.*, No. 8:20-cv-00700 (C.D. Cal.). Paper 24, 1. Patent Owner also identifies *Certain Electronic Devices, Including Streaming Players, Televisions, Set Top Boxes, Remote Controllers, and Components Thereof*, Inv. No. 337-TA-1200 (U.S.I.T.C. 2020) as a related matter before the International Trade Commission. *Id.*

The '486 patent is one of several patents owned by Patent Owner that are challenged by Petitioner in various petitions for *inter partes* review, including in IPR2019-01595, IPR2019-01608, IPR2019-01612, IPR2019-01613, IPR2019-01614, IPR2019-01615, IPR2019-01619, IPR2019-01620, IPR2019-01621, IPR2021-00951, IPR2020-00952, IPR2020-00953, IPR2020-01012, IPR2021-00261, IPR2021-00262, IPR2021-00263, IPR2021-00264, and IPR2021-00299. *See* Pet. 68–69; Paper 24, 1–2.

II. ANALYSIS

A. Legal Principles

A claim is unpatentable for obviousness under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness, i.e., secondary considerations.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333

² The parties do not address objective indicia of nonobviousness, which accordingly do not form part of our analysis. See Pet. 65–66 (noting that evidence related to objective indicia of nonobviousness for other patents was presented in an ITC proceeding under protective order and unavailable to Petitioner, such that Petitioner asserts that it is “not presently aware of any publicly available secondary indicia of non-obviousness with the required nexus to the challenged claims of the ’486 patent”).

(Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person of ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). “This legal construct is akin to the ‘reasonable person’ used as a reference in negligence determinations” and “also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Petitioner proposes that a person of ordinary skill in the art would have had general knowledge of home theater systems, control of devices within the home theater systems, and remote control devices, as well as: (1) at least a bachelor’s degree in electrical engineering, computer engineering, or equivalent coursework, and (2) at least one year of experience researching or developing structure and operating principles of common digital content reproduction and related appliances, contemporary television and home theater standards, and specifications of consumer digital reproducing devices of the time.

Pet. 16–17 (citing Ex. 1003 ¶¶ 15–19). Patent Owner proposes instead that a person of ordinary skill in the art

would have had a bachelor’s degree that involved software design and development coursework, for example, electrical engineering, computer engineering, computer science, cognitive science, industrial engineering, information systems, information studies, or a similar degree, and at least one year of work experience in software programming, development, or design of consumer applications as of the priority date of the ’486 Patent. Additional education might substitute for some of the experience, and substantial experience might substitute for some of the educational background.

PO Resp. 9–10.

As Patent Owner observes, the two proposals differ “in terms of the level of experience specifically with home theater systems.” *Id.* at 10. Because all of the challenged claims make specific reference to a “home theater device,” Petitioner’s proposal is reasonable on the current record, and is additionally supported by the testimony of Dr. Russ. *See* Ex. 1003 ¶¶ 15–19. Patent Owner notes that its expert, Dr. Turnbull, agrees with Patent Owner’s proposed articulation, but that Dr. Turnbull’s “conclusions resulting from his analysis did not change when reviewing the cited references from the perspective of the level of ordinary skill in the art as proposed by the Petition.” PO Resp. 10–11 (citing Ex. 2003, 31–41).

We adopt Petitioner’s articulation of the level of ordinary skill for purposes of this Decision. We note, however, that we would reach the same ultimate conclusion were we to adopt Patent Owner’s proposal.

C. Claim Construction

The Board uses “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). The specification may reveal a special definition given to a claim term by the patentee. *Phillips*, 415 F.3d at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998).

The parties dispute the meaning of the phrase “data that functions to identify a controllable function,” which is recited as part of the “receiving” limitation of independent claim 1. Patent Owner contends that the phrase “should be construed consistent with its plain and ordinary meaning such that *the data itself* identifies a controllable function of the controllable appliance from which the data is received.” PO Resp. 15 (emphasis added). In contrast, Petitioner contends that the presence of the words “functions to” broadens the phrase such that the phrase is instead properly construed to mean “data that can be used *in connection with* other information, to identify a controllable function of the controllable appliance.” Reply 2. For the reasons set forth below, particularly in light of the prosecution history, we agree with Patent Owner.

1. Plain and Ordinary Meaning

Although the presence of the words “functions to” in the disputed phrase creates a degree of ambiguity, we are mindful that “the claims themselves provide substantial guidance as to the meaning of particular claim terms” and that “the context in which a term is used in the asserted claim can be highly instructive.” *Phillips*, 415 F.3d at 1314. In this instance, the related phrasing that appears in the “automatically adding” and “causing” limitations of issued independent claim 1 is illuminating. Both of those limitations refer to “the controllable function of the controllable appliance *that was identified by the data* received from the controllable appliance.” Ex. 1001, 17:11–14, 17:21–24 (emphasis added). There is no question that the only antecedent for “the data” in these limitations is the “data that functions to identify a controllable function of the controllable appliance” recited in the “receiving” limitation. *See id.* at 17:8–9. And there is no apparent room in the language “that was identified by the data” for the introduction or consideration of such “other information” that Petitioner would like to use “in connection with” the recited “data” to identify the controllable function. *See* Reply 2.

During the oral hearing, we discussed this point with Petitioner, who argued that “we can rely on the antecedent basis or this notion of antecedent basis when a claim term is repeated throughout a claim.” *See* Tr. 11:14–12:24. According to Petitioner, the absence of the words “functions to” in the form of the recitations in the “automatically adding” and “causing” limitations is of no consequence because reference to the “data” in those limitations necessarily incorporates the entirety of how the “data” is introduced in the “receiving” limitation. *See id.* at 12:14–19 (“if . . . you

were to find any inconsistency there, . . . that would cut against this notion of antecedent basis and it would effectively require patent drafters to repeat in its entirety a claim term, and that would lead to . . . a very inefficient and unwieldy claim drafting practice”). But the difficulty with Petitioner’s position is that the “automatically adding” and “causing” limitations do not merely refer to “the data,” such that it might be appropriate to incorporate the language of the “receiving” limitation as Petitioner suggests.

Instead, such incorporation would at best be superfluous because the “automatically adding” and “causing” limitations are explicit: they refer to “the data *received from the controllable appliance*” as identifying the controllable function of the controllable appliance. *See* Ex. 1001, 17:11–14, 17:21–24 (emphasis added). It is also notable that the explicit language “received from the controllable appliance” was added during prosecution. *See* Ex. 1002, 466–467. Patent Owner specifically drew our attention to this point when asked about Petitioner’s antecedent-basis argument at the oral hearing, arguing that the prosecution amendment “does indicate that the patent owner, the patent applicant, really was referencing the fact that whatever data comes from that controllable appliance is the thing that then identifies that controllable function.” Tr. 43:19–44:15. We agree.

Other aspects of the structure of independent claim 1 further reinforce Patent Owner’s position based on the plain and ordinary meaning of the claim language. As Patent Owner points out, independent claim 1 “makes three things clear” about the disputed phrase: (1) “the data must be received from the controllable appliance”; (2) “the data is used to add an icon to the user interface”; and (3) “selecting the icon sends a command to the controllable appliance to control the controllable function identified by the

data.” PO Resp. 12. We agree with Patent Owner that to satisfy all three requirements of the claim, each of which is supported by the plain language recited in the claim, “‘the data that functions to identify a controllable function’ must itself identify functions that can be executed by the appliance so that icons representative of that controllable function can be added and later selected to control the appliance.” *Id.* Patent Owner’s position is moreover supported by Dr. Turnbull’s testimony. Ex. 2003 ¶ 90.

2. Specification

The specification of the ’486 patent is of relatively little help in determining which of the proposed constructions of “data that functions to identify a controllable function” is most compelling. Each party contends that the other side’s proposed construction is “inconsistent” with the specification. *See* Reply 3–5; Sur-reply 4–6. But each party instead at best establishes that the specification can be read in a manner consistent with its own proposed construction.

In elaborating their respective positions, both parties focus on certain aspects of Figure 15 of the ’486 patent, reproduced above. And both parties agree that, although the challenged claims do not use the term “icon information,” that term refers to an example of “data that functions to identify a controllable function” when describing Figure 15. *See* PO Resp. 13 (Patent Owner stating that “the ’486 patent’s discussion of ‘icon information’ and its use is entirely consistent with the plain and ordinary meaning of the term ‘data that functions to identify a controllable function’”); Reply 4 (Petitioner stating that “the ’486 patent appears to use the term ‘icon information’ as one non-limiting example of ‘data that

functions to identify a controllable function”). Supported by the testimony of Dr. Turnbull, for example, Patent Owner asserts that “[t]he icon information described in the ’486 patent specification may be used to automatically add an icon to the user interface, and those icons can include icons that function as soft keys which may be selected to cause transmission of commands.” PO Resp. 13 (citing Ex. 2003 ¶ 90). Petitioner does not appear to dispute this specific assertion.

But Petitioner places considerable weight on the specification’s explanation that “icon information provided to the smart device may be used in connection with information stored on the smart device, stored in the internet cloud and/or at a remote server to automatically add an icon to the user interface of the smart device.” *See* Ex. 1001, 14:46–54. Because this disclosure specifically refers to the icon information being used “in connection with [other] information,” Petitioner contends that the “‘icon information itself may not fully inform the home theater device as to which icon should be automatically added to the [user interface].” Reply 4 (citing Ex. 1052 ¶ 22). In addition, Petitioner notes that “it is not just ‘icon information’ that arrives at the home theater device in step 1526” of Figure 15, the step where “icon information may be sent to the smart device by the appliance and/or retrieved by the smart device using other information provided by the appliance as appropriate.” *Id.*; Ex. 1001, 14:35–39.

The difficulty with Petitioner’s position is that the portions of the specification of the ’426 patent that Petitioner relies on consistently use optional language. *See, e.g.*, Ex. 1001, 14:35–39 (“the icon information *may be* . . . retrieved by the smart device using other information”), 14:46–54

(“icon information . . . *may be* used in connection with [other] information”) (emphases added). Indeed, Petitioner appears to recognize the optional nature of this disclosure when asserting that “‘icon information’ itself *may not fully inform* the home theater device as to which icon should be automatically added to the [user interface].” *See* Reply 4. And Petitioner further recognizes that the disclosure it relies upon is made by the ’486 patent “[i]n the context of the *specific embodiment* described by Figure 15.” *Id.* at 3 (emphasis added). Neither Petitioner nor its expert, Dr. Russ, goes so far as to assert that other information *must necessarily* be used in combination with the icon information, as would be necessary to establish that Patent Owner’s position is inconsistent with the specification. *See* Ex. 1052 ¶ 22 (Dr. Russ testifying that “‘icon information’ itself *is not required to fully inform* the home theater device as to which icon (and thus which controllable function) should be automatically added to the [user interface]”) (emphasis added)).

That is, we agree with Patent Owner that “[s]imply because the specification indicates that a home theater device can receive data from other data sources does not establish that ‘other information’ is ‘used in connection with’ data received from the controllable appliance to identify a controllable function of the controllable appliance.” *Sur-reply* 4. In addressing this point, Patent Owner correctly emphasizes that “the ‘data’ recited in [independent claim 1] is specifically received ‘from the controllable appliance.’” *Id.* But even with this point in mind, neither Patent Owner nor its expert, Dr. Turnbull, goes so far as to assert that the use of other information is *precluded* from being used in combination with the

icon information, as would be necessary to establish that Petitioner's position is inconsistent with the specification. *See* Ex. 2003 ¶ 90.

To summarize, we find the specification of the '486 patent of limited value in discriminating between the two proposed constructions. The specification is neither inconsistent with nor specifically supportive of either proposed construction.

3. Prosecution History

Patent Owner contends that the prosecution history of the '486 patent also supports its proposed construction. *See* PO Resp. 14–15. In our summary above, we emphasized those aspects of the prosecution history most relevant to our evaluation of this contention. *See supra* § I.A.3. To recap briefly, the Applicant amended the claims specifically to recite in the “automatically adding” and “causing” limitations of independent claim 1 that the “data that functions to identify a controllable function of the controllable appliance” recited in the “receiving” limitation is “the data received from the controllable appliance.” Ex. 1002, 466–467. In addition, the Applicant distinguished Sakai, which the Examiner had cited as an anticipatory reference, because “the state data that is used in the system of Sakai is not, and would not be considered by one of skill in the art to be, the claimed data indicative of a controllable function of a controllable appliance.” *Id.* at 470. As Patent Owner's expert, Dr. Turnbull, aptly summarizes, “[d]uring prosecution, the Applicant[] contrasted this direct connection between the controllable function and the data received from the controllable appliance as compared with the ‘state’ information disclosed in Sakai.” Ex. 2003 ¶ 91.

First, it is significant that the Applicant amended the “automatically adding” and “causing” limitations during prosecution in a consistent way, namely to specify that the “controllable function of the controllable appliance [] was identified by the data received from the controllable appliance.” Whatever ambiguity might exist as a result of the “functions to” language recited in the “receiving” limitation is resolved by the addition of this unambiguous language—which was added not just once, but twice, in two separate limitations.

Second, in addressing the anticipation rejection, the Applicant drew a distinction between the recited “data” that identifies a controllable function of a controllable appliance and Sakai’s state data, effectively excluding the additional use of “other information,” at least in the form of “state data”: “In short, it is respectfully submitted that the state data that is used in the system of Sakai is not, and would not be considered by one of skill in the art to be, the claimed data indicative of a controllable function of a controllable appliance.” Ex. 1002, 470. This statement was offered in summarizing the Applicant’s argument that

while the function buttons 130 that are caused to be displayed in the user interface may be used control various individual functions, e.g., to control a navigation function (§ 0059), to control a rewind function, a pause function, a fast forward function, etc. (§ 0068), in Sakai the controllable device, e.g., the TV, DVD player, radio/amplifier, does not function to provide the server unit 330 data indicative *of such controllable functions* and, furthermore, the function buttons 130 are not used to transmit a command to control *the state of the device within the system that was reported to [be] determined by the server unit 330*, i.e., in Sakai the server unit 330 does not issue a command to at least the controllable appliance to control at

least *the state* of the controllable appliance *that may have been identified by data received from the controllable appliance.*

Id.

Petitioner was given a specific opportunity at the oral hearing to address this aspect of the prosecution history.³ *See* Tr. 18:12–23:14. In doing so, Petitioner characterized the Applicant’s remarks as a “structural argument” to distinguish Sakai based on communications between the controllable appliance and the server. *See id.* at 20:26–21:18; *see also id.* at 22:17–25. That is, Petitioner focuses on the requirement of the “receiving” limitation of independent claim 1 that the data be received “from a controllable appliance in communication with the home theater device via use of a high definition multimedia (‘HDMI’) connection.” *See* Ex. 1002, 466.

While Petitioner’s position at the hearing is consistent with the argument presented in its Reply, we disagree that the Applicant’s remarks during prosecution are limited to the structural distinction. *See* Reply 5–8. Multiple amendments were made simultaneously during prosecution, and we recognize that there is a degree of intermingling in the Applicant’s responsive remarks. Nevertheless, it is sufficiently clear that the Applicant distinguished Sakai not only structurally, but also on the basis of Sakai’s use of state data.

³ During the hearing, we referred to an earlier version of the Applicant’s Response that had been filed before the Examiner issued a Notice regarding a noncompliant amendment. *See* Ex. 1002, 325–328. The relevant portion of the Applicant’s responsive argument is identical in the earlier version we referred to at the hearing and the version the Examiner considered and that we cite herein. *Compare id.* at 242–243, *with id.* at 470.

This is reinforced by the Examiner’s stated reasons for allowance, which Petitioner too quickly dismisses as merely “listing the entire claim as the reason for allowance.” *See* Pet. 13. More than merely parroting the claim language, the Examiner specifically addressed Sakai’s teachings in explaining the reasons for allowance. *See* Ex. 1002, 535–536. The Examiner also intermingles the structural basis identified by Petitioner by highlighting Sakai’s disclosure of “a system in which the *server unit is responsible for communicating control signal(s) back to the remote control to transition the control view of the remote control* in response to a selection.” *Id.* at 535. But the Examiner relies on this disclosure to find that “it is clear that the server unit of Sakai does not itself use the data that functions to identify a controllable function of the controllable appliance as received from the controllable appliance to automatically add to the user interface an icon representative of the controllable function of the controllable appliance that was received from the controllable appliance.” *Id.*⁴

⁴ At the oral hearing, Petitioner suggested that Patent Owner’s reliance on the prosecution history to support its claim-construction position was, in fact, an application of prosecution history disclaimer that requires “clear and unequivocal evidence that the claimed invention includes or does not include a particular feature.” Tr. 16:24–10; *see Poly-America, L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016). We understand Patent Owner’s arguments to be an application of the *Phillips* framework for claim construction, which necessarily considers the prosecution history. Regardless, Petitioner’s briefs do not cite *Poly-America*, such that reliance on it at the oral hearing would improperly deprive Patent Owner of a full opportunity to respond. *See Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293 (Fed. Cir. 2016) (vacating Board final written decision for relying on new evidence or arguments at oral argument).

4. Summary

While we find the specification of the '486 patent to be of limited usefulness in construing the phrase “data that functions to identify a controllable function,” both the plain and ordinary meaning of the complete claim language and the prosecution history more strongly favor Patent Owner’s position. We accordingly construe the phrase as Patent Owner advocates, namely as meaning that “the data itself identifies a controllable function of the controllable appliance from which the data is received.” *See* PO Resp. 15.

D. Scope and Content of the Prior Art

1. Chardon

Chardon describes “a remote control solution for devices, applications and content by combining a controller with an on-TV user interface that is adaptable to communicate with and control various devices and/or applications.” Ex. 1005, 1:18–23. Figure 1 of Chardon is reproduced below.

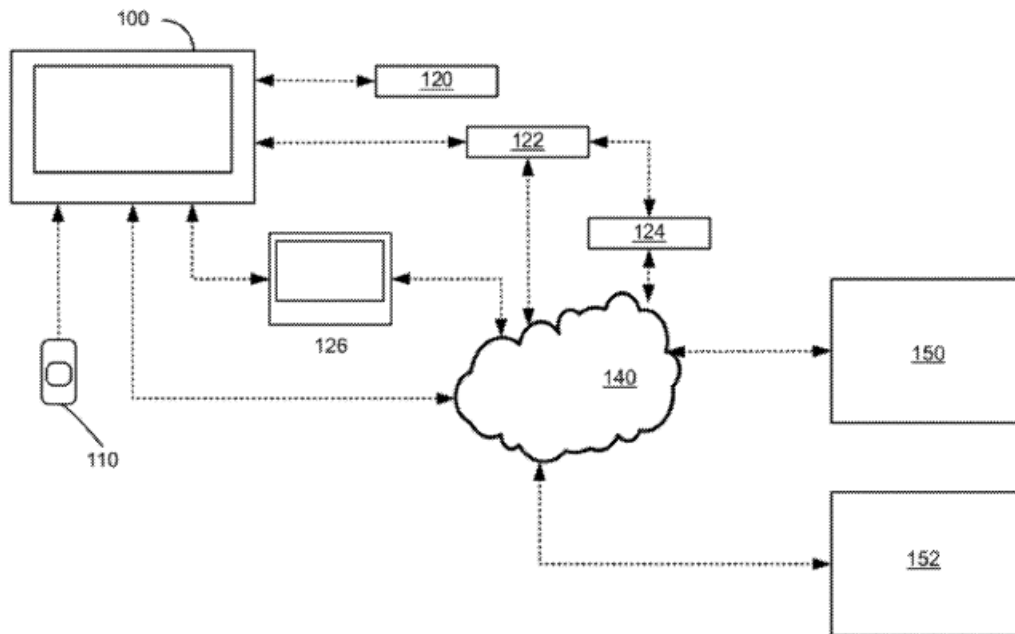


FIG. 1

Figure 1 is a schematic diagram of an exemplary display system and related devices with which Chardon's remote-control solution may operate. *Id.* at 6:46–48. In addition to including a display screen, various external controls, and speakers, display system 100 may include a microprocessor, memory, and communications ports or devices (such as HDMI interfaces) for receiving and transmitting signals. *Id.* at 6:48–56. For instance, display system 100 may be a television configured to receive commands from remote control 110. *Id.* at 7:1–3.

Display system 100 may include a network interface to send and receive data over a network connection to other electronic systems, such as DVD player 120, Audio/Video Receiver 122, gaming system 124, and computer system 126. *Id.* at 7:25–28, 7:42–45. Display system 100 may also connect to Internet 140, which may allow further communication with

various other services, such as video streaming service 150 or device software update/activation services 152. *Id.* at 7:35–41.

Figure 2 of Chardon is reproduced below.

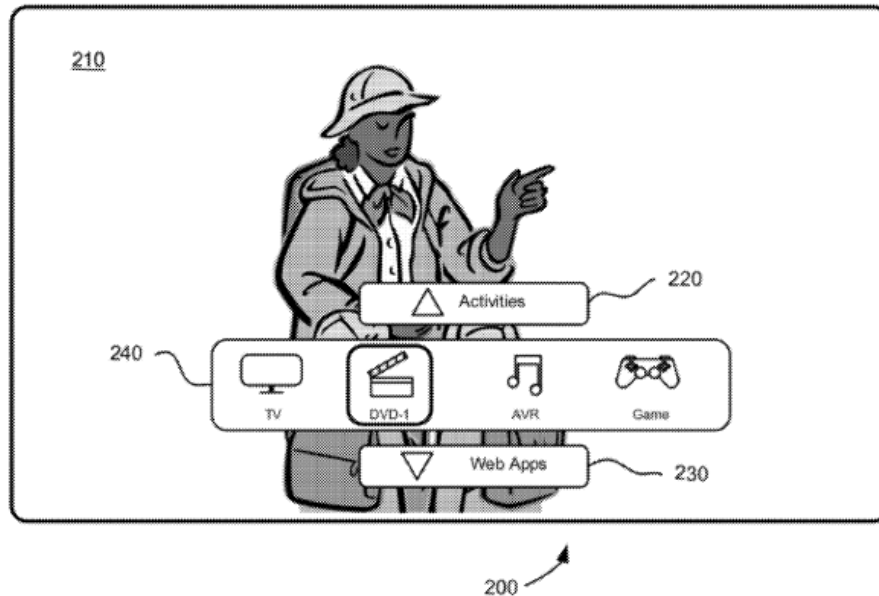


FIG. 2

Figure 2 depicts an exemplary screen that may be displayed by display system 100. *Id.* at 8:33–35. A user interface may be provided as an overlay upon existing content on the display, such as illustrated with background 210, which may be a TV broadcast, streaming video, video game, or web browser view. *Id.* at 8:35–39. Upon activation of the user interface, screen 200 may also include navigation bars 220 and 230 and selection bar 240 that are responsive to commands received from remote control 110. *Id.* at 8:39–42. For instance, remote control 110 may have navigation arrows that allow the user to move between bars 220, 230, and 240, and within selection bar 240, as well as a select button to activate a highlighted bar or selection. *Id.* at 8:42–47.

Figure 3 of Chardon is reproduced below.

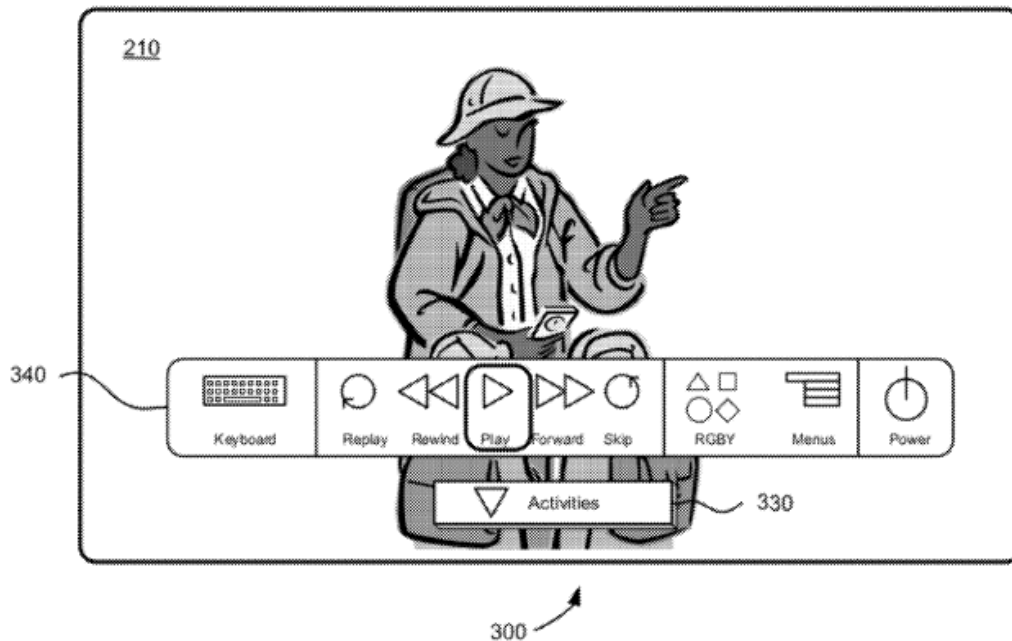


FIG. 3

Figure 3 shows control selection bar 340, which may include “various control icons specific to a selected device, e.g. DVD player 120.” *Id.* at 10:53–55. “Such icons may be based on predetermined criteria related to the type of device, and/or may include operations specifically determined for the device model, manufacturer, etc.” *Id.* at 10:55–58. In the illustrated example, command selection bar 340 includes, among others, icons for “Replay,” “Rewind,” “Play,” “Forward,” and “Skip” for instructing DVD functions. *Id.* at 11:1–3.

2. HDMI 1.3a

HDMI 1.3a is version 1.3 of the High-Definition Multimedia Interface specification. Ex. 1010, 17. “The High-Definition Multimedia Interface is provided for transmitting digital television audiovisual signals from DVD

players, set-top boxes and other audiovisual sources to television sets, projectors and other video displays.” *Id.* HDMI carries audio, video, control, and status information. *Id.* HDMI 1.3a describes transmitting the audiovisual signals from an audiovisual source (a device with HDMI output) to an HDMI sink (a device with an HDMI input) such as television sets, projectors, and other video displays. *Id.* at 17, 21. HDMI 1.3a describes an optional CEC line “for high-level user control of HDMI-connected devices.” *Id.* at 139; *id.* at 24, 128.

E. Obviousness over Chardon and HDMI 1.3a

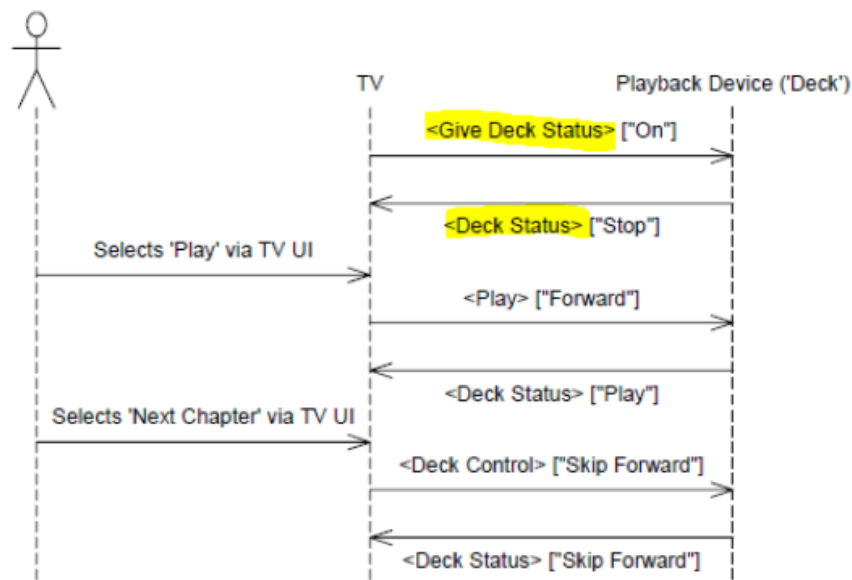
In challenging claims 1–9 as unpatentable under 35 U.S.C. § 103(a) over Chardon and HDMI 1.3a, Petitioner presents an element-by-element analysis setting forth its position. Pet. 32–65.

Independent claim 1 recites “receiving at the home theater device from a controllable appliance in communication with the home theater device via use of a high definition multimedia (‘HDMI’) connection data that functions to identify a controllable function of the controllable appliance.” Ex. 1001, 17:5–9. This limitation has two aspects: first, it requires that data be received from a “controllable appliance” at the “home theater device” via an HDMI connection; and, second, it requires that such data “function[] to identify a controllable function of the controllable appliance.”

For the first aspect, Petitioner observes that Chardon expressly discloses communication by display system 100 with multiple controllable appliances, and that such communication may be over an HDMI connection in addition to other techniques. Pet. 37–38; Ex. 1005, 7:42–45 (Chardon’s

display system 100 “may communicate directly or indirectly with various other electronic devices, such as, for example, a DVD player 120, Audio/Video Receiver (AVR) 122, gaming system 124, and computer system 126”), 7:45–52 (“Such communications may be performed by . . . consumer electronics control (CEC),” i.e. over an HDMI connection, *see* Ex. 1003 ¶ 149). Patent Owner does not dispute Petitioner’s showing with respect to this aspect.

Rather, Patent Owner disputes the second aspect, which implicates the claim construction that we discuss at some length above. *Supra* § II.C. For this aspect, Petitioner relies on HDMI 1.3a for “additional details” that describe what Petitioner characterizes as an “identification and association method for networked appliances.” Pet. 39 (citing Ex. 1010, 134–137, 139). According to Petitioner’s expert, Dr. Russ, once Chardon’s “display system 100 knows that it is in communication with an HDMI-CEC compliant device, it will automatically understand, via the information exchanged with the device, which ‘controllable functions are available for that controllable appliance.’” Ex. 1003 ¶ 158. In elaborating on how controllable functions available in HDMI-CEC compatible devices are learned by controlling devices, Dr. Russ provides as an example the following annotated version of CEC Figure 17 from a Supplement that is part of HDMI 1.3a. *Id.* ¶ 161.



CEC Figure 17 A typical scenario for the Deck Control feature

CEC Figure 17 illustrates a “typical scenario” for a “Deck Control feature” that Dr. Russ testifies is illustrative of an interrogation used to determine and synchronize status. *Id.* ¶¶ 160–161. “Deck Control” is a feature described by HDMI 1.3a that permits an HDMI source device, such as a DVD player, to be controlled by another device, such as a television. Ex. 1010, 212.

Dr. Russ’s highlights to the drawing show that “a TV may use a deck control feature of HDMI’s CEC protocol to ‘interrogate’ a playback device’s deck (e.g., a device in the topology like DVD player 122) to get the deck status information.” Ex. 1003 ¶ 162. Based on this disclosure, together with the deck status and deck-status operations documented in CEC Tables 13 and 26 of HDMI 1.3a, Dr. Russ testifies that “it is plainly clear from the HDMI specification and the CEC protocol within it that part of device discovery between initiator and follower devices, messages are exchanged where identification and capabilities are requested by initiator devices and are in turn, provided by follower devices.” *Id.* ¶ 165.

Petitioner reasons that a person of ordinary skill in the art would have combined such teachings from HDMI 1.3a with Chardon's system because HDMI 1.3a "is a technical guide for the interoperability of the HDMI standard and how HDMI enabled devices operate," and that "Chardon relies on HDMI capabilities to facilitate communication and monitoring-device state changes in its system." Pet. 30–31 (citing Ex. 1005, 4:18–21; Ex. 1010, 17; Ex. 1003 ¶¶ 130–131). According to Petitioner, "[a] person of ordinary skill in the art would have therefore turned to at least one of the versions of the HDMI Specification to fill in any details in Chardon with respect to how HDMI-capable devices, such as those of Chardon and the '486 patent operate, and would have had a reasonable expectation of success in doing so." *Id.* at 31. Petitioner supports this reasoning with testimony by Dr. Russ that it is a "well-known industry practice" to rely on HDMI 1.3a as "specification of an industry standard" when "designing and building devices that implement the HDMI standard, incorporating all of the capabilities it offers." Ex. 1003 ¶ 133.

Patent Owner disputes the sufficiency of Petitioner's showing. In particular, Patent Owner provides testimony by Dr. Turnbull that Patent Owner characterizes as "explain[ing] that Petitioner and Dr. Russ incorrectly interpret the Chardon and HDMI v. 1.3a references and incorrectly summarize the functionality of HDMI devices in general." PO Resp. 24. The disagreement between the two experts is grounded in what Dr. Turnbull describes as a "mistaken conflation of status data and data that functions to identify a controllable function." *See* Ex. 2003 ¶ 109. That disagreement may most readily be understood with the example provided with Figure 17 of HDMI 1.3a since both experts discuss that example in some detail.

On cross examination, Dr. Russ testified as follows.

Q Do you agree that deck control is a mechanism to learn the current status of the playback device?

A Yes; and that current status then indicates what the deck is capable of doing in the future.

So, for example, if it indicates that it's stopped, it indicates that it could in the future be asked to play.

Ex. 2005, 45:10–16. This testimony encapsulates the disagreement between the parties and their respective experts because Dr. Russ relies on the transmission of the current status of the playback device to indicate potential controllable future actions—or, in the language of independent claim 1, “functions to identify a controllable function of the controllable appliance.” For instance, in the context of Figure 17, reproduced above, the fact that the deck status is “Stop” supports, in Dr. Russ’s view, an identification of a controllable function of “Play.”

The difficulty with Petitioner’s and Dr. Russ’s position is that it is inconsistent with our adopted claim construction that the data *itself* identify a controllable function of the controllable appliance from which the data is received. *See supra* § II.C. As Patent Owner asserts, HDMI 1.3a “does not contemplate the exchange of any information that *itself* functions to identify a controllable function of a playback device.” PO Resp. 24 (emphasis added). All that the “Deck Status” message indicates in the example of Figure 17 is that the current status of the playback device is “Stop.”

We also are not persuaded by Petitioner’s and Dr. Russ’s argument that HDMI 1.3a’s Tables 13 and 26 disclose that “Deck Info” information is returned with the “Deck Status” message, and that such “a deck status message includ[es] the features that the device can provide (e.g., play, pause,

stop, etc.).” Pet. 41; Ex. 1003 ¶ 117. Reliance on such “Deck Info” information is problematic at least because it is “other information” that would be used in combination with the “Deck Status” to determine controllable functions of the controllable device, which is precluded by our adopted claim construction.

In addition, although Dr. Turnbull concedes that “additional information can be pre-stored on the television, or it can be obtained from an external source, such as an internet-accessible database,” he observes that use of such additional information would be “analogous to the functionality of Sakai, which was distinguished during prosecution of the ’486 patent as being different from ‘data that functions to identify a controllable function.’” Ex. 2003 ¶ 114. As Patent Owner points out, “[a]t no point does Deck Control describe that the playback device provides any data to the television from which the television then determines that certain functions are available.” PO Resp. 27–28. Instead, the Deck Control messages are “preprogrammed and are simply sent from the television to the playback device, which then executes those messages—if possible—in its own manner.” *Id.* at 28.

We thus determine that Petitioner does not sufficiently establish that the “receiving” limitation of independent claim 1 is met by the combination of Chardon and HDMI 1.3a. We accordingly conclude that Petitioner does not show, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Chardon and HDMI 1.3a. In addition, because challenged claims 2–9 depend from independent claim 1 and thereby implicitly include the same limitation, we also conclude that Petitioner does not show, by a preponderance of the evidence, that those

claims are unpatentable under 35 U.S.C. § 103(a) over Chardon and HDMI 1.3a.⁵

III. CONCLUSION

The table below summarizes our conclusions as to the challenged claims.

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–9	103	Chardon, HDMI 1.3a		1–9
Overall Outcome				1–9

IV. ORDER

It is

ORDERED that claims 1–9 of U.S. Patent No. 10,325,486 B1 have not been shown, by a preponderance of the evidence, to be unpatentable; and

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

⁵ We note that our reasoning also implicates the “causing” limitation of independent claim 1. Because the “data received from the controllable appliance” in HDMI 1.3a does not identify the “controllable function of the controllable appliance,” the combination of Chardon and HDMI 1.3a does not meet the claim requirement of “causing the home theater device to issue a command to at least the controllable appliance to control at least the controllable function of the controllable appliance that was identified by the data received from the controllable appliance.” *See* PO Resp. 34–35 (citing, *inter alia*, Ex. 2003 ¶¶ 112–116).

IPR2021-00455
Patent 10,325,486 B2

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