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Paper 55
Date: March 10, 2025

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 B1

Before AMBER L. HAGY, SHARON FENICK, and RUSSELL E. CASS, *Administrative Patent Judges*.

CASS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining All Challenged Claims Unpatentable
35 U.S.C. §§ 144, 318(a)

I. INTRODUCTION

This decision is issued following the opinion of the United States Court of Appeals for the Federal Circuit in *Roku, Inc. v. Universal Electronics, Inc.*, 2024 WL 3042701 (Fed. Cir. Jun. 18, 2024), vacating our Final Written Decision and remanding for further proceedings. As discussed below, after considering the entirety of the record in light of the court's directives in *Roku*, we find that Roku, Inc. ("Petitioner") has shown by a preponderance of the evidence that the challenged claims are unpatentable.

II. PROCEDURAL HISTORY

Petitioner filed a Petition requesting *inter partes* review of claims 1–9 of U.S. Patent No. 10,325,486 B1 (the "'486 patent"). Paper 2 ("Pet."). Universal Electronics, Inc. ("Patent Owner") filed a Preliminary Response to the Petition. Paper 6. We instituted trial on all claims and grounds set forth in the Petition.[1] Paper 7 ("Inst. Dec."). Following the institution decision, 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.").

On August 11, 2022, we issued a Final Written Decision holding that Petitioner had failed to show by a preponderance of the evidence that any of the challenged claims were unpatentable. Paper 27 ("Final Written Decision" or "FWD"). In the FWD, we adopted Patent Owner's proposed

[1] After the Federal Circuit's decision in this case, the Panel was changed due to the departure of two judges from the original panel. Paper 31.

construction of the phrase "data that functions to identify a controllable function" as meaning that "*the data itself* identifies a controllable function of the controllable appliance from which the data is received." *Id.* at 18 (citing PO Resp. 15). In doing so, we rejected Petitioner's proposed construction of this phrase to mean "data that can be used *in connection with* other information, to identify a controllable function of the controllable appliance." *Id.* (citing Reply 2). We also found that Petitioner had not shown by a preponderance of the evidence that the prior art disclosed or suggested "data that functions to identify a controllable function" under the adopted construction of that phrase. *Id.* at 32–38.

Petitioner appealed the FWD to the Federal Circuit. Paper 28. On June 18, 2024, the Federal Circuit issued an opinion determining that the Board incorrectly adopted Patent Owner's claim construction of the term "data that functions to identify a controllable function of the controllable appliance" in claim 1 and should have adopted Petitioner's proposed construction instead. Paper 28; Paper 30 ("Federal Circuit Opinion") at 6–7, 10–11. Accordingly, the Federal Circuit vacated the Board's FWD and remanded the case for the Board to determine whether the challenged claims would have been obvious under the proper claim construction. Federal Circuit Opinion at 11.

Following the Federal Circuit Opinion, the parties filed briefs regarding their proposals for post-remand briefing, and we held a teleconference with the parties, a transcript of which has been entered into the record. Papers 41, 43; Ex. 1055. After reviewing the parties' briefing and argument, we issued an order allowing: (1) Patent Owner to file an amended Sur-reply and supplemental declaration to respond to the

arguments presented in Petitioner's Reply; (2) Petitioner to conduct a deposition of Patent Owner's declarant based on the issues addressed in the supplemental declaration; (3) Petitioner to file a post-remand brief directed to the new issues raised in Patent Owner's amended Sur-reply; and (4) Patent Owner to file a post-remand brief directed to the issues raised in Petitioner's post-remand brief. Paper 44. Following our order, Patent Owner filed an Amended Sur-reply (Paper 45 ("PO Amended Sur-reply")) and Supplemental Declaration of Dr. Don Turnbull (Ex. 2008), Petitioner filed a Post-Remand Brief (Paper 51 ("Pet. Remand Br."), and Patent Owner filed a Post-Remand Brief (Paper 52 ("PO Remand Br."). Petitioner conducted a deposition of Dr. Turnbull, and submitted a copy of the deposition transcript. Ex. 1056, 2011.[2] Petitioner also filed a motion to strike portions of Patent Owner's Amended Sur-reply, which Patent Owner opposed. Papers 50, 53.

III. 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.

[2] The transcript of Dr. Turnbull's deposition was submitted as Exhibits 1056 and 2011. We will reference the transcript as Exhibit 1056 in this Decision.

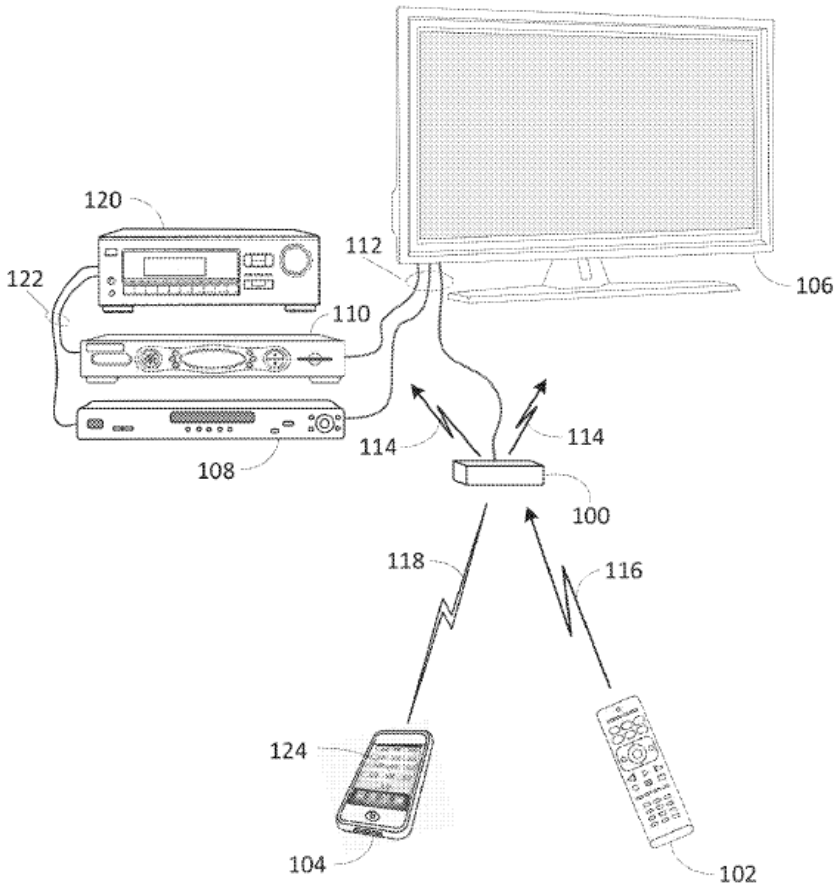


Figure 1

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," 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.

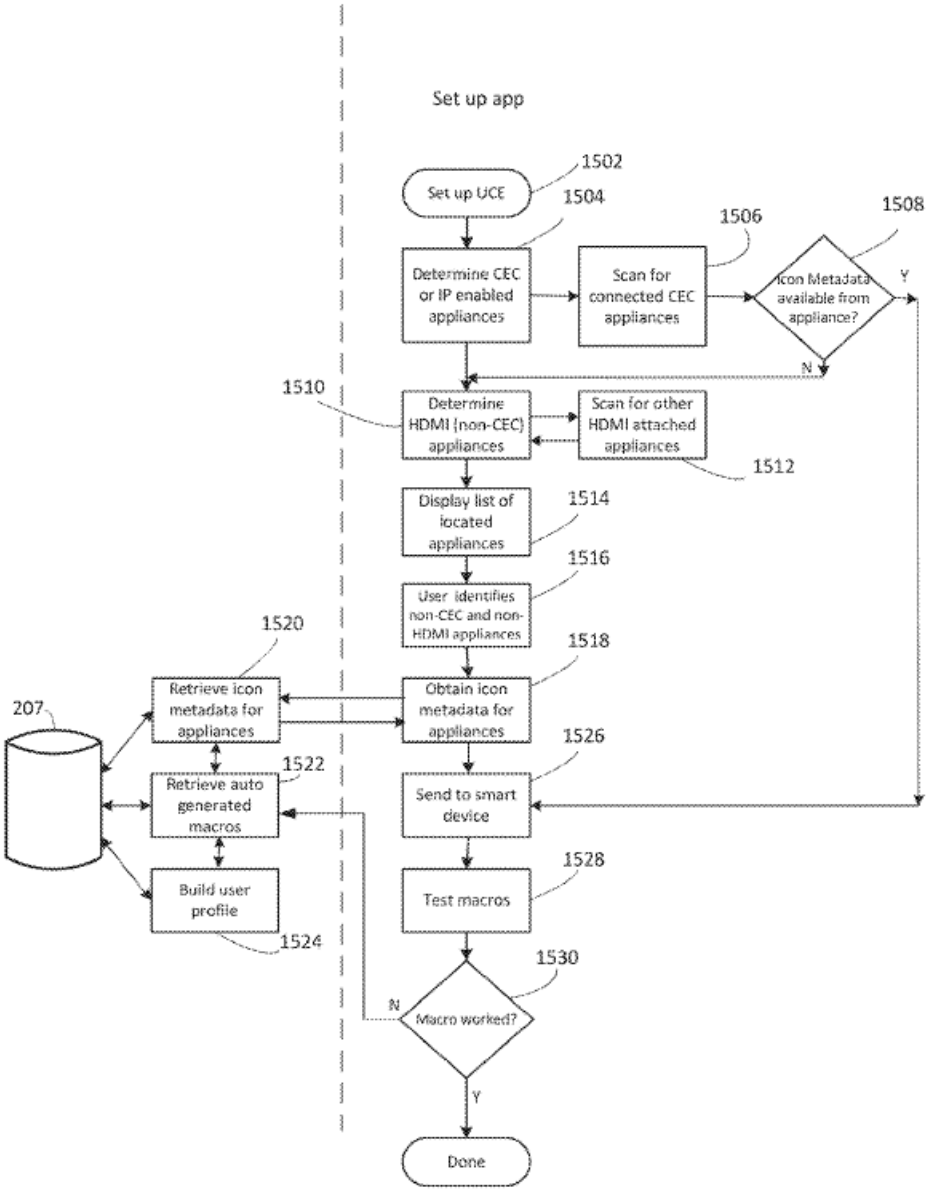


Figure 15

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, with limitation identification added in brackets.

> [1.P] 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:

> [1.1] 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;
>
> [1.2] 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;
>
> [1.3] 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;
>
> [1.4] 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.

B. Evidence

Petitioner relies on the following references:

> Chardon, US 9,239,837 B2, issued Jan. 19, 2016 (Ex. 1005, "Chardon");
>
> HDMI Licensing, LLC, High-Definition Multimedia Interface, Specification Version 1.3a (November 10, 2006) (Ex. 1010) ("HDMI 1.3a").

Pet. 4–5. 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 Declarations by Don Turnbull, Ph.D. Exs. 2003, 2008. Dr. Turnbull was cross-examined by Petitioner on each of his declarations,

and transcripts of his deposition were entered into the record. Exs. 1051, 1056.

C. Instituted Ground of Unpatentability

Petitioner challenges claims 1–9 on the following ground.

Claim(s) Challenged	35 U.S.C. §	References
1–9	103[3]	Chardon, HDMI 1.3a

Pet. 4.

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-

[3] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. In the FWD, we explained that the Institution Decision accorded the '486 patent an effective filing date of May 22, 2013, and that the parties did not contest that determination or whether the asserted references qualified as prior art during the trial. FWD 8 n.1 (citing Inst. Dec. 11–15; Tr. 7:9–13, 25:7–8). Accordingly, we apply the post-AIA version of 35 U.S.C. § 103.

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, IPR2020-01012, IPR2021-00261, IPR2021-00262, IPR2021-00263, IPR2021-00264, and IPR2021-00299. *See* Pet. 68–69; Paper 24, 2–3.

IV. ANALYSIS

A. Legal Principles

A claim is unpatentable for obviousness under 35 U.S.C. § 103 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.[4] *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 (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

[4] 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").

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).

In our Final Written Decision, we adopted Petitioner's articulation of the level of ordinary skill, and also noted that we would reach the same ultimate conclusion were we to adopt Patent Owner's proposal. FWD 16–17. The Federal Circuit Opinion did not address the level of ordinary skill. In this Decision on Remand, we continue to adopt Petitioner's articulation of the level of ordinary skill, and also note that we would reach the same ultimate conclusion if we were to adopt Patent Owner's proposal instead.

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).

As noted above, in our Final Written Decision, we adopted Patent Owner's proposed construction of the phrase "data that functions to identify a controllable function," which was that "*the data itself* identifies a controllable function of the controllable appliance from which the data is received." FWD 28 (citing PO Resp. 15). In its Opinion, the Federal Circuit determined that our claim construction was erroneous, and that "[t]he proper construction of 'data that functions to identify a controllable function of the controllable appliance,' as it appears in claim 1, is 'data that can be used in connection with other information, to identify a controllable function of the controllable appliance,'" as Petitioner proposed. *Roku*, 2024 WL 3042701 at *5.

Accordingly, in this Decision, we apply the construction of "data that functions to identify a controllable function of the controllable appliance" set forth by the Federal Circuit, namely that it is "data that can be used in connection with other information, to identify a controllable function of the controllable appliance."

As in the Final Written Decision, we determine that it is not necessary to provide an express interpretation of any other claim terms for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co*., 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy."). To the extent claim interpretation issues are raised in the context of the parties' unpatentability analysis, we will address those issues in our discussion of the analysis of the claim limitations at issue.

D. Obviousness Over Chardon and HDMI 1.3a

Petitioner asserts that claims 1–9 would have been obvious over Chardon in view of HDMI 1.3a. Pet. 4, 18–66. Patent Owner disagrees. PO Resp. 22–39. We first discuss the references, and then address the parties' arguments below.

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.

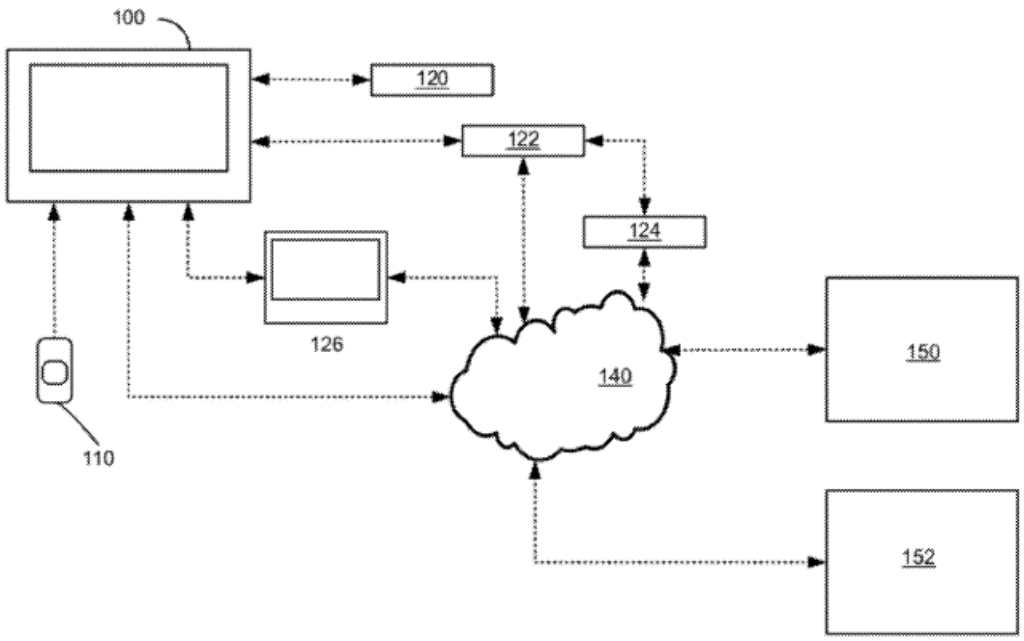


FIG. 1

Chardon's Figure 1 is a schematic depiction of an exemplary display system and related devices in accordance with an embodiment of the invention. Ex. 1001, 5:12–14.

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.

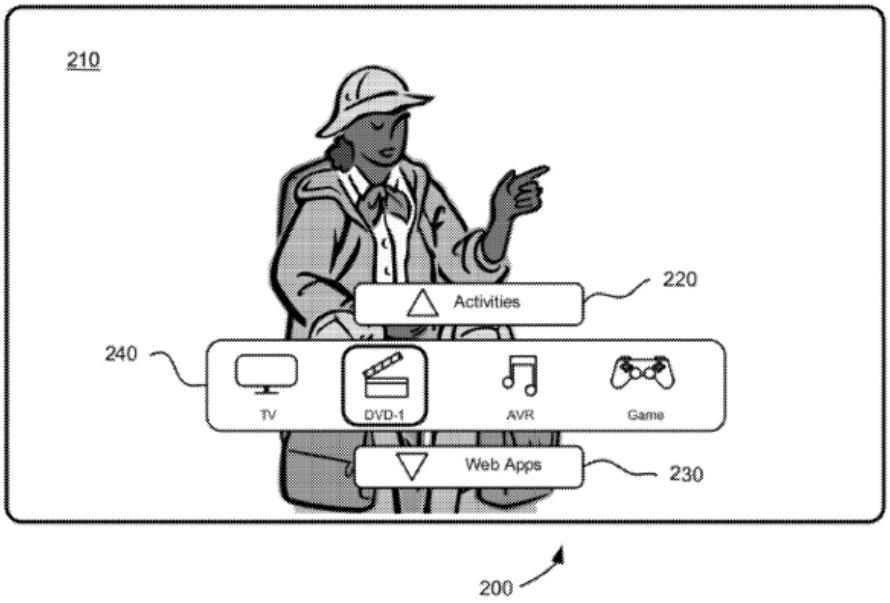


FIG. 2

Chardon's Figure 2 is a depiction of an exemplary screenshot including a device select user interface in accordance with an embodiment of the invention. Ex. 1001, 5:15–17.

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.

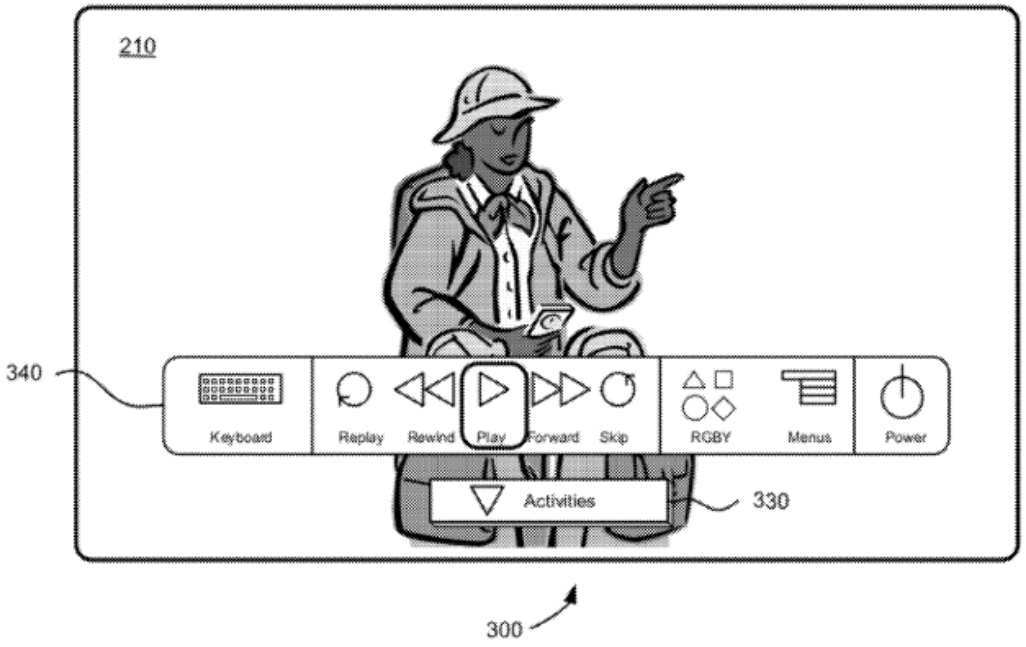


FIG. 3

Chardon's Figure 3 is a depiction of an exemplary screenshot including a command select user interface in accordance with an embodiment of the invention. Ex. 1001, 5:18–20.

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, 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 1.3a 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; *see id.* at 24, 128.

3. Motivation to Combine Chardon and HDMI 1.3a

Petitioner argues that one of ordinary skill "would have turned to the HDMI Specification in view of Chardon" because "Chardon, itself, unambiguously relies on the features and capabilities of HDMI-compliant devices" to "facilitate communication and monitoring-device state changes in its system." Pet. 30, 31 (citing Ex. 1005, 3:8, 4:18–21). "Generally," Petitioner asserts, "the HDMI specification is a technical guide for the interoperability of the HDMI standard and how HDMI enabled devices operate." *Id.* "For example," according to Petitioner, "the HDMI specification 'completely describes the [HDMI] interface such that one could implement a complete transmission and interconnect solution or any portion of the interface.'" *Id.* at 30–31 (citing Ex. 1010, 17; Ex. 1003 ¶¶ 130–131). Therefore, Petitioner contends, one of ordinary skill would have "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. "In fact," Petitioner argues, "Chardon itself describes many of the HDMI features,

such as CEC device identification for setup operations" and "the inventor of the '486 patent relie[d] on the HDMI Specification—and HDMI 1.3a specifically—when designing the features of its UCE system." *Id.* (citing Ex. 1005, 4:18–21; Ex. 1014 (U.S. Provisional App. No. 61/680,876) ¶ 58; Ex. 1003 ¶ 132). Further, Petitioner contends, relying on the HDMI Specification when designing and building devices that implement the HDMI standard was "common industry practice," as "acknowledged by UEI's expert Dr. Turnbull in a related IPR proceeding (IPR2019-01615)." *Id.* at 31–32 (citing IPR2019-01615, Ex. 1021 (Turnbull Dep. Tr.) 123:4–9; Ex. 1003 ¶ 133).

"Accordingly," Petitioner argues, one of ordinary skill "would have looked to, and been fully familiar with, at least one publicly available version of the HDMI Specification in view of Chardon to fill in or confirm any details in Chardon with respect to how HDMI-capable devices operate." Pet. 32. "And," Petitioner contends, one of ordinary skill "would have had a reasonable expectation of success in doing so" because "as the HDMI Specification itself explains, 'a device that is compliant with this specification is interoperable with other compliant devices through the configuration and implementation provided for in this specification.'" *Id.* (citing Ex. 1010, ¶ 17; Ex. 1003 ¶¶ 134–135).

Patent Owner argues that "Petitioner's alleged motivation to combine is fatally flawed" because one of ordinary skill "would not look at any version of the HDMI standard to modify the command control methodologies disclosed in Chardon." PO Resp. 36. Specifically, Patent Owner asserts, "HDMI v. 1.3a does not disclose or suggest using the Deck Control messaging functionality either (i) to control which icons are

displayed on a user interface of a connected HDMI device or (ii) to determine which functionalities an HDMI connected device is capable of receiving and executing such that relevant icons could be selected for display to reflect the functionalities of the HDMI connected device." *Id.* Thus, according to Patent Owner, "[i]f connected device-provided data as described in Chardon and HDMI v. 1.3a were used for the selection of icons to be included within a graphical user interface, those icons would not reflect controllable functions as determined by data received from the connected device *that functions to identify controllable functions of the connected device*," as claim 1 requires. *Id.*

We find that Petitioner has sufficiently proven that one of ordinary skill reviewing Chardon would have been motivated to look to HDMI v.1.3a. Chardon expressly states that "[i]in embodiments" of the invention, "the display device may be . . . a TV including a . . . high-definition multimedia interface (HDMI)." Ex. 1005, 3:5–8. We also agree with and credit Dr. Russ's testimony that one of ordinary skill would have "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 . . . , operate," and that "it is common industry practice for manufacturers to rely on the HDMI specification when designing and building HDMI compliant devices." Ex. 1003 ¶¶ 132, 133; *see also* Ex. 1052 ¶¶ 91–93.

Patent Owner's arguments against the combination are not directed to the general question of whether one of ordinary skill would have looked to HDMI to fill in details of Chardon with respect to how HDMI-capable devices operate, but rather are directed to whether one of ordinary skill

would have found it obvious to combine Chardon and HDMI 1.3a to "modify the command control methodologies disclosed in Chardon" to add "an icon representative of the controllable function of the controllable appliance that was identified by the data received from the controllable appliance," as claim 1 requires. *See* PO Resp. 35–39; PO Amended Sur-reply 19–20. We address these additional arguments in the section below applying the prior art to that claim limitation. *See* § IV.D.4(b), *infra*.

4. Claim 1

a) [1.P] 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:

In addressing the preamble, Petitioner identifies multiple ways in which Chardon's system can be mapped to the recited features. Pet. 32–36. In the most straightforward of these, Petitioner draws a correspondence between (1) the recited "home theater device" and Chardon's display system 100, (2) the recited "display device" and the display screen of Chardon's display system 100, and (3) the recited "user interface" and Chardon's display screen 200. *Id.* at 34–35. In doing so, Petitioner points to Chardon's disclosure that its display device "may be configured to provide various menus and UI [(user interface)] for the control of external devices such as those shown in FIG. 1," and displayed as illustrated in Figure 2, reproduced above. *Id.* at 35 (citing Ex. 1005, 8:31–35). From this disclosure, Petitioner reasons that "Chardon's display system/device 100 thus includes a display screen upon which user interface (a UI) 'may be dynamically configured according to the context in which the display device is being used.'" *Id.* (citing Ex. 1005, code (57), 8:34–35; Ex. 1003 ¶ 142).

Patent Owner does not present arguments directed to this limitation. PO Resp. 22–39.

Petitioner's contentions are supported by Dr. Russ's testimony and the cited portions of Chardon. After consideration of the contentions and the evidence of record, we find that Petitioner has sufficiently shown that Chardon discloses the preamble of claim 1. Because Petitioner's showing based on Chardon's disclosure is sufficient, it is also unnecessary, for purposes of this Decision, to determine whether the preamble is limiting.

b) *[1.1] 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;*

(1) The Parties' Contentions

This limitation has two aspects: first, it requires that data be received from a "controllable appliance" in communication with 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." Patent Owner does not dispute Petitioner's showing as to the first aspect, but does dispute Petitioner's showing as to the second.

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, 3:5–8 (Chardon's "display device may be, for example, a TV including a tuner, audio-visual (AV), high definition multimedia interface (HDMI), and/or separate video (S-Video) inputs"), 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"). Petitioner also argues that Chardon discloses communications using HDMI's Consumer Electronics Control (CEC) protocol. *Id.*; Ex. 1005 (citing 7:45–52 (communications in Chardon's system "may be performed by any well-known communication system that allows communications with external electronic devices, e.g., . . . consumer electronics control (CEC)"), 8:10–15 (Chardon's "display device (or other device) may be configured to interact with external devices over several mediums, including . . . CEC over HDMI"). Thus, according to Petitioner, Chardon "expressly discloses using the well-known 'HDMI-CEC,'" short for HDMI Consumer Electronics Control, which "was a well-known communication protocol" that "allows devices in a home theater network" to "communicate back and forth through HDMI ports." *Id.* at 38 (citing Ex. 1003 ¶¶ 147–149).

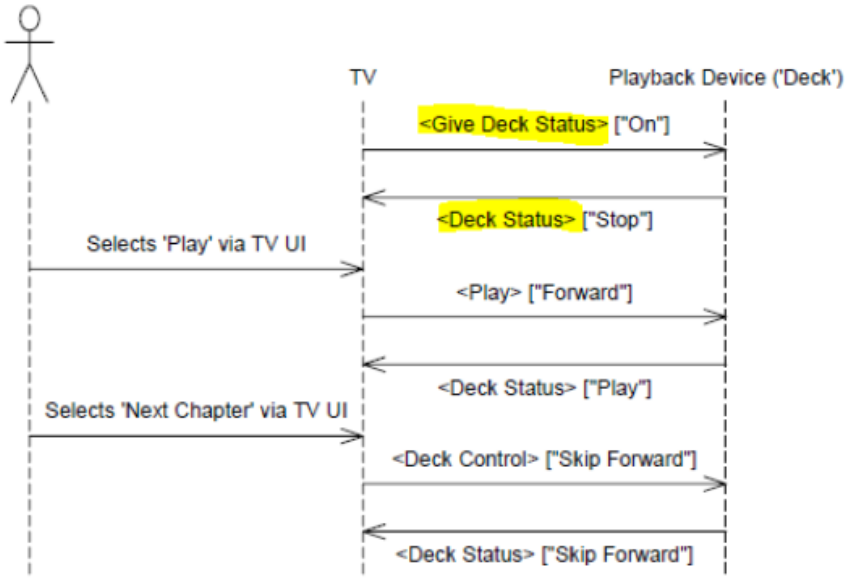
Petitioner also argues that, "[c]onsistent with well-known HDMI-CEC protocols, Chardon explains that its 'display device 100 may be configured to infer what external devices are in use and/or relevant activities by tracking, for example, which display device input is selected.'" Pet. 38 (quoting Ex. 1005, 9:44–47). Petitioner further points to Chardon's explanation that "[s]uch processes may include an initial identification and association of the particular external devices and input sources, e.g., as an initial setup process flow, *through CEC device identification*, or in other ways." *Id.* at 38–39 (citing Ex. 1005, 9:44–50). Petitioner also points to Chardon's reliance "on HDMI-CEC protocols to identify controllable appliances associated with the home theater network," and argues that one of ordinary skill "would have turned to an HDMI Specification like [HDMI

1.3a] for additional details with respect to an initial set up process flow." *Id.* at 39 (citing Ex. 1003 ¶ ¶ 149–152).

For the second aspect, which implicates the claim construction that was at issue in the Federal Circuit Opinion, Petitioner relies on HDMI 1.3a to provide details describing what Petitioner characterizes as an "identification and association method for networked appliances or devices." Pet. 39 (citing Ex. 1010, 134–137, 139). "As part of device discovery, communication, and control," Petitioner argues, "the HDMI standard may use a product's Extended Display Identification Data (EDID) for physical address discovery and CEC protocol for logical address discovery." *Id.* Relying on Dr. Russ, Petitioner contends that "the combination of physical and logical addresses (which typically includes manufacturer name and serial number, and product type) enables a device (e.g., display system 100) to create a mapping of interconnected devices that the device can communicate with." *Id.* (citing Ex. 1003 ¶¶ 59, 60, 104, 150). "Once interconnected devices generate the mapping of the network," according to Petitioner, "the CEC protocol is then 'used for high-level control functions between all of the various audiovisual products in a user's environment.'" *Id.* at 40 (citing Ex. 1003 ¶¶ 100, 125, 126, 157; Ex. 1010, 180, 184, 217, 237, 274).

Petitioner also argues that, "[t]o carry out the CEC control functions, devices rely on deck control messaging within the CEC protocol to request and receive deck status messages." Pet. 40. Relying on the testimony of Dr. Russ, Petitioner argues 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." *Id.* (citing Ex. 1003 ¶¶ 153–162). Petitioner provides a highlighted version of "CEC Figure 17" from HDMI 1.3a, reproduced below, to show "a typical interrogation between devices."



CEC Figure 17 A typical scenario for the Deck Control feature

Petitioner's highlighted version of CEC Figure 17 from HDMI 1.3a. Pet. 41 (citing Ex. 1010, Fig. 17, 213).

Relying on the testimony of Dr. Russ, Petitioner argues that, as shown in the above figure, "an initiator sends a <Give Deck Status> message" highlighted in yellow "to a follower device and a follower device provides <Deck Status>," also highlighted in yellow, "to the initiator[] including '[Deck Info]' parameters such as 'play,' 'record,' 'stop' and the like." *Id.* (citing Ex. 1003 ¶¶ 160–163). These features, according to Petitioner, "are part and parcel of HDMI's CEC protocol." *Id.* (citing Ex. 1003 ¶¶ 161–164).

"[O]nce display system 100 knows that is in communication with an HDMI-CEC compliant device," Petitioner argues, "it will automatically understand, via the information exchanged with the device, which 'controllable functions are available for that controllable appliance.'"

Pet. 41 (citing Ex. 1003 ¶ 158). "The Deck Control feature," Petitioner argues, "including the <Deck Status> message and [Deck Info] parameters received from an HDMI-compatible device is thus data that 'functions to identify a controllable function of the controllable appliance,' like the function of playing or watching a movie." *Id.* at 41–42.

Petitioner argues that the above understanding is consistent with Chardon, which explains that "display device 100 may be configured to infer what external devices are in use and/or relevant activities by tracking, for example, which display device input is selected," and that these processes "may include an initial identification and association of the particular external devices and input sources, e.g. as an initial setup process flow, *through CEC device identification*, or in other ways." Pet. 42 (citing Ex. 1005, 9:44–50). Petitioner also points to Chardon's description of an embodiment for an "Activities" UI shown in Figure 4, in which the "[a]ctivity selection bar may be configured to present various predetermined and/or dynamic activity icons representing categories of activities" and "[c]ertain activity icons like 'Watch TV' or 'Watch Movie' may be [] dynamically loaded activity icons *based on the detection* and/or input of DVD player 120, AVR 122, and video game 124, respectively, or other online available service." *Id.* (citing Ex. 1005, 12:8–10, 12:16–22). "Thus," according to Petitioner, one of ordinary skill "would have understood that by receiving a detected device's Deck Control messaging, including <Deck Status> in accordance with HDMI-CEC protocol," for example, "Chardon's display device/system 100 would receive 'data that functions to identify a controllable function of the controllable appliance,' such as play, stop, fast

forward, etc., when watching a movie, as set forth in element 1.1." *Id.* at 42–43 (citing Ex. ¶¶ 165–169).

"Further," Petitioner argues, one of ordinary skill "seeing Chardon's express reliance on CEC over HDMI as one communication protocol (e.g., EX1005, 8:14) would have been motivated to turn to an HDMI Specification (such as the well-known and, by then, publicly available Version 1.3a)," in order to "ascertain such HDMI-CEC capabilities, including use of EDID, the Hot Plug Detect, and Deck Control features to both detect networked appliances and ascertain their functional capabilities." Pet. 43 (citing Ex. 1003 ¶¶ 169–171). "And," Petitioner contends, "because HDMI is a well-recognized standard and is referred to by Chardon itself," a person of ordinary skill "would have had a reasonable expectation of success in applying the HDMI-CEC specification and its described capabilities in the context of Chardon's disclosure." *Id.*

In its Patent Owner Response, Patent Owner disputes that the cited references teach "data that functions to identify a controllable function of the controllable appliance" that "is received from the controllable appliance itself." PO Resp. 22. Instead, Patent Owner argues, the only data received from the controllable appliance in the cited references is "data that *identifies* a controllable appliance and/or data that identifies a current *state* of a controllable appliance." *Id.* Specifically, Patent Owner asserts that the "Deck Status messages" in HDMI 1.3a, upon which Petitioner relies, provide only "minimal information about the current state of the playback device, without any indication of what controllable functions are available by the playback device." *Id.* at 25. Thus, according to Patent Owner, Deck Status messages can be used to send the status of the playback device to the

television, including the status of a command that has already been executed, but do not "provide any data to the television to identify a controllable function of the playback device" before "the controllable function is selected by the controlling device." *Id.* at 26.

Additionally, Patent Owner contends, the Deck Status messages merely include "generic" functions, such as "Play," "Stop," and "Next Chapter," that "have already been pre-configured in the television in accordance with the HDMI v. 1.3a standard." PO Resp. 26 (citing Ex. 2003 ¶¶ 109–114). "For example," Patent Owner asserts, "the ['Stop'] message sent from the Playback Device does not indicate whether a ['Stop'] command or a ['Play'] command (or any other command) is a controllable function of the controllable device." *Id.* at 27 (citing Ex. 2003 ¶¶ 108, 110–116). "At no point," according to Patent Owner, does HDMI 1.3a's Deck Control "describe that the playback device provides any data to the television from which the television then determines that certain functions are available." *Id.* at 27–28. "Instead," Patent Owner argues, "the messages in Deck Control 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.

Finally, Patent Owner argues that Petitioner's asserted motivation to combine Chardon and HDMI 1.3a is flawed because one of ordinary skill "would not look at any version of the HDMI standard to modify the command control methodologies disclosed in Chardon." PO Resp. 36. According to Patent Owner, this is because: (1) HDMI 1.3a's Deck Control messaging "uses generic, preconfigured functions that are not set or determined based on any data from the controllable device"; (2) "the

configuration of user interfaces is outside of the scope of the HDMI v. 1.3a standard," which "does not provide any indication that any data 'received' at the TV (or other display device) can be used as a part of a process for generating a graphical user interface"; and (3) even in the Chardon/HDMI 1.3a combination, the icons would merely "reflect assumed functions of the device based on locally stored data at the TV and/or data received from an external server," rather than reflecting "controllable functions as determined by data received from the connected device *that functions to identify controllable functions of the connected device*." *Id.* at 36–37 (citing Ex. 2003 ¶¶ 113–115, 121).

"Moreover," Patent Owner argues, "Chardon discloses a complete solution for providing command signals to an external device, thereby eliminating any motivation to search for alternative mechanisms for achieving the very same result." PO Resp. 37–38 (citing Ex. 2003 ¶¶ 119, 120, 126, 127; Ex. 2005, 64). "In particular," Patent Owner contends, "Chardon discloses using pre-defined functions or using data identifying a connected device to access a database of available functions on the internet," and thus "already discloses a mechanism for accomplishing the very task that Petitioner purportedly identifies in HDMI v. 1.3a." *Id.* at 38 (citing Ex. 1005, 10:53–67, 14:62–15:6). "In fact," according to Patent Owner, "just like the disclosure of Deck Control in HDMI, Chardon describes using the state of external devices to confirm that commands have been executed," and "adding the HDMI reference to Chardon would not change this functionality or otherwise modify Chardon to arrive at the claimed invention." *Id.* (citing Ex. 1005, 11:19–28; Ex. 2003 ¶ 126).

Petitioner responds that several of Patent Owner's arguments improperly criticize Chardon for lacking elements that are not recited in claim 1, citing specifically: (1) Patent Owner's arguments regarding Chardon's use of pre-loaded commands for commonly used devices, where, Petitioner asserts, "nothing in claim 1 precludes using pre-loaded commands or even pre-loaded icons"; (2) Patent Owner's assertions regarding Chardon's lack of icons that "are device specific" and "received from the external devices themselves," because, Petitioner argues, claim 1 "does not require device-specific icons"; and (3) Patent Owner's arguments regarding Chardon's use of icons that are "preloaded or updated through communication with a server system," because, Petitioner argues, claim 1 does not preclude using received icon information in connection with information stored in the Internet or a remote server. Pet. Reply 8–10. Petitioner also contends that Patent Owner improperly argues that HDMI 1.3a uses "standardized" or "generic" messages as the "data that functions to identify a controllable function of the controllable appliance, because nothing in claim 1 precludes the use of such "standardized" or "generic messages" for this data. *Id.* at 10–11.

Turning to the combination, Petitioner argues that Chardon can use common HDMI features to "determine whether a controllable appliance will have a 'deck'—i.e., whether it is a playback device like a digital video recorder (DVR) or DVD player." Pet. Reply 12 (citing Ex. 1052 ¶ 77; Ex. 1051, 51:11–15; Ex. 1005, 9:44–50). Thus, "if Chardon's display device 100 (e.g., an HDMI-compatible TV) receives data indicating that the controllable appliance has a deck, then it will know that typical controllable functions for media playback will be available" and, "from that information

alone, Chardon can determine the functions for which it can automatically display an icon in, for example, command selection bar 340 of Figure 3." *Id.* (citing 1052 ¶¶ 77–80; Pet. 38–40).

Petitioner uses Chardon's Figure 3, reproduced below, to illustrate how Chardon uses "data that functions to identify a controllable function of the controllable appliance." Pet. Reply 12–13.

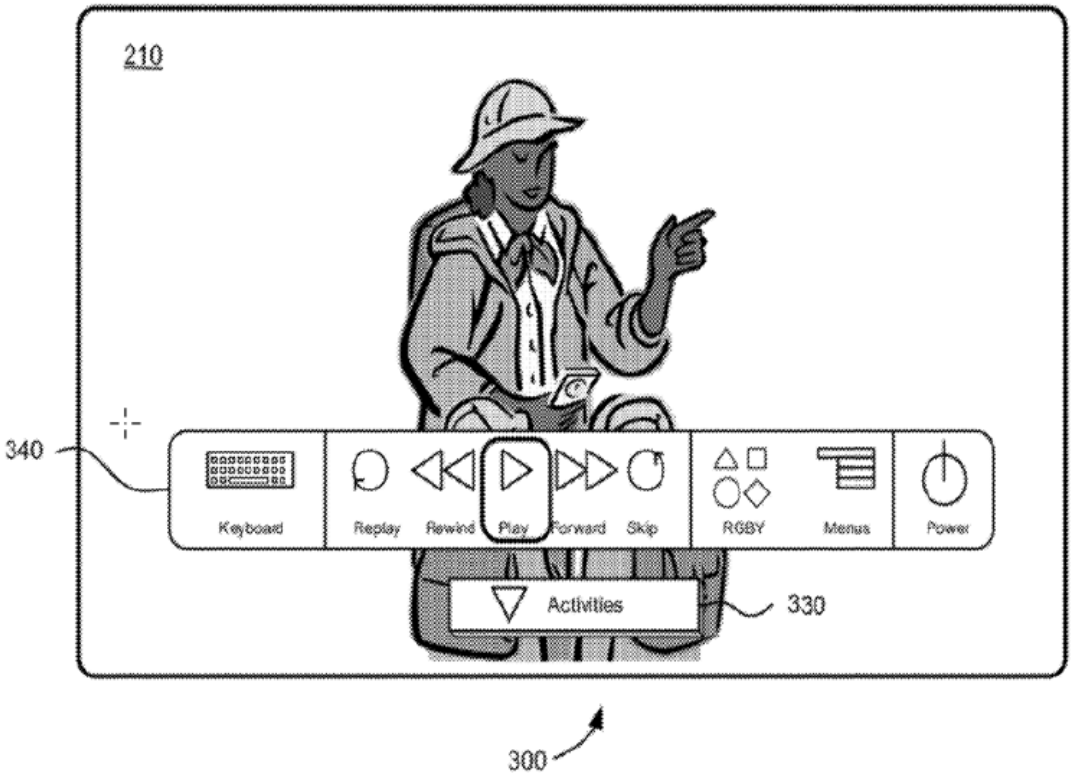


FIG. 3

Petitioner argues that Chardon's Figure 3 illustrates a user interface UI in the form of "command selection bar 340," which shows "various icons for controllable functions of a playback device like a DVD player." *Id.* at 13 (citing Ex. 1005, 10:53–67). Notably, Petitioner contends, the command selection bar 340 includes a "Play" icon but does not include a "Stop" icon because, as Chardon explains, "the display device (or another device) may

have determined that the play command was the most likely to be selected by the user" where a video is in a paused state. *Id.* at 13–14 (citing Ex. 1005, 11:15–18, 11:19–28; Ex. 1052 ¶¶ 60–61). Thus, Petitioner asserts, Chardon "explains how its system could use a received 'state' of an external device in use," i.e., the "paused" state of a video player, "to identify a controllable function," i.e., the "play" function, "that it then displays as an icon in UI 340." *Id.* at 14 (citing Ex. 1052 ¶¶ 60–61). And, relying on the testimony of Dr. Russ, Petitioner argues that this "received state of an external device" is "data that functions to identify a controllable function of the controllable appliance." *Id.* (citing Ex. 1052 ¶ 61).

Petitioner acknowledges that Chardon itself does not explain exactly how it is made aware of the "current state of an external device," but relies in the combination on HDMI 1.3a's CEC Deck Control messaging for that disclosure. Pet. Reply 14. Specifically, Petitioner argues, one of ordinary skill "would have understood that by receiving a detected device's Deck Control messaging, including <Deck Status> in accordance with HDMI-CEC protocol," Chardon's display device 100 "would receive 'data that functions to identify a controllable function of the controllable appliance,' such as play, stop, fast forward, etc. when watching a movie." *Id.* at 14–15 (citing Pet. 42–43). The UI shown in Chardon's Figure 3, according to Petitioner, is consistent with what a user would expect to see at the TV user interface after the playback device returns a <Deck Status> of "Stop" or "Pause" because "Play" is the most likely function to be selected next by the user. *Id.* at 17–18 (citing Ex. 1052 ¶ 85; Pet. 54–56; Ex. 1003 ¶¶ 198–200; Ex. 1051, 121:1–24).

In its Amended Sur-reply, Patent Owner responds that Petitioner fails to apply Petitioner's proposed construction (adopted by the Federal Circuit) to the prior art because Petitioner "fail[s] to identify any 'other information' that is allegedly used in connection with HDMI 1.3a's 'Deck Status' message data to identify a controllable function of a controllable appliance." PO Amended Sur-reply 10 (citing Pet. 39–43; Pet. Reply 11–19). To the extent Petitioner contends that the appliance type is the "other information" used in connection with a "Deck Status" message, Patent Owner argues, Petitioner failed to previously make this argument in its Petition or Reply. *Id.* at 12 (citing Pet. 39–43; Pet. Reply 12–19). And, in any event, Patent Owner contends, "[n]either Chardon nor HDMI 1.3a teaches using 'Deck Status' message data in connection with appliance type information to identify a controllable function of a controllable appliance." *Id.* at 13 (citing Ex. 2008 ¶¶ 50–55; Ex. 1005, 4:18–21, 11:1–35, 26:13–33; Ex. 1010, CEC-33[5], CEC-34, CEC-59, CEC-82; Pet. 39–43; Pet. Reply 11–19). Patent Owner also argues that "Petitioner has failed to show that the data in a 'Deck Status' message is used ***in any way***" to "identify a controllable function of the controllable appliance." *Id.* at 13–14.

In its Brief on Remand, Petitioner responds that the proposed combination uses "Deck Status" information along with "other information" to identify an appliance's controllable function. Pet. Remand Br. 2–3. This "other information," Petitioner argues, can include "data about 'what external devices are in use' obtained via the 'CEC device identification protocol," which it pointed to in its earlier submissions. *Id.* at 3 (citing

[5] "CEC-x" refers to page numbers added to this document in the form "CEC-X of 97," with CEC-1 of 97 beginning at document page 180.

Pet. 38–39; Ex. 1005, 9:40–60, 10:53–67, 11:11–28, 15:59–67, 34:24–27, Fig. 3; Pet. Reply 12, 14). Petitioner also asserts that Patent Owner's expert testified that Chardon's display device "acquires '[i]nformation relating to the type, brand and model" of the appliance, which "may be obtained from the appliance via 'known' HDMI protocol or from a remote 'server,'" and that Chardon's disclosure in this regard is "nearly identical" to that of the '486 patent. *Id.* at 3–4 (citing Ex. 2003 ¶¶ 49, 64–65, 101, 105; Ex. 1051, 63:10–13, 125:18–24; Ex. 1056, 97:16–98:10, 100:7–17; Ex. 1001, 14:30–54, 15:31–41).

Petitioner argues that HDMI 1.3a provides additional details on this "other information" by explaining that "the HDMI-CEC protocol uses information, including EDID, to identify the type of appliance at issue, its capabilities, and its logical address." Pet. Remand Br. 4 (citing Pet. 39 (citing Ex. 1003 ¶¶ 59, 60, 104, 150); Ex. 1010, 134–139; Ex. 2003 ¶ 77). And, according to Petitioner, "Dr. Turnbull admitted that an appliance's logical address, in turn, 'defines a device type' and thus communicates additional information about the appliance." *Id.* (citing Ex. 1056, 104:19–108:3). Petitioner also asserts that it previously pointed to this evidence in its earlier submissions. *Id.* (citing Pet. 28–29, 38–42; Pet. Reply 12–15). Petitioner further contends that Chardon uses this information because, once the display system "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 the controllable appliance.'" *Id.* at 4–5 (citing Pet. 41; Ex. 1003 ¶¶ 165–169; Pet. Reply 17–18; Ex. 2005, 32:12–33:24, 37:19–42:6, 45:12–46:25, 52:4–11; Ex. 2005, 41:18–42:6, 45:10–25). "For example," according to

Petitioner, "if Chardon's display device knows that it is communicating with a DVD player (based on the 'other information' described above) and that the player is in a 'paused' state, the display device will determine that a controllable function while in that state is 'play.'" *Id.* at 5 (citing Ex. 1005, 11:11–28; Pet. Reply 13–14; Ex. 1052 ¶¶ 60–61; Ex. 2005, 41:18–42:6, 45:10–16, 46:13–25). Petitioner further argues that this argument is supported by Dr. Turnbull's testimony and Patent Owner's argument at the oral hearing. *Id.* at 5–6 (citing Ex. 1056, 110:1–11, 46:17–47:2, 85:17–86:8; Ex. 2005, 41:18–42:65, 60:9–18; Tr. 57:4–21).

In its Remand Brief, Patent Owner acknowledges that Petitioner previously "discuss[ed] the EDID, appliance type, and logical address at various points in its briefing," but argues that these discussions had "no bearing on the Federal Circuit's construction, which expressly requires that the claimed data 'be used in connection with other information to identify a controllable function of the controllable appliance." PO Remand Br. 1. And, according to Patent Owner, "Petitioner's assertion that it previously argued that the prior art teaches using a 'Deck Status' message in connection with an appliance type to identify a controllable function is wrong." *Id.* at 1–2 (citing Paper 51, 3 n.2). Instead, Patent Owner contends, Petitioner's citations merely "discuss using a 'Deck Status' message ***or*** an appliance type for various purposes, but never using both in connection with each other to identify a controllable function." *Id.* at 2 (citing Pet. 39–42; Pet. Reply 12–14, 17–18; Ex. 1003 ¶¶ 158, 165–169; Ex. 1052 ¶¶ 60–61, 85–86; Ex. 1005, 11:11–28). Patent Owner further argues that the portions of the hearing transcript and testimony of Dr. Turnbull cited by Petitioner "are completely untethered from Petitioner's invalidity theory, the asserted prior art, the

language of the claims, and the Federal Circuit's construction," and that the argument made by Patent Owner's counsel at the hearing was directed to the Board's prior construction, which the Federal Circuit rejected." *Id.* at 2–3 (citing Pet. Remand Br. 5–6; Tr. 57:4–21).

Patent Owner also argues that Dr. Turnbull's unrebutted testimony confirms the patentability of the challenged claims. PO Remand Br. 3. Specifically, Patent Owner argues that Dr. Turnbull "provided uncontroverted evidence that the prior art does not use a 'Deck Status' message to identify a controllable appliance's 'capabilities' (*i.e.*, the functions the appliance is potentially capable of executing, irrespective of time or configuration)." *Id.* at 4. Patent Owner acknowledges that Chardon "teaches using a device's 'state' to highlight an icon," but argues that Dr. Turnbull testified that "Chardon does not teach using an appliance's 'status' or 'state,' alone or in connection with any 'other information,' to identify a controllable function of another device." *Id.* at 5 (citing Ex. 2008 ¶¶ 50–54; Ex. 1005, 10:65–11:28). Thus, Patent Owner contends, "the data in a 'Deck Status' message (*i.e.*, the 'data that functions to identify') 'is not used either alone, or in connection with "other information," to identify a controllable function of a controllable appliance.'" *Id.* at 3 (citing Ex. 2008 ¶¶ 50–55; Ex. 2003 ¶¶ 100, 102, 110, 119–121).

(2) Analysis

Based on the full trial and remand record, we find that Petitioner has sufficiently shown that that limitation [1.1] would have been obvious over the combination of Chardon and HDMI 1.3a.

First, Petitioner sufficiently shows that the Chardon/HDMI 1.3a combination discloses receiving at a "home theater device" (Chardon's

display system 100) data from a "controllable appliance" (e.g., Chardon's DVD 120) in communication with the home theater device via use of an HDMI connection. *See* Ex. 1005, 3:5–8 (Chardon's "display device may be, for example, a TV including a tuner, audio-visual (AV), high definition multimedia interface (HDMI), and/or separate video (S-Video) inputs"), 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"), 8:10–15 (Chardon's "display device (or other device) may be configured to interact with external devices over several mediums, including . . . CEC over HDMI"). As noted above, Patent Owner does not dispute Patent Owner's showing as to this portion of limitation [1.1].

We next turn to the portion of limitation [1.1] reciting that the data received at the home theater device from the controllable device "functions to identify a controllable function of the controllable appliance." As noted above, the Federal Circuit held that this language should be construed to mean "data that can be used *in connection with other information*, to identify a controllable function of the controllable appliance." *See* § IV.C, *supra*; *Roku*, 2024 WL 3042701 at *5 (emphasis added).

First, we agree with Petitioner that Chardon discloses that the home theater device (display system 100) displays controllable functions of a controllable appliance (such as a DVD player) in command selection bar 340, as shown in Figure 3 reproduced below.

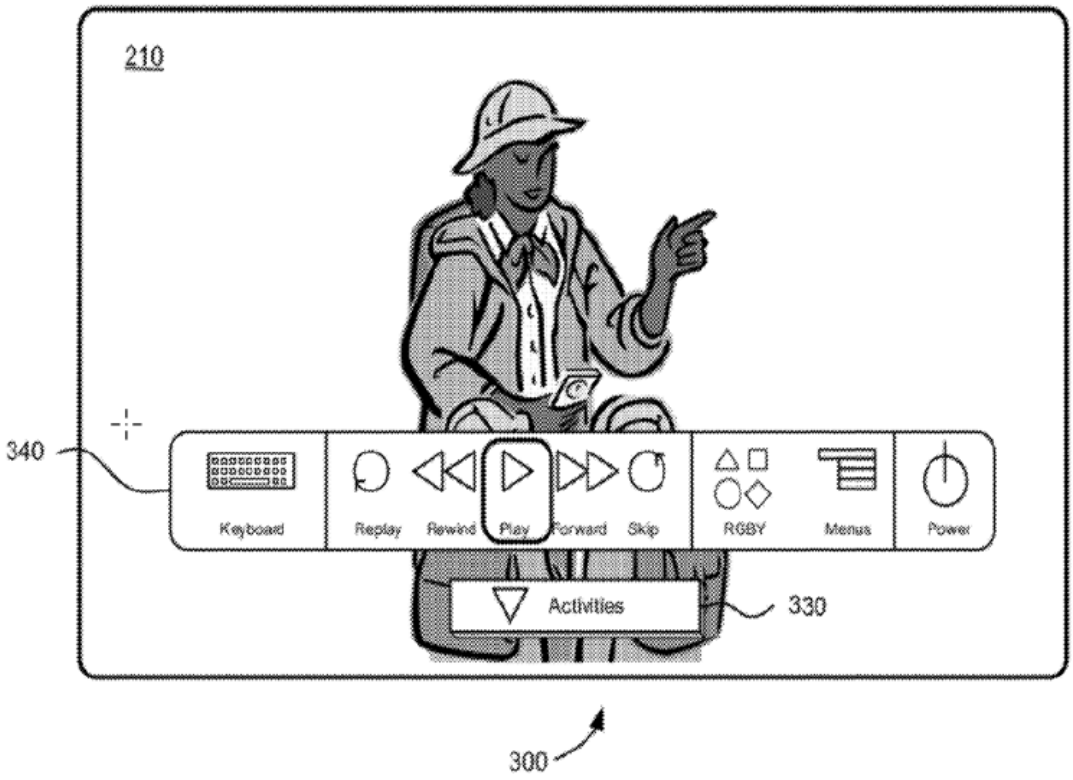


FIG. 3

Figure 3 of Chardon showing command selection bar 340 of display system 100. Ex. 1005, Fig. 3.

We agree with and credit Dr. Russ's testimony that the icons shown on command selection bar 340 ("Replay," "Rewind," "Play," "Forward," "Skip") represent "controllable functions of the controllable appliance" (e.g., DVD player) because they represent functions of the DVD player that can be controlled using the user interface displayed on display device 100. Ex. 1003 ¶¶ 170 (identifying "controllable functions of the controllable appliance" on command selection bar 340 in Fig. 3), 187 (same), 198 (same); Ex. 1052 ¶ 60 (identifying "controllable functions of a playback device like a DVD player" on command selection bar 340 in Fig. 3).

We also agree with Petitioner that Chardon discloses that its system may be aware of the current state of an external device, and can

"dynamically determine what commands are to be displayed" on the display device by configuring command selection bar 340 of its user interface to display and highlight particular icons based on the current external device state. *See* Ex. 1005, 10:53–67. For example, Chardon can receive an indication from the playback device that it is in a paused state, and use this information (along with other information about the features and capabilities of the playback device) to highlight the "play" icon on command selection bar 340. Chardon describes this operation in connection with Figure 3, as follows:

> As shown in FIG. 3, a "play" command is highlighted. . . . [T]he display device (or another device) may have determined that the play command was the most likely to be selected by the user. As one illustrative example, ***a video may be in a paused state and, as a result, the display or other device may have determined that the next command selected is likely to be play***.
>
> The UI, and particularly command UI such as shown in FIG. 3, ***may also be aware of the current state of the external devices in use***, and ***may change an icon representing a function state***, in order to, for example, minimize the need for navigation of the UI. For example, ***if a live TV broadcast is paused by the user*** (such as a digital video recorder (DVR)) via a command selection bar similar to that shown in FIG. 3, ***the UI may automatically highlight for activation the "Play" command icon*** and thus avoid the user having to manually navigate the menu of DVR commands. . . . In embodiments, ***such changes may be based, for example, on two-way communication with the external device, such as by HDMI***, that allows the display device to confirm that certain commands have been executed.

Ex. 1005, 11:11–35 (emphasis added). Thus, Chardon discloses that the display device may receive information about the "current state" of an "external device" via "two-way communication with the external device" via HDMI, and may use this state information to identify a controllable function

of the external device that a user is likely to select (such as the "play" command of a DVR player).

We also agree with Petitioner that HDMI 1.3a teaches providing information about the "current state" of an external device using a <Deck Status> message. Pet. 40–42; Pet. Reply 14–17; Ex. 1003 ¶¶ 159–165; Ex. 1052 ¶¶ 80–90. HDMI 1.3a explains that this feature "allows a Playback Device (a deck or disc player or recorder) to be controlled by another device (e.g., the TV)" and provides messages "to allow a device to find out the status of the Deck." Ex. 1010, 212. For example, this allows "a TV to keep its user interface synchronized with the status of the Deck." *Id.* Using this feature, "[a] device may query the status of a deck with the <Give Deck Status> command" and "[t]he deck should respond with a <Deck Status> message." *Id.* This operation is illustrated in in Figure 17 of HDMI 1.3a, which shows a TV issuing a <Give Deck Status> command to a Playback Device, which responds with a <Deck Status> message of "Stop." *Id.* at 0213.

We further agree with Petitioner that the proposed combination uses information about the state of the controlled device (such as <Deck Status> information) along with "other information" to identify an appliance's controllable function. *See* Pet. Remand Br. 2–3. This "other information" can include information about the external devices that are in use and their capabilities. *Id.* at 3. For example, Chardon includes the following disclosure explaining that the system can determine information about an external device in use:

> In embodiments, the display device 100 may be configured to infer what external devices are in use and/or relevant activities by tracking, for example, which display device input is

> selected. Such processes may include an initial identification and association of the particular external devices and input sources, e.g., as an initial setup process flow, through CEC device identification, or in other ways.

Ex. 1005, 9:44–50; *see* Ex. 1003 ¶¶ 151–152. Chardon further explains that its display system can "automatically determine a type, brand and/or model of an external device via communication with the external device itself" and "may exchange information with the display device" via an HDMI port "sufficient for the display device to recognize the external device's type, brand and/or model number, similar to 'plug-and-play' type recognition." Ex. 1005, 15:59–67; *see* Ex. 1003 ¶ 153.

Similarly, we agree with Petitioner that HDMI 1.3a also discloses the use of "other information" describing the identity and capabilities of an external device. *See* Pet. 39; Pet. Remand Br. 4; Ex. 1003 ¶¶ 59, 60, 104, 107–111, 150; Ex. 1010, 134–139, 195–196. As Dr. Russ explains, HDMI 1.3a's CEC protocol allows one device to use another device's logical address to determine the identity of that device, such as whether it is a TV, a recording device, a playback device, or some other type of device. Ex. 1003 ¶¶ 107–108; Ex. 1010, 195–196. "This portion of the CEC protocol," Dr. Russ explains, "is what would enable Chardon's display system 100 to communicate with other devices in the topology, such as DVD player 120, and learn their types and capabilities." Ex. 1003 ¶ 108. Dr. Russ further testifies that a device (such as Chardon's DVD player 120) can send [Deck Info] parameters indicating what functions and capabilities it includes. *Id.* ¶¶ 115, 117; Ex. 1010, 261, Table 26. We credit this testimony, which is consistent with the disclosures of Chardon and HDMI 1.3a discussed and cited above.

Consequently, we find that Petitioner has sufficiently shown that, in the Chardon-HDMI 1.3a combination, Chardon's TV 100 (a "home theater device") receives from the DVR player (a "controllable appliance") via an HDMI connection data providing the status of the DVR player (such as a <Deck Status> message indicating that the DVR player is paused). The Chardon-HDMI 1.3a combination uses this status message, along with "other information" received by the TV indicating the functions and capabilities of the DVR player, to identify a controllable function (the highlighted "play" function on command status bar 340) of the DVD player.

We do not agree with Patent Owner's arguments to the contrary. To begin with, a number of Patent Owner's arguments rely on its proposed construction, rejected by the Federal Circuit, that "the data ***itself*** identifies a controllable function of the controllable appliance from which the data is received." *See* PO Resp. 15 (emphasis added) (setting forth proposed construction), 22–23 (arguing that the references do not teach data that functions to identify a controllable function that "is received from the controllable appliance ***itself***" (emphasis added)), 24 (arguing that HDMI 1.3a "does not contemplate the exchange of any information that ***itself*** functions to identify a controllable function of a playback device" (emphasis added)), 27 (arguing, with respect to the "Deck Status" messages in Figure 17 of HDMI 1.3a, that "the TV has no way of knowing whether a particular command is a controllable function since it never receives data that functions to identify controllable functions from the playback device ***itself***" (emphasis added)). Because the Federal Circuit has rejected the construction upon which these arguments were based, we do not find them to be persuasive. To the contrary, as discussed above, we find that Petitioner has

sufficiently shown that, in the proposed combination, the TV uses data received from the playback device about the state of the controllable appliance in combination with other information about the functions and capabilities of the playback device to identify a controllable function of the controllable appliance.

Similarly, we are not persuaded by Patent Owner's arguments that HDMI 1.3a's <Deck Status> messages provide only information about the current state of the playback device based on an already-executed command, without any information about what controllable functions are available by the playback device or what the next command selected by the controlling device will be. PO Resp. 25–26; *see id.* at 27–28. As explained above, the Federal Circuit's construction does not require that the data received from the playback device ***itself*** inform the TV of the playback device's available functions and commands are, and allows the TV to use "other information" about the playback device's functions and commands in conjunction with the <Deck Status> messages to identify a controllable function to display on the TV's user interface. Petitioner relies on such "other information" here. Additionally, we see nothing in limitation [1.1] or the Federal Circuit's claim construction that prevents the "data that functions to identify a controllable function" from including data on the playback device's current state, which is used along with other information on the available functions and commands of the playback device to identify and display a controllable function of the playback device.

Relatedly, we do not agree with Patent Owner's and Dr. Turnbull's argument that the Deck Status messages cannot be "data that functions to identify a controllable function of a controllable appliance" because one of

ordinary skill would have understood that "the relevant functions (*e.g.*, 'Play,' 'Stop,' 'Next Chapter') are generic and have already been pre-configured in the television in accordance with the HDMI v. 1.3a standard." PO Resp. 26. As explained above, the pre-configuration of these "generic" functions in Chardon's TV are part of the "other information" that the TV uses in conjunction with the state data from the external device to "identify a controllable function" of the controllable device. Moreover, as Petitioner points out, there is nothing in limitation [1.1] that prevents the use of "generic" functions of the controllable appliance as the "data that functions to identify a controllable function" of the external device. *See* Pet. Reply 10–11.

Additionally, we do not agree with Patent Owner's argument that Petitioner fails to apply the Federal Circuit's construction to the prior art because Petitioner "fail[s] to identify any 'other information' that is allegedly used in connection with HDMI 1.3a's 'Deck Status' message data to identify a controllable function of a controllable appliance." *See* PO Amended Sur-reply 10–11. As explained above, Petitioner identifies "other information" in the form of information received by the system about the external devices in use and their capabilities, as disclosed in Chardon and HDMI 1.3a, that is used along with information about the state of the external device (such as a "Deck Status" message) to identify a controllable function of a controllable appliance (such as the "play" function in Chardon's Figure 3). Contrary to Patent Owner's argument, we find that Petitioner sufficiently raised this argument in its Petition and Reply brief and associated declarations of Dr. Russ by explaining that the HDMI CEC protocols disclosed in Chardon and HDMI 1.3a allow a TV (home theater

device) to obtain information about the functions and capabilities of a controllable appliance (such as a DVD player). *See* Pet. 37–43; Pet. Reply 12; Ex. 1003 ¶¶ 59, 60, 100, 104, 125, 126, 147–152, 157, 158, 161–164, 169–171; Ex. 1052 ¶¶ 77–80. Moreover, Petitioner further clarified and explained this argument in its Remand Brief by explicitly identifying that the "other information" referenced in the Federal Circuit's construction includes "data about 'what external devices are in use' obtained via the 'CEC device identification' protocol." Pet. Remand Br. 3. Patent Owner had an opportunity to respond to Petitioner's Remand brief, as well as file a revised Sur-reply and accompanying declaration. Therefore, we find that Patent Owner has had a sufficient opportunity to address and respond to Petitioner's arguments.

We also disagree with Patent Owner's assertion that Petitioner's argument about the use of "other information" fails because "there is no evidence in the record to support Petitioner's position that 'the type of appliance' is used in connection with HDMI 1.3a's 'Deck Status' message to identify a controllable function of a controllable appliance" because "[n]either Chardon nor HDMI 1.3a teaches using 'Deck Status' message data in connection with appliance type information to identify a controllable function of a controllable appliance." PO Amended Sur-reply 13. As discussed above, Chardon teaches that its TV can use information about the "state" of an external device (such as that a DVD player is in a "pause" state) to identify a particular function (such as "play") that a user is likely to select next. *See* Ex. 1005, 10:53–67, 11:11–35, Fig. 3; Pet. Pet. Reply 12–14; Ex. 1052 ¶¶ 60–61. And, HDMI 1.3a teaches that information about the "state" of an external device can be sent to a controlling device in the form

of a "Deck Status" message. Ex. 1010, 212–213 Pet. 42–43, Pet. Reply 14–17; Ex. 1052 ¶¶ 80–84. The fact that Chardon *individually* does not expressly describe the use of "Deck Status" messages and that HDMI 1.3a does not individually explain what the TV does after receiving a "Deck Status" message is not controlling. *See In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986) (explaining that for obviousness "the test is whether the references, taken as a whole, would have suggested appellant's invention to one of ordinary skill in the . . . art[] at the time the invention was made"). The key here is what the combination of references would have taught to a person of ordinary skill.

We also disagree with the assertions of Patent Owner and Dr. Turnbull that Petitioner has failed to show that state information from the controllable appliance (such as a "Deck Status" message) "is used ***in any way***" to "identify a controllable function of a controllable appliance," even when considered along with the "other information" Petitioner identifies. PO Amended Sur-reply 13–14; Ex. 2008 ¶¶ 39, 52–53, 59–60; *see* PO Remand Br. 1–2. According to Patent Owner, this is because "Deck Status" information "is used merely to indicate the status of a playback device (*i.e.*, the alleged controllable appliance)," merely provides "standardized commands that are sent indiscriminately to a playback device in response to a user input," and "is not used to identify the controllable functions of the playback device." *Id.* The Federal Circuit's claim construction, however, merely requires that the TV (home theater device) receive from the controllable appliance "data that can be used in connection with other information, to identify a controllable function of the controllable appliance." *Roku*, 2024 WL 3042701 at *5. As discussed above,

Petitioner's proposed Chardon-HDMI 1.3a combination teaches that the TV receives state information ("data") from a controllable appliance (DVD player), which is used with "other information" (information at the TV about the functions and capabilities of the DVD player) to identify a controllable function of the controllable appliance (such as the "play" function) that a user is likely to select.

Further, we do not find Dr. Turnbull's testimony that "the prior art does not use a Deck Status' message to identify a controllable appliance's capabilities" persuasive because Petitioner does not rely on the "Deck Status" message itself to provide those capabilities to the TV. *See* PO Remand Br. 4; Ex. 2008 ¶¶ 39, 52–53. Rather, Petitioner relies on the "Deck Status" message to provide the state of the controllable appliance to the TV, and relies on "other information" received by the TV to provide the controllable appliance's range of functions and capabilities. The combination of both, according to Petitioner, is what is used to identify the controllable function (i.e., "play") of the controllable appliance.

Finally, we disagree with Patent Owner's argument that one of ordinary skill would not have looked to HDMI 1.3a to modify Chardon's command control methodologies, and find that Petitioner has presented sufficient evidence of a motivation to combine the references as proposed. *See* PO Resp. 35–38. We disagree with Patent Owner's argument that HDMI 1.3a uses "generic, preconfigured functions that are not set or determined based on any data from the controllable device," *id.* at 37, because it does squarely address Chardon's use of "state" information from the controllable device to identify a function of the controllable device (i.e. "play") that a user is predicted to select next. We disagree with Patent

Owner's argument that "the configuration of user interfaces is outside the scope of the HDMI v. 1.3a standard," *id.*, because Petitioner relies on Chardon for the configuration of the user interface and merely uses HDMI 1.3a to flesh out the status messages that Chardon's TV would receive using the HDMI 1.3a standard. We further disagree with Patent Owner's argument that, in the combination, the icons would merely "reflect assumed functions of the device based on locally stored data at the TV and/or data received from an external server" rather than controllable functions of a controllable device, *id.*, because this argument does not sufficiently address Petitioner's reliance on Chardon's Figure 3 embodiment using state information from the DVD to highlight a particular controllable function ("play") on the user interface. Finally, we disagree with Patent Owner's argument that "Chardon discloses a complete solution for providing command signals to an external device" thereby "eliminating any motivation to search for alternative mechanisms for achieving the very same result." *See id.* at 37–38. Petitioner does not rely on HDMI 1.3a to provide "alternative mechanisms" for Chardon, but rather relies on HDMI 1.3a to fill in the details of the HDMI standard referenced in and used by Chardon, particularly the manner in which messages are sent between Chardon's TV and Chardon's DVD player using the HDMI standard.

Consequently, we conclude that limitation [1.1] would have been obvious over Chardon in view of HDMI 1.3a.

c) *[1.2] 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 the Petition, Petitioner points to Chardon's presentation of on-screen icons as shown in Chardon's Figures 2 and 3, reproduced above. Pet. 43–46. In particular, Petitioner observes that Chardon teaches that bars 220, 230, and 240 of Figure 2 be displayed "automatically," such as "when a new external device is detected" or "when an external device is turned ON." *Id.* at 43–44 (quoting Ex. 1005, 9:31–38 (Petitioner's emphasis omitted)). In addition, Chardon explains that its display device 100 may be configured such that selection of an activity from activity selection bar 220 switches the UI to a device UI displaying a "tailored group of controllable device and/or application icons relevant to the selected activity." Ex. 1005, 12:38–43. In an example where a "Watch Movie" icon is selected, for instance, a UI is brought up with "all available devices and/or applications that the display device can control with the ability to feed movies to the display device." *Id.* at 12:43–47. Based on these disclosures, Petitioner reasons that "Chardon thus describes automatically adding icons for controllable functions like watching a movie on a DVD player, or watching television, both of which are icons in bar 240 in Figure 2," and supports that reasoning with testimony by Dr. Russ. Pet. 45 (citing Ex. 1003 ¶¶ 173–176).

Petitioner augments this reasoning with reference to Chardon's Figure 3, which includes control selection bar 340 with icons specific to a selected device, such as DVD player 120. Pet. 45 (citing Ex. 1005, 10:53–58; Ex. 1003 ¶¶ 173–176). Chardon teaches that its display system "may have pre-loaded commands for commonly used devices, and/or specific

makes and models of devices, and/or may be configured to receive or access device command information as needed for detected or input devices." Ex. 1005, 10:58–67. Dr. Russ testifies that "[t]his is exactly the type of information provided by a device's deck status (e.g., the received data from the controllable appliance), which is obtained using HDMI-CEC device discovery protocols described above." Ex. 1003 ¶ 177. Because "[t]he deck status thus 'functions to identify a controllable function of the controllable appliance,'" as Dr. Russ also testifies, *id.*, Petitioner reasons that the UI shown in Figure 3 of Chardon "displays detected controllable functions of the controllable appliance based on the received data that functions to identify the controllable functions," Pet. 46. In doing so, Petitioner thus relies on HDMI 1.3a's description of such deck status as described above.

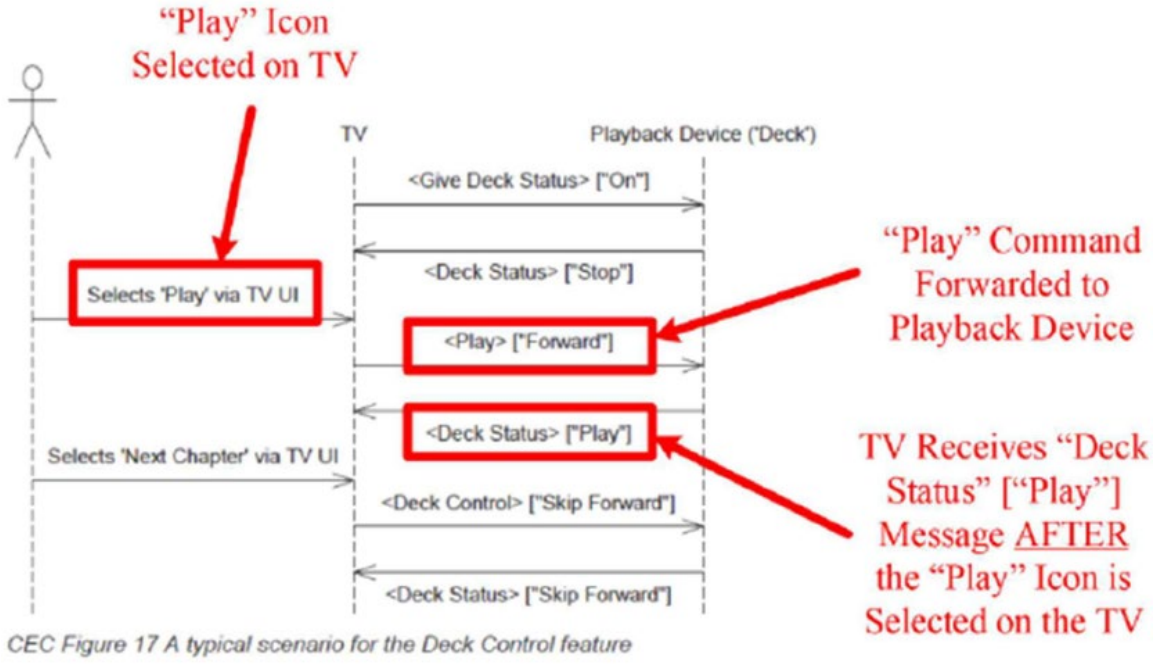
Patent Owner responds that neither Chardon nor HDMI 1.3a teaches "automatically adding by the home theater device to the user interface an icon representative of" the controllable function of the controllable appliance identified by the data received from the controllable appliance. PO Resp. 29. The control icons of Chardon's Figure 3, Patent Owner asserts, are not representative of any such controllable functions received from the controllable appliance because they "are identified locally at the television" and/or are "based on data received from an alternative data source." *Id.* (citing Ex. 2003 ¶¶ 98, 99, 121–124) (citations omitted). Additionally, Patent Owner contends, "the Deck Control messaging feature of HDMI v. 1.3a simply allows the playback device to pass 'Deck Status' messages to the TV, which is unrelated to the television's ability to pass command messages to the external device (the 'deck' or another external device)." *Id.* at 30. HDMI 1.3a, according to Patent Owner, "does not logically tie the

Deck Status messages passed from the playback device with the command messages passed from the TV, except perhaps to provide some confirmation that a previously requested command was actually executed by the playback device." *Id.* (citing Ex. 2003, 109). "In other words," Patent Owner argues, "the playback device does not first identify controllable functions that can be executed by the external device to enable the TV to display icons *representative* of the controllable functions." *Id.* (citing Ex. 2003, 122–123).

Patent Owner further argues that HDMI 1.3a's "disclosure of logical addressing of playback devices further diminishes Petitioner's arguments." PO Resp. 30. According to Patent Owner, HDMI 1.3's logical addressing "defines a device type as well as being a unique identifier," such as identifying an HDMI source device as a "Playback Device," like a DVD player, and allows the functionality available on the source device to be "presumed via this logical address." *Id.* at 30–31 (citing Ex. 1010, 139, 0140, 0195, 1096; Ex. 2005, 38–39). However, Patent Owner asserts, the TV must "then look to an external source to identify the presumed capabilities of the device." *Id.* at 31 (citing Ex. 1010, 195–196). "[T]he only messaging that is received *from* a connected playback device in accordance with the HDMI-standard Deck control functionality," Patent Owner contends, "is *status messages* indicative of a current status of a playback device." *Id.* at 31–32 (citing Ex. 2003, 81–84).

With regard to Figure 17 of HDMI 1.3a, Patent Owner argues that this figure "does not provide any indication that the TV makes any decisions regarding manipulations to a UI based on any of these received <Deck Status> messages." *Id.* at 31–32. *Id.* (citing Ex. 2003, 81–84, 108–109, 114–115; Ex. 2005, 33, 46). "At most," Patent Owner asserts, Figure 17

would indicate to one of ordinary skill "that a <Deck Status> message could be sent *after* the TV provides a command to the playback device so that the <Deck Status> message can be used by the TV to confirm that the command was actually executed." *Id.* at 32 (citing Ex. 2003, 109). For example, Patent Owner points out, "the <Deck Status> ['Play'] message is returned to the TV *after* the TV provides the <Play> ['Forward'] command to the playback device," as illustrated in Patent Owner's annotated version of HDMI 1.3a's Figure 17, reproduced below.



Patent Owner's annotated version of Figure 17 of HDMI 1.3a showing selection of the "Play" icon on the TV and the passing of a <Play> Deck Status message from the Playback Device to the TV.
PO Resp. 32 (citing Ex. 1010, Fig. 17).

Because the "Play" icon was "already established on the user interface of the television before the television receives the Deck Status message for a 'Play' command from the connected device," Patent Owner contends, "the 'Play' icon clearly was not added to the user interface to represent the 'Play' function identified in the Deck Status message." *Id.* at 33.

Furthermore, Patent Owner argues that "the HDMI v. 1.3a standard does not provide any discussion about how a UI is generated (or if the UI is generated at all)." PO Resp. 33. Therefore, Patent Owner contends, "[b]ecause the <Deck Status> message itself is not indicative of any specific controllable functions of the playback device, the TV is not provided with any information about the functionality of the playback device via data received from the playback device itself." *Id.* (citing Ex. 2003, 84–86). "Consequently," according to Patent Owner, "the TV could be requested to send a command to the playback device that cannot be executed by the playback device because the TV does not know what is and what is not a controllable function of the playback device." *Id.* (citing Ex. 2003, 87–88).

Petitioner responds that Patent Owner's arguments "appear[] to be premised on Patent Owner's narrow construction of 'data that functions to identify a controllable function of the controllable appliance' such that '*the data itself* identifies the functionalities that are executed by the controllable appliance from which the data is received.'" Pet. Reply 20. "Under the correct construction," Petitioner argues, one of ordinary skill "would have been able to leverage a <Deck Status> message from the controllable appliance to determine a controllable function of the controllable appliance," as previously explained. *Id.* According to Petitioner, the "prior transmission of <Deck Status> ['STOP'] in Figure 17" would "have led the skilled artisan looking at Chardon to automatically display a 'Play' icon on control selection bar 340, in Chardon's Figure 3 (and not to display a 'Stop' since the device was already in a stopped state)." *Id.* at 21–22 (citing Ex. 1005, 11:11–28, Fig. 3).

Patent Owner, in turn, responds that the Petition did not raise the argument that "Chardon teaches using a received 'Deck Status' message indicating a 'Stop' status to automatically display and highlight a 'Play' icon in the control selection bar 340 of Chardon's Figure 3." PO Amended Sur-reply 18 (citing Pet. 43–47; Pet. Reply 21; Ex. 1052 ¶¶ 59–61, 85–86). Patent Owner also argues that "Chardon does not teach that the 'Play' icon in control selection bar 340 is added to the user interface ('UI') based on a received state or status of a connected device," but instead "Chardon at most teaches that the 'Play' icon is '***highlighted***' when the connected device is in the 'paused' state." *Id.* (citing Ex. 1005, 11:1–28). "Importantly," Patent Owner contends, "'highlighting' an already displayed icon is not 'automatically adding' an icon to the UI, as the Challenged Claims require." *Id.* (citing Ex. 2008 ¶ 65).

Additionally, Patent Owner points to Chardon's statement that "the user may have navigated to the play command" highlighted in control selection bar 340, and argues that one of ordinary skill "would have understood that, for the user to 'have navigated' to the 'Play' icon highlighted in Figure 3, the 'Play' icon must be displayed prior to the navigation." PO Amended Sur-reply 18–19 (citing Ex. 208 ¶ 66). "Otherwise," according to Patent Owner, "there would be no 'Play' icon for the user to navigate to," which "further confirms that the 'Play' icon in Chardon's Figure 3 is an already displayed icon that is merely highlighted." *Id.* at 19. Finally, Patent Owner contends that, even though Chardon's Figure 3 displays a "Play" icon but not a "Stop" icon," that "does not mean that the 'Play' icon was added in place of a stop icon" because "[t]he 'Stop' icon may still be accessible by, for example, navigating sideways in

Chardon's control selection bar 340." *Id.* (citing Pet. Reply 21; Ex. 1052 ¶ 85; Ex. 2008 ¶ 67).

Petitioner responds that Patent Owner's argument is untimely and exceeds the scope of the Board's October 22 Order governing the proceedings on remand, and therefore should not be considered. Pet. Remand Br. 9. In response to Patent Owner's argument that Chardon merely "highlights" an icon rather than "adding" it, Petitioner points to Chardon's disclosure that the system "dynamically determines" which icons "are to be displayed" and that its user interface "may change an icon" based on the appliance's current operational state." *Id.* at 10 (emphasis omitted) (citing Ex. 1005, 3:28–42, 4:18–21, 10:6–8, 10:65–11:28; Ex. 2005, 55:14–22). According to Petitioner, "Dr. Turnbull admitted that 'changing' an icon is an example of 'adding' the icon." *Id.* (citing Ex. 1056, 120:3–11). Patent Owner responds to this testimony by arguing that it is hypothetical and "has nothing to do with Chardon's actual teachings." PO Remand Br. 5 (citing Ex. 1056, 120:3–11).

Based on the full trial and remand record, we find that Chardon discloses limitation [1.2]. As discussed with respect to limitation [1.1], Chardon discloses identifying a "play" function on command selection bar 340 (a "controllable function of a controllable appliance") in response to receiving state information indicating that a playback device is in a "paused" state ("data that can be used in connection with other information, to identify a controllable function of the controllable appliance"). *See* § III.D.4(b), *supra*. We also find that, as part of this identification of the play function, Chardon automatically adds to command selection bar 340 a "play" icon, which is representative of the "play" controllable function of the controllable

appliance (DVD player) that was identified by the data received from the controllable appliance (along with "other information" indicating the functions and capabilities of the controllable appliance). Our finding is supported by Chardon's disclosure that its display device "may dynamically determine what commands are to be displayed" in the form of icons in command selection bar 340. Ex. 1005, 10:65–67. Additionally, Chardon explains that the user interface may "be aware of the current state of the external devices in use, and may change an icon representing a function state, in order to, for example, minimize the need for navigation of the UI." *Id.* at 11:19–23. As an example, Chardon explains that Figure 3 shows a highlighted "play" icon when a video is "in a paused state" and the display has "determined that the next command selected is likely to be play." *Id.* at 11:11–18; *see id.* at 11:23–28. Thus, Chardon discloses automatically adding an icon (the highlighted "play" icon in command selection bar 340 of Figure 3) representative of the controllable function of the controllable appliance that was identified by the data received from the controllable appliance (the "play" function) to the user interface (command selection bar 340).

We do not agree with Patent Owner's argument that, even though Chardon's Figure 3 displays a "Play" icon but not a "Stop" icon," that "does not mean that the 'Play' icon was added in place of a stop icon" because "[t]he 'Stop' icon may still be accessible by, for example, navigating sideways in Chardon's control selection bar 340." *See* PO Amended Sur-reply 19. This argument is not supported by Chardon's disclosure. Neither Chardon's Figure 3 nor the accompanying disclosure includes anything indicating that one can display additional icons in control selection bar 340

by navigating sideways, such as arrows or other indicators in Figure 3 that would indicate scrolling capability. Instead, control selection bar 340 has solid lines around it, which suggests a lack of scrolling capability. Moreover, if a "Stop" button was available, one would expect it to be within the existing functions of "Rewind," "Play," and "Forward" displayed on control selection bar 340. And, although Petitioner cites the Supplemental Declaration of Dr. Turnbull in support, Dr. Turnbull merely repeats the statement in the Sur-reply brief without any additional explanation or citation to evidence supporting his position. PO Amended Sur-reply 19; Ex. 2008 ¶ 67.

Next, we turn to Patent Owner's argument that "'highlighting' an already displayed icon is not 'automatically adding' an icon to the UI, as the Challenged Claims require." PO Amended Sur-reply 18 (citing Ex. 2008 ¶ 65). We disagree with this assertion, and instead agree with Petitioner that changing of an icon (including Chardon's highlighting of the "Play" icon) in the command selection bar 340 of Figure 3 is an example of adding an icon. Chardon explains that its system may "dynamically determine" what icons "are to be displayed," and that the UI "may change an icon representing a function state" based on the status of an external device, such as by "automatically highlight[ing] for activation the 'Play' command icon" or changing a volume icon to indicate that an external device is muted. Ex. 1005, 11:19–31. Chardon also states that "highlighting" of an icon "can be performed in any manner that emphasizes an item being highlighted." Ex. 1005, 10:5–7, 10:65–66, 11:19–23. Additionally, Dr. Turnbull testified at his deposition that "changing" an icon (such as by replacing a grayed-out version of an icon with a non-grayed out version) could be an example of

"adding" the icon. Ex. 1056, 120:3–11. In light of this evidence, we find that the highlighted "Play" icon in Chardon's Figure 3 amounts to a "new" icon that is added to command selection bar 340.

We also do not agree with Patent Owner's argument that Chardon's statement that "the user may have navigated to the play command" highlighted in control selection bar 340 indicates that the "Play" icon "must be displayed prior to the navigation." PO Amended Sur-reply 18–19. The full sentence in Chardon that Patent Owner relies on states that "the user may have navigated to the play command ***or*** the display device (or another device) may have determined that the play command was the most likely to be selected by the user." Ex. 1005, 11:11–15 (emphasis added). Petitioner relies on the second part of this sentence, which explains that the display device determines that the "Play" command was most likely to be selected by the user based on the receipt of status information indicating that the DVD player is in a "paused" state, not the first portion (relied on by Patent Owner) where the highlighting is performed based on a user's navigation to the "Play" icon. The fact that Chardon provides user navigation as an alternative embodiment for highlighting the "Play" icon does not detract from its disclosure that the "Play" icon is highlighted based on received status information from the DVD player.

Finally, we are not persuaded by Patent Owner's assertion that the Petition did not argue that Chardon uses a received "Deck Status" message indicating a "Stop" status to automatically display and highlight a "Play" icon in control selection bar 340. *See* PO Amended Sur-reply 18. The Petition relied on Chardon's display of icons in control selection bar 340 of Figure 3, which it can "tailor . . . based on content," including "information

provided by a device's Deck Status." Pet. 45–46. Petitioner's Reply Brief provided further explanation, in response to the Patent Owner Response, more specifically explaining that the system can display and highlight the "Play" icon on control selection bar 340 in response to receiving a status message (such as "Deck Status") indicating that the DVD player is in a "paused" state. Pet. Reply 20–23. We find that the argument presented in Petitioner's Reply was a permissible further explanation of the argument in the Petition, made in response to arguments made in the Patent Owner Response. *See Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990 (Fed. Cir. 2023) ("It is for the Board to determine what grounds are being articulated in a petition and what arguments and evidence are being referred to in the responses and any replies," and the Board "has discretion to determine 'whether a [p]etition identified the specific evidence relied on in a [r]eply and when a [r]eply contention crosses the line from responsive to new.'"). Additionally, Patent Owner had sufficient opportunity to address and respond to the argument in Petitioner's Reply in its Amended Sur-reply and accompanying Supplemental Declaration of Dr. Turnbull.

For the above reasons, we conclude that limitation [1.2] would have been obvious over Chardon in view of HDMI 1.3a.

> d) *[1.3] 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;*

Claim 1 recites that a certain action, discussed more fully below, is performed "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." Ex. 1001, 17:15–19. In addressing this recitation, Petitioner contends that the '486 patent "does not clearly explain" how a "controlling device" is used to select the added icon from the user interface displayed in the display device because "the description associated with Figure 15 . . . does not use the claim language, and is divorced [from] the other figures [in] the patent." Pet. 48. Accordingly, Petitioner identifies as "one reasonable possibility" that "a basic remote control like remote control device 102 is used to manipulate a cursor (or other UI) over an icon added to the display associated [with] a home theater device (e.g., TV 106), and the 'command transmission' is what happens when a user highlights and selects the icon using, for example, remote control device 102." *Id.* This is supported by Dr. Russ's testimony and is not disputed by Patent Owner.

With this understanding, Petitioner draws a correspondence between (1) the recited "controlling device" and Chardon's remote control device 600, and (2) the recited "command transmission" and what Chardon's remote control sends to the home theater device when the user uses it to highlight and select the added icon to watch TV, play a movie using DVD player 120, or various functional operations of DVD player 120. *Id.* at 52. Petitioner supports these correspondences to meet the specific claim language with various examples drawn from Chardon. *See id.* at 49–52.

Patent Owner does not present argument directed to this limitation. PO Resp. 22–39; PO Amended Sur-reply 8–21; PO Remand Br.

Based on the full trial and remand record, we find that Petitioner has sufficiently shown that this limitation would have been obvious based on the combination of Chardon and HDMI 1.3a.

e) *[1.4] 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;*

Petitioner contends that this limitation is disclosed by the flow chart of Chardon's Figure 8, which is reproduced below.

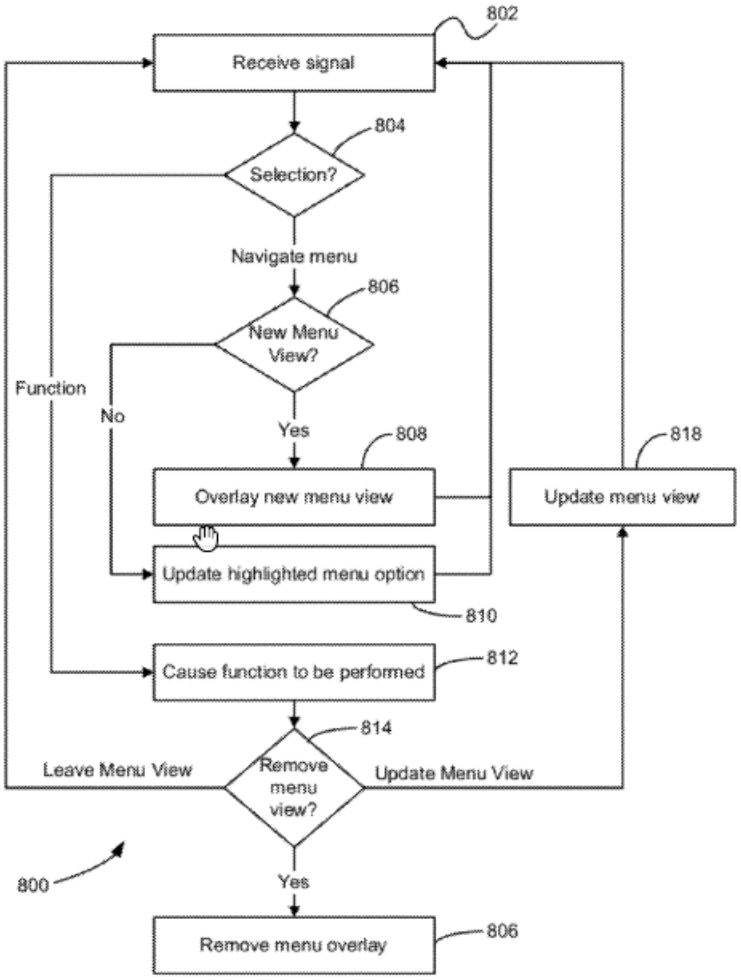


FIG. 8

Figure 8 provides an example of a process for updating a menu presented to a user on a display. Ex. 1005, 23:58–60. Petitioner points specifically to Chardon's disclosure of what happens when a signal received at step 802 is determined at step 804 to correspond to a function to be performed by a different device: "[If] a different device is to perform the function, a signal

may be sent to the device to instruct the device to perform the function." Pet. 53–54; Ex. 1005, 24:43–45. Chardon illustrates this with an example in which a television is performing process 800 and the function corresponds to a DVD player function, such as "pause." Ex. 1005, 24:49–52. In such case, "a signal may be sent to the DVD player to cause the DVD player to perform the function." *Id.*

Chardon also discloses that commands may be communicated to a selected device over an HDMI connection upon the selection of icons discussed above. *Id.* at 11:5–10. Petitioner relies on such additional disclosure, in combination with HDMI 1.3a's disclosure of how a device relying on the HDMI standard would operate, to provide the following reasoning, which is supported by Dr. Russ's testimony:

> Thus, if Chardon's display device 100 corresponds to the claimed "home theater device" and the received command from a controlling device corresponds to the selection of a displayed function icon (by a remote control) in the UI displayed on Chardon's display device 100, then Chardon's display device 100 will "issue a command to at least the controllable appliance [e.g., a HDMI-compatible DVD player or playback device] to control at least the controllable function of the controllable appliance [e.g., play movie] that was identified by the data received from the controllable appliance [e.g., <Deck Status> message from which Chardon's HDMI compatible TV can identify its controllable functions]," as set forth in the claim.

Pet. 56 (citing Ex. 1003 ¶¶ 195–201).

Patent Owner responds that the Deck Status message from the playback device "is irrelevant to whether a user thereafter selects the 'Play' command, or any other command, on the user interface of the television." PO Resp. 34–35. Patent Owner argues that "[t]here is no indication in Figure 17 or otherwise that the Deck Status message is related to the 'Play'

command that is passed to the playback device, nor is there any indication that the Deck Status message functions to identify 'Play' as a controllable function." *Id.* at 35. Referring to Figure 17 of HDMI 1.3a, Patent Owner asserts that "the Deck Status message that is received at the television before the 'Play' icon is selected is for a 'Stop' command," and "a 'Stop' status does not necessarily indicate that a 'Play' command is executable." *Id.* (emphasis omitted) (citing Ex. 1010, 213 (Fig. 17); Ex. 2003 ¶¶ 112–116). "When the TV later transmits the 'Play' command to the playback device," according to Patent Owner, "the TV only knows that the playback device has a 'Stop' status," and the playback device "may generate an error message if no media is available for playing." *Id.* "Therefore," Patent Owner contends, "the 'Play' command transmitted to the playback device is *not* a command for a controllable function of the playback device that was identified by any data received from the playback device." *Id.*

Petitioner responds that Patent Owner's argument "reflects the same misunderstanding" addressed with respect to the previous limitations "of how the skilled artisan would use <Deck Status> messages." Pet. Reply. 25. Petitioner argues that Patent Owner attacks HDMI 1.3a and Figure 17 thereof "individually without considering how a skilled artisan would have leveraged the described HDMI-CEC Deck Control features in Chardon's detailed examples of how it decides to automatically display and highlight a 'Play' icon" command selection bar 340 of Chardon's Figure 3. *Id.* (citing Ex. 1005, 11:10–16). Additionally, according to Petitioner, Patent Owner does not consider "how the skilled artisan would have leveraged Deck Control features like <Deck Status> to make the home theater device 'aware of the current state of the external devices in use' to 'dynamically determine

what commands [icons] are to be displayed.'" *Id.* (citing Ex. 1005, 10:35–11:35).

We agree with Petitioner. The proposed Chardon-HDMI 1.3a combination causes the TV (home theater device) to issue a command ("Play") to the DVD player (controllable appliance) to control the controllable function of the controllable appliance (the "Play" function) that was identified by the data received from the controllable appliance (a Deck Status message indicating that the DVD player is in a "paused" state). As explained above with respect to limitation [1.1], the TV in the Chardon-HDMI 1.3a uses this state data from the DVD player, along with "other information" about the functions and capabilities of the DVD player, to identify the "Play" function. *See* § IVD.4(b), *supra*. Patent Owner does not squarely address these arguments, but instead improperly relies on the deficiencies of HDMI 1.3a's "Deck Status" messages standing alone without considering the way that those messages would have been leveraged by a person of ordinary skill in the art in Petitioner's proposed combination.

Consequently, we conclude that limitation [1.4] would have been obvious over Chardon in view of HDMI 1.3a.

f) Summary as to Claim 1

For the reasons explained above, Petitioner has proven by a preponderance of the evidence that claim 1 would have been obvious over the combination of Chardon and HDMI 1.3a.

5. Dependent Claims 2–9

Petitioner argues that claims 2–9 would have been obvious over Chardon in view of HDMI 1.3a. Pet. 57–65. Patent Owner does not argue

these claims separately, but instead relies on its arguments for independent claim 1. PO Resp. 39.

Claim 2 recites that "the command transmission is received from the controlling device via use of an infrared communications protocol." Ex. 1001, 18:1–3. Petitioner argues that Chardon discloses that display system 100 may be a TV configured to receive commands from a controlling device (remote control 110) via infrared (IR) signals. Pet. 57–58 (citing Ex. 1005, 6:48–58, 7:1–3, 7:42–61; Ex. 1003 ¶¶ 202, 203).

Claim 3 recites that "the command transmission is received from the controlling device via use of a radio frequency communications protocol." Ex. 1001, 18:4–6. Petitioner argues that Chardon discloses radio frequency (RF) communications between electronic devices and that using such communications was well known, and leaves the incorporation details to the skilled artisan. Pet. 58–59 (citing Ex. 1005, 6:48–58, 7:42–61; Ex. 1003 ¶¶ 204, 205).

Claim 4 recites that "the command transmission is received from the controlling device via use of a wired communications protocol." Ex. 1001, 18:7–9. Petitioner argues that Chardon describes the use of communication ports for wired communications, such as HDMI interfaces, Ethernet ports, and USB ports, and that one of ordinary skill would have known that a device coupled to the display system 100 via a wired communication protocol such as HDMI, Ethernet, or USB could be used as a controlling device to transmit a command via the wired communication protocol to display system 100. Pet. 59–60 (citing Ex. 1005, 6:48–56, 7:7–12, 7:42–61; Ex. 1003 ¶¶ 206, 207).

Claim 5 recites that "the home theater device comprises a television." Ex. 1001, 18:10–11. Petitioner argues that Chardon explains that its display system 100 may be a television. Pet. 61 (citing Ex. 1005, 7:1–3; Ex. 1003 ¶ 209).

Claim 6 recites that "the home theater device comprises a set-top box." Ex. 1001, 18:12–13. Petitioner argues that Chardon discloses a home theater device in the form of a Logitech Revue device, which was a type of set-top box. Pet. 61–62 (citing Ex. 1005, 13:67–14:4, 23:46–50, 31:37–41; Ex. 1003 ¶ 212–216).

Claim 7 recites that "the home theater device comprises an A/V receiver." Ex. 1001, 18:14–15. Petitioner argues that Chardon discloses that its TV includes an audio-visual (AV) receiver that initiates and receives "video and/or audio streaming." Pet. 62 (citing Ex. 1005, 3:5–9). Thus, according to Petitioner, one of ordinary skill would have understood that Chardon's TV includes an A/V receiver that initiates and receives video and audio streaming. *Id.* at 62–63 (citing Ex. 1003 ¶ 217).

Claim 8 recites that "the home theater device issues the command to the controllable appliance via use of a wired communications protocol." Ex. 1001, 18:16–18. Petitioner argues that Chardon discloses display device 100 (home theater device) issuing commands to a DVD player via an HDMI connection, which one of ordinary skill would appreciate is a wired communications protocol. Pet. 63 (citing Ex. 1005, 11:5–10; Ex. 1003 ¶ 218).

Claim 9 recites that "the controllable function of the controllable appliance comprises a controllable media rendering function that is provided via use of the controllable appliance." Ex. 1001, 18:19–22. Petitioner

argues that Chardon discloses that controllable functions (such as "Watch TV," "Watch Movie," and "Play Game") of a controllable appliance (DVD player 120, AVR 122, or video game 124) are well known "controllable media rendering function[s]" that are provided via use of the controllable appliance, like a DVD player or video game console 124. Pet. 64–65 (citing Ex. 1001, 10:26–39; Ex. 1005, 12:4–22; Ex. 1003 ¶¶ 219, 220).

We agree with Petitioner's contentions and find that Petitioner has proven by a preponderance of the evidence that dependent claims 2–9 would have been obvious over the combination of Chardon and HDMI 1.3a.

E. Petitioner's Motion to Strike

Petitioner filed a Motion to Strike portions of Patent Owner's Amended Sur-reply and Dr. Turnbull's Supplemental Declaration. Paper 50. In its Motion, Petitioner argues that Section III.B of Patent Owner's Amended Sur-reply (concerning limitation [1.2]) and Dr. Turnbull's accompanying testimony exceed the scope of the Board's October 22, 2024, order governing the scope of the remand proceedings. *Id.* at 2–7. Because, as discussed above in Section IV.D.4(c), we find that Petitioner has proven unpatentability of limitation [1.2] even when considering the arguments and testimony sought to be stricken, we deny Petitioner's Motion to Strike as moot.

V. CONCLUSION

The table below summarizes our conclusions as to the challenged claims.[6]

[6] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding after the issuance of this Final Written Decision, we draw Patent Owner's attention to the April 2019

Claim(s)	35 U.S.C. §	References	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–9	103	Chardon, HDMI 1.3a	1–9	

VI. ORDER

It is

ORDERED that claims 1–9 of U.S. Patent No. 10,325,486 B1 have been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Strike is denied as moot; 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.

Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

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