

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

YEALINK (USA) NETWORK TECHNOLOGY CO. LTD., and
YEALINK NETWORK TECHNOLOGY CO., LTD.,
Petitioner,

v.

BARCO N.V.,
Patent Owner.

IPR2025-00491
Patent 10,684,972 B2

Before MEREDITH C. PETRAVICK, DAVID C. McKONE, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

LANEY, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Yealink (USA) Network Technology Co., Ltd., and Yealink Network Technology Co., Ltd. (collectively, “Petitioner”) and Barco N.V. (“Patent Owner”) are identified as the real parties in interest for this matter. Paper 2 (“Pet.” or “Petition”), 6; Paper 29, 1. The parties identify other IPRs as being related to this one, including IPR2024-01436 (“1436-IPR”), IPR2024-01437 (“1437-IPR”), IPR2024-01438 (“1438-IPR”), IPR2024-01439 (“1439-IPR”), IPR2025-00597, and IPR2025-00598. Pet. 6; Paper 29, 1–2. Patent Owner additionally provides a list of patents and applications that it contends are related. Paper 29, 1.

On January 17, 2025, Petitioner filed a Petition requesting *inter partes* review of claims 1–18 of U.S. Patent No. 10,684,972 B2 (Ex. 1001, “the ’972 patent”), along with a supporting declaration from Kevin C. Almeroth, Ph.D. Pet. 1; Ex. 1002. After institution (Paper 20), Patent Owner filed a Response to the Petition (Paper 25, “PO Resp.”) and likewise included its own supporting declaration from Michael C. Brogioli, Ph.D. (Ex. 2030). Petitioner filed a Reply (Paper 33 (“Pet. Reply”)) and a supplemental declaration from Dr. Almeroth (Ex. 1035), and Patent Owner filed a Sur-reply (Paper 39 (“PO Sur-reply”)). An oral hearing with the parties was held on April 16, 2026, and the transcript is of record. Papers 53, 54.

We have jurisdiction under 35 U.S.C. § 6. This is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the challenged claims of the ’972 patent. For the reasons discussed below, we determine Petitioner establishes by a preponderance of the evidence that the challenged claims are unpatentable.

B. The '972 Patent

The '972 patent, titled “Method and System for Making Functional Devices Available to Participants of Meetings,” relates to “methods, devices and systems for making functional devices [e.g., cameras, speakerphones, displays] available to participants of meetings, as well as software for carrying out such methods.” Ex. 1001, code (54), 1:5–8. As background, the '972 patent notes that “meetings are going digital” and, “[i]ncreasingly, people are using computer technology alone and in conjunction with broadband networks to support their meeting objectives prior to and during an actual meeting.” *Id.* at 1:31–35. “However, certain functionalities such as microphones and loud speakers tend to have a low quality if these are provided by portable devices such as laptops and mobile phones” and the '972 patent states that “[a]s meetings get larger in size there is a need for high quality audio as well as visual signals to be made available to participants at a meeting.” *Id.* at 1:37–42.

To address these concerns, the '972 patent describes a system designed to connect a user's processing device—such as a computer, laptop, PDA, or smartphone—to a base unit within a communications network via a wireless connection. Ex. 1001, 8:66–9:9. This enables users to gain access to various functional devices (e.g., microphone, speaker, display, camera) that are either attached to or part of the base unit. *Id.* at 9:10–17. The connection may be made through integrated wireless hardware or by using a first peripheral device, such as a dongle. *Id.* at 9:2–9. The functional devices are made available for shared use in group settings like meetings or classrooms. *Id.* at 9:18–28. Connection between the base unit and the functional devices may occur over wired interfaces such as USB (Universal

Serial Bus) or wirelessly via protocols like Bluetooth or Wi-Fi. *Id.* at 9:29–35.

The '972 patent describes the base unit as a hardware box comprising a digital processor, such as an CPU, along with memory and input/output ports. Ex. 1001, 9:48–55. It connects to functional devices like cameras, microphones, speakerphones, and touchscreens. *Id.* at 9:22–26, 9:55–10:2. The base unit manages these data streams with components like encoders, decoders, mixers, and encryptors. *Id.* at 12:30–35. And the first peripheral device—such as a USB dongle—serves as a bridge between the base unit and the user's processing device. *Id.* at 17:17–56. It presents fixed or configurable endpoints, including USB audio/video, HID (Human Interface Device), or vendor-specific interfaces, enabling standard operating system recognition. *Id.* at 12:58–13:44, 16:44–17:15.

To expose the base unit's connected functional devices to the user's processing device, the '972 patent describes employing one or more of five architectural methods. Ex. 1001, 10:16–67. These methods include: (1) tunneling packets through an endpoint of the first peripheral device, (2) “mimicking the at least one functional device, e.g. the second peripheral device at the first peripherals' end (e.g. receiver devices' end), either in software or hardware or both,” (3) “combining one or more functional devices . . . and exposing it to the one or more first peripheral devices . . . through a custom device in hardware, software or both,” (4) “combining one or more functional devices . . . and exposing its functionality through to the end user through proprietary software,” or (5) combining any of these approaches “to provide the function of the functional device e.g. the second peripheral device to the one or more first peripheral devices such as receiver devices.” *Id.* at 10:24–58. The exposure strategy may vary depending on

device availability across users, technical feasibility, and software support.
Id. at 11:37–40.

The system enables bidirectional communication between the processing device and the base unit over the wireless link, handled by firmware on the peripheral and base unit sides. During operation, data flows in both directions: signals from functional devices (e.g., cameras and microphones) are transmitted to the processing device, while user-generated data (e.g., audio output or screen sharing) is routed back to the base unit. *Id.* at 17:18–56. This includes media handling such as timestamping and lip sync synchronization between audiovisual streams. *See id.* at 13:34–41. USB endpoints on the first peripheral device may be preconfigured or dynamically set, based on the functional devices detected at the base unit. *Id.* at 16:44–17:15.

A particular application identified by the '972 patent for the described system is to provide support for unified communications (UC), such as Skype. Ex. 1001, 2:28–36. When having a Skype meeting, “the first peripheral device is connected to, e.g. plugged into a user processing device and all the functional devices connected to the base unit can be used, e.g. a better camera that gives a wide a room view, a better microphone and better speakers.” *Id.* at 11:64–12:2.

C. Illustrative Claims

Petitioner challenges claims 1–18 of the '972 patent. Pet. 5. Of the challenged claims, claims 1, 9, and 15 are independent. Ex. 1001, 22:63–24:59. Claims 2–8 depend from claim 1; claims 10–14 and 17 depend from claim 9; and claims 16 and 18 depend from claim 15. *Id.*

Claim 1 is illustrative and is reproduced below.

1. A system for connecting a processing device to a functional device connected to or in a base unit of a communications network, the processing device having a memory, a display and an operating system, the system comprising:
a first peripheral device being adapted to be coupled to the processing device via a generic communications protocol, the base unit having a transmitter and the first peripheral device having a receiver and at least one fixed or a configurable endpoint, where the at least one fixed or a configurable endpoint is a data source or a data sink which is able to store or emit data, of the functional device exposed or made available on the first peripheral device;
the base unit and the first peripheral device being adapted to transmit and receive data respectively over the communications network from the functional device to the processing device via the at least one fixed or configurable endpoint using the generic communications protocol for communication between the processing device and the first peripheral device,
wherein the processing device is adapted to host a unified communication between two or more processing devices.

Ex. 1001, 22:63–23:20.

D. Evidence and Asserted Grounds

Petitioner asserts that claims 1–18 of the '972 patent would have been unpatentable on the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §	Basis
1	1–18	103(a) ¹	Beel, ² Dinka, ³ Christison ⁴
2	1–18	103(a)	Kaplan, ⁵ Van de Laar, ⁶ Christison

II. ANALYSIS

A. Legal Standards

Petitioner bears the burden of establishing the unpatentability of the challenged claims by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (Sept. 16, 2011), includes revisions to Sections 102 and 103 that became effective on March 16, 2013. Because the challenged claims issued from an application claiming priority to an application filed before March 16, 2013, we apply pre-AIA law.

² U.S. Patent Application Publication No. 2015/0169477 A1, published June 18, 2015 (Ex. 1005) (“Beel”).

³ U.S. Patent No. 8,369,498 B2, issued February 5, 2013 (Ex. 1006) (“Dinka”).

⁴ U.S. Patent No. 7,761,627 B2, issued July 20, 2010 (Ex. 1011) (“Christison”).

⁵ U.S. Patent Application Publication No. 2010/0295994 A1, published November 25, 2010 (Ex. 1008) (“Kaplan”).

⁶ U.S. Patent Application Publication No. 2016/0014172 A1, published January 14, 2016 (Ex. 1007) (“Van de Laar”).

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

The Supreme Court explained in *KSR* that

[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” (alteration in original))). This search for answers about whether the claimed subject matter would have been obvious to a skilled artisan at the time of the invention applies “an expansive and flexible approach.” *Id.* at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according

to their established functions. *Id.* at 417. Reaching this conclusion, however, “requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination.” *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

“Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). “[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

Reasonable expectation of success of the proposed combination is also a question of fact. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1366 (Fed. Cir. 2016). “The reasonable expectation of success requirement refers to the likelihood of success in combining references to meet the limitations of the claimed invention.” *Id.* at 1367. In evaluating reasonable expectation of success, we must consider the appropriate scope of the “claimed invention.” *Id.* (emphasis omitted).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art would have had

a Master of Science (M.S.) degree in electrical engineering or computer science, and five years of work experience in a related field. Additional educational experience could substitute for some of the work experience.

Pet. 9–10 (citing Ex. 1002 ¶¶ 36–37). “Patent Owner does not dispute Petitioner’s proposed level of skill in the art.” PO Resp. 6.

On the complete record, we adopt Petitioner’s proposed definition of a person of ordinary skill in the pertinent art, as it is consistent with the ’972 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). In applying this standard, we generally give claim terms their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

Petitioner proposes constructions for a number of claim terms. Pet. 10–19. Specifically, the Petitioner proposes the following constructions (the recited claim language is *italicized*):

- *functional device*—“a second peripheral device connected in some way to a base unit” (Pet. 10);
- *generic communications protocol*—“is the protocol used by the pre-installed generic drivers to interface/communicate between the first peripheral device and the processing device” (*id.* at 12);
- *coupled*—“means ‘connected through electronic communication’” (*id.* at 13);
- *unified communication*—“audio or audio visual communications” (*id.* at 13);

- *means for encoding, optionally encrypting*—structure: “is software that encodes and optionally encrypts” and function: “is encoding and optionally encrypting data” (*id.* at 13); and
- *at least one fixed or a configurable endpoint, where the at least one fixed or a configurable endpoint is a data source or a data sink which is able to store or emit data, of the functional device exposed or made available on the first peripheral device*—“[a] data source or sink that is fixed or configurable and used to transfer data between the peripheral device and the functional device” (*id.* at 19).

Rather than addressing Petitioner’s proposals, Patent Owner states “the claims of the ’972 Patent require no construction as they are valid under their plain and ordinary meaning.” PO Resp. 6.

Our decision in this matter does not turn on resolving any particular differences between the parties’ constructions. Therefore, because only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy, we determine that no claim term requires express construction in this proceeding and that the ordinary and customary meaning of the claim terms apply. *See Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019).

D. Ground 1: Obviousness in View of Beel, Dinka, and Christison

Petitioner contends that claims 1–18 are obvious over Beel, Dinka, and, optionally, Christison. Pet. 26–46. For independent claims 1, 9, and 15, Petitioner relies on the same evidence and reason (*id.* at 26–38, 44–45); similarly, Patent Owner’s arguments are addressed to claim 1 with the understanding that the arguments apply equally to claims 9 and 15 (Prelim. Resp. 14–24). Furthermore, Patent Owner does not separately dispute any of Petitioner’s contentions regarding the patentability of dependent claims 2–8, 10–14, and 16–18. *See generally* PO Resp. Accordingly, we also focus on claim 1 in our analysis below.

1. Overview of the Prior Art Asserted in Ground 1

Before turning to the analysis, we summarize the three references on which Ground 1 rests. Petitioner relies on Beel as its primary reference, on Dinka in combination with Beel, and on Christison as an optional, additional reference. Because Ground 2 relies on Christison as well, we set out our description of that reference here and do not repeat it in connection with Ground 2 below.

a) Beel (Ex. 1005)

Beel is titled “Electronic Tool and Methods with Audio for Meetings” and relates to a network-based electronic meeting system and method that allows users to share arbitrary media content—including audio, video, and screen content—across a communications network with minimal setup. Ex. 1005, codes (54), (57), ¶¶ 40, 44, 73. To facilitate this, Beel describes an electronic meeting tool to addresses problems in meeting collaboration by communicating arbitrary media content from users at a meeting through a “zero-foot-print” architecture. *Id.* ¶¶ 113–116, 122, 138. The system comprises a node configuration adapted to operate a display node of a communications network, with the display node being coupled to a first display. *Id.* ¶¶ 44, 64, 123, 119. Beel describes the node configuration as being adapted to receive user selected arbitrary media content from multiple meeting participants and to control display of the user selected arbitrary media content on the first display through automatic composition functionality. *Id.* ¶¶ 123, 132–134.

Beel discloses a peripheral device (e.g., “USB dongle”) adapted to communicate the user selected arbitrary media content via the communications network that serves as a connection unit comprising a connector adapted to couple to a port of a processing device having a second

display, a memory and an operating system, and a transmitter. Ex. 1005 ¶¶ 44, 49, 58, 68, 70, 124–125, 128. Internally, the peripheral device contains executable code divided into functional components: (1) setup of communication channels using generic drivers, (2) connection to the network via an internal transceiver, (3) capture of screen content, (4) routing of that content to a display node, (5) GUI presentation to the user, (6) encoding, compression, and optional encryption of transmitted data, and (7) management of visual indicators and input handling. *Id.* ¶¶ 64–65, 67.

Beel describes the peripheral device as presenting itself as a composite device comprising a mass storage device, a HID, and a virtual audio device, utilizing pre-installed generic drivers of the operating system to eliminate installation requirements and administrative privileges. *Id.* ¶¶ 41–42, 50, 60–62, 65, 69, 205, 208. Beel teaches that the peripheral device may use a virtual audio device that presents itself as an audio output device to the processing device, enabling audio capture through generic USB audio drivers (UAC1/UAC2) without requiring specialized audio driver installation. *Id.* ¶¶ 43, 50, 312–313, 319. Both audio and video streams are time-stamped synchronously to ensure lip synchronization at the receiving end. *Id.* ¶¶ 43, 50, 314, 319.

Beel discloses using a portable program that is adapted to obtain user selected arbitrary media content through screen scraping techniques that read video frame buffers from the graphics card, enabling capture of full real-time content including full HD videos. Ex. 1005 ¶¶ 47–48, 51, 127, 320. Beel teaches that the program leaves a zero footprint on termination, meaning all temporary files, registry entries, and system changes exist only while the program is running and are completely removed upon exit. *Id.* ¶¶ 47, 56, 138. And, Beel describes the system as operating without

requiring software installation or configuration changes on the client processing device. *Id.* ¶¶ 62, 65, 69, 171, 173, 182. According to Beel, the disclosed system operates across multiple platforms providing plug-and-play functionality that bypasses network interface complications and firewall restrictions while maintaining the client processing device's independent networking capabilities for other applications. *Id.* ¶¶ 176, 179, 205.

Beel describes interacting with the system in a simple multi-step process. First, they connect the peripheral to the host device. Then, the embedded application is launched—either manually or automatically—and finally, the user triggers content transmission to the display by activating an input device (either physical or virtual). Ex. 1005 ¶¶ 58–59, 68. For automated operation, Beel teaches that the system may include a lightweight service (or daemon) pre-installed on the host that detects the peripheral and initiates the client software automatically. *Id.* ¶ 59. Beel teaches that the system supports “democratic screen sharing,” allowing any participant to share content directly to the main display without mediation by a central presenter or moderator, which fosters a more dynamic and equitable meeting experience. *Id.* ¶ 55. Beel teaches that content is routed automatically to the appropriate network node (e.g., display node or base station) without user configuration, using pre-paired devices to define routing destinations. *Id.*

b) Dinka (Ex. 1006)

Dinka is titled “Television Set,” and relates to “a television apparatus having an embedded processing apparatus for conducting voice or video calls via a packet-based network.” Ex. 1006, code (54), 1:13–15. Dinka discloses a media appliance system comprising integrated video processing apparatus configured for signal output to a display interface, a network interface module providing access to packet-switched communication

networks, non-volatile memory storage containing an embedded communication client application, and a processing unit operatively coupled to execute the client application software. *Id.* at 5:49–51, 6:14–17, 7:22–31.

Dinka disclose a communication client application that implements bidirectional session establishment protocols enabling local terminal users to engage in real-time multimedia communication sessions with remote network endpoints via packet-based network infrastructure. Ex. 1006, 6:23–39. The client application incorporates an automated session management subsystem configured to: receive network signaling messages containing invitation signals from remote terminal endpoints, where such invitation signals encapsulate trigger condition parameters that specify predetermined event criteria for automated session initiation; implement continuous monitoring functionality for the specified trigger condition parameters; and execute automated session joining procedures contingent upon detection of the specified event occurrence. *Id.* at 2:44–63, 11:5–15.

Dinka teaches that this architecture enables event-driven communication session scheduling that synchronizes session initiation with user-defined temporal or activity-based trigger events, thereby providing non-intrusive integration of real-time communication capabilities within media consumption workflows. Ex. 1006, 2:64–3:5, 11:5–15.

c) Christison (Ex. 1011)

Christison is titled “Wireless USB Hub” and discloses a wireless USB (“WUSB”) system addressing critical performance limitations in existing wireless USB systems while enabling seamless integration of legacy wired USB devices. Ex. 1011, code (54), 1:20–24. Christison describes “improving the throughput of WUSB Wire Adapter systems” by, in one embodiment, “streamlining the Wire Adapter Protocol to improve the

throughput of WUSB Wire Adapter systems” and, in another embodiment, “presenting wired USB devices plugged into a WUSB hub as if they are ‘native’ WUSB devices.” *Id.* at 3:18–25. Christison indicates that the technical problem solved stems from the inherent inefficiencies of existing WUSB Wire Adapter protocols, which suffer from excessive control message overhead (“chatty” communication patterns) and poor data flow pipelining, resulting in unacceptably low throughput in wireless USB environments. *Id.* at 2:8–17

Christison describes the system disclosed as “provid[ing] a Wireless USB hub that includes a first port configured to communicate with a wired USB enabled device, a second port configured to communicate with a first wireless USB enabled device, and a controller that detects the wired USB enabled device and presents the wired USB enabled device as a native wireless USB enabled device to the first wireless USB enabled device.” Ex. 1011, code (57). “The WUSB hub acts as a proxy for the wired USB devices and presents them to the host system as if they were native WUSB devices. The WUSB hub presents an attached wired USB device as a unique WUSB device with its own device address or as a separate function on an already existing device (the WUSB hub for instance, which may enumerate as a Device Wire Adapter).” *Id.* at 2:60–67.

Christison teaches that the Wire Adapter Protocol implements intelligent automatic segmentation of data transfers, “cut-through” transmission that begins downstream transfer upon receiving minimum data thresholds rather than waiting for complete segments, and eliminates explicit Transfer Complete messages in favor of downstream polling mechanisms. Ex. 1011, 3:5–15, 5:17–23. In Christison, the system “includes an Enhanced Wire Adapter Protocol that improves throughput by reducing the number of

messages that are exchanged as a part of data transfer, thereby reducing processing time and transfer time of the messages over the wired USB interfaces and wireless medium. Throughput is also increased by improving ‘pipelining’ of data flow through the system, which reduces transfer latency.” *Id.* at 4:52–59.

2. *Independent Claim 1*

We address claim 1 limitation-by-limitation, following the lettering Petitioner assigns to the limitations in the Petition (i.e., elements (a) through (h)). For each limitation that Patent Owner does not dispute, we set out Petitioner’s contention and, finding the contention supported, determine that Petitioner’s evidence is persuasive. For the disputed limitations—element (f) and element (g)—and for the motivation to combine, we set out the parties’ respective positions and explain why we find Petitioner’s evidence persuasive. Consistent with the parties’ presentations, we address the motivation to combine Beel with Christison within element (f), and the motivation to combine Beel with Dinka within element (g).

Element (a)—A system for connecting a processing device to a functional device connected to or in a base unit of a communications network

Petitioner contends that Beel discloses “[a] system for connecting a processing device to a communications network.” Pet. 28 (citing Ex. 1005, claim 92; Ex. 1002 ¶¶ 112–114). Petitioner contends that Beel further discloses the recited functional device connected to or in a base unit, explaining that “[o]ptional equipment can be cameras 39, 40, 41 for recording the progress of the meeting,” which “can be linked by a network 51, e.g. a cable network to the router 42 and/or the base node 36,” and that “a microphone or microphones 38 . . . can be used to transfer audio, e.g. to

the processing devices 31 and to loud speakers (not shown) attached to the base node 36 or part of the display 44.” *Id.* (citing Ex. 1005 ¶¶ 120, 41, 88, 310, Figs. 1A, 1B; Ex. 1002 ¶ 115) (emphasis omitted). Petitioner contends that “[e]xamples of a ‘functional device’ include cameras, microphones, speakers, and displays, as recited in claim 2 of the ’972 patent.” *Id.* (citing Ex. 1001, claim 2; Ex. 1002 ¶ 115).

Patent Owner does not dispute Petitioner’s contention as to element (a). On this record, we find Petitioner’s evidence persuasive to show that Beel discloses element (a).

Element (b)—the processing device having a memory, a display and an operating system

Petitioner contends that Beel discloses this limitation, citing among other things Beel’s disclosure of processing devices such as laptops, tablets, and PDAs having the recited components. Pet. 29 (citing Ex. 1005 ¶¶ 41, 45, 56, 64, 68, 71, 94, 125, 196, 310, claims 82, 92; Ex. 1002 ¶ 116).

Patent Owner does not dispute Petitioner’s contention as to element (b). We find Petitioner’s evidence persuasive to show that Beel discloses element (b).

Element (c)—a first peripheral device being adapted to be coupled to the processing device via a generic communications protocol

Petitioner contends that Beel discloses a first peripheral device “comprising a connector adapted to couple to a port of a user processing device 31” that is communicatively coupled to the processing device “via a generic communications protocol” because the processing device has “at least one pre-installed generic driver providing a generic communications protocol for communication between processing device and a standard class

of peripheral devices.” Pet. 29–30 (citing Ex. 1005 ¶¶ 56, 58, 125, 195; Ex. 1002 ¶¶ 117–120).

Patent Owner does not dispute Petitioner’s contention as to element (c). We find Petitioner’s evidence persuasive to show that Beel discloses element (c).

Element (d)—the base unit having a transmitter

Petitioner contends that Beel discloses the base unit having a transmitter, explaining that “[t]he base node 36 for communicating with the connection unit 47 has a receiver 63 which can be included in the connection unit 49 or integrated into the base node 36,” and that “[t]he receiver is preferably a transceiver.” Pet. 30 (citing Ex. 1005 ¶ 129; Ex. 1002 ¶ 121).

Patent Owner does not dispute Petitioner’s contention as to element (d). We find Petitioner’s evidence persuasive to show that Beel discloses element (d).

Element (e)—the first peripheral device having a receiver and

Petitioner contends that Beel discloses the first peripheral device having a receiver, explaining that “[t]he connection unit 47 for communicating with said base node 36 has a network interface e.g. comprising a transmitter 62,” and that “[t]he transmitter 62 is preferably a transceiver.” Pet. 30–31 (citing Ex. 1005 ¶¶ 120, 125, 128; Ex. 1002 ¶ 122).

Patent Owner does not dispute Petitioner’s contention as to element (e). We find Petitioner’s evidence persuasive to show that Beel discloses element (e).

Element (f)—at least one fixed or a configurable endpoint, where the at least one fixed or a configurable endpoint is a data source

or a data sink which is able to store or emit data, of the functional device exposed or made available on the first peripheral device

This limitation is disputed. It is a structural limitation: it recites an endpoint, residing on the first peripheral device, that is a data source or a data sink, that is “of the functional device,” and that is “exposed or made available on the first peripheral device.” Together with the base unit’s transmitter (element (d)) and the first peripheral device’s receiver (element (e)), it identifies the structure through which the communication recited in element (g) is carried out; it does not itself recite a direction of data flow. Patent Owner disputes this limitation in both its Response and its Sur-reply. We set out, in turn, Petitioner’s contention, Patent Owner’s position (as presented in its Response), Petitioner’s Reply, Patent Owner’s Sur-reply, the motivation to combine Beel with Christison that Petitioner advances within this limitation, and the reasoning leading to our conclusion.

(1) Petitioner’s Contention

Petitioner contends that Beel discloses the recited endpoint. Pet. 31–35. As a threshold matter, Petitioner asserts that the limitation is “ambiguous” as to whether it requires an endpoint “of the peripheral device” or “of the functional device,” and states that it therefore addresses both possibilities. *Id.* at 31, 33 (citing Ex. 1002 ¶123). First, Petitioner contends that Beel’s first peripheral device has at least one fixed or configurable endpoint, identifying the “[m]ass storage device 12,” the “USB audio device 14,” and the “USB HID device 13” shown in Beel’s Figure 11. *Id.* at 31 (citing Ex. 1005, Fig. 11, ¶¶ 320–323; Ex. 1002 ¶ 124). Petitioner contends these are either “fixed” (e.g., the mass storage device) or “configurable” (e.g., the virtual audio device). *Id.* (citing Ex. 1005 ¶ 50; Ex. 1001, 16:44–67; Ex. 1002 ¶ 124). Petitioner emphasizes that the ’972 patent discloses

“the identical figure illustrating the same endpoints” as Beel’s Figure 11, and that the ’972 patent admits Beel’s Figure 11 discloses endpoints. *Id.* at 31–32 (citing Ex. 1001, 4:28–33, 16:44–67, Fig. 4; Ex. 1002 ¶¶ 124–126). Petitioner quotes the ’972 patent’s admission that the Figure 4 elements—which the patent states are “described with reference to Figure 4 [to] do screen sharing and audio”—“are fixed and are a combination of vendor specific endpoints and a number of standard endpoints.” *Id.* at 32 (citing Ex. 1001, 4:28–33, 15:62–16:6; Ex. 1002 ¶ 126).

Second, Petitioner contends that Beel discloses that the endpoint is a data source or data sink “able to store or emit data, of the functional device exposed or made available on the first peripheral device.” Pet. 32. Petitioner relies on Beel’s disclosure that “audio data is captured through a virtual sound card interface added as a logical device over the physical interface provided in the peripheral device.” *Id.* (citing Ex. 1005 ¶43). Petitioner further relies on Beel’s disclosure that “[t]he peripheral device preferably acts as a composite device comprising for instance a (virtual) audio speaker device,” but that “instead of operating like a speaker the audio is channeled over the communications network,” and the peripheral device can “capture the audio stream with a device driver . . . and stream the audio to the base unit.” *Id.* at 33 (citing Ex. 1005 ¶¶ 317, 313–316; Ex. 1002 ¶ 128). Petitioner contends these endpoints allow the functional device—such as the A/V components connected to the base unit—to be exposed or made available on the first peripheral device, citing Beel’s disclosure of “a third software code portion [on the peripheral device] for receiving media content from the network and for displaying the media content on the display,” and Beel’s disclosure that the base node may be coupled to “microphones 38 that can be used to transfer audio, e.g. to the processing devices 31 and to loud

speakers.” *Id.* (citing Ex. 1005 ¶¶ 71, 120, 43, 50, 56, 75, 93, 119–122, 126, 298, 310–311; Ex. 1002 ¶ 129). Petitioner also relies on Beel’s statement that “[a]udio data is captured at this interface 8–11 internally in the peripheral device 32,” and “is then optionally re-encoded and streamed to the communications network,” contending that the peripheral device “can have a composite device able to store and emit virtual audio/visual data to endpoints, such as a speaker or display.” *Id.* at 34 (citing Ex. 1005 ¶ 319; Ex. 1002 ¶ 130).

(2) *Patent Owner’s Response*

In its Response, Patent Owner does not dispute that Beel’s peripheral device has an endpoint in the general sense; rather, it disputes that Beel discloses an endpoint that stores or emits data of the functional device. PO Resp. 19–24. Responding to Petitioner’s “ambiguity” point, Patent Owner argues that “[i]t is clear from a plain reading of the claim language that the endpoint is of the peripheral device,” but that the endpoint must be “a data source or a data sink ‘able to store or emit data, of the functional device exposed or made available on the first peripheral device.’” *Id.* at 19–20 (citing Ex. 1001, claim 1; Ex. 2030 ¶¶ 91–92). In Patent Owner’s words, “the processing device is able to receive data stored in or emitted by the endpoint of the peripheral device as if the endpoint was an endpoint of the functional device.” *Id.* at 20 (citing Ex. 2030 ¶ 91; Ex. 1001, 7:58–63, 19:52–61, 19:64–20:11).

Patent Owner next argues that the term “endpoint” does not appear in Beel, and that the drivers accompanying Beel’s Figure 11 (and the ’972 patent’s Figure 4) “are depicted on the client PC, not the external USB dongle.” PO Resp. 22–23 (citing Ex. 2030 ¶ 94; Ex. 1001, Fig. 4).

Patent Owner’s principal argument is that the data identified by Petitioner is the processing device’s data, not the functional device’s data. Patent Owner argues that the passages Petitioner blockquotes describe “an alternative embodiment of Beel regarding how ‘audio is channeled over the communications network,’” and that “[t]his data is not ‘of the functional device;’ the peripheral device acts as an audio out device when connected to the processing device and channels audio data of the processing device (not functional device) to the base unit.” PO Resp. 23 (citing Ex. 1005 ¶¶ 313, 317; Ex. 2030 ¶ 96). Patent Owner further argues that “[t]he audio data of the processing device is then communicated to the physical audio device of the base unit.” *Id.* (citing Ex. 1005 ¶ 315; Ex. 2030 ¶ 96). Patent Owner also observes that the Petition “does not provide a single citation to Dinka” for this limitation and “relies on Christison only to teach the sub-element: ‘exposed or made available.’” *Id.* at 23–24 (citing Ex. 2030 ¶ 97).

(3) *Petitioner’s Reply*

In reply, Petitioner argues that “[t]he ’972 patent itself admits that it and Beel disclose the same exact endpoints,” and that “Beel and the ’972 patent have identical figures illustrating endpoints,” both containing “the same ‘mass storage 12,’ ‘USB audio device 14,’ and ‘USB HID device 13’ endpoints.” Pet. Reply 7 (citing Ex. 1005, Fig. 11; Ex. 1001, 4:28–33, 16:51–56, Fig. 4). Petitioner relies on the ’972 patent’s statement that “endpoints should be interpreted broadly as data sources or sinks.” Pet. Reply 8 (citing Ex. 1001, 7:64-67). Petitioner further relies on Dr. Almeroth’s reply testimony that “Beel’s USB, MSD, HID, and audio devices are endpoints.” *Id.* (citing Ex. 1035 ¶¶ 10–11).

Petitioner also challenges the reliability of Dr. Brogioli’s testimony on this limitation, contending that Dr. Brogioli took the position that a reference

discloses no endpoint unless it uses the word “endpoint,” yet “[c]ontradicting himself” testified that “a mass storage device is a type of endpoint” and agreed “that audio devices are endpoints,” while declining to identify any endpoint in the ’972 patent’s Figure 4, “testifying that ‘there isn’t a block there that uses [the word endpoint].’” Pet. Reply 7–8 (citing Ex. 1034, 42:11–17, 43:19–21, 46:19–47:7, 57:5–61:4, 72:18–73:12; Ex. 1035 ¶ 10). Petitioner contends that the combination of Beel and Dinka, and further Christison, renders the limitation obvious, arguing that “Christison further supports the understanding of endpoints as functional devices capable of transmitting or receiving data within such a networked framework.” *Id.* at 8–9 (citing Ex. 1006, 1:7–39, Figs. 1, 3b; Ex. 1011, 4:39–6:12, 6:36–37, Figs. 6A–9).

(4) *Patent Owner’s Sur-reply*

In its Sur-reply, Patent Owner reiterates that the Beel devices Petitioner identifies “do not store or emit data of the functional device.” PO Sur-reply 8. Patent Owner argues that “the virtual audio device captures audio data from the processing device,” and that the mass storage device “stores a software application or configuration parameters to facilitate communication to the base node” — in each instance, Patent Owner contends, “processing device data; not functional device data.” *Id.* 8–9 (citing Ex. 1005 ¶¶ 43, 50, 208–209, 213, 313–314, 317, 320). Patent Owner further argues that “[t]he mass storage device and virtual audio device are not associated with the ‘functional devices’ identified by Petitioner,” namely “the optional cameras and microphones (disclosed at paragraph 120 of Beel), which do not communicate data over the mass storage device or virtual audio device endpoints.” *Id.* at 9 (citing Ex. 1005 ¶ 120). Finally, Patent Owner argues that the Petition “does not cite Dinka’s

disclosure to teach the endpoint limitation,” and that Dinka’s “peripherals are speakers, headphones, and webcams” that “communicate directly to a computer or TV” and thus “do not include a receiver and an endpoint that stores or emits data of a functional device as the claimed first peripheral device.” *Id.* at 9–10 (citing Pet. 31–35; Ex. 1006, 7:44–56, Figs. 3a, 3b).

(5) *Motivation to combine Beel and Christison*

Petitioner advances Christison as an optional, additional reference directed to the “exposed or made available” aspect of this limitation. Petitioner contends that “Christison discloses a method of wirelessly connecting functional devices to personal computers via a wireless peripheral device,” and “teaches one efficient example of presenting wireless USB devices as ‘native devices.’” Pet. 27 (citing Ex. 1011, code (57), 6:13–19; Ex. 1002 ¶ 110). Petitioner contends that a person of ordinary skill in the art would have combined this known technique with Beel: “Beel teaches connecting remote virtual devices to a client computer,” and “Christison teaches one way of effecting Beel’s virtual devices by presenting a wireless USB device as ‘native.’” *Id.* (citing Ex. 1005 ¶¶ 43, 50, 313–314; Ex. 1011, code (57); Ex. 1002 ¶ 111). Petitioner contends that the combination “would create the predictable result of a web conferencing system that used USB protocols to present remote functional devices as local or ‘native’ functional devices.” *Id.* at 27–28 (citing Ex. 1002 ¶ 111).

Patent Owner responds that “the proposed motivation to combine Christison with either Beel or Dinka is insufficient,” arguing that the Petition explains neither “how” nor “why” the combination would be made and “does not even conclude that a POSITA would actually make the combination,” but “simply alleges that the combination could have been made.” PO Resp. 31 (citing Pet. 27; Ex. 2030 ¶ 88). Patent Owner also

argues that even if Christison teaches “exposed or made available,” the Petition “still fails to identify how the combination teaches” the full limitation. *Id.* at 24 (citing Ex. 2030 ¶ 97).

(6) *Reasoned Determination*

Having considered the parties’ positions and the underlying evidence, we find Petitioner’s evidence persuasive to show that Beel—and, as additional and cumulative support, Christison—teaches or renders obvious the endpoint limitation. We reach this determination in several steps.

First, we agree with Patent Owner that, under the ordinary meaning of the claim language, the endpoint is an endpoint of the peripheral device, and that it must be “a data source or a data sink which is able to store or emit data, of the functional device exposed or made available on the first peripheral device.” Ex. 1001, 23:11–17. The limitation thus identifies a structure—an endpoint, residing on the peripheral device, that is a source or sink and that corresponds to (is “of”) the functional device—through which the communication recited in subsequent element (g) is carried out. By its terms, it imposes no requirement as to the direction in which data flows; it requires only that the endpoint be a data “source” or a data “sink” that is able to “store or emit” data. The operative transmit-and-receive communication “from the functional device to the processing device via the . . . endpoint” is recited in subsequent element (g), which we take up separately below. The disputed question under this limitation is therefore the structural one: whether Beel discloses, on the peripheral device, an endpoint that is “of the functional device.” Because the inquiry is structural and non-directional, we are not persuaded that the audio-out orientation of Beel’s described embodiment, on which Patent Owner relies, is dispositive of this limitation.

Second, we find that Beel discloses endpoints on the first peripheral device. The '972 patent expressly defines endpoints broadly “as data sources or sinks.” Ex. 1001, 7:64–67. And the '972 patent admits that Beel’s Figure 11 discloses the same endpoints depicted in the '972 patent’s own Figure 4. *Id.* at 4:28–33, 16:44–67. Beel’s Figure 11 and accompanying description disclose a “[m]ass storage device 12,” a “USB audio device 14,” and a “USB HID device 13” on the peripheral device. Ex. 1005, Fig. 11, ¶¶ 320–323. Patent Owner’s own declarant conceded that a mass storage device is “a type of endpoint” (Ex. 1034, 43:19–21), and that “audio devices are endpoints” (*id.* at 57:5–61:4). We give reduced weight to Patent Owner’s contrary position to the extent it rests on the premise that a reference cannot disclose an endpoint unless it uses the word “endpoint” (Ex. 2030 ¶ 94; Ex. 1034, 43:19–44:16, 72:18–73:12); a premise that is inconsistent with the '972 patent’s own broad definition and with the '972 patent’s admission regarding Beel’s Figure 11. As additional support not separately emphasized by the parties in this connection, we note Dr. Almeroth’s technical explanation that, for data to pass from a functional device to a peripheral device, “both the functional device and the peripheral device must have ‘endpoints’”—a data source and a data sink—reasoning consistent with the '972 patent’s definition. Ex. 1002 ¶ 125.

Third, we find that the endpoint Beel discloses is a data source or a data sink that is “*able* to store or emit data, of the functional device.” We begin with the words of the limitation. The endpoint need only be “*able* to store or emit data”—language of capability, not a requirement that particular data actually traverse the endpoint in operation, and still less in a particular direction. And the endpoint is defined by the character of the data it handles: it is “a data source or a data sink,” which the '972 patent instructs

must “be interpreted broadly as data sources or sinks.” Ex. 1001, 7:64–67. An audio endpoint, so understood, is characterized as an audio source or sink; its structure is not tied to any single instance of an audio device.

On that understanding, Beel’s disclosure establishes the required capability directly. Beel discloses that “audio data is captured through a virtual sound card interface added as a logical device over the physical interface provided in the peripheral device,” Ex. 1005 ¶ 43, that the peripheral device “acts as a composite device comprising for instance a (virtual) audio speaker device,” *id.* ¶ 317, and that “audio data is captured at this interface . . . internally in the peripheral device 32” and streamed over the communications network, *id.* ¶ 319. Beel thus shows the endpoint on the peripheral device actually storing and emitting audio—and, correspondingly, video—data, which is the very type of data produced and consumed by the audio/visual functional devices connected to the base unit, including the microphones, cameras, speakers, and displays. *Id.* ¶ 120. An endpoint shown to store or emit audio and video data is necessarily one that is “able to store or emit” such data; the capability the limitation requires is thus established by Beel’s disclosure.

We further find that this same evidence teaches a person of ordinary skill in the art that the endpoint is “of the functional device.” Because the endpoint is a generic, class-based audio (and video) interface defined by the data it carries rather than by allegiance to any one device, a skilled artisan reading Beel’s disclosure of an endpoint that stores and emits audio/visual data would understand that the same structure is the endpoint for like data produced by like functional devices—including the base-side microphones and cameras that Petitioner identifies as the functional device under element (a). A reference is read not only for what it expressly states but for what it

teaches a skilled artisan, and nothing in the endpoint's structure limits its ability to source or sink audio/visual data to a single device instance. Beel confirms this representational character: the peripheral is provided with "[a]n audio device that acts as a virtual sound card to a client PC over USB," Ex. 1005 ¶ 50, and is "present[ed] . . . to the processing device as a composite device (e.g. USB composite device)" driven by "pre-installed generic drivers," *id.* ¶ 62—that is, the endpoint exposed on the peripheral stands in for, and corresponds to, an audio functional device rather than a device of the peripheral itself. That structural correspondence is confirmed by the '972 patent's admission that its own Figure 4 endpoints, which the patent states "do screen sharing and audio," are the same endpoints disclosed in Beel's Figure 11. Ex. 1001, 4:28–33, 15:62–16:6; Ex. 1005, Fig. 11. On this record, we find that Beel discloses an endpoint, exposed on the peripheral device, that is a data source or sink able to store or emit data of the functional device, as the limitation requires. Whether, and in what direction, functional-device data is in fact communicated through that endpoint is addressed under subsequent element (g).

Fourth, we address, and are not persuaded by, Patent Owner's argument that Beel's identified endpoints store or emit only "processing device data," not "functional device data," and are "not associated with" the cameras and microphones of Beel. PO Sur-reply 8–9. Even accepting Patent Owner's premise that the embodiment Petitioner blockquotes describes the peripheral channeling the processing device's audio outward to the base unit, that premise does not defeat this limitation, for three reasons. The limitation requires only that the endpoint be "able to store or emit" data of the functional device; an endpoint shown to store and emit audio and video data is able to do so irrespective of the origin or destination of the data

in any particular narrated example. As explained above, the endpoint's identity as one "of the functional device" derives from the type of data it is structured to source or sink—audio and video—not from a fixed tie to a single device instance; an endpoint that a skilled artisan would recognize as able to carry the processing device's audio is, by the same evidence, one the artisan would recognize as able to carry the like audio and video of the base-side microphones and cameras. That Beel's described embodiment happens to illustrate one direction of flow therefore does not negate that the endpoint is structurally an audio (and video) device's endpoint exposed on the peripheral device. To the extent Patent Owner contends the limitation additionally requires proof that the base-side cameras' and microphones' data be shown reaching the processing device through the endpoint, that contention seeks to import into this structural limitation the directional, transmit-and-receive requirement that the claim places in subsequent element (g); we address, and find satisfied, that directional showing under element (g) next. Accordingly, Patent Owner's argument, which is directed to the content and direction of a particular data flow, does not undermine Petitioner's showing that Beel discloses an endpoint able to store or emit data of the functional device.

Fifth, we find that Christison provides additional, independent support and that Petitioner has articulated a sufficient reason to combine it with Beel. Christison teaches a known technique for "present[ing]" a wired device "to the host system as if [it] were [a] native WUSB device[.]" by reading and modifying device descriptors and by mapping "endpoints one-for-one for USB device endpoints" and treating "the collection of endpoints associated with a particular USB device as a function on the WUSB hub." Ex. 1011, 2:60–62, 6:66–7:3, 7:29–33, 9:21–38. We note Christison's disclosure that

the hub “participates in the WUSB protocol as if it were the WUSB devices it is proxying,” *id.* at 6:55–58, and “informs the host that a new function needs to be enumerated in order to activate support for a newly attached device,” *id.* at 7:33–35—disclosures that further confirm that Christison presents a remote functional device’s endpoint to the host. Beel “teaches connecting remote virtual devices to a client computer,” Ex. 1005 ¶¶ 43, 50, 313–314, and a skilled artisan would have recognized Christison as “one way of effecting Beel’s virtual devices by presenting a wireless USB device as ‘native.’” Ex. 1002 ¶¶ 110–111. We find this a sufficient, non-conclusory articulation of a reason to combine—the application of a known technique (Christison’s native-presentation of USB endpoints) to a device (Beel’s peripheral) ready for the improvement, with a predictable result. We further find a reasonable expectation of success, as both references operate within the same USB framework. Ex. 1002 ¶ 111. We note that Christison’s wireless-USB extensions expressly “build on existing wired USB specifications,” Ex. 1011, 1:52–54, and that Beel explains that generic USB device classes enjoy “standard built-in support . . . without special driver installation,” Ex. 1005 ¶¶ 312, 40, 185. We are not persuaded by Patent Owner’s argument that Petitioner’s use of the word “could” defeats the combination; read in context, Petitioner and Dr. Almeroth explain why a skilled artisan would have made the combination and what predictable result it would yield. Ex. 1002 ¶¶ 110–111. Because we find Beel, together with the ’972 patent’s admissions, discloses the endpoint of the functional device, we treat Christison as cumulative and confirmatory; it is not necessary to our determination, but it provides additional support.

Accordingly, we find Petitioner’s evidence persuasive to show that the combination teaches or renders obvious element (f).

Element (g)— the base unit and the first peripheral device being adapted to transmit and receive data respectively over the communications network from the functional device to the processing device via the at least one fixed or configurable endpoint using the generic communications protocol for communication between the processing device and the first peripheral device

This limitation is disputed. It supplies the directional requirement that element (f) does not: data must travel “from the functional device to the processing device via the . . . endpoint.” We address, in turn, Petitioner’s contention, Patent Owner’s position (as presented in its Response), Petitioner’s Reply, Patent Owner’s Sur-reply, the motivation to combine Beel with Dinka advanced within this limitation, and our determination.

(1) Petitioner’s Contention

Petitioner contends that Beel discloses the base unit transmitting audio/visual data and the first peripheral device receiving it, and that the recited path from the functional device to the processing device would have been obvious over Beel in view of Dinka. Petitioner relies on Beel’s disclosure that base-side “microphones 38 . . . can be used to transfer audio, e.g. to the processing devices 31.” Pet. 35 (citing Ex. 1005 ¶ 120; Ex. 1002 ¶ 134). Petitioner relies on Beel’s disclosure of “a third software code portion for receiving media content from the network and for displaying the media content on the display,” where “the first software code portion is adapted to use the generic communication protocol for transferring the media content between the peripheral device and the processing device.” *Id.* at 35–36 (citing Ex. 1005 ¶ 71; Ex. 1002 ¶ 135). Petitioner contends that this media content “can be, for example, audio/visual data presented by a different user or data from the cameras 39, 40, 41.” *Id.* at 36 (citing

Ex. 1005 ¶¶ 118–121, 50, 56, 75, 85, 88–89, 93, 126, 253–71, 298, 310–11;
Ex. 1002 ¶ 136).

Petitioner further relies on Dinka’s disclosure of bidirectional communication: “The client application is configured to allow a local user of the media appliance to participate in bidirectional communication sessions with other remote users via the network interface and packet-based network.” Pet. 36 (citing Ex. 1006, code (57); Ex. 1002 ¶ 137). Petitioner contends that Dinka discloses a “client application” that can establish a “voice or video call over the Internet 101” using the user terminals’ “webcam 112,” which Petitioner characterizes as a functional device. *Id.* at 37 (citing Ex. 1006, 6:12–13, 6:34–37; Ex. 1002 ¶ 137). Petitioner contends that “[i]t would have been obvious to a [skilled artisan] to combine Beel’s system of bidirectional communication using a peripheral device and base unit/node with Dinka’s system utilizing user devices’ webcams and client application . . . for bidirectional communication of video calls.” *Id.* (citing Ex. 1002 ¶ 138).

(2) *Patent Owner’s Position*

In its Response, Patent Owner argues that Beel does not disclose data originating at a functional device connected to the base unit and traveling, via the peripheral device, to the processing device. Patent Owner emphasizes the claimed path: the data “originates from a functional device connected to the base unit,” is “transmitted from the base unit and received by the first peripheral device,” and is “then communicated to the processing device from the first peripheral device.” PO Resp. 14–15 (citing Ex. 1001, claim 1; Ex. 2030 ¶ 99).

Patent Owner argues that “neither of the cameras 39, 40, 41 or microphones 38 utilize the claimed . . . communications path (through a

peripheral),” PO Resp. 15 (citing Ex. 1005 ¶ 120; Ex. 2030 ¶ 100), and that “[t]here is no disclosure in Beel which supports that the data from cameras 39, 40, or 41 ever interacts with the peripheral device, much less arrives at the user processing devices via the peripheral device,” *id.* at 16 (citing Ex. 1005 ¶ 120; Ex. 2030 ¶ 101). Patent Owner contends that the camera feeds “are simply described as being sent to the internet (43) via router (42),” *id.* at 17 (citing Ex. 1005 ¶¶ 118–119; Ex. 2030 ¶ 101), and that the outputs of the microphones “are described as being stored digitally in the node or another device to provide a record of the meeting,” *id.* (citing Ex. 1005 ¶ 121; Ex. 2030 ¶ 102). Patent Owner further argues that in many instances the Petition “relies on communications from the peripheral device to the base node, the opposite direction from the claimed path.” *Id.* at 18 (citing Ex. 1005 ¶¶ 75, 126, 263; Ex. 2030 ¶ 103).

(3) Petitioner’s Reply

In reply, Petitioner argues that “Beel teaches bi-directional communication, which satisfies ‘the first peripheral device being adapted to transmit and receive data’” of claim 1, and quotes a related Board institution determination that “Beel expressly describes microphones 38 transmitting audio data to processing devices 31.” Pet. Reply 4 (citing Ex. 1036, 24; Ex. 1035 ¶ 8). Petitioner reiterates Beel’s paragraph 120 and contends that Dr. Brogioli “unreasonably limits Beel’s transmission of audio data ‘to the processing devices’ as a direct transmission . . . without involving the peripheral device.” *Id.* (citing Ex. 1005 ¶ 120; Ex. 1034, 23:15–25:20, 133:1–136:5; Ex. 1035 ¶ 9). Petitioner argues that “Beel’s WiFi antenna located on the peripheral device is the obvious choice and the only option for the embodiments of FIGS. 5 and 11, which do not disclose means for communicating with IP-based networks other than by using the peripheral

device’s WiFi interface.” *Id.* at 5 (citing Ex. 1005, Figs. 5, 11; Ex. 1035 ¶ 9). Petitioner also relies on Dinka’s bidirectional architecture, contending that “Dinka expressly discloses bi-directional communication among peripheral and processing devices,” with “processing devices (computer terminals 102) [that] can both send and receive data.” *Id.* at 6 (citing Ex. 1006, 1:7–39, Figs. 1, 3b; Ex. 1035 ¶ 9).

(4) *Patent Owner’s Sur-reply*

In its Sur-reply, Patent Owner argues that “Beel is silent regarding any return communication from a base node to a processing device via the peripheral device,” contending that the source of Beel’s media content is the processing device rather than a functional device. PO Sur-reply 3 (citing Ex. 1005 ¶¶ 122, 126, 127, 135, 315–317). Patent Owner argues that the Reply’s proposed path “would require . . . three different wireless hops”—from microphones 38 to base node 36, from base node 36 to peripheral device 47, and from peripheral device 47 to processing device 31—whereas Beel more simply describes microphones connecting directly to processing devices, and that the microphones “are not connected to or in the base unit even under Petitioner’s . . . interpretation.” *Id.* at 5–7 (citing Pet. Reply 4–5; Ex. 1005, Fig. 1a). Patent Owner also argues that Beel’s Figure 11 “shows communication from a client PC’s USB Port 8 to the external USB dongle . . . and to the Base Unit via WiFi transceiver 21”—the opposite of the claimed path—and “does not teach or suggest a peripheral device receiving functional device data.” *Id.* at 7–8 (citing Pet. Reply 5; Ex. 1005, Fig. 11). Finally, Patent Owner argues that Dinka cannot cure Beel because “Dinka does not disclose a first peripheral device”; its “peripherals are speakers, headphones, and webcams” that “communicate directly to a computer or TV” and thus “do not include a receiver and an endpoint that stores or emits

data of a functional device as the claimed first peripheral device.” *Id.* at 9–10 (citing Pet. Reply 6; Ex. 1006, 7:44–56, Figs. 3a, 3b).

(5) Motivation to Combine Beel and Dinka

Petitioner advances its principal reason to combine Beel with Dinka in connection with this limitation and the unified-communication limitation. Petitioner contends that “[b]oth Beel and Dinka disclose systems of online audio/visual conferences using various communication applications.” Pet. 26 (citing Ex. 1005, code (57), ¶¶ 85–89, 118, 253, 259; Ex. 1006, code (57), 2:44–3:5, Fig. 1; Ex. 1002 ¶ 107). Petitioner contends that Dinka is “a Skype patent,” and that Skype is an example of the unified-communication call software referenced in the ’972 patent itself. *Id.* (citing Ex. 1006, code (73); Ex. 1001, 6:59–63, Fig. 1C; Ex. 1002 ¶ 107). Petitioner contends that Beel discloses using similar software for “electronic meeting systems,” “groupware,” and “web conferencing systems,” *id.* (citing Ex. 1005 ¶¶ 85–89), and that the AAPA confirms Skype was a known way to perform such web conferencing, *id.* at 26–27 (citing Ex. 1001, 6:59–63, 7:66–8:21). Petitioner contends that a skilled artisan, “motivated to improve similar systems in the same manner,” would have combined Beel and Dinka to yield “the predictable result of a web conferencing system using a unified communication call, such as Skype . . . wherein the system could utilize one or more functional devices’ capabilities.” *Id.* at 27 (citing Ex. 1002 ¶ 109).

Patent Owner responds that Dinka teaches away and that the Petition’s rationale is conclusory and hindsight-driven. Patent Owner argues that “Dinka actively discourages . . . the use of portable devices for virtual meetings and instead advocates for packet-based communications to be integrated in a television or set-top box.” PO Resp. 25 (citing Ex. 1006, 2:4–30; Ex. 2030 ¶¶ 74, 76). Patent Owner argues that Beel and Dinka are

“competing, and diametrically opposed, solutions,” and that “[t]he Petition fails to articulate why a POSITA would combine references with fundamentally different approaches.” *Id.* at 29 (citing Ex. 2030 ¶ 84).

Patent Owner argues that reliance on “general similarities” is insufficient, *id.*, and that the Petition draws a “false equivalence” from the ’972 patent’s reference to Skype. *Id.* at 30–31 (citing Pet. 26; Ex. 2030 ¶ 87).

Petitioner replies that Patent Owner “improperly limits the prior art to specific embodiments.” Pet. Reply 2. Petitioner argues that “Dinka discloses a system of personal computers or ‘plurality of computer terminals 102,’” *id.* (citing Ex. 1006, 5:45–46, Fig. 1; Ex. 1035 ¶ 5), and that “to the extent Dinka disclosed embedded systems as an alternative to personal computers[, that] does not teach away.” *Id.* at 3. Petitioner asserts that “a reference may be read for all that it teaches” and that “just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.” *Id.* at 3–4.

In its Sur-reply, Patent Owner argues that “Dinka’s pervasive preference towards room systems with embedded functions teaches away,” citing *Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1343–44 (Fed. Cir. 2011), and that this preference “undermines Petitioner’s proposed motivation to combine,” citing *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1363 (Fed. Cir. 2017). PO Sur-reply 12.

(6) *Reasoned Determination*

We find Petitioner’s evidence persuasive to show that the combination of Beel and Dinka teaches or renders obvious element (g). We proceed in steps, and we identify the functional device and the endpoint consistently with element (f): the functional device is the base-side microphone (or camera), and the endpoint is exposed on the peripheral device. Element (g)

adds the requirement that data travel from that functional device to the processing device, via that endpoint.

First, we find that Beel discloses the base unit transmitting and the peripheral device receiving over the communications network. Beel discloses that the base node's receiver "is preferably a transceiver," Ex. 1005 ¶ 129, and that the peripheral device's transmitter "is preferably a transceiver," *id.* ¶ 128—that is, each is capable of both transmitting and receiving. As additional support not separately emphasized by the parties, we note that this transceiver disclosure independently establishes the bidirectional capability of Beel's base unit and peripheral device over network 50, and that Beel discloses that the base node "may be coupled to a second connection unit 49 that provides access to the network 50 thus linking all of the processing devices 31, 36 together." *Id.* ¶ 118. The peripheral device includes "a third software code portion for receiving media content from the network and for displaying the media content on the display" of the processing device, "us[ing] the generic communication protocol for transferring the media content between the peripheral device and the processing device." *Id.* ¶ 71.

Second, we find that Beel discloses functional-device data reaching the processing device. Beel expressly discloses that base-side "microphones 38 . . . can be used to transfer audio, e.g. to the processing devices 31." Ex. 1005 ¶ 120. We credit Dr. Almeroth's explanation that, in the Figures 5 and 11 embodiments, the processing device communicates with the IP-based network only through the peripheral device's interface, such that audio from the base-side microphones reaching a processing device does so via the peripheral device. Ex. 1035 ¶ 9. We find that this evidence, taken together

with Beel’s transceiver and media-receiving disclosures, shows the recited path from the functional device to the processing device via the endpoint.

Third, to the extent Beel does not expressly describe every segment of the return path in a single embodiment, we find the recited path would have been obvious over Beel in view of Dinka. Dinka discloses “bidirectional communication sessions” conducted “via the network interface and packet-based network,” Ex. 1006, code (57), 2:51–54, 4:21–25, 5:1–5, and voice or video calls established over the Internet, *id.* at 6:35–36. We note that Dinka discloses a peripheral remote-control unit whose microphone and speaker are “operatively coupled to the [short-range RF] interface,” Ex. 1006, 6:56–61, and that this unit “communicate[s] voice signals from the microphone . . . to the television . . . and . . . receive[s] voice signals from the television . . . for playing out of the speaker,” *id.* at 6:62–67; *see also id.* at 9:27–44 (voice and video engines encoding microphone and webcam input “for transmission over the Internet” and decoding received media). This bolsters Petitioner’s showing that bidirectional carriage of a functional device’s audio through an intermediary was well within the level of skill in the art. Combining Beel’s transceiver-based peripheral-and-base architecture with Dinka’s bidirectional communication sessions would have been an obvious adaptation of Beel’s system, yielding the predictable result of functional-device data traveling from the base unit, through the peripheral device, to the processing device. Ex. 1002 ¶¶ 137–138.

Fourth, we address Patent Owner’s specific arguments. We are not persuaded by the argument that Beel is “silent regarding any return communication,” PO Sur-reply 3, because Beel’s paragraph 120 expressly discloses microphone audio transferred “to the processing devices 31,” and Beel’s transceivers, at paragraphs 128–129, and media-receiving software, at

paragraph 71, supply the return capability. We are not persuaded by the “three hops” argument, PO Sur-reply 5–7, because the claim recites a multi-segment path—from the functional device, to the base unit (transmit), to the peripheral device (receive), to the processing device—and does not require a direct connection; that Beel may also suggest a simpler direct connection does not negate the disclosed and obvious multi-segment path. We are not persuaded by the argument that Dinka “does not disclose a first peripheral device,” PO Sur-reply 9–10, because Dinka is relied upon for its teaching of bidirectional communication, not as a bodily substitution for Beel’s peripheral device; the peripheral device is supplied by Beel.

Fifth, as to the motivation to combine Beel and Dinka, we find Petitioner’s articulated reason persuasive and non-conclusory: both references are directed to online audio/visual conferencing, Ex. 1005 ¶¶ 85–89; Ex. 1006, code (57); the ’972 patent itself identifies Skype (a Dinka-associated technology) as an example of the recited unified-communication software, Ex. 1001, 6:59–63; and a skilled artisan would have combined the references to yield the predictable result of a web-conferencing system employing a unified-communication call that utilizes functional-device capabilities, Ex. 1002 ¶¶ 107–109. We are not persuaded that Dinka teaches away. A reference teaches away only if it criticizes, discredits, or otherwise discourages the claimed solution; Dinka’s preference for a television-integrated embodiment does not disparage the use of personal computers, and indeed Dinka discloses a “plurality of computer terminals 102” communicating over the network, Ex. 1006, 5:45–51. Disclosed preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. And a reference may be read for all that it teaches, including uses beyond its primary purpose; just because better

alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes. Weighing the competing declaration testimony, we credit Dr. Almeroth's explanation that a skilled artisan would have understood Dinka to teach inter-computer communication despite its stated preference, Ex. 1035 ¶¶ 5–6, over Dr. Brogioli's contrary view. We have considered Patent Owner's hindsight argument and find that Petitioner's rationale rests on the references' own disclosures and the knowledge of a skilled artisan, not on the challenged claims.

Accordingly, we find Petitioner's evidence persuasive to show that the combination of Beel and Dinka teaches or renders obvious element (g).

(7) *Element (h)—wherein the processing device is adapted to host a unified communication between two or more processing devices*

Petitioner contends that Beel discloses an electronic meeting tool “for communicating arbitrary media content between different users 37 (with their own processing devices 31 . . .),” Ex. 1005 ¶ 122, and expressly defines the processing device as a host: “Each of the processing devices 31 can be a host device,” *id.* ¶ 117. Pet. 37–38 (citing also Ex. 1005 ¶¶ 142, 196, 221; Ex. 1002 ¶¶ 139–141). Petitioner further relies on Dinka's disclosure of bidirectional communication sessions among remote users, Ex. 1006, code (57), and contends that the combination renders obvious hosting a unified communication such as a Skype conference. *Id.* at 38 (citing Ex. 1002 ¶ 143).

Patent Owner does not separately dispute Petitioner's contention as to element (h) apart from its motivation-to-combine arguments, which we have addressed above. On this record, we find Petitioner's evidence persuasive to show that the combination teaches or renders obvious element (h).

(8) *Conclusion*

After considering holistically all of the evidence and arguments presented by the parties (including the objective evidence addressed *infra* § II.F), we determine that Petitioner has carried its burden of proving by a preponderance of the evidence that claim 1 is unpatentable as being obvious in view of the combination of Beel and Dinka, with and without the additional evidence from Christison. Accordingly, we likewise determine that Petitioner has carried its burden of proving by a preponderance of the evidence that claims 9 and 15 are unpatentable as being obvious in view of the combination of Beel and Dinka, with and without the additional evidence from Christison.

3. *Remaining Claims 2–8, 10–14, and 16–18*

Petitioner provides a detailed, limitation-by-limitation analysis of dependent claims 2–8, 10–14, and 16–18, supported by the testimony of Dr. Almeroth. *See* Pet. 38–46; Ex. 1002 ¶¶ 144–181. Patent Owner does not separately address these claims in the context of Ground 1 in its Response or Sur-reply. Having considered all of Petitioner’s contentions and the supporting evidence as to these claims, we find that evidence persuasive to show that the combination of Beel and Dinka, with and without the additional evidence from Christison, discloses or suggests the additional limitations these claims recite. Petitioner has therefore also shown, by a preponderance of the evidence, that claims 2–8, 10–14, and 16–18 are unpatentable.

E. *Ground 2: Obviousness in View of Kaplan, Van De Laar, and Christison*

In Ground 2, Petitioner contends that claims 1–18 of the ’972 patent would have been obvious in view of Kaplan, Van de Laar, and, optionally,

Christison. Pet. 46–59. We resolve Ground 2 on a single, threshold issue: whether Petitioner has shown that a person of ordinary skill in the art would have been motivated to combine Kaplan and Van de Laar in the manner the Petition proposes. Because we are not persuaded that Petitioner has made that showing, and because the deficiency is common to every claim challenged under this Ground, we determine that Petitioner’s evidence does not establish that any of claims 1–18 would have been obvious on this Ground.

1. Overview of the Asserted Prior Art

Before turning to the proposed combination, we summarize the two principal references on which Ground 2 rests. We described Christison in connection with Ground 1 and do not repeat that description here.

a) Kaplan (Ex. 1008).

Kaplan is directed to transmitting video content wirelessly from a computer to a display device such as a television. Ex. 1008, code (57), ¶¶ 5–6. Kaplan’s system has two principal components: a receiver 110 coupled to the display device, which includes a wireless transceiver and video and audio outputs; and a transmitter 120—a USB dongle—that is inserted into a port of the computer. *Id.* ¶¶ 16–17, 45, Figs. 1–4. The transmitter and receiver each include a transceiver and perform two-way wireless communication with one another. *Id.* ¶¶ 6, 16–17, 42, 45.

A defining feature of Kaplan is that the receiver 110 and transmitter 120 are “pre-paired during the manufacturing process,” so that “there is no need for the user to pair or define settings” before use. Ex. 1008 ¶ 18. Kaplan describes this design as a “walled garden” approach “in which no configuration actions on the part of the user are needed,” contrasting it with the setup burdens of conventional 802.11-based networks. *Id.* ¶¶ 21, 53. In

operation, the transmitter first registers with the computer as a mass storage device and uploads software, and thereafter transmits video content to the receiver for display. *Id.* ¶¶ 59, 61, Fig. 6. Kaplan adds that, in some embodiments, the communications channel between the transmitter and receiver “is provided in accordance with commercially available wireless communications standards,” such as IEEE 802.11n. *Id.* ¶ 31.

b) Van de Laar (Ex. 1007)

Van de Laar is directed to wireless docking and, in particular, to enabling multiple “dockees” to dock wirelessly to a shared host. Ex. 1007, code (57), ¶ 9. A central element is the wireless docking host (WDH), which manages a set of wired and/or wireless peripherals—for example, displays and loudspeakers—and provides multiple dockee’s simultaneous access to those peripherals through wireless messaging and streaming protocols. *Id.* ¶¶ 73–74, 92. Each dockee device, such as a laptop or comparable mobile device, has its own “dockee communication unit”—for example, Bluetooth, Wi-Fi, or 60 GHz—through which it communicates with the host, and “there may be multiple communication units for that purpose.” *Id.* ¶ 76. In a practical example, a set of dockee’s connects to the WDH simultaneously using Wi-Fi Direct, with the WDH acting as the Wi-Fi Direct Group Owner. *Id.* ¶ 111.

The WDH distinguishes dockee’s into “primary” dockee’s—for example, a presenter, who controls the audio/visual content that is rendered—and “secondary” dockee’s—for example, attendees, who receive and monitor that content on their own devices. Ex. 1007 ¶¶ 52, 92. The peripherals are “considered to support standards such as Wi-Fi Serial Bus and Wi-Fi Miracast.” *Id.* ¶ 73. Van de Laar describes use in meeting-room, lecture-room, and classroom settings, and identifies a number of audio-

streaming mechanisms—including Skype—by which a dockee may provide output through the WDH and its audio peripherals. *Id.* ¶¶ 80, 128.

2. *The Proposed Combination*

Petitioner maps the claimed processing device to Kaplan’s computer 220, the first peripheral device to Kaplan’s USB transmitter dongle 120, and the base unit to Kaplan’s receiver 110, with Kaplan’s display 210 as the base-side functional device. Pet. 48–54; Ex. 1002 ¶¶ 187–202. As described above, Kaplan’s system wirelessly presents audio/visual content from the computer to a remote display, and its transmitter and receiver are pre-paired so that no user configuration is required. Ex. 1008 ¶¶ 18, 21.

Van de Laar is offered to supply the multi-user, multi-peripheral functionality that Kaplan’s single-display system lacks. Petitioner proposes to modify Kaplan’s receiver 110 to incorporate features of Van de Laar’s WDH so that the system may use multiple functional devices—beyond Kaplan’s display—and access those devices in a unified-communications (e.g., Skype) call. Pet. 47; Ex. 1002 ¶¶ 182–184. Christison is invoked only optionally, for the proposition that presenting a remote USB device as a “native” device was a known technique. Pet. 48; Ex. 1002 ¶¶ 185–186.

3. *Reason to Combine Kaplan and Van de Laar*

a) *Petitioner’s Contention*

Petitioner contends that both Kaplan and Van de Laar disclose the wireless presentation of audio/visual content, and that a person of ordinary skill in the art would have been motivated to “modify the receiver 110 of Kaplan to have features of the WDH of Van De Laar to improve usability, [and] allow use of multiple functional devices,” beyond Kaplan’s display, “to access the functional device(s) in a unified communications call.”

Pet. 47 (citing Ex. 1008, code (57), Fig. 2; Ex. 1007, code (57), Fig. 1, ¶ 9;

Ex. 1002 ¶¶ 182–183). Petitioner further contends that, because the ’972 patent’s AAPA and Van de Laar both identify Skype as a known unified-communications tool, the combination would have yielded the “predictable result of a web conferencing system using a unified communication call, such as Skype.” Pet. 47–48 (citing Ex. 1001, 6:59–63, 7:66–8:21; Ex. 1007 ¶ 128; Ex. 1002 ¶ 184). Petitioner supports these contentions with the declaration of Dr. Almeroth. Ex. 1002 ¶¶ 182–186.

b) Patent Owner’s Response

Patent Owner argues that a skilled artisan would not have been motivated to modify Kaplan’s receiver with Van de Laar’s WDH as Petitioner proposes. PO Resp. 42. According to Patent Owner, Van de Laar’s dockee’s communicate with the WDH through Wi-Fi or Bluetooth communication units associated with the dockee’s, without an intermediate peripheral device like Kaplan’s transmitter. *Id.* (citing Ex. 1007 ¶¶ 76, 111, Fig. 1; Ex. 2030 ¶ 118). Patent Owner contends that Van de Laar already provides the multiple-dockee and multiple-peripheral functionality invoked by Petitioner, and that the Petition does not explain why a skilled artisan would replace Kaplan’s receiver with Van de Laar’s WDH while continuing to rely on Kaplan’s transmitter. *Id.*

Patent Owner further contrasts Van de Laar’s multiple-dockee system with what it characterizes as Kaplan’s one-to-one, pre-paired “walled garden.” PO Resp. 43–44. It argues that Kaplan does not discuss using more than one transmitter or explain how its receiver would manage multiple transmitters, primary and secondary dockee’s, or dockee’s moving between those classes. *Id.* at 43 (citing Ex. 1007 ¶ 121; Ex. 1008 ¶¶ 18, 21; Ex. 2030 ¶ 119). Patent Owner also argues that using Kaplan’s approach for multiple users would require multiple transmitters and, on its reading,

multiple receivers, making the arrangement impractical for Van de Laar’s lecture or classroom setting. *Id.* at 43–44 (citing Ex. 1007 ¶ 53; Ex. 2030 ¶¶ 119–120). It contends that the proposed changes would abandon Kaplan’s no-configuration approach and reintroduce end-user pairing and interference-management concerns, rather than improve usability. *Id.* at 44 (citing Ex. 1008 ¶ 21; Ex. 2030 ¶ 121).

Patent Owner separately argues that the Petition’s stated motivation relies on the ’972 patent’s acknowledgment of Skype and on the assertion that known elements could have been combined predictably. PO Resp. 45–46. In Patent Owner’s view, the fact that Skype was known does not explain why a skilled artisan would have combined Kaplan and Van de Laar, particularly given their different communication approaches. *Id.* at 45 (citing Ex. 2030 ¶¶ 124–125). Patent Owner also argues that Christison’s technique for presenting a remote device as native addresses what could have been implemented, not why a skilled artisan would have made the proposed combination. *Id.* at 46 (citing Ex. 2030 ¶¶ 126–127).

c) Petitioner’s Reply

Petitioner replies that Patent Owner improperly confines Kaplan and Van de Laar to particular embodiments. Pet. Reply 9–11. Petitioner argues that Kaplan’s “walled garden” is not required because Kaplan also describes commercially available wireless standards and permits pairing steps to be added or removed depending on the application. *Id.* at 9–10 (citing Ex. 1008 ¶¶ 21, 31, 56, 65; Ex. 1035 ¶¶ 12–13). Petitioner likewise argues that Van de Laar is not limited to Wi-Fi Direct or an integrated communication unit, citing disclosures of Wi-Fi Serial Bus, Wi-Fi Miracast, peer-to-peer communication, a Wi-Fi Direct pre-association device, and multiple possible

communication units. *Id.* at 10–11 (citing Ex. 1007 ¶¶ 73–76, 117, 134; Ex. 1035 ¶¶ 14–15).

Petitioner further states that the Petition proposed modifying Kaplan’s receiver with Van de Laar’s features, including the use of multiple functional devices, and that Van de Laar teaches benefits for that combination. Pet. Reply 11 (citing Ex. 1007 ¶ 128; Ex. 1035 ¶ 15). Petitioner asserts an industry trend toward interoperability and flexible multi-device environments and argues that combining Kaplan’s transmitter/receiver architecture with Van de Laar’s multi-user, peripheral-sharing capabilities would address meeting-room needs by allowing multiple users to access AV peripherals without cumbersome configuration. *Id.* (citing Ex. 1035 ¶ 16).

Petitioner also argues that the references use standard protocols and compatible hardware and software, and that their different pairing mechanisms are implementation details rather than barriers to a predictable combination. Pet. Reply 12 (citing Ex. 1035 ¶ 17). It characterizes the proposed integration as a functional synergy that would support scalable, user-friendly conferencing for individual and group uses. *Id.* (citing Ex. 1035 ¶ 18). Petitioner further argues that the shared technological domain and protocols support a reasonable expectation of success, that Christison’s native-device teaching reinforces the rationale, and that the motivation arises from technical benefits and industry needs rather than hindsight or product emulation. *Id.* at 12–14 (citing Ex. 1035 ¶¶ 19–20).

d) Patent Owner’s Sur-reply

In its Sur-reply, Patent Owner contends that Petitioner still identifies known capabilities without explaining the tradeoffs or design considerations that would lead a skilled artisan to the proposed combination. PO Sur-

reply 18. Addressing Petitioner's reliance on Van de Laar's paragraph 128, Patent Owner argues that the cited disclosure concerns presenting content from a primary dockee through a WDH, in some embodiments using Skype, but does not explain why that capability would motivate modifying Kaplan's receiver with WDH features. *Id.* (citing Ex. 1007 ¶¶ 94, 127–128).

Patent Owner further argues that the Reply does not cure what it views as the Petition's reliance on the '972 patent's acknowledgment of Skype, generalized reference characterizations, and conclusory expert testimony. PO Sur-reply 19–20. It contends that the Reply's references to technical benefits and industry needs merely paraphrase the desired claim result, and that Christison's ability to present remote peripherals as native devices establishes a capability rather than a reason to combine Kaplan and Van de Laar. *Id.* Patent Owner also rejects Petitioner's suggestion that it must identify insurmountable technical barriers, arguing that the burden remains on Petitioner to establish why a skilled artisan would have made the combination. *Id.* at 20–21.

Finally, Patent Owner argues that the Reply raises new rationales based on an industry trend toward interoperability and on functional synergy, scalability, and user-friendliness. PO Sur-reply 21–22. Patent Owner contends that those rationales were not presented in the Petition and, in any event, are conclusory because the proposed system would require a peripheral device connected to each personal computer rather than allowing dockee's to use Van de Laar's integrated communication units. *Id.* at 22 (citing Ex. 1007 ¶ 76, Fig. 1).

e) Reasoned Determination

We are not persuaded that Petitioner has articulated a sufficient reason, supported by rational underpinning, to combine Kaplan and Van de

Laar in the proposed manner. Our determination does not require either reference to be deficient, Kaplan to be the preferred starting point, or the references to be bodily incorporated into one another. We also do not find that Kaplan teaches away from multi-user docking or that a skilled artisan lacked the ability to engineer the asserted combination. The issue is whether Petitioner explains why a skilled artisan would have selected the particular modification proposed.

The record establishes that multi-user conferencing, shared peripheral access, Skype, and standard wireless protocols were known. Van de Laar expressly identifies benefits associated with multi-user docking, including collaboration, presentation monitoring, and shared access to peripherals. Ex. 1007 ¶¶ 79–82, 92–98, 103. Dr. Almeroth’s testimony also supports that the relevant components and software could have been combined predictably. Ex. 1002 ¶¶ 183–184. We give that evidence full consideration.

The evidence, however, does not connect those general benefits to Petitioner’s particular combination. Petitioner proposes adding Van de Laar’s WDH functionality to Kaplan’s receiver while retaining Kaplan’s transmitter-based connection between the processing device and receiver. Pet. 47–48. Kaplan’s transmitter would continue to carry information from computer 220 to receiver 110, but Petitioner does not explain why a skilled artisan seeking Van de Laar’s multi-user benefits would retain that arrangement or how doing so advances the asserted objectives of interoperability, scalability, and multi-user peripheral access.

Kaplan emphasizes a pre-paired transmitter and receiver that provide a simplified, no-configuration connection. Ex. 1008 ¶¶ 18, 21, 40. Van de Laar emphasizes dynamic management of multiple dockee’s, permissions,

streams, and shared peripherals through a WDH. Ex. 1007 ¶¶ 52, 60, 74–76, 92–95, 111. Those differences do not render the combination impossible or establish teaching away. They do, however, leave an unresolved design question: why would a skilled artisan combine the systems in Petitioner’s asserted manner rather than use Van de Laar’s existing dockee-to-WDH arrangement to obtain the identified multi-user benefits? The Petition does not answer that question.

Petitioner’s Skype rationale does not supply the missing connection. The record establishes that Skype-based conferencing was known and that Van de Laar identifies Skype as one possible audio-streaming mechanism. Pet. 47; Ex. 1007 ¶ 128; Ex. 1002 ¶ 184. But the known availability of Skype does not explain why a skilled artisan would have modified Kaplan’s receiver with Van de Laar’s WDH functionality. It describes a possible use of the completed system, not a reason for selecting the asserted architecture.

Petitioner’s Reply arguments concerning interoperability, flexible meeting environments, scalability, functional synergy, and predictable implementation, Pet. Reply 11–13; Ex. 1035 ¶¶ 16–20, were not presented in the Petition; thus, they are forfeited. However, we would reach the same conclusion even if these arguments were considered. Even treating those arguments as proper elaboration and considering them fully, they establish desirable objectives and technical feasibility, but do not explain why Petitioner’s particular receiver modification would achieve those objectives or why a skilled artisan would select it.

Dr. Almeroth’s testimony warrants limited weight on that distinct issue. His testimony supports that a skilled artisan could have implemented a conferencing system using known software and shared peripherals. Ex. 1002 ¶¶ 183–184. It does not explain the design choice presented by

Petitioner’s combination—why the artisan would have added WDH functionality to Kaplan’s receiver while retaining Kaplan’s transmitter-based arrangement. The AAPA establishes that conferencing functionality was known, and Christison supplies a possible technique for presenting remote peripherals as native devices, which likewise fail to supply a reason for selecting the underlying Kaplan–Van de Laar combination. Pet. 47–48; Ex. 1002 ¶¶ 185–186.

For these reasons, we determine that Petitioner has not shown that a person of ordinary skill in the art would have combined Kaplan and Van de Laar as proposed. Petitioner’s evidence on the reason to combine is not persuasive.

4. Conclusion as to Ground 2

The reason-to-combine deficiency is common to every claim challenged under Ground 2. Petitioner advances a single rationale to combine Kaplan and Van de Laar for all of claims 1–18 (Pet. 46–48), and its obviousness theory for each of independent claims 1, 9, and 15, and for the dependent claims, depends on that same proposed combination. Because the motivation showing fails, it fails as to every claim that depends on it. Accordingly, Petitioner’s evidence does not persuade us that any of claims 1–18 would have been obvious over Kaplan, Van de Laar, and Christison, and Ground 2 fails as to all challenged claims.

F. Objective Evidence

Patent Owner argues that the commercial success of those products that incorporate its patented technology and its competitors’ licensing activities provide objective evidence of nonobviousness. *See* PO Resp. 47–72. Patent Owner provides an element-by-element analysis mapping of the challenged claims to its “Barco System.” *Id.* at 51–68. Patent Owner

contends that “there is essentially no unclaimed feature in the accused products.” *Id.* at 51. Patent Owner provides “United States Net Sales Annual Totals” for 2020 up to 2024, which demonstrate significant sales and Patent Owner contends that those sales demonstrate “commercial success using its patented invention [and] is strong evidence that the claims of the ’972 Patent are non-obvious.” *Id.* at 69–70. Finally, Patent Owner identifies two licenses taken by its competitors and another competitor that allegedly “changed the design of their competing product rather than face liability for patent infringement.” *Id.* at 70–72.

Petitioner responds that Patent Owner’s sales evidence for its Barco System lacks the necessary nexus to the claimed inventions at issue here because that system is “not coextensive with the claimed invention because it includes significant unclaimed features.” Pet. Reply 19. Petitioner highlights that it is undisputed that Patent Owner has several patents that are allegedly practiced by its Barco System and that Patent Owner concedes that each patent lays claim to significant features. *Id.* at 21–22. Petitioner notes further that Patent Owner relies exclusively on the presumption of a nexus to the claims at issue in this case and that Patent Owner offers no direct evidence showing any sale was the “direct result” of the claimed features. *Id.* at 22. Regarding Patent Owner’s licensing evidence, Petitioner argues that it is nothing more than evidence of “the mere existence of a license.” *Id.* at 23–26.

After considering the parties’ arguments and the submitted objective evidence of nonobviousness, we are persuaded Patent Owner’s license evidence is entitled to some weight, but we give no weight to the product sales evidence.

*1. Nexus of the Sales Evidence to the
Commercial Success of the '972 Patent*

Patent Owner asserts that claims of the '972 patent are coextensive with Patent Owner's ClickShare Products, which is formed of a ClickShare Button and a Barco Base. PO Resp. 47–72; PO Sur-reply 25–26. Patent Owner states:

Patent Owner identifies the '972 Patent as practiced by a number of products in the ClickShare Conference line, including the CX-20, CX-30, CX-50 (Gen 1 and Gen 2), CB Core, CB Pro, and the Button as identified on its website. Ex. 2017, 9. The first of these ClickShare Conferencing products were added to the ClickShare line in 2020 and extended ClickShare's "local sharing and collaboration capabilities with remote collaboration features by embracing traditional UC&C tools." Ex. 2026; Ex. 2027; Ex. 2028; Ex. 2029. The features of the '972 Patent are evident with use of the 2020 generation of ClickShare Button ("ClickShare Button") with one of the CX-20, CX-30, CX-50, CX-50 Gen2, CB Core, and CB Pro ("Barco Bases"). Together, ClickShare Button and a Barco Base form the Barco System.

PO Resp. 49–50.

Petitioner argues that Barco's ClickShare product is not coextensive with the claimed invention because the ClickShare product includes a significant unclaimed feature. Pet. Reply 19–22.

Considering first the product sales evidence, we are persuaded that the Barco System is not coextensive with any of the challenged claims. Perhaps the most illustrative evidence of this point comes from Patent Owner. Patent Owner has correctly identified that this proceeding is related 1436-IPR, 1437-IPR, and 1439-IPR, which each address a different one of Patent Owner's patents. Paper 29, 1–2. Notably, for our purposes here, in each of those proceedings Patent Owner similarly argues that there is objective

evidence of nonobviousness. *See e.g.*, 1436-IPR, Paper 21 at 47–66; 1437-IPR, Paper 15 at 39–56; 1438-IPR, Paper 15, 49–70; 1439-IPR, Paper 20 at 47–74. And, in each of those related cases, Patent Owner provided an element-by-element analysis to show the exact same “Barco System” product practices the claimed invention of the respective patent at issue in the respective IPR, moreover, in each case Patent Owner likewise contends “there is essentially no unclaimed feature.” *See* 1436-IPR, Paper 21 at 49–63; 1437-IPR, Paper 15 at 41–52; 1438-IPR, Paper 15, 51–67; 1439-IPR, Paper 20, 50–70. Furthermore, the sales evidence is for the identical products in each of the related proceeding, although here the products are an overlapping subset. *See* 1436-IPR, Paper 21 at 49–63; 1437-IPR, Paper 15 at 41–53; 1438-IPR, Paper 15, 51–67; 1439-IPR, Paper 20, 50–71.

“A patent claim is not coextensive with a product that includes a ‘critical’ unclaimed feature that is claimed by a different patent and that materially impacts the product’s functionality.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1375 (Fed. Cir. 2019). Patent Owner’s representation in the other IPRs demonstrates that the patent claims in this case are not coextensive with the Barco System product because that product indisputably includes “critical” unclaimed features claimed by a different patent that materially impacts the product’s functionality. Thus, because Patent Owner has failed to demonstrate a nexus between the sales evidence and the claims at issue here and because Patent Owner has offered no persuasive evidence directly linking the sales evidence to the claims, we do not give any patentable weight to the product sales evidence offered by Patent Owner.

2. *Acquiescence in Industry*

Patent Owner argues that industry acquiescence demonstrates secondary considerations of nonobviousness. PO Resp. 70–72.

Patent Owner first argues that licensing of the '972 patent by Creston shows industry acquiescence and shows nonobviousness of the claimed invention. PO Resp. 70–72; PO Sur-reply 22–25.

Petitioner argues that the mere existence of the Creston license is insufficient to show nonobviousness because there is no evidence that Creston entered the license because it believed that Barco's patents were valid or enforceable. Pet. Reply 23–26.

“[T]he mere fact of licensing, without more, is generally not a strong indication of nonobviousness if it cannot also be shown that the licensees did so out of respect for the patent rather than to avoid litigation expense.”

Bosch Auto. Serv. Sols., LLC v. Matal, 878 F.3d 1027, 1038 (Fed. Cir. 2017). As the Federal Circuit has long recognized, it is often “cheaper to take licenses than to defend infringement suits.” *EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 908 (Fed. Cir. 1985).

Patent Owner provides insufficient evidence to show that Creston licensed the '972 patent because Creston believed that that '972 patent was valid or enforceable. The Creston license involves three patent families and 20 patents total. Ex. 2011, 15. The '972 patent is among the 20 licensed patents (Ex. 2011, 15) and Patent Owner provided no evidence to show the weight or importance of the '972 patent to the license. Petitioner's other evidence persuades us that, to the contrary, the Creston license was part of an agreement driven by business factors, interests, and benefits beyond the patents themselves. *See* Ex. 1049, 73:7–74:3, 105:8, 106:1; Ex. 1042, 58:7–12.

We have reviewed Patent Owner’s arguments concerning *Ancora Techs., Inc. v. Roku, Inc.*, 140 F.4th 1351 (Fed. Cir. 2025), but find them misplaced. PO Resp. 50, 69; PO Sur-reply 2–3. Unlike here where Creston’s license covers a significant number of patents, *Ancora* analyzed a licenses to a single patent and held that “[l]icenses to the challenged patent . . . do not require a nexus with respect to the specific *claims* at issue.” *Ancora* at 1362 (emphasis added). We do not agree with Patent Owner that *Ancora* stands for the proposition that all licenses, regardless of the circumstances of the licensing, are strong evidence of nonobviousness. We give little weight to the Creston’s license of the ’972 patent.

Patent Owner finally argues that Defendants’ Opposed Motion for Ongoing Royalty in the related Texas Litigation (Ex. 2036) is strong evidence of nonobviousness because Petitioner asked the court for a compulsory license to the ’972 patent. Paper 48. Petitioner disputes that its Motion is evidence of nonobviousness because the Motion was filed to avoid needless future litigation. Paper 49 (citing Ex. 2036, 7, 13). The Motion indicates that “Yealink admitted that its WPP20 and WPP30 wireless presentation pods (or, dongles) infringed the asserted patents and withdrew them from the U.S. market” and that Petitioner now wishes to reintroduce dongles to the market and asks the court to determine an ongoing royalty for selling the WPP30, specifying a royalty rate for the dongle alone. *See generally* Ex. 2036. However, Petitioner has now withdrawn its motion. Ex. 1050. Nevertheless, we still find the Motion to have some probative value and give it some weight.

3. *Conclusion as to Secondary Considerations*

We have considered all of Patent Owner’s arguments and evidence concerning secondary considerations. We give Patent Owner’s evidence regarding its revenue and profits from the ClickShare Conference line little weight. We give some weight to Patent Owner’s evidence of licensing. We, however, do not find the licensing evidence outweighs Petitioner’s showing of obviousness.

III. CONCLUSION⁷

Based on the fully developed trial record, Petitioner has demonstrated by a preponderance of the evidence that claims 1–18 of the ’972 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–18	103(a)	Beel, Dinka, Christison	1–18	
1–18	103(a)	Kaplan, Van de Laar, Christison		1–18
Overall Outcome			1–18	

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

In consideration of the foregoing, it is

ORDERED that claims 1–18 of the '972 patent have been shown to be unpatentable; and

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

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