

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 NV

Patent Owner.

US Patent No. 11,966,346

Filing Date: December 21, 2018

Issue Date: April 23, 2024

Title: Method and System for Making Functional Devices Available to
Participants of Meetings

Inter Partes Review No.: IPR2025-00597

**PETITION FOR *INTER PARTES* REVIEW OF
US PATENT NO. 11,966,346**

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I. LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
Ex-1001	U.S. Patent No. 11,966,346 (“’346 patent”)
Ex-1002	Declaration of Kevin C. Almeroth, Ph.D.
Ex-1003	Curriculum Vitae of Kevin C. Almeroth, Ph.D.
Ex-1004	File History of U.S. Patent No. 11,966,346
Ex-1005	U.S. Publication No. 2015/0169477 (“Beel”)
Ex-1006	U.S. Patent No. 8,369,498 (“Dinka”)
Ex-1007	U.S. Publication No. 2016/0014172 (“Van de Laar”)
Ex-1008	U.S. Publication No. 2010/0295994 (“Kaplan”)
Ex-1009	Skype Webpage (Archived Sept. 14, 2012) (https://web.archive.org/web/20120914232239/http://www.skype.com/intl/en-us/home) (accessed Feb. 3, 2025).
Ex-1010	USB Endpoints and Their Pipes - Windows drivers _ Microsoft Learn.pdf (https://learn.microsoft.com/en-us/windows-hardware/drivers/usbcon/usb-endpoints-and-their-pipes) (accessed Feb. 3, 2025)
Ex-1011	U.S. Patent No. 7,761,627 (“Christison”)
Ex-1012	EP3732827B1 (“Renard”)
Ex-1013	Skype Webpage (Archived Nov. 28, 2015) (https://web.archive.org/web/20151128100316/http://www.skype.com/en/) (accessed Feb. 3, 2025)
Ex-1014	U.S. Patent Application Publication No. 2002/0196378 (“Slobodin”)
Ex-1015	U.S. Patent Application Publication No. 2008/0074560 (“Ichieda”)
Ex-1016	English Translation of JP Patent Application Publication No. 2007-208606 (“Maeda”)
Ex-1017	JP Patent Application Publication No. 2007-208606

Ex-1018	Certification for English Translation of JP Patent Application Publication No. 2007-208606
Ex-1019	U.S. Patent Application Publication No. 2002/0174254 (“Kita”)
Ex-1020	U.S. Patent Application Publication No. 2005/0210390 (“Ono”)
Ex-1021	EP Patent Application Publication No. 2107463 (“Deforche”)
Ex-1022	U.S. Patent Application Publication No. 2009/0172219 (“Mardiks”)
Ex-1023	English Translation of Japanese Patent Application Publication No. 2008-165007 (“Uchida”)
Ex-1024	JP Patent Application Publication No. 2008-165007
Ex-1025	Certification for English Translation of Japanese Patent Application Publication No. 2008-165007
Ex-1026	Imation Wireless Projection Link User Guide
Ex-1027	EZAir Press Release, “EZAir Wireless PC to TV Solutions Now Available Across Europe,” March 16, 2011
Ex-1028	Warpia Product Brief, “Wireless USB PC to TV Audio/Video Display Adapter,” 2009
Ex-1029	Q-Waves Product Overview, “Quicklink TV,” November 2010
Ex-1030	IOGear Installation Guide, “Wireless USB to VGA Kit,” 2008
Ex-1031	Dictionary definition of “Communication Protocol”
Ex-1032	WIPO Publication No. WO 2012/128972 (“Scragg”)
Ex-1033	Wi-Fi Security Webpage (Archived Aug. 16, 2017) (https://web.archive.org/web/20170816134219/http://www.wi-fi.org/discover-wi-fi/security) (accessed Feb. 3, 2025)
Ex-1034	Dictionary definition of “transform”
Ex-1035	What is screen scraping? By Alexander Gillis (https://www.techtarget.com/searchdatacenter/definition/screen-scraping) (accessed Feb. 10, 2025)

II. INTRODUCTION

Petitioner requests IPR of claims 1-22 of US Patent No. 11,966,346 (Ex-1001, the “’346 patent”) assigned to Barco NV (“Patent Owner.”) The ’346 patent discloses system for video conferencing where user computers connect to remote displays or speakers (*i.e.*, “*functional devices*”) that is remarkably similar to earlier-filed patents. For example, Barco owns earlier-filed U.S. Patent Publication No. 2015/0169477 (“Beel,” Ex-1005), which the ’346 patent admits,

shows an arrangement of components that can be used in embodiments of the present invention. This figure is FIG. 11 of WO 2013/037980 entitled “Electronic tools and methods with audio for meetings” which is incorporated herein by reference.

Ex-1001, 5:35-40. The examiner used Beel minimally in its examination of the ’346 patent and overlooked key features disclosed by Beel. Furthermore, the examiner never considered Beel in combination with other references presented herein, such as Dinka (Ex-1006) which, together, disclose all limitations of the challenged claims.

Additionally, the Office never considered other art relied on in this petition, including Van de Laar (Ex-1007) and Kaplan (Ex-1008), teaching well known and commonly used systems including providing “*transformations*” of data from the “*functional devices*.”

III. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(B)(1)-(4)

A. Real Parties-In-Interest

The real parties-in-interest are Yealink (USA) Network Technology Co., Ltd.
and Yealink Network Technology Co., Ltd.

B. Related Matters

The '346 patent is related to IPR2024-1436, IPR2024-01437, IPR2024-01438
and IPR2024-01439.

C. Counsel and Service Information

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Petitioners consent to electronic service when sent to each of the above emails.

D. Payment of fees

The PTO is authorized to charge any fees due during this proceeding to
Deposit Account No. 30827.

IV. GROUNDS FOR STANDING

Yealink is not barred or estopped from requesting IPR challenging the claims of the '346 patent.

V. PRECISE RELIEF REQUESTED

Ground 1: Claims 1-22, are obvious over Beel in view of Dinka, AAPA, and optionally Christison.

Ground 2: Claims 1-22 are obvious over Kaplan in view of Van de Laar, AAPA, and optionally Christison

VI. THE '346 PATENT

A. Prosecution History

The '346 patent issued from U.S. Application No. 16/771,068 (“the '068 Application”), which was National Stage Entry of PCT application PCT/EP2018/086537, filed on December 21, 2018, and which is a continuation-in-part of, and has priority to, U.S. Appl. No. 15/858,668 (“the '668 Application”) (now U.S. Patent No. 10,684,972). Ex-1004, 1-7. Barco used convoluted and misguided explanations of the '068 Application’s disclosure and the prior art to erroneously overcome the Examiner’s numerous rejections. *See* Ex-1004.

On October 12, 2021, the Examiner issued a Non-Final Rejection based on a combination of “Brands” (U.S. Publication No. 2015/0121466 (assigned to Barco)) and “Christison” (U.S. Patent No. 7,761,627). Ex-1004, 505-16; Ex-1002, ¶63. In

response, Barco canceled all claims and added new claims. The new claims included the following limitation:

wherein the client software, when executed by a processor of the processing device, is configured to present the first display device to the processing device and to allow interaction therewith,

Ex-1004, 660; Ex-1002, ¶63.

Barco argued that the '068 Application does not recite “first peripheral device 130, e.g., none is available.” Ex-1004, 665; Ex-1002, ¶64. Barco acknowledged that Brands did, however, disclose embodiments where the “portable application or a software only client [is] installed on the client processing,” but did not teach the portable application “create[d] a virtual functional device.” *Id.* Barco did not explain how peripherals would not be “virtual functional device” given that without a peripheral device, the peripherals would be exposed to endpoints on the processing devices, *i.e.*, a virtual device. Ex-1002, ¶64; *see also* § VII.B.2.

On March 21, 2022, the Examiner issued a Final Rejection of all claims based on Brands and “Beel” (U.S. Publication No. 2015/0169477). Ex-1004, 676-86; Ex-1002, ¶65. Beel is also assigned to Barco and has a similar disclosure. In response, Barco amended the claims to further require that the client software “is configured to provide any simulations or translations, as required, to allow interaction between the first display device and the processing device.” Ex-1004, 763 (underlining in original; deleted text not shown); Ex-1002, ¶65.

Barco argued that “the client software 70’ [is on the processing device and] is adapted to provide any simulations, or translations that are required to” interact directly between the display device and the processing device. Ex-1004, 769; Ex-1002, ¶66. Barco argued that Brands “us[ed] a processing device that operates through a peripheral device [the] combination relies on using peripheral device.” Ex-1004, 768; Ex-1002, ¶67. However, Barco reiterated that Brands discloses an embodiment that “does not include a peripheral device.” Ex-1004, 770; *see also* Ex-1004, at 665; Ex-1002, ¶67. Barco did not clarify how Brands’ disclosed software is not necessarily on the processing device if embodiments do not include a peripheral device. Ex-1002, ¶67. Barco admitted that Brands teaches “multiple participants, who can be at different locations, to engage in a media conference” (Ex-1004, 769) but did not distinguish how a “media conference” is not “audio or audio visual communications.” Ex-1002, ¶68.

On July 29, 2022, the Examiner issued a second Non-Final Rejection based on Brands and Beel. Ex-1004, 831-43; Ex-1002, ¶69. Barco amended the claims, in relevant part, to recite “the processing device having . . . a driver and a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection.” Ex-1004, 883; Ex-1002, ¶69.

Barco argued:

the presentation of the at least one functional device is at the operating system level, such that, for example, the endpoint for the functional device may be presented to the operating system for registration on the processing device, e.g., the endpoint being on the processing device...instead of on the peripheral device.

Ex-1004, 889; Ex-1002, ¶70. Barco further stated, “[T]he operation of the virtual functional device is at the operating system level of the processing device to allow full control to transfer the virtual device for the Unified Communication call.” Ex-1004, 890; Ex-1002, ¶71. Barco again stated Brands did not teach “client software that is specifically configured such to provide any simulations or translations, as required, to allow interaction between the first display device and the processing device.” Ex-1004, 888; Ex-1002, ¶71.

On April 12, 2023, the Examiner issued a second Final Rejection, reverting back to Brands and Christison. Ex-1004, 976-86; Ex-1002, ¶72. Barco amended the claims to additionally recite “wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device.” Ex-1004, 1031 (underlining in original).

Barco argued that the recited features create:

different flows / behaviors dependent on the actual data modalities and interprets/processes the data accordingly.... Fig. 15 (middle of page) shows that there are different data flows being done between the ‘driver installed on PC’, ‘base unit’ and ‘peripheral’. That is, the base

unit, there is the ‘data decode / processing / encryption’ part that shows that the data isn’t simply rearranged as in [prior art], but that the functional data (e.g. audio stream, video stream) is actually interpreted and transformed.

Ex-1004, 1037-38; Ex-1002, ¶72. Barco explained “the data transformations are related to the functional data of the functional device, e.g., the images for a camera, the audio data for a microphone, etc., in which the transformations can include encoding/decoding, mixing, (de)multiplexing.” Ex-1004, 1038; Ex-1002, ¶73. *But see* Ex-1005, ¶¶71-72.

On August 23, 2024, a Notice of Allowance issued because Brands allegedly did not teach transformations of the “functional data from the at least one functional device received by the processing device.” Ex-1004, 1049-50; Ex-1002, ¶74. However, Examiner noted Brands taught the peripheral device comprised software for “receiving, decrypting, and decoding incoming arbitrary media content”¹ and, as Barco concedes, Brands disclosed embodiments in which the software was integrated into the processing device (no externally connected peripheral device). Ex-1004, 1050, 665, 770; Ex-1002, ¶74.

¹ Beel contains substantially *verbatim* disclosure but also includes additional disclosure. Ex-1005, ¶¶71-72.

Based on the overlooked errors, the Examiner issued the Notice of Allowability and the '068 Application issued as the '346 patent on April 23, 2024. Ex-1004, 1044, 1213.

VII. LEGAL STANDARDS

A. Person of Ordinary Skill in the Art (“POSA”)

The '346 patent is directed to a system and method for connecting a processing device to a functional device to be used by participants of meetings. *See* Ex-1001, 1:46-54. In litigation concerning related patents, Barco alleged that a POSA would likely 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. Petitioners adopt this definition of a POSA solely for the purposes of this proceeding. Ex-1002, ¶¶36-37.

B. Claim Construction

These claim constructions are limited to this Petition and the '346 patent and shall not be construed as admissions or constructions in any other proceeding, including Unified Patent Court proceeding UPC_CFI_582/2024, concerning European Patent No. 3,732,827 B1 (the “'827 patent”), which is related to the '346 patent. The patents contain different specifications, prosecution histories, and claim limitations. Therefore, a POSA would not necessarily reach the same construction each proceeding. Ex-1002, ¶¶75-81.

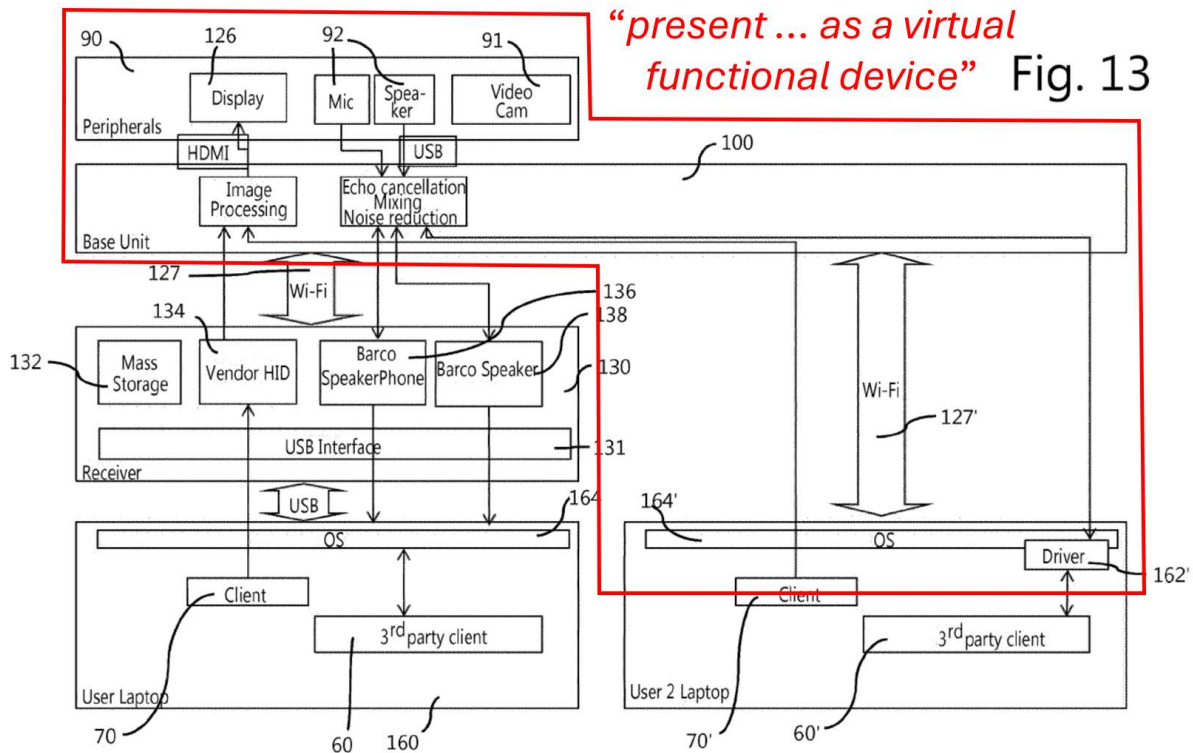
1. “functional device” (Claims 1, 7, 11, 16, 19)

The '346 patent defines the “functional device” as, “a second peripheral device connected in some way to a base unit.” Ex-1001, 9:3-4; Ex-1002, ¶¶82-83.

2. “to present the at least one functional device to the operating system of the processing device as a virtual functional device” (Claims 1, 7, 9-11, 16, 18-20)

The '346 patent does not define a “virtual functional device.” Ex-1002, ¶84. Instead, the '346 patent states that “other hardware or software exposes a virtual device that has the same functionality or more as the combined functionalities of the functional devices [attached to the base unit].” Ex-1001, 10:56-58 (emphasis added). In regard to computer technology, “virtual” means “created by computer technology and *appearing to exist but not existing in the physical world.*” Ex-1002, ¶84.

The claims of the '346 patent do not include an external peripheral device connected to the processing device. Ex-1002, ¶85. Instead, the system is “configured to present the at least one functional device to the operating system of the processing device as a virtual functional device.” Ex-1001, claim 1. For example, in “FIG. 13, the processing device 160’ has no first peripheral device 130” but instead, the “client software 70’ can be adapted to interact directly with the base unit 100 over a wireless connection 127’ and the client software 70’ is adapted to...present the display device 126 to the processing unit 160’ and to allow interaction therewith.” Ex-1001, 23:1-7; Ex-1002, ¶85.



Ex-1001, Fig. 13

Thereafter, the “third party software 60’ for the Unified Communication [located on the processing device]...will be presented with these virtual devices which it then uses for the call.” Ex-1001, 23:20-22; Ex-1002, ¶86. Accordingly, the limitation means “to present the at least one functional device to the operating system of the processing device as a non-physical, software component designed to mirror the functionalities of the functional device attached to the base unit and present it to the processing device.” Ex-1002, ¶86.

3. “screen scraping” (Claims 4, 14)

The ’346 patent defines “screen scraping” as “reading the video frame buffers and processing them, rather than just rendering them on a display.” Ex-1001, 8:22-

24. However, the '346 patent later describes reading video frame buffers as just an example of screen scraping: “screen scrape, e.g. to read one or more video frame buffers from a graphics card in the processing device 160.” *Id.*, 16:56-58; Ex-1002, ¶87. Thus, screen scraping is not limited to reading “video buffers” but is instead “a data collection method used to gather information shown on a display to use for another purpose.” Ex-1035; Ex-1002, ¶88.

4. “*means for encoding, optionally encrypting*” (Claims 8, 17)

The structure for this limitation is software that encodes and optionally encrypts. Ex-1002, ¶89. The function is encoding and optionally encrypting data. *Id.* This claim is sufficiently definite for purposes of determining patentability. *Samsung Electronics America, Inc. v. Prisia Eng'g Corp.*, 948 F.3d 1342, 1355 (Fed. Cir. 2020) (holding that the Board can find a claim obvious even if a term is indefinite).

5. “*providing simulations or translations, as required, to allow interaction between the first display device and the processing device*” (Claims 1, 11)

The '346 patent does not define this term and Barco cited *verbatim* disclosure as support for it without explaining what it means. Ex-1004, 763-767 (citing Ex-1001, 22:54-60); Ex-1002, ¶90. However, portions of the specification refer to simulations as virtually simulating a remote functional device as if it is connected locally. Ex-1001, 23:17-22, 36-41; Ex-1002, ¶90. “*Translation*” has no clear definition, but the claim recites that “*simulations or translations...allow interaction*

between the first display device and the processing device.” Ex-1002, ¶90. FIG. 5 of the ’346 patent illustrates translating the size of an image from a client PC 106-1 to the main display 126. Ex-1002, ¶90. The limitation also includes the term “*as required*,” making the “*simulations or translations*” optional. Ex-1002, ¶90. The term “*simulations or translations*” means “capable of modifying data to present on the first display device.” Ex-1002, ¶90.

6. “*configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device*” (Claims 1, 11)

“*Data transformation*” is a broad term meaning “To change the appearance or format of data without altering its content.” Ex-1034; Ex-1002, ¶91. Barco provided six citations to the original specification allegedly supporting this limitation: 18:16-23, 19:1-6, 21:14-17, 25:19-23, 28:13-29:2 (corresponding to Ex-1001, 11:52-62, 12:9-18, 14:39-54, 16:36-43, 18:34-19:2, respectively). This is the same disclosure referring to translations (claim 1, limitation g) as including encoding, decoding, and encryption. Ex-1002, ¶91. Barco further argued that FIG. 15 defines “*transformations*” in the context of “data decode / processing / encryption.” Ex-1004, 1037-38; Ex-1002, ¶91. Therefore, to the extent this term is reasonably certain, “*data transformations*” means “decoding, processing, or encrypting data.” Ex-1002, ¶91.

**7. “third-party software for a Unified Communication call”
“unified communication” (Claims 1, 9, 11, 18)**

The '346 patent defines the “Unified Communications systems or tools” as “audio or audio visual communications such as provided by ‘Skype™’ or ‘Skype™ for Business’. Such software can take over audio and/or visual data provided from a host processing device.” Ex-1001, 7:66-8:3. The '346 patent further explains that “processing devices ... shar[e] the Unified Communication (UC) call such as the Skype call or a Skype for Business call.” Ex-1001, 19:13-16. Accordingly, this limitation means an “audio or audio visual communication.” Ex-1002, ¶92.

8. “*at least one fixed or a configurable endpoint of the virtual functional device*” (Claims 10, 20)

The '346 patent defines the “*at least one fixed or a configurable endpoint*” as follows:

“Endpoints” can be described as data sources or sinks and are defined for USB Devices which can be physical devices or virtual devices. [E]ndpoints should be interpreted broadly as data sources or sinks. Hence data can be stored at an endpoint or emitted. An endpoint can act as a kind of buffer can be [sic] defined for physical devices or virtual devices.

Ex-1001, 9:11-18 (emphasis added); Ex-1002, ¶93. The claims, additionally, define the “*endpoint*” as “*a data source or a data sink which stores or emits data of the virtual functional device.*”

The quote above further explains that the claimed “endpoints should be interpreted broadly as a data sources or sinks...can act as a kind of buffer.” *Id.* A buffer is a temporary storage for digital data that is moving from one place to another, such as data received in a video buffer before it is decoded for presentation on a display. Ex-1002, ¶94.

The claims recite that the “fixed or configurable endpoint” is of the “virtual functional device” and is configured to store/emit data “of the virtual functional device.” The claims of the ’346 patent do not include an external peripheral device connected to the processing device. Ex-1002, ¶95. Instead, the claims require that the system is “configured to present the at least one functional device to the operating system of the processing device as a virtual functional device.” Ex-1001, claim 1. The “fixed or configurable endpoint” of the “virtual functional device,” then, is located on the “processing device.” Ex-1002, ¶95.

Further, the ’346 patent does not define the difference between “*fixed*” or “*configurable*” endpoints, and these are not commonly understood terms of art. Ex-1002, ¶96. However, the ’346 patent explains,

[F]ixed USB endpoints...are provided for the basic functionality, ...
[and] configurable USB endpoints are configured either when pairing a first peripheral device 130 device with a base unit 100 or over the wireless connection 127 between the processing device 130 and the base unit 100.

Ex-1001, 17:63-18:7. The context of the terms implies that the “*endpoint*” is either “*configurable*” or it’s not, *i.e.*, it’s “*fixed*.” Ex-1002, ¶97. To the extent the meaning of this term is reasonably certain, every device is either configurable or not, and therefore this limitation covers both possibilities and does not limit the claim because every device must be either configurable or not configurable. Ex-1002, ¶97. There are no other options. Alternatively, a fixed endpoint could mean a mass storage device, and a configurable endpoint could mean an HID or audio device capable of pairing with a base unit. Ex-1002, ¶97.

This limitation also requires that the “*endpoint*” “*is configured to store or emit data, of the functional device.*” This is a feature of USB endpoints. Endpoints are buffers, and buffers, by definition, store and emit data. Ex-1002, ¶98.

Accordingly, this limitation means “a data source or sink located on the processing device that is fixed or configurable and used to transfer data between the processing device and the functional device.” Ex-1002, ¶99.

VIII. OVERVIEW OF PRIOR ART

A. Beel (Ex-1005)

Beel published on June 18, 2015, and is prior art under 35 U.S.C. § 102(a)(1). Beel was considered on the record during prosecution of the ’346 patent but was used minimally as a secondary reference in an obviousness rejection. Ex-1002, ¶100.

Beel is also assigned to Barco NV but has a different inventive entity and published more than a year before the '346 patent's priority date. Ex-1002, ¶100.

Beel discloses systems and methods of wirelessly communicating media content between an electronic device and a display via a peripheral device and base node. Ex-1005 (*See id.*, ¶¶40-41, claims 82-102). Beel describes its systems and methods in largely identical language to that of the '346 patent. Ex-1002, ¶101.

B. Dinka (Ex-1006)

Dinka published on February 2, 2013, and is prior art under 35 U.S.C. § 102(a)(1). Dinka was not considered on the record during prosecution of the '346 patent. Ex-1002, ¶102.

Dinka is assigned to Skype (INID-73) and discloses methods and systems for communications between multiple computer terminals and televisions. Ex-1006, abstract, 1:12-15; Ex-1002, ¶103. For example, Dinka uses a client application which allows a local user to connect and communicate with other remote users via the network. Ex-1006, 2:44-55. Dinka also discloses bidirectionally sending audio/visual data that is encoded, decoded, and (de)multiplexed in both directions. *Id.*, abstract, 8:7-51, 9:32-50, 13:1-24, 15:24-32; Ex-1002, ¶103.

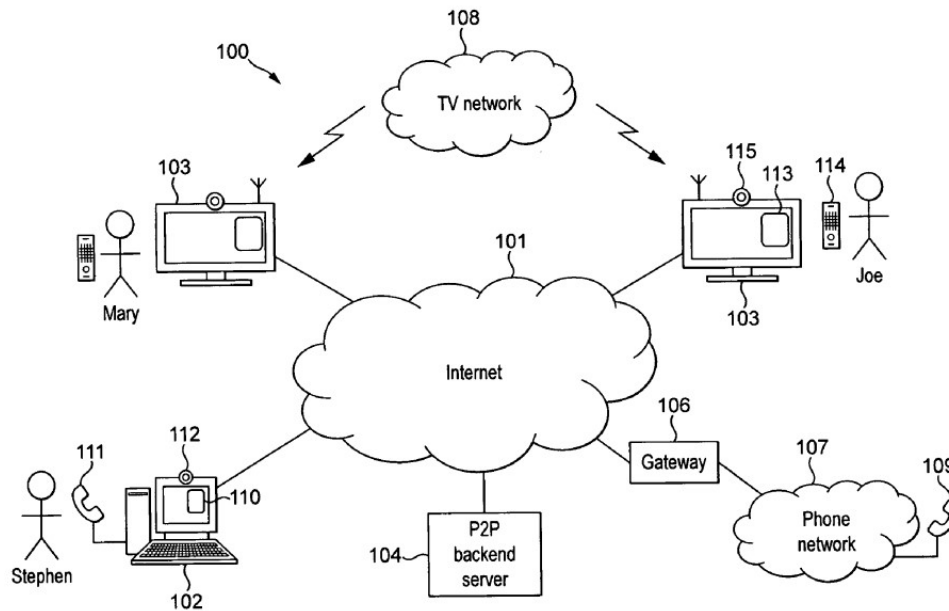


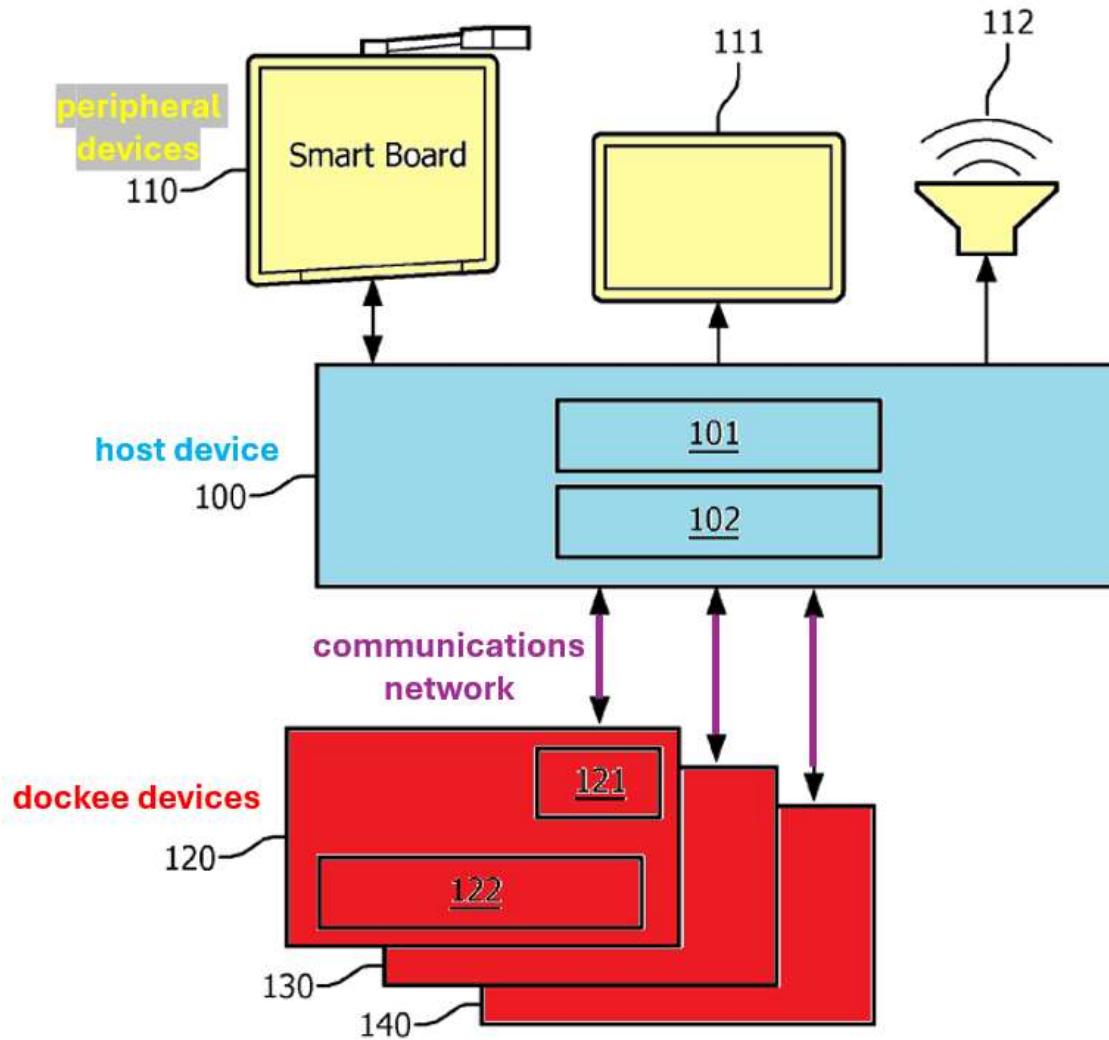
FIG. 1

Ex-1006, FIG. 1

C. Van de Laar (Ex-1007)

Van De Laar published on June 18, 2015, and is prior art under § 102(a)(1). It was not considered on the record during prosecution of the '346 patent. Ex-1002, ¶107.

Van de Laar discloses a system for connecting mobile devices, which it calls “dockees,” such as laptops, to one or more “peripheral[s] so as to control the peripheral[s] to perform [their] intended functions.” Ex-1007, ¶55, 73-74, 80, 82; Ex-1002, ¶108.



Ex-1007, FIG. 1

The dockees communicate to a host device via a wireless communications network. *Id.*, ¶¶74-76. The communication between the host device and the peripheral devices can be through a wired connection, such as HDMI or USB. *Id.*, ¶¶54, 110. They communication within the system can use a unified communication protocol, such as Skype. *Id.*, ¶128; Ex-1002, ¶109.

D. Kaplan (Ex-1008)

Kaplan published November 25, 2010, and is prior art under 35 U.S.C. § 102(a)(1). Kaplan was not considered during prosecution of the '346 patent. Ex-1002, ¶104.

Kaplan disclosed methods for transmitting video content between a computing device and display device. Ex-1008, abstract; Ex-1002, ¶105. Kaplan, therefore, describes a communications system 100 in which a computer 220 is wirelessly connected to a display device 210 via a USB transmitter 120. *See, e.g.*, Ex-1008, ¶¶16-18 and FIG. 2, reproduced below; Ex-1002, ¶106. The transmitter 120 is pre-paired with a receiver 110 which is connected to the display device 210, such that a user does not need to configure the wireless connection. Ex-1008, ¶18. In this system, “the user may select a video to be played and the selected video footage may be transmitted from the computer 220 through the transmitter 120 to the receiver 110 and then displayed on the display device 210.” Ex-1008, ¶28; Ex-1002, ¶106.

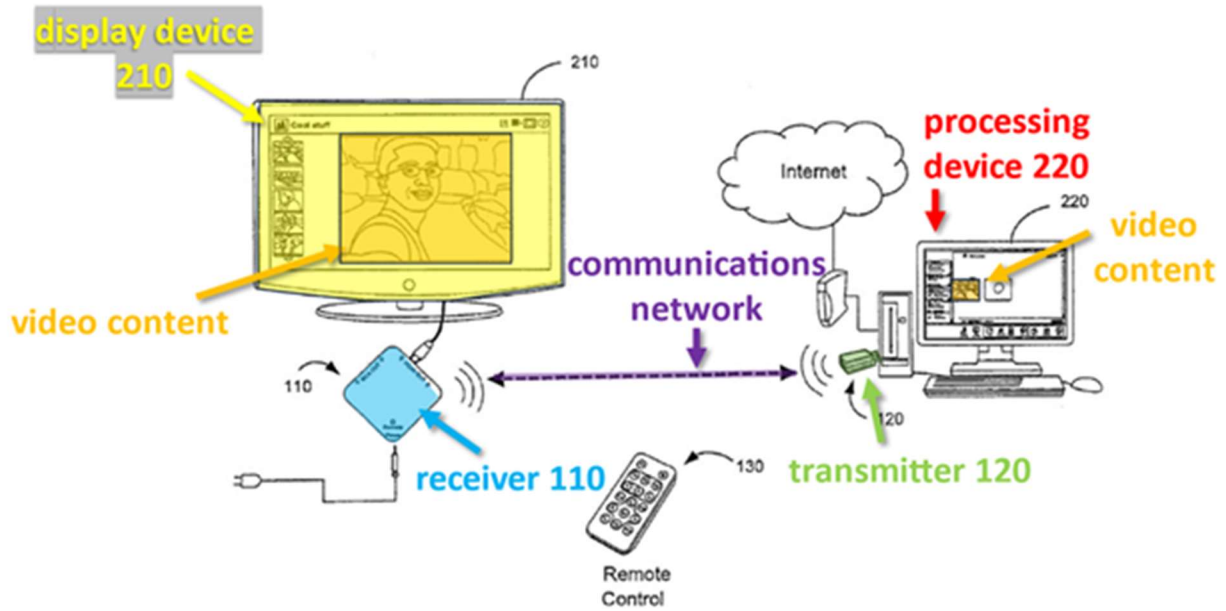
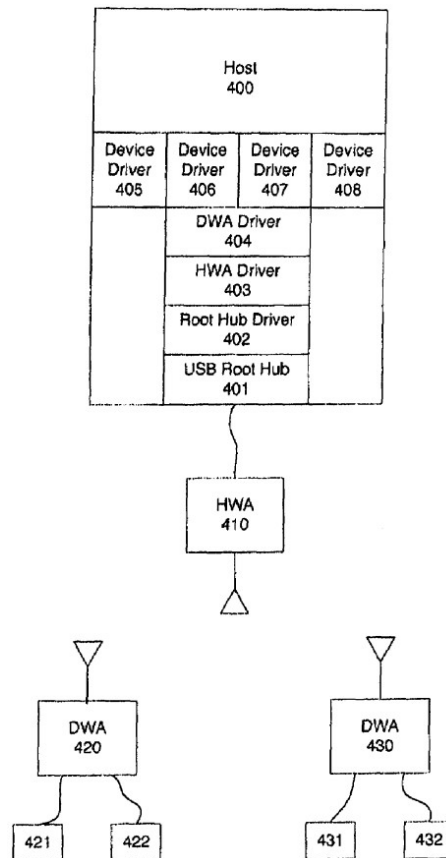


FIG. 2

Ex-1008, FIG. 2

E. Christison (Ex-1011)

Christison published on July 20, 2010, and is prior art under § 102 (a)(1). It was considered on the record during prosecution but overcome with the amendment of the “*data transformations*” limitation. Ex-1002, ¶110.



Ex-1011, FIG. 4.

Christison discloses a Host Wire Adapter 410 (HWA) and Device Wire Adapters 420/430 (DWA) for mimicking wired USB devices (421, 422, 431, 432) to appear to a PC as a wireless USB device (WUSB). Ex-1011, 3:59-4:16; Ex-1002, ¶111. One of the ways Christison accomplishes this is by configuring USB device descriptor fields to be compliant with the values for WUSB devices. *Id.*, 6:66-7:5, 9:36-38. This allows Christison to present wireless USB devices as “native devices,” which introduces throughput efficiencies over the prior art. *Id.*, 6:13-19; Ex-1002, ¶111.

F. Applicant Admitted Prior Art (“AAPA”)

The '346 patent admits that known web conferencing tools, such as Skype, “can take over audio and/or visual data provided from a host processing device.” Ex-1001, 7:66-8:3. Ex-1002, ¶¶60-62; Ex-1002, ¶112. Skype has been known since at least 2012, and has expanded to include many of the limitations presented by the '346 patent by at least 2015. Ex-1009; Ex-1013; Ex-1002, ¶112. The '346 patent also admits that Beel

shows an arrangement of components that can be used in embodiments of the present invention. This figure is FIG. 11 of WO 2013/037980 entitled ‘Electronic tools and methods with audio for meetings’ which is incorporated herein by reference.

Ex-1001, 5:35-41. Ex-1002, ¶61; Ex-1002, ¶113. The '346 patent further admits, concerning Beel’s FIG. 11, which is identical to FIG. 4 of the '346 patent:

These are fixed and are a combination of vendor specific endpoints and a number of standard endpoints and can be interpreted or understood as a custom Driver, a default OS driver and/or a host application as has been described with reference to FIG. 4 do screen sharing and audio.

Ex-1001, 17:65-18:3; Ex-1002, ¶61; Ex-1002, ¶114.

The '346 patent admits that drivers were well-known, standard means for controlling peripheral devices:

The term “pre-installed generic driver” is intended to mean a driver which is installed on a processing device such as a computer as a

standard driver, e.g. is installed with the installation of the operating system. Such a driver is standard for the operating system and can drive a standard class of peripheral devices coupled to or connected to the processing device.... Such a generic driver can be a human interface driver (HID) or a mass storage device driver, which has predetermined software components.

Ex-1001, 8:53-67.

IX. THE GROUNDS DEMONSTRATING A REASONABLE LIKELIHOOD OF PREVAILING

A. Claims 1-22 Are Obvious Over Beel in view of Dinka, AAPA, and Optionally Christison

1. Rationale to Combine

Beel and Dinka disclose systems of online audio/visual conferences using various communication applications. Ex-1005, abstract, ¶¶85-89, 118, 253, 259; Ex-1006, FIG. 1, abstract, 2:44-3:5; Ex-1002, ¶115. Dinka is a Skype patent (Ex-1006 (INID-73)), which is an example of an application that allows for bidirectional unified communication calls, as defined by the '346 patent. Ex-1001, FIG. 1C, 3:1-9. Skype allows for group communication calls and includes video sharing/streaming and the use of “screen sharing” to share a user’s screen to another device. Ex-1013; Ex-1002, ¶115.

Beel similarly discloses “electronic meeting systems,” and “web conferencing systems.” Ex-1005, ¶¶85-89. It also discloses embodiments in which the software need not be “zero footprint” and can be installed directly on the processing device,

thereby foregoing the need for a separate peripheral device. *Id.*, FIGS. 8-9, ¶¶215-248; Ex-1002, ¶116.

Furthermore, the '346 patent contains AAPA that Skype and pre-installed generic drivers are known ways to perform the web conferencing disclosed by Beel. Ex-1001, 7:66-8:21, 8:53-67; *see also* Ex-1009 (Skype available in 2012); Ex-1013; Ex-1002, ¶117. Therefore, motivated to improve similar systems in the same manner, a POSA would have been motivated to combine Beel and Dinka. Ex-1002, ¶117. The combination of Beel and Dinka would result in the use of the well-known and widely used Skype application, or similar prior art, for bidirectional unified communications to build on Beel's data sharing technology between a processing device and a functional device. Ex-1002, ¶117. This would create the predictable result of a bidirectional web conferencing system using a unified communication, wherein the system could utilize the capabilities of functional devices. Ex-1002, ¶117.

A POSA would recognize that connecting wireless functional devices to computers was well known in the art, and would recognize that Christison teaches one efficient example of presenting wireless USB devices as "native devices." Ex-1011, 6:13-19; Ex-1002, ¶118. Beel teaches connecting remote virtual devices to a client computer. Ex-1005, ¶¶43, 50, 313, 314. Christison teaches one way of effecting Beel's virtual devices by presenting a wireless USB device as "native." Ex-

1011, abstract. Ex-1002, ¶118. Beel, Dinka, and Christison could have been combined by using Christison's known technique of presenting a remote device as native to improve or suggest one way for Beel to implement its disclosed virtual devices. Ex-1002, ¶119. The combination would create the predictable result of a bidirectional web conferencing system that used USB protocols to present remote functional devices as local or "native" functional devices to host a unified communication call, such as Skype, wherein the system could utilize the capabilities of one or more functional devices for the unified communication call. Ex-1002, ¶119.

2. Claim 1

a. A system for connecting a processing device to a functional device connected to or in a base unit of a wireless connection, the system comprising:

Beel discloses this limitation largely verbatim: "A system for connecting a processing device to a communications network." Ex-1005, claim 92; *see also id.* ¶¶40 ("wireless network"), 93, 112-114, 117-119, 194-99, 225, 288, 319, 321, 323; Ex-1002, ¶120-122. Beel further discloses:

Optional equipment can be cameras 39, 40, 41 for recording the progress of the meeting. These cameras can be linked by a network 51, e.g. a cable network to the router 42 and/or the base node 36. Another optional item is a microphone or microphones 38 that 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.

Ex-1005, ¶120 (emphasis added); *see also*, ¶¶41, 88, 310, FIGs. 1a and 1b. Examples of “*functional device[s]*” include data capturing devices, microphones, speakers, displays, and cameras, as defined by claim 7 of the ’346 patent. *See* Ex-1001, claim 7, 2:14-17; Ex-1002, ¶122.

b. *the base unit having a transmitter,*

Beel discloses,

The 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. The receiver is preferably a transceiver. Optionally the transmitter/receiver can be a wireless transmitter/receiver.

Ex-1005, ¶129 (emphasis added); *see also id.*, ¶288; Ex-1002, ¶123.

c. *a first display device connected to or in the base unit,*

Beel discloses “The display node 36 is coupled to and adapted to allow display of media on some kind of display 44. The display node is in embodiments of the present invention a base node of the communications network 50.” Ex-1005, ¶119; *see also id.*, ¶319; Ex-1002, ¶124.

d. *at least one functional device connected to or in the base unit, and*

See § IX.A.2.a above (preamble recites “a functional device connected to or in a base unit”). *See* ¶¶120 (“optional equipment can be cameras.... [linked to] the base node 36”), 41, 88, 310, FIGs. 1a and 1b; Ex-1002, ¶125.

- e. the processing device having a memory, a second display device, an operating system, a third party software for a Unified Communication call, a driver and a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection,***

Beel discloses “the processing device having a memory, a display and an operating system with pre-installed generic drivers.” Ex-1005, ¶41; *see also id.*, abstract, ¶¶45, 56, 64, 68, 71, 94, 125, 142, 196, 310, claims 82 and 92; Ex-1002, ¶126.

Beel also discloses, “*a third party software for a Unified Communication call,*” (e.g., “web conferencing system”) “*a driver and a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection*”:

To avoid the need for administrator rights, this embodiment uses other peripheral device pre-installed drivers such as USB class drivers supported without any extra installation....This embodiment...routes at least Screen scraped data presented by client Software running on the processing device for transfer to a communications network via a network connection of the processing device.

Ex-1005, ¶221 (emphasis added); *see also id.*, ¶¶85-89, 205, 208, 213-14, 215-248 (fourth embodiment discloses removing the peripheral device, *i.e.*, the portable application is stored on the processing device); Ex-1002, ¶127. The network connection is, for example, the WiFi interface 2 illustrated in FIGs. 8-9. *See Ex-*

1005, FIGs. 8-9; Ex-1002, ¶128. Each of the “*operating system, third party software for a Unified Communication call, driver and client software*” allow “*the processing device interact directly with the base unit over a wireless connection.*” Ex-1002, ¶128.

Regarding the “*Unified Communication call*,” Beel discloses communication between users at different endpoints,

an electronic meeting tool for communicating arbitrary media content between different users 37 (with their own processing devices 31, e.g. PC, mobile phone, or tablet) and one display or projector or multiple displays or projectors 44 in the meeting room 30.

Ex-1005, ¶122; *see also, id.*, abstract, ¶¶13, 44, 87-88, 113, 253-58; Ex-1002, ¶129. Beel further discloses a video conferencing context, such as when “one or multiple client operating devices are not in the direct vicinity of the base node but on a remote location.” Ex-1005, ¶253; *see also id.* ¶252 (“video conferencing equipment”); Ex-1002, ¶130-31. Beel’s disclosure aligns with the definition of “Unified Communication call.” *See* § VII.B.7. *See also* Ex-1001, 8:16-21; Ex-1002, ¶131. The ’346 patent also defines Skype™ as a form of “unified communication.” Ex-1001, 3:1-10.

Dinka discloses using the well-known Skype application: “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.” Ex-1006, abstract; Ex-1002, ¶132. Dinka’s “unified communication” application would have been one obvious example of an application to run on Beel’s system. Ex-1002, ¶132.

f. wherein the base unit, via the transmitter, is configured to transmit data over the wireless connection to the processing device,

Beel discloses the “base node 36 for communicating with the connection unit 47 has a receiver 63.... Optionally the transmitter/receiver can be a wireless transmitter/receiver.” Ex-1005, ¶129. *See also id.*, ¶¶71 (“In another aspect of the invention a peripheral device is provided for providing communication connectivity to a processing device which is provided with memory, a display...[T]he peripheral device comprising...a third software code portion for receiving media content from the network and for displaying the media content on the display”), 120, 288; Ex-1002, ¶133. The “display” receiving the media content from the network, *i.e.*, the base unit, in this embodiment of Beel is the display of the processing device.” ¶¶ 221-248. *See also id.*, ¶¶247-250 (disclosing an embodiment with no peripheral device, *i.e.*, bidirectional data transmission would transmit directly to the processing device); Ex-1002, ¶133.

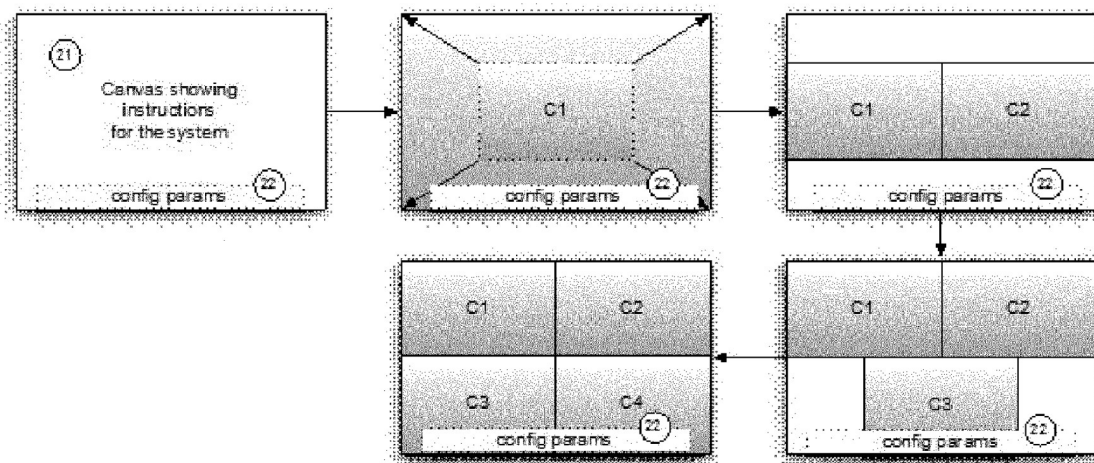
g. wherein the client software, when executed by a processor of the processing device, is configured to provide any simulations or translations, as required, to allow interaction between the first display device and the processing device,

Beel discloses “the client software...allow[s] interaction between the first display device and the processing device”:

This embodiment of the present invention routes at least screen scraped data presented by client software running on the processing device for transfer to a communications network via a network connection of the processing device.

Ex-1005, ¶221. *See also id.*, ¶¶247-250 (disclosing an embodiment with no peripheral device, *i.e.*, bidirectional data transmission would transmit directly to the processing device); Ex-1002, ¶134.

Beel’s FIG. 2 discloses modifying or resizing data to be presented onto the main display, similar to FIG. 5 of the ’346 patent:



Ex-1005, FIG. 2

Ex-1002, ¶135. Beel also explains “The base node 36 receives the plurality of arbitrary media content...and auto composes this media content for rendering on the central display.” Ex-1005, ¶143. The auto composition is an example of translating

from one screen size to another. *See also id.*, ¶¶71-72 (underlining added) (“executable software code [of the peripheral device] for execution on the processing device” includes “eleventh code for providing a means for receiving, decrypting and decoding incoming arbitrary media content” and “twelfth code for scaling of incoming arbitrary media streams”); Ex-1002, ¶136.

Beel also discloses encoders/decoders, packetizers/unpackers, and the like. *See* Ex-1005, ¶¶320, 322-23. These components at least translate data (*e.g.*, between an encoded and decoded form) to “*allow interaction between the first display device and processing device.*” Ex-1002, ¶137.

h. and wherein the client software and the driver, when executed on the processing device, are configured to present the at least one functional device to the operating system of the processing device as a virtual functional device,

See § VII.B.2 (“*virtual functional device*”). Beel discloses,

The peripheral device preferably acts as a composite device comprising for instance a (virtual) audio speaker device. However instead of operating like a speaker the audio is channeled over the communications network. The peripheral device can preferably capture the audio stream with a device driver, for instance a built in ALSA UAC1, and stream the audio to the base unit...The peripheral device then encodes this time stamp into the audio stream (for instance RTP audio stream) that is streamed to the base unit. At the receiving end, the audio and video streams are then preferably

recombined taking into account the time stamp to reach lip synchronization.

Ex-1005, ¶317; *see also, id.* ¶¶313-316. Beel is additionally, at least obviously, configured for bi-directional communication (*See* Ex-1005, ¶¶71-72) with functional devices attached to the base node. *See* Ex-1005, ¶¶120-21; Ex-1002, ¶138. Accordingly, in Beel, an audio “*functional device*” connected to the base unit is “*present[ed]...to the operating system of the processing device as a virtual functional device.*” *See* Ex-1005, ¶¶247-250 (disclosing an embodiment with no peripheral device, *i.e.*, bidirectional data transmission would transmit directly to the processing device); Ex-1002, ¶138.

Christison, optionally, complements the disclosure of Beel and Dinka with regard to the “*virtual functional device.*” Ex-1002, ¶139. For example, Christison discloses that the “Proxy WUSB [wireless USB] Hub 1000 takes advantage of this efficiency by presenting wired USB devices 1010, 1020 as if they are ‘native’ WUSB devices.” Ex-1011, 6:17-19. Therefore, the USB devices attached to the WUSB Hub appear to the host computer “as if they are native WUSB [wireless USB] devices,” *i.e.*, the wireless USB device appears as if it were attached. Ex-1011, 6:25-26; Ex-1002, ¶139. *See additionally*, Ex-1011, 6:32-58. Christison’s WUSB device therefore, fits the definition of “*virtual functional device,*” which is presented “as a non-physical, software component designed to mirror the functionalities of the

functional device [(“*WUSB device*”)] attached to the base unit [(“*WUSB Hub*”)].” § VII.B.2; Ex-1002, ¶139.

It would have been obvious to utilize the advantages of a wireless USB device (*i.e.*, “functional device”) to allow “communicat[ion] over a wireless signal...instead of via a wired cable.” Ex-1011, 3:40-41. Ex-1002, ¶139.

i. and the third party software for the Unified Communication call is presented with the virtual functional device for the Unified Communication call,

See §§ IX.A.2.e (“*Unified Communication call*”) and IX.A.2.h (“*virtual functional device*”). Beel further discloses:

On the peripheral device in embodiment of the present invention one can implement a virtual audio device. This peripheral device can present itself as an audio out device to the processing device such as a laptop, PDA, laptop, smartphone, tablet, PC, etc it is connected to.

Ex-1005, ¶313; *see also id.* ¶¶252-53 (“video conferencing equipment”). Since the “*third party software*” on the processing device is presented with the virtual audio device, the web conference software disclosed by Beel, is also presented with the virtual audio device “*for the Unified Communication call.*” Ex-1002, ¶140.

Optionally, it would have been obvious to combine Christison’s disclosure of remotely connecting USB device to processing device as a native USB device, *i.e.*, a “*virtual functional device,*” and present the device to the Unified Communication call. *See* § IX.A.2.h; Ex-1002, ¶141.

j. *the processing device being configured to host the Unified Communication between two or more other processing devices, and*

See § IX.A.2.e above. As demonstrated, Beel discloses:

an electronic meeting tool for communicating arbitrary media content between different users 37 (with their own processing devices 31, e.g. PC, mobile phone, or tablet) and one display or projector or multiple displays or projectors 44 in the meeting room 30.

Ex-1005, ¶122; *see also, id.*, abstract, ¶¶13, 44, 87-88, 113, 252-58. Beel expressly defines the “*processing device*” as a “*host*”: “Each of the processing devices 31 can be a host device.” *Id.*, ¶117; *see also, ¶¶142, 196, 221. Ex-1002, ¶142.*

k. *wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device.*

See § VII.B.6 (“data transformations”). Beel discloses a processing device executing software code “*to provide data transformations,*” such as code “for providing a means for receiving, decrypting and decoding incoming arbitrary media content.” Ex-1005, ¶72; Ex-1002, ¶143. This data is “*from the at least one functional device to the processing device.*” *Id.*, ¶¶71-72 (“executable software code [of the peripheral device] for execution on the processing device”); *see also id.*, ¶¶247-250 (“software is copied on the client operating device”); Ex-1002, ¶143.

Beel further discloses using data-type specific encoders/decoders, packetizers/unpackers, and the like for “*transformations based on a type of*

functional data.” Ex-1005, ¶¶314, 320-23; Ex-1002, ¶143. For example, audio and video data is obviously decoded/decrypted based on the particular encoding/encryption used, *e.g.*, “optionally encoded into for instance Orgg/Vorbis, optionally encrypted using for instance CryptoPP.” *Id.*; Ex-1002, ¶143. Therefore, the transformation is “*based on a type of functional data.*” Ex-1002, ¶143.

Beel discloses “*the base unit*” transmitting audio/visual data to “*the first peripheral device*”:

Optional equipment can be cameras 39, 40, 41 for recording the progress of the meeting. These cameras can be linked by a network 51, *e.g.* a cable network to the router 42 and/or the base node 36. Another optional item is a microphone or microphones 38 that 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.

Ex-1005, ¶120 (emphasis added); *see also* ¶¶71-72; *see also* § IX.A.2.f; Ex-1002, ¶144.

Beel also discloses the well-known and obvious method of bidirectional video/audio communication from a conference call to one or more users’ PCs (*i.e.*, “*processing devices*”). *See* Ex-1005, ¶¶ 71, 50, 56, 75, 93, 119, 122, 126, 298, 310-11; Ex-1002, ¶145. Dinka further reinforces the obviousness of bidirectional data communication for Beel’s electronic meeting system. Ex-1006, abstract; *see also*, Ex-1005, ¶¶85-87; Ex-1002, ¶146.

Dinka also explains that electronic meeting tools, such as Beels, “*provide data transformations based on a type of functional data*” in both directions of the A/V transmission (e.g., “The voice engine is arranged to accept speech signals from the microphone 201, and to encode those speech signals for transmission over the internet 101 via the network interface 302. The voice engine is also arranged to decode speech signals received over the Internet”). Ex-1006, 9:32-50; Ex-1002, ¶146. Transformations of A/V data by encoding and decoding obviously depends on the “*type of functional data*” and whether to use a “voice code” for audio data or a “video codec” for visual data. *Id.*; Ex-1002, ¶146.

3. Claims 2 and 12

- a. ***The system of claim 1, wherein the client software and the driver are configured to present a simulated speakerphone to the operating system to create a virtual microphone and a virtual speaker.***

Beel discloses “client software on the processing device [including] pre-installed generic drivers” for communicating to “a (virtual) audio speaker device” and “microphones,” which constitute a “*simulated speakerphone.*” Ex-1005, ¶¶120, 137, 317; *see also* §§ IX.A.2.h-I; Ex-1002, ¶147, 172.

4. Claims 3 and 13

- a. ***The system of claim 1, wherein the client software and the driver are configured to present a simulated videocam to the operating system to create a virtual videocam device.***

Beel discloses “client software on the processing device [including] pre-installed generic drivers” for communicating to cameras (*i.e.*, cameras 35, 39, 40, 41). *Id.*, Ex-1005, ¶¶88, 119-121; *see also* §§IX.A.2.h-I; Ex-1002, ¶148, 173.

5. Claim 4

- a. *The system of claim 1, wherein the client software is configured to provide video data, optionally obtained by screen scraping, directly to the base unit, wherein the base unit processes the video data.***

Beel discloses:

Optionally the portable application 60 when run on the processing device is adapted to “screen scrape” content of the client display of the client processing device 31 and to transmit it via a network interface of the processing device 31, for example if the connection unit 47 has no transmitter or this is not functioning.

Ex-1005, ¶127, *see also id.*, ¶¶221 (“routes at least screen scraped data presented by client software running on the processing device for transfer to a communications network”), 132-133, 247-250 (disclosing an embodiment with no peripheral device, *i.e.*, data transmission would transmit directly to the base unit), 320; Ex-1002, ¶149.

Beel also discloses “*the base unit processes the video data*”:

Having been routed over a communications network to the base unit 33, the incoming stream is read from the communications interface such as a WiFi access point 22, unpacked in an unpacker 25, decoded in a decoder 26 and then inserted into a Suitable composition such as

an OpenGL based composition in the compositor 29 for display on a central display device.

Ex-1005, ¶322, *see also id.*, ¶211; Ex-1002, ¶150.

6. Claim 5

- a. *The system of claim 1, wherein the functional data includes video data received from the base unit via the transmitter over the wireless connection.***

Beel discloses cameras that collect video data and provide this video data to the base node. *See, e.g.*, Ex-1005, ¶¶119-120, Fig. 1a. *See* § IX.A.2.b (the base node includes a transceiver/transmitter capable of wireless transmission. *See, e.g., id.*, ¶¶129, 288; Ex-1002, ¶151. The peripheral device includes a transceiver able to receive the video data. *See, e.g., id.*, ¶¶71-72, 120, 128; *see also* § IX.A.2.a (cameras linked by a network to the base node); Ex-1002, ¶151.

7. Claim 6

- a. *The system of claim 5, wherein the data transformations of the video data comprises decoding and compositing or decrypting the video data.***

Beel discloses a peripheral device with a “software code portion for receiving media content from the network and for displaying the media content on the display.” Ex-1005, ¶71; Ex-1002, ¶152. Beel further provides instructions for transforming received video for display: “The executable Software code can comprise eleventh code for providing a means for receiving, decrypting and decoding incoming arbitrary media content.” *Id.*, ¶72; Ex-1002, ¶152.

8. Claims 7 and 16

- a. *The system of claim 1, wherein the at least one functional device which is presented to the operating system as a virtual functional device, is one or more of a data capturing device, a microphone, a speakerphone, a speaker, another display, a touchscreen, a projector, a camera, a video camera, and a webcam.***

Beel discloses a “functional device” that may be “a microphone” (Ex-1005, ¶120), “a speakerphone” (*Id.*, ¶118) “a speaker” (*Id.*, ¶¶120, 315 (“physical audio device in the base unit”)), “a display” (*Id.*, ¶¶119, 120), “a projector” (*Id.*, ¶¶40, 119, 122, 123), and “a camera, a video camera, or a webcam” (*Id.*, ¶¶119-21). Beel also discloses that these “functional devices” can be “virtual.” *Id.*, ¶¶43, 50, 313-17; *see also* §§ IX.A.2.a, IX.A.2.h; Ex-1002, ¶153, 176.

9. Claims 8 and 17

- a. *The system of claim 1, further comprising means for encoding, optionally encrypting the data in the base unit or the processing device.*²**

Beel discloses this limitation largely verbatim: “The system of claim 100 further comprising means for encoding, optionally encrypting the audio data.” Ex-1005, claim 101; *see also* ¶¶67, 70, 162, 314, 315, 319, 320, 323 and claim 90; Ex-1002, ¶154, 177.

² Claim 17 does not require “in the base unit or the processing device.”

10. Claims 9 and 18

- a. *The system of claim 1, wherein the virtual functional device is presented to the unified communication between the two or more other processing devices.***

See §§ IX.A.2.f, IX.A.2.i. Beel discloses:

provides an electronic meeting tool for communicating arbitrary media content between different users 37 (with their own processing devices 31, e.g. PC, mobile phone, or tablet) and one display or projector or multiple displays or projectors 44 in the meeting room 30.

Ex-1005, ¶122; *see also id.*, abstract, ¶¶13, 44, 87-88, 113, 253-58; Ex-1002, ¶155, 178.

11. Claims 10 and 20

- a. *The system of claim 1, further comprising at least one fixed or a configurable endpoint of the virtual functional device, wherein the at least one fixed or a configurable endpoint is a data source or a data sink which is configured to store or emit data of the virtual functional device.***

Beel discloses an “*endpoint of the virtual functional device*,” e.g., A/V components connected to the base unit. Ex-1005, ¶¶43, 50, 313-17; Ex-1002, ¶156, 180. These endpoints are either “*fixed*” (e.g., a mass storage device) or “*configurable*” (e.g., virtual audio device). Ex-1001, 17:58-18:14; Ex-1005, ¶50; Ex-1002, ¶156, 180. The “*endpoint*” is either “*fixed*” or “*configurable*” to provide A/V functions, such as a speaker or a display. Ex-1001, 5:9-16, 17:58-18:14, 23:42-44 (explaining that FIG. 15 illustrates using Beel’s FIG. 11 to communicate with a

peripheral device); Ex-1005, ¶¶43, 50, 313-17. Ex-1002, ¶156, 180. The nature of the claim provides no other option, *i.e.*, if it is not “*configurable*,” then the only other possible option is to be “*fixed*.” Therefore, in essence, this claim only requires there be an “*endpoint of the virtual functional device*” within the system. Ex-1002, ¶156, 180.

The '346 patent admits that Beel's FIG. 11 (which the '346 patent copied as FIG. 4) discloses endpoints:

These are fixed and are a combination of vendor specific endpoints and a number of standard endpoints and can be interpreted or understood as a custom Driver, a default OS driver and/or a host application as has been described with reference to FIG. 4 do screen sharing and audio.

Ex-1001, 17:65-18:3; *see also id.*, 5:35-40, 17:10-23; Ex-1002, ¶157, 180.

Therefore, Beel discloses the claimed “*endpoint*.”

Beel explains that the “*endpoint is a data source or a data sink which is configured to store or emit data of the virtual functional device*”:

audio data is captured through a virtual sound card interface added as a logical device over the physical interface provided in the peripheral device. On the processing device only a generic sound driver such as a USB sound driver is required which is generally standard on any modern processing devices.

Ex-1005, ¶43.

The peripheral device preferably acts as a composite device comprising for instance a (virtual) audio speaker device. However instead of operating like a speaker the audio is channeled over the communications network. The peripheral device can preferably capture the audio stream with a device driver, for instance a built in ALSA UAC1, and stream the audio to the base unit....The peripheral device then encodes this time stamp into the audio stream (for instance RTP audio stream) that is streamed to the base unit. At the receiving end, the audio and video streams are then preferably recombined.

Id., ¶317; *see also, id.* ¶¶313-316; Ex-1002, ¶158, 180. Beel's endpoints allow the "virtual functional device," such as A/V components or virtual audio device connected to the base unit, to "store or emit data of the functional device" because, for example, Beel states, "[A]udio data is captured at this interface 8-11 internally in the peripheral device 32. This data is then optionally re-encoded and streamed to the communications network to which the peripheral device 32 has access." *Id.*, ¶319; Ex-1002, ¶159, 180. Accordingly, the peripheral device of Beel can have a composite device able to store and emit virtual audio/visual data to endpoints, such as a speaker or display. Ex-1002, ¶159, 180.

Beel discloses the same endpoints as the '346 patent:

Optional equipment can be cameras 39, 40, 41 for recording the progress of the meeting. These cameras can be linked by a network 51, e.g. a cable network to the router 42 and/or the base node 36.

Another optional item is a microphone or microphones 38 that 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.

Ex-1005, ¶120 (emphasis added); *see also, Id.* ¶¶73, 119-121 and 317; Ex-1002, ¶160, 180.

Furthermore, Dinka explains that display endpoints buffer digital data: “The television set 103 further comprises, within the same casing: a video frame buffer 320 and user interface (UI) frame buffer 322.” Ex-1006, 7:44-64; *see also, id.* 8:21-32, 8:66-9:13, 9:45-50, 9:65-10:7, 15:24-30; Ex-1002, ¶161, 180. The POSA would have understood that other endpoints, including microphones and speakers, would also have buffered data prior to or after doing analog-to-digital or digital-to-analog conversion, respectively. Ex-1002, ¶161, 180. Therefore, Beel’s endpoints are physical or virtual devices that can act as a kind of buffer.

12. Claims 22 and 21

- a. *The system of claim 1, wherein the interaction directly with the base unit further includes presenting the first display device to the processing device.***

See §§ IX.A.2.b-c. Beel discloses “*presenting the first display device to the processing device*”:

[T]he peripheral device comprising a memory in which executable software code is stored for execution on the processing device, said executable software code comprising:...a third software code portion

for receiving media content from the network and for displaying the media content on the [computer's] display.

Ex-1005, ¶71; *see also* Ex-1005, ¶¶247-50 (“software is copied on the client operating device”); Ex-1002, ¶162, 181.

13. Claim 11

a. *A method for connecting a processing device to a functional device connected to or in a base unit of a communications network,*

See § IX.A.2.a; Ex-1002, ¶163.

b. *the base unit having a transmitter and a first display device,*

See §§ IX.A.2.b-c; Ex-1002, ¶164.

c. *the processing device having a memory, a second display device and an operating system, a third party software for a Unified Communication call, and a driver and a client software wherein, the client software, when executed by a processor on the processing device:*

See § IX.A.2.e; Ex-1002, ¶165.

d. *interacts directly with the base unit over a wireless connection and provides any simulations or translations, as required, to allow interaction between the first display device and the processing device,*

See §§ IX.A.2.e, g; Ex-1002, ¶166.

e. *wherein the base unit transmits data over the wireless connection to the processing device,*

See § IX.A.2.f; Ex-1002, ¶167.

- f. *the client software and a driver, when executed on the processing device, present the functional device to the operating system of the processing device as a virtual functional device,***

See § IX.A.2.h; Ex-1002, ¶168.

- g. *third party software for a Unified Communication call is presented with the virtual functional device which it then uses for the call,***

See § IX.A.2.i; Ex-1002, ¶169.

- h. *wherein the processing device hosts the Unified Communication call between two or more processing devices,***

See § IX.A.2.j; Ex-1002, ¶170.

- i. *wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device.***

See § IX.A.2.k; Ex-1002, ¶171.

14. Claim 14

- a. *The method of claim 11, wherein the functional data includes video data, optionally obtained by screen scraping, directly to the base unit where it is processed.***

See §§ IX.A.5-6; Ex-1002, ¶174.

15. Claim 15

- a. *The method of claim 14, wherein the data transformations comprises decoding and compositing or decrypting the video data and providing the video data to the first display device.***

See §§ IX.A.5.a, 7.a; *see also* Ex-1005, ¶¶128-29, FIG. 11 (video pack 4; video unpack 25); Ex-1002, ¶175.

16. Claim 19

- a. *The method of claim 11, further exposing a same type of functional device to the processing device as is connected to the base unit which is presented to the operating system as a virtual functional device.***

Beel discloses,

With reference to the audio data on the processing device 31 such as a client PC, the audio is sent over a port using generic drivers such as over a USB port 8 using the standard built-in generic audio driver such as UAC driver 7...This information is then...transferred to the communications network...On the base unit 33 the audio information stream is recovered at a suitable communications interface such as the WiFi access point 22.

Ex-1005, ¶323; *see also id.* ¶¶43, 312-319 and Fig. 11; Ex-1002, ¶179. This shows that, for example, when an audio functional device is “*connected to the base unit*” to play the audio stream received from the peripheral device, the “*same type of functional device*” (*i.e.*, an audio device here) is exposed to the processing device. Ex-1002, ¶179. The processing device is then able to access and use the functions associated with the remotely connected “*virtual functional device.*” See § IX.A.2.h; Ex-1002, ¶179.

B. Claims 1-22 Are Obvious Over Van de Laar in view of Kaplan, AAPA, and Optionally Christison

1. Rationale to Combine

Both Van de Laar and Kaplan disclose systems of wirelessly presenting audio/visual content. Ex-1008, abstract, FIG. 2; Ex-1007, abstract, FIG. 1; Ex-1002, ¶182. Van de Laar explains that the content can include information from a unified communications call, such as Skype. Ex-1007, ¶ 128; Ex-1002, ¶182. Kaplan discloses well known ways for presenting/transmitting information using a standard operating system and data transformations. Ex-1008, ¶32, 44-49; Ex-1002, ¶182. The POSA would have been motivated to modify Kaplan's system of data transmission and display with Van de Laar's system to connect multiple user processing devices together which could further access the functionality of multiple wirelessly connected, i.e., "virtual," functional devices. Ex-1002, ¶182. This modification would predictably enable the use of multiple functional devices, beyond the display in Kaplan, to access functional devices in a unified communications call. Ex-1007, ¶9; Ex-1002, ¶182-83.

Furthermore, the '346 patent contains AAPA that Skype is a known way to perform web conferencing disclosed in Van de Laar. Ex-1001, 7:66-8:21, 13:17-25; *see also* Ex-1009 (showing Skype was available online in 2012); Ex-1007, ¶128; Ex-1002, ¶184. Therefore, the combination of Kaplan, Van de Laar, and AAPA would result in using Skype or similar prior art unified communication call software because Skype was a known technique to improve similar devices in the same way.

Ex-1002, ¶184. The combination would create 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. Ex-1002, ¶184.

Christison discloses a method of wirelessly connecting functional devices to personal computers via a wireless peripheral device. Ex-1011, abstract. A POSA would recognize that connecting wireless functional devices to computers was well known in the art, and that Christison teaches one efficient example of presenting wireless USB devices as “native devices.” Ex-1011, 6:13-19; Ex-1002, ¶185. Kaplan further teaches connecting remote functional devices to a client computer. Ex-1008, abstract, ¶¶2-6, 16-17, 44, FIG. 2; Ex-1002, ¶185.

Christison teaches one way of effecting Kaplan's virtual devices by presenting a wireless USB device as “native.” Ex-1011, abstract; Ex-1002, ¶185. Kaplan, Van de Laar, and Christison could have been combined by using Christison's known technique of presenting a remote device as native to improve or suggest one way for Kaplan to implement its disclosed functional devices. Ex-1002, ¶186. The combination would create the predictable result of a unified communication system (e.g., Skype) that used USB protocols to present remote functional devices as local or “native” functional devices and which could use the functional devices' capabilities. Ex-1002, ¶186.

2. Claim 1

a. *A system for connecting a processing device to a functional device connected to or in a base unit of a wireless connection, the system comprising:*

Van De Laar's disclosure "enables multiple dockee devices (such as smartphones, laptops, tablets) [(*"processing device"*)] to be simultaneously docked to a wireless docking host (WDH) [(*"base unit"*)] which is connected to a set of peripherals (such as display, mouse, shared local storage, lights/blinds controls, internet connection) [(*functional device*)]." Ex-1007, ¶82; Ex-1002, ¶187-190.

the wireless docking host (WDH) device that enables handling simultaneous wireless docking of multiple docking devices (Dockees).

The multiple dockees are connected simultaneously to the WDH, the WDH managing a set of wired and/or wireless peripherals and provides dockees access to these peripherals

Id., ¶92; *see also* ¶¶62, 73(*"functional device"* can include "display devices, audio devices, webcams ...USB hubs") 94, 97, 106, 119 ("a host device is connected to a set of wired and wireless peripherals and makes their function available to client devices over a wireless network (such as Wi-Fi)"), 128.

Kaplan also discloses this limitation. *See* Ex-1008, abstract, ¶¶2-6, 16-18, 23, 28, 44, FIG. 2; Ex-1002, ¶191.

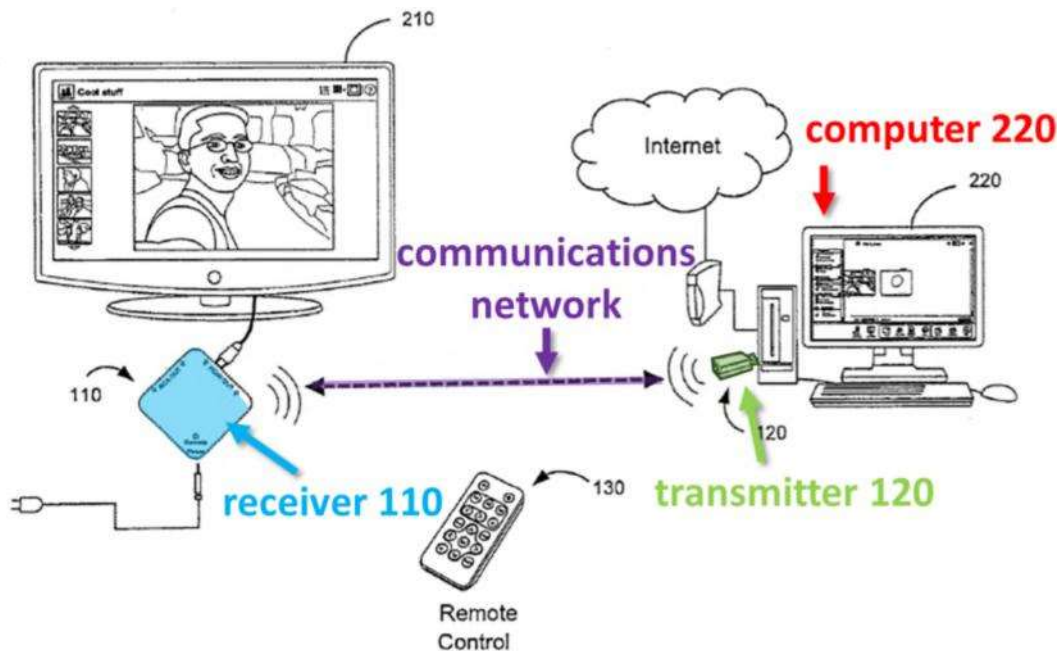


FIG. 2

Ex-1008, FIG. 2

b. the base unit having a transmitter,

Van De Laar discloses the “the host device [or WDH 200] comprising a host communication unit for accommodating said wireless communication.” Ex-1007, ¶1. *See also id.*, ¶¶ 60, 75, claims 1, 11, 12, 14, and FIG. 1; Ex-1002, ¶192. The wireless communication would obviously use a transmitter similar to the one that Kaplan discloses. *See* Ex-1008, ¶¶ 6, 16, 42, FIG. 3; Ex-1002, ¶193.

c. a first display device connected to or in the base unit,

Van De Laar discloses a “display screen 111” as one of the “number of peripherals 110, 111, 112” that the “host device 100” can connect to. Ex-1007, ¶74; *see also id.*, ¶¶ 62, 123, and FIG. 1; Ex-1002, ¶194.

d. at least one functional device connected to or in the base unit, and

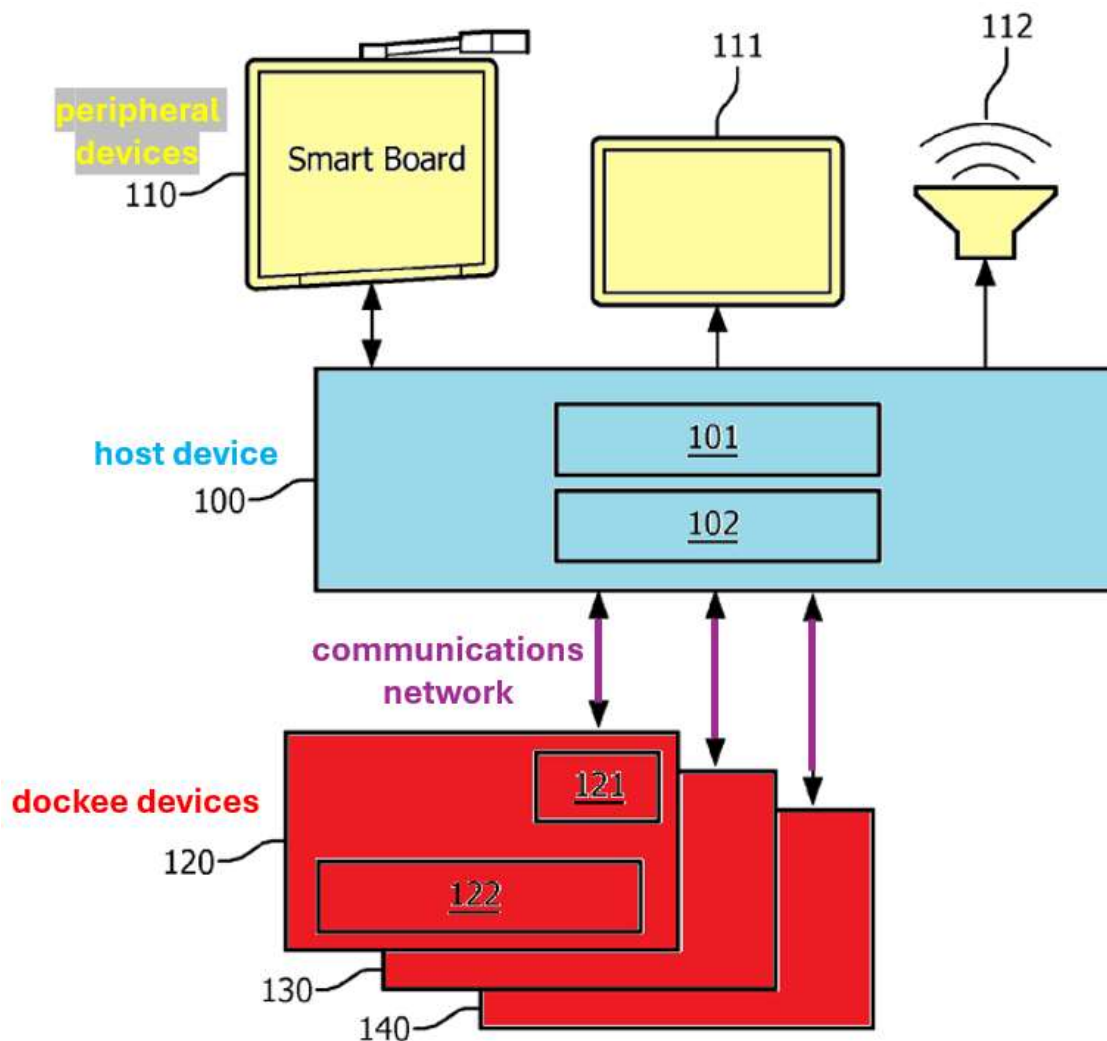
See § IX.B.2.a (claim 1 recites “a functional device connected to or in a base unit”); Ex-1002, ¶195.

e. the processing device having a memory, a second display device, an operating system, a third party software for a Unified Communication call, a driver and a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection,

Van de Laar discloses using “Skype,” which the AAPA includes as a Unified Communication. Ex-1001, 7:66-8:3; Ex-1007, ¶128. *See also*, Ex-1007, ¶¶53-54, 58-60, 73-74, 81, 121-128 and 164; Ex-1002, ¶196. Further, the dockees are described as “mobile phones, laptops or tablet computers.” Ex-1007, ¶74. A POSA would find it obvious that Van de Laar includes *a memory, a second display device, an operating system*, because it was well known that mobile phones, laptops, or tablet computers (*i.e., processing device*) include a memory and display. Ex-1002, ¶196. *See also* Ex-1007, claim 14 (“A non-transitory computer-readable medium having one or more executable instructions stored thereon,” *e.g.*, a memory). *See also* Ex-1007, ¶¶56, 77 (“rendering video on the display of the dockee device”).

Van de Laar discloses a “dockee” or “laptop” having “an application running locally” (*i.e., client software*), which can “take care of presenting data to the user(s), handling interactivity.” Ex-1007, ¶53; Ex-1002, ¶197. Further, Van de Laar

discloses “a primary dockee running a docking application using Wi-Fi Miracast (WFM) over IP and connected to a WDH [(i.e., base unit)]” where the WDH acts as a “sink and source” to “allow the secondary dockee(s) to function as a WFM sink.” Ex-1007, ¶126. *See also id.*, abstract, ¶1-2, 53, 74, 124, 126, 166-67, FIG. 1, FIG. 2; Ex-1002, ¶197. Therefore, the application allows the dockees to “interact directly with the base unit over a wireless network.” Ex-1002, ¶197-98.



Ex-1007, FIG. 1

Further, a POSA would have found that the operating systems of Van de Laar's dockee devices necessarily or obviously include pre-installed drivers to, for example, drive physical or simulated peripherals Ex-1007, ¶¶54, 93, 124; *see also* Ex-1008, ¶¶47-49 (Kaplan teaching that computers run operating systems, such as Windows); Ex-1002, ¶199. Further, AAPA admits drivers are standard: "a driver is standard for the operating system and can drive a standard class of peripheral devices." Ex-1001, 8:53-67. Therefore, Van de Laar necessarily or at least obviously includes drivers. Ex-1002, ¶199

f. wherein the base unit, via the transmitter, is configured to transmit data over the wireless connection to the processing device,

Van de Laar discloses the "host device 100" or "WDH 200" *transmit[s] data over the wireless connection* to "dockee devices." *See, e.g.,* Ex-1007, ¶¶96 ("the WDH device is further configured to create and provide a video and/or audio stream representing the video and/or audio output that is sent by primary dockees to the one or more display and/or audio peripherals. This allows all dockees (primary and secondary) to monitor the merged display output and/or audio output and follow the presentation on their own screen and/or headphones") (emphasis added); *see also* ¶¶1, 2, 74, 124, 152 ("the dockee [is] able to access the audio and video streams provided by the WDH to monitor the meeting"), 166-167, FIG. 1, FIG. 2; Ex-1002, ¶200. Data transmission in Van de Laar is therefore bidirectional. Ex-1002, ¶200.

g. wherein the client software, when executed by a processor of the processing device, is configured to provide any simulations or translations, as required, to allow interaction between the first display device and the processing device,

Van de Laar discloses: “host device is connected to a set of wired and wireless peripherals and makes their function available to client devices over a wireless network (such as Wi-Fi) through a set of network messaging and streaming protocols.” Ex-1007, ¶119 (emphasis added); *see also id.*, ¶¶74 (peripheral is a “display screen”), 92, 94 (“it allows primary dockees to be able to present content using the peripherals connected to a WDH, such as a large screen”) (emphasis added), 106; Ex-1002, ¶201.

The “*simulations and translations*” are optional (*i.e.*, “*as required*”) and not clearly defined in the ’346 patent; Ex-1002, ¶202. However, Van de Laar discloses to provide “simulated peripherals,” such as a “simulated webcam” or “display device” in which media data can be scaled, mixed, or re-encoded as needed. *See, e.g.*, Ex-1007 ¶¶54, 59-60, 73, 86, 93, 123-25, 126 (“WDH may scale the audio/video data to constrain bandwidth”), 162. *See also* Ex-1008, ¶48 (“compression/decompression algorithms (codecs) are available on the computer 220”); Ex-1002, ¶202.

Further, Kaplan discloses “compression/decompression algorithms (codecs) are available on the computer 220,” and further demonstrates that codecs were known in the art. Ex-1008, ¶48. A POSA would recognize and understand that a

codec is known as “an encoder and a decoder,” and that encoding and decoding is a form of simulation or translation of data. Ex-1002, ¶203.

h. and wherein the client software and the driver, when executed on the processing device, are configured to present the at least one functional device to the operating system of the processing device as a virtual functional device,

See § VII.B.2 (definition of “virtual functional device”). Van De Laar discloses presenting the peripheral devices *to the operating system of the processing device (e.g., dockee device) as a virtual functional device (e.g., “simulated peripheral”)*:

The host may be further arranged to make the AV output for the secondary dockee available as a peripheral for docking (e.g. simulated webcam), that will appear to the dockee as a real peripheral (e.g. USB webcam) through the docking protocol.... in effect, the host may offer one set of peripherals to the primary dockee and another set of peripherals, which may include such simulated peripherals for secondary dockees.

Ex-1007, ¶54; *see also* ¶¶93 (“Moreover, the A/V output may be offered to a secondary dockee through a simulated peripheral (e.g. simulated webcam) that would appear to the dockee as if it were a normal peripheral”), 124; Ex-1002, ¶204.

For example, the “simulated webcam” of Van De Laar is a *virtual device* because it is not physically attached to the processing device, but software-enabled to mirror the functionality of a physical webcam and “that would appear to the

dockee as if it were a normal peripheral.” Ex-1007, ¶93; *see also*, Ex-1001, 10:56-58 (“[A] virtual device that has the same functionality or more as the combined functionalities of the functional devices”); Ex-1002, ¶205.

i. *and the third party software for the Unified Communication call is presented with the virtual functional device for the Unified Communication call,*

Van de Laar discloses:

[T]he WDH may enable primary dockees to provide output to the WDH and/or its audio peripherals through an audio stream between the dockee and the WDH. This may be based on ... Skype, DLNA or other audio streaming mechanism.

Ex-1007, ¶128 (emphasis added); *see also*, *id.* ¶¶60, 74-76, 120, 124, 166-167; Ex-1002, ¶206. Van De Laar also discloses,

[T]he A/V output may be offered to a secondary dockee through a simulated peripheral (e.g. simulated webcam) that would appear to the dockee as if it were a normal peripheral.

Ex-1007, ¶93 (emphasis added); *see also*, *id.*, ¶¶54 (“simulated peripherals for secondary dockees;” “secondary peripheral that receives and renders the at least part of the AV data that is rendered via a corresponding primary peripheral”), 124. Since the dockee device is presented with the simulated webcam (e.g., “*the virtual functional device*”), software executed on the dockee device, such as Skype,

provides audio-video conference functionality presented with the simulated webcam “for the Unified Communication call.” Ex-1002, ¶207.

Optionally, it would have been obvious to combine Christison’s disclosure of remotely connecting USB device to processing device as a native USB device, *i.e.*, a “virtual functional device,” and present the device to the Unified Communication call. *See* § IX.B.2.h; Ex-1002, ¶208.

j. the processing device being configured to host the Unified Communication between two or more other processing devices, and

See §§ IX.B.2.e and IX.B.2.i. Van De Laar discloses data transfer by, such as, using Skype. *See, e.g.*, Ex-1007, ¶¶74-76, 96, 120, 124, 128, 166-167. *See also id.*, ¶95 (“This allows the dockee users to collaborate, interact, share content with each other during the meeting/lecture”) (emphasis added); Ex-1002, ¶209-11.

k. wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device.

See §§ VII.B.6 (definition of “data transformation”), IX.B.2.g. Van De Laar discloses data scaling, transcoding, and mixing. *See, e.g.*, Ex-1007, ¶¶56, 59-60, 123, 126; Ex-1002, ¶212. Data is conventionally scaled, transcoded, or mixed *based on a type of functional data*, such on whether the data is audio data, visual data, or another type of data. Ex-1002, ¶212.

Kaplan also discloses that this limitation. *See, e.g.*, Ex-1008, ¶¶32 (scaling video data); 48 (compressing data using a codec); Ex-1002, ¶213. Codecs are specific to data type, such as whether the data being compressed/decompressed or encoded/decoded is audio data, visual data, *etc.*, and therefore “*based on a type of functional data.*” Ex-1002, ¶213.

3. Claims 2 and 12

- a. *The system of claim 1, wherein the client software and the driver are configured to present a simulated speakerphone to the operating system to create a virtual microphone and a virtual speaker.***

See § IX.B.2.h. Van De Laar further discloses,

[T]he WDH may enable primary dockees to provide output to the WDH and/or its audio peripherals through an audio stream between the dockee and the WDH. This may be based on WSB Audio.

Ex-1007, ¶128. *See also*, Ex-1007, ¶¶54 (“The host may be further arranged to make the AV [audio/visual] output for the secondary dockee available as a peripheral for docking (e.g., simulated webcam)”), 93, 124 (“a WSB video peripheral (e.g. a simulated webcam)”). A POSA would have understood that AV output stands for audio/visual, and that the WSB audio can be achieved using simulated audio peripherals, such as a simulated microphone and a simulated speaker or a *simulated speakerphone*. Ex-1002, ¶214-15, 240.

4. Claims 3 and 13

- a. *The system of claim 1, wherein the client software and the driver are configured to present a simulated videocam to the operating system to create a virtual videocam device.***

See §§ IX.B.2.h, B.3.a; Ex-1002, ¶216, 241.

5. Claim 4

- a. *The system of claim 1, wherein the client software is configured to provide video data, optionally obtained by screen scraping, directly to the base unit, wherein the base unit processes the video data.***

Van De Laar discloses a “dockee device may connect to the video and/or audio stream provided by the WDH that represents the video and/or audio output that is sent by primary dockees to the one or more display and/or audio peripherals.” Ex-1007, ¶¶103 (emphasis added); *see also* Ex-1007, ¶¶115, 123 (“The WDH may be configured to provide a video stream representing the output that is sent by the primary dockees to the one or more display peripheral” (emphasis added)), FIG. 1 (arrows demonstrating data flow); Ex-1002, ¶217. The data is sent “*directly*” because there is no peripheral device in between the dockee and the host device. *Id.* FIG. 2; *see also*, Ex-1001, 22:54-23:8; Ex-1002, ¶217.

Van De Laar also discloses:

[T]he display output may be merged by the WDH using split screen, PIP overlay or any other means of audio and video mixing, scaling and/or re-encoding.

Ex-1007, ¶123 (emphasis added); *see also, id.* ¶¶56 (“the read access may be to the original, full resolution AV data, or to a modified, e.g. scaled and/or transcoded, representation of the primary AV data”), 59-60; Ex-1002, ¶218.

The combination of Van de Laar and Kaplan disclose sharing “screen scrape” content. *See* Ex-1007, ¶¶60 (“shared content”), 80 (“share...presentations, whiteboard, or smartboard contents”), 95, FIG. 1, FIG. 2; Ex-1008, ¶¶23, 24 (“Video content is then shared”), 26; Ex-1002, ¶219.

6. Claim 5

- a. *The system of claim 1, wherein the functional data includes video data received from the base unit via the transmitter over the wireless connection.***

Van De Laar discloses:

To the secondary dockee device, the AV data to be rendered via the at least one peripheral is additionally transferred so as to enable monitoring the AV output data locally at the secondary dockee, e.g. rendering video on the display of the dockee device.

Ex-1007, ¶77 (emphasis added); *see also, id.* Abstract, ¶¶13, 36, 60, 78, 93, 124, 166, claims 1, 12, 14, FIG. 1 (arrows demonstrating data flow); Ex-1002, ¶220.

7. Claim 6

- a. *The system of claim 5, wherein the data transformations of the video data comprises decoding and compositing or decrypting the video data.***

See § IX.A.5.a. Kaplan discloses that “resident software application may determine whether certain compression/decompression algorithms (codecs) are available on the computer” or whether to install certain codecs otherwise. Ex-1008, ¶48 (emphasis added); Ex-1002, ¶221. A POSA would recognize and understand that a codec is “an encoder and a decoder.” Ex-1002, ¶221-22. A POSA would further understand a codec as able to “*decode*” or “*decrypt*” an incoming data stream. *Id.*

Van de Laar also discloses using standard encrypted secure WiFi connections. See Ex-1007, ¶¶75, 118. For example, Van de Laar discloses using WiFi to connect the host device with the dockee devices. Ex-1007, ¶6. Secure WiFi connections were ubiquitous and, as of at least 2017, used standards including WEP, WPA, WPA2, and AES, as by the Wi-Fi Alliance in 2017. See Ex-1033; Ex-1002, ¶223. A POSA would have understood the processing device and/or client software would necessarily or obviously include the secure communication protocols described above and, further, that these protocols include “*decoding*” or “*decrypting*” on the processing device for data streams incoming from the WiFi network to interact with the processing device or software. Ex-1002, ¶223.

8. Claims 7 and 16

- a. *The system of claim 1, wherein the at least one functional device which is presented to the operating system as a virtual functional device, is one or more of a data capturing device, a microphone, a speakerphone, a*

speaker, another display, a touchscreen, a projector, a camera, a video camera, and a webcam.

See § IX.B.2.a. Van De Laar discloses “peripherals,” which can include, for example, “wireless mice, keyboards, display devices, audio devices, webcams, printers, storage devices, USB hubs.” Ex-1007, ¶73; *see also, id.*, ¶62; Ex-1002, ¶224, 244. Van De Laar also discloses presentation of peripherals as “a simulated peripheral (e.g. simulated webcam).” Ex-1007, ¶93; Ex-1002, ¶224, 244.

9. Claims 8 and 17

a. The system of claim 1, further comprising means for encoding, optionally encrypting the data in the base unit or the processing device.³

Van De Laar discloses “the display output may be merged by the WDH using split screen, PIP overlay or any other means of audio and video mixing, scaling and/or re-encoding.” Ex-1007, ¶123 (emphasis added). *See also* Ex-1007, ¶56; Ex-1002, ¶225, 245.

10. Claims 9 and 18

a. The system of claim 1, wherein the virtual functional device is presented to the unified communication between the two or more other processing devices.

See § IX.B.2.i. *See also* Ex-1007, ¶¶115, 117-18, 122, 127; Ex-1002, ¶226, 246.

³ Claim 17 does not include “in the base unit or the processing device.”

11. Claims 10 and 20

- a. *The system of claim 1, further comprising at least one fixed or a configurable endpoint of the virtual functional device, wherein the at least one fixed or a configurable endpoint is a data source or a data sink which is configured to store or emit data of the virtual functional device.***

See § VII.B.8 (definition of “one fixed or a configurable endpoint”).

Van De Laar discloses:

The primary dockee will function as a WFM source and the WDH as both a WFM sink and source. In order to allow the secondary dockee(s) to function as a WFM sink the WDH should forward the WFM packets in broadcast mode.

Ex-1007, ¶126 (emphasis added); *see also, id.* ¶¶82 (“Primary dockee devices will have direct access to the peripheral functions offered by the WDH”), 92, 93 (“the A/V output may be offered to a secondary dockee through a simulated peripheral (e.g. simulated webcam) that would appear to the dockee as if it were a normal peripheral” (emphasis added)), 123-125, FIG. 3 (reproduced below); Ex-1002, ¶227, 248.

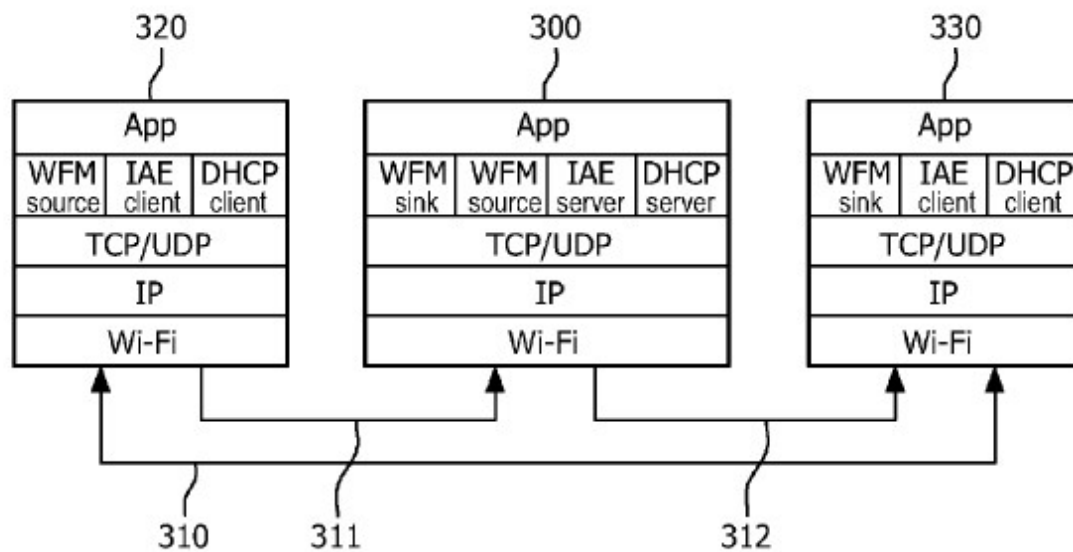


FIG. 3

The '346 patent gives examples of endpoints or virtual devices that can buffer data, *e.g.*, "... a microphone, a speakerphone, a speaker, a display,...a projector, a camera, a video camera, or a webcam." Ex-1001, 5:9-15. Each of these devices includes a buffer, or temporary storage, as admitted by the '346 patent. Ex-1001, 9:11-17. Ex-1002, ¶228, 248. Further, endpoints are a necessary or obvious feature of USB devices, including simulated devices. Ex-1002, ¶228, 248. Therefore, the peripheral devices of Van de Laar would obviously include *at least one fixed or a configurable endpoint. Id.*

12. Claims 22 and 21

- a. *The system of claim 1, wherein the interaction directly with the base unit further includes presenting the first display device to the processing device.*

Van De Laar discloses:

[A] dockee device may connect to the video and/or audio stream provided by the WDH that represents the video and/or audio output that is sent by primary dockees to the one or more display and/or audio peripherals, the dockee device rendering the respective stream being received on its screen and/or audio output devices.

Ex-1007, ¶103 (emphasis added); *see also, id.*, ¶¶96, 115 (“This allows the users of the secondary dockee devices to follow the presentation (audio and/or video showing slides, Smartboard contents, chats, etc.) on his or her own portable docking device”); Ex-1002, ¶229, 249.

A POSA would further recognize that FIG. 1 of Van de Laar shows that data from the Smart Board 110 can flow into the host device 100, which can then flow to the dockee devices 120, 130, 140, which aligns with Van de Laar’s disclosure. Ex-1007, FIG. 1; *see also, id.*, ¶¶96, 115; Ex-1002, ¶230, 249.

13. Claim 11

- a. *A method for connecting a processing device to a functional device connected to or in a base unit of a communications network,***

See, § IX.B.2.a; Ex-1002, ¶231

- b. *the base unit having a transmitter and a first display device,***

See §§ IX.B.2.b-c; Ex-1002, ¶232

- c. *the processing device having a memory, a second display device and an operating system, a third party software for a Unified Communication call, and a driver and a client***

software wherein, the client software, when executed by a processor on the processing device:

See § IX.B.2.e; Ex-1002, ¶233.

d. interacts directly with the base unit over a wireless connection and provides any simulations or translations, as required, to allow interaction between the first display device and the processing device,

See §§ IX.B.2.e, g; Ex-1002, ¶234.

e. wherein the base unit transmits data over the wireless connection to the processing device,

See § IX.B.2.f; Ex-1002, ¶235.

f. the client software and a driver, when executed on the processing device, present the functional device to the operating system of the processing device as a virtual functional device,

See § IX.B.2.h; Ex-1002, ¶236.

g. third party software for a Unified Communication call is presented with the virtual functional device which it then uses for the call,

See § IX.B.2.i; Ex-1002, ¶237.

h. wherein the processing device hosts the Unified Communication call between two or more processing devices,

See § IX.B.2.j; Ex-1002, ¶238.

i. wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device.

See § IX.B.2.k; Ex-1002, ¶239.

14. Claim 14

- a. *The method of claim 11, wherein the functional data includes video data, optionally obtained by screen scraping, directly to the base unit where it is processed.***

See §§ IX.B.5-6; Ex-1002, ¶242.

15. Claim 15

- a. *The method of claim 14, wherein the data transformations comprises decoding and compositing or decrypting the video data and providing the video data to the first display device.***

See §§ IX.B.7.a and § IX.B.5.a; Ex-1002, ¶243.

16. Claim 19

- a. *The method of claim 11, further exposing a same type of functional device to the processing device as is connected to the base unit which is presented to the operating system as a virtual functional device.***

See §§ IX.B.2.h and IX.B.2.i; Ex-1002, ¶247.

X. THE PROPOSED GROUNDS ARE NOT SUBSTANTIALLY THE SAME AS PREVIOUSLY CONSIDERED ART OR ARGUMENTS 35 U.S.C. § 325(D)

The *Advanced Bionics* test for discretionary denial has two parts: (1) whether the same or substantially the same art was previously presented to the Office, and if so (2) whether Petitioner has demonstrated that the Examiner erred in a manner material to the patentability of the challenged claims. *Advanced Bionics, LLC, v. Med-El Elektromedizinische Gerate GMBH*, IPR2019-01469, Paper 6, pp. 8-11 (PTAB Feb. 13, 2020) (precedential); *Nokia of America Corporation v. Alexander*

Soto, IPR2023-00680, Paper 32, pp. 4 (PTAB Dec. 3, 2024) (Decision reversing Board on *Advanced Bionics*).

A. The Petition’s Asserted Prior Art and Arguments Are Not Substantially the Same to that Evaluated During Prosecution

During examination, the Examiner discussed only three prior art references, Brands, Christison, and Beel.⁴ Petitioner relies minimally on Christison and, while relying on Beel, adds new prior art to that shows “data transformations based on a type of functional data” was well-known and obvious. *See* §§ IX.A.2.k and IX.B.2.k. The ’346 patent also admits that PCT publication of Beel “can be used in embodiment of the present invention.” Ex-1001, 5:35-40.

However, Petitioner relies new references, including Dinka Van der Laar, and Kaplan. Importantly, none were evaluated or during prosecution of the ’068 Application, and each is materially different from the evaluated prior art. Thus, the Petition presents different and non-cumulative prior art than was presented to the Examiner, as detailed herein. Further, the grounds above present a “compelling merits” for institution. *CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 (PTAB Feb. 27, 2023) (precedential).

⁴ Two separate Beel references were discussed during examination; however, each contain substantially similar disclosures. *See* Ex-1004, at 516.

1. The Office Never Considered Dinka or its Combination with Beel

In its first asserted ground of unpatentability, Petitioner relies on Beel combined with Dinka. Beel was evaluated during prosecution. *See* Ex-1004. However, the record does not demonstrate the extent to which the Examiner considered Beel in combination with Dinka. Dinka was not presented to the Office or otherwise discussed during prosecution of the '068 Application and is materially different from the evaluated prior art. Importantly, Dinka includes materially different disclosure addressing what the Examiner found Beel lacked. *See* § IX.A.2.k.

Thus, Dinka, its combination with Beel, nor Petitioner's arguments presented in this Petition were ever considered in determining the '346 patent's patentability and discretionary denial is unwarranted.

2. The Office Never Considered Van de Laar or Kaplan

Petitioner also relies on Van der Laar combined with Kaplan. Neither reference was presented to the Office or otherwise discussed during the prosecution of the '346 patent and each is materially different from the evaluated prior art. The combination of Van de Laar include additional disclosure addressing what the Examiner found the prior art lacked. *See* § IX.B.2.k. Thus, Van de Laar and Kaplan are new and materially different, meaning discretionary denial is unwarranted.

B. The Examiner Erred in a Manner Material to the Patentability of the '346 Patent During Examination

The examiner materially erred by overlooking specific, relevant references, including Dinka, Van der Laar, and Kaplan. As described in this Petition, these references disclose elements of the challenged claims, including the element the Examiner thought allowable. Their disclosures, in combinations as described in this Petition, render the '346 patent's claims obvious. Thus, this error reflects a significant gap in the Examiner's evaluation of art and arguments.

Similarly, the Examiner materially erred by not appreciating the disclosures of Beel regarding data transformations based on a type of functional data from the at least one functional device, including the software being located on the processing device. Specifically, the Examiner concedes that Brands taught that software on the peripheral device comprised software for “receiving, decrypting, and decoding incoming arbitrary media content.” Ex-1004, 1050. *See also* Ex-1005, ¶72. Further, the Examiner noted that software for screen scraping for “encoding, compressing and optionally encrypting” were “transformations,” albeit of video data on the processing device. Ex-1004, 1049. Importantly, Barco concedes to this point. Ex-1004, 1038. Therefore, these admissions about Beel's additional disclosure demonstrates that the examiner materially erred in not rejecting the issued claims as obvious over Beel.

Further, the Examiner did not appreciate the obviousness of using software on the processing device to provide transformations on data in bidirectional

communication. The Examiner overlooked that Beel disclosed that the software for “decrypting, and decoding incoming arbitrary media content” could be located on the processing device as well. Specifically, Beel discloses that the software code included “third software code portion for receiving media content **from the network,**” instead of video data from the processing device. Ex-1005, ¶¶70-71 (emphasis added). The Examiner overlooked that, as conceded by Barco that Brands disclosed embodiments without a peripheral device, this software would be obviously located on the processing device. Ex-1004, 665, 770; *see also* Ex-1005, ¶¶247-50 (“software is copied on the client operating device,” *i.e.*, no peripheral device).

Thus, the new ground of Van de Laar and Kaplan teaches exactly these limitations (*See* § IX.B.2.k) and the Examiner materially erred by overlooking Van de Laar and Kaplan and, further, by not fully considering Brands and Beel, which led to the ’346 patent’s allowance.

XI. CONCLUSION

Petitioners request review for claims 1-22 of the ’346 patent.

Dated: February 10, 2025

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,985 as counted by Word Count feature of Microsoft Word, which is less than 14,000 allowed under 37 C.F.R. § 42.24(a)(1)(i), excluding the parts of the paper exempted by 37 C.F.R. §42.24(a).

Dated: February 10, 2025

By: /Stephen Yang/
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CERTIFICATE OF SERVICE

I hereby certify that on February 10, 2025, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 11,966,346 and supporting exhibits to be served via Federal Express mail on the Patent Owner at the following correspondence address of record as listed on PAIR:

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