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.
Petitioners,

v.

BARCO N.V.
Patent Owner

U.S. Patent No. 11,966,347
IPR2025-00598

**DECLARATION OF KEVIN C. ALMEROTH, PH.D.,
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,966,347**

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I, Kevin C. Almeroth Ph.D., declare as follows:

I. INTRODUCTION

1. I have been retained by Yealink (USA) Network Technology Co., Ltd. and Yealink Network Technology Co., Ltd. (collectively, "Petitioners") as an independent expert consultant in this proceeding before the United States Patent and Trademark Office ("PTO") regarding U.S. Patent No. 11,966,347 ("the '347 patent") (Ex-1001).

2. My name is Kevin C. Almeroth and I am a Professor Emeritus of Computer Science at the University of California, Santa Barbara. I have prepared this declaration as an expert witness on behalf of Petitioners. In this declaration, I will give my opinion as to whether claims 1-32 of the '347 patent are unpatentable. I also provide herein the technical bases for these opinions, as appropriate.

3. For my efforts in connection with the preparation of this declaration, I have been compensated at my usual and customary rate for this type of consulting activity. My compensation is in no way contingent on the outcome of these or any other proceedings.

4. I have been asked to consider whether certain references disclose or suggest the features recited in claims 1-31 of the '347 patent. My opinions are set forth below.

II. QUALIFICATIONS / PROFESSIONAL BACKGROUND

5. I am currently a Professor Emeritus in the Department of Computer Science at the University of California, Santa Barbara (UCSB). All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. In forming my opinions, I have relied on my knowledge and experience in designing, developing, researching, and teaching regarding computer networks and protocols, wireless networking, multicast communication, large-scale multimedia systems, and mobile applications.

6. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. I understand that a copy of my current curriculum vitae, which details my education and professional and academic experience, is being submitted by Petitioner as Exhibit 1003. The following provides an overview of some of my experience that is relevant to the matters set forth in this declaration.

7. While at UCSB, I have held faculty appointments and was a founding member of the Computer Engineering (CE) Program, Media Arts and Technology (MAT) Program, and the Technology Management Program (TMP). I have also served as the Associate Director of the Center for Information Technology and

Society (CITS) from 1999 to 2012. I have been a faculty member at UCSB since July 1997.

8. I hold three degrees from the Georgia Institute of Technology: (1) a Bachelor of Science degree in Information and Computer Science (with minors in Economics, Technical Communication, and American Literature) earned in June 1992; (2) a Master of Science degree in Computer Science (with specialization in Networking and Systems) earned in June 1994; and (3) a Doctor of Philosophy (Ph.D.) degree in Computer Science (Dissertation Title: Networking and System Support for the Efficient, Scalable Delivery of Services in Interactive Multimedia System, minor in Telecommunications Public Policy) earned in June 1997. During my education, I took a wide variety of courses as demonstrated by my minors. My undergraduate degree also included a number of courses more typical of a degree in electrical engineering including digital logic, signal processing, and telecommunications theory.

9. One of the major concentrations of my research over the past 30+ years has been the delivery of multimedia content and data between computing devices, including through various network architectures. In my research, I have studied large-scale content delivery systems, and the use of servers located in a variety of geographic locations to provide scalable delivery to hundreds or thousands of users

simultaneously. I have also studied smaller-scale content delivery systems in which content is exchanged between individual computers and portable devices. My work has emphasized the exchange of content more efficiently across computer networks, including the scalable delivery of content to many users, mobile computing, satellite networking, delivering content to mobile devices, and network support for data delivery in wireless networks.

10. In 1992, the initial focus of my research was on the provision of interactive functions (e.g., VCR-style functions like pause, rewind, and fast-forward) for near video-on-demand systems in cable systems; in particular, how to aggregate requests for movies at a cable head-end and then how to satisfy a multitude of requests using one audio/video stream broadcast to multiple receivers simultaneously. This research has continually evolved and resulted in the development of techniques to scale the delivery of on-demand content, including audio, video, web documents, and other types of data, through the Internet and over other types of networks, including over cable systems, broadband telephone lines, and satellite links.

11. An important component of my research has been investigating the challenges of communicating multimedia content, including video, between computers and across networks including the Internet. Although the early Internet

was used mostly for text-based, non-real time applications, the interest in sharing multimedia content, such as video, quickly developed. Multimedia-based applications ranged from downloading content to a device to streaming multimedia content to be instantly used. One of the challenges was that multimedia content is typically larger than text-only content, but there are also opportunities to use different delivery techniques since multimedia content is more resilient to errors. I have worked on a variety of research problems and used a number of systems that were developed to deliver multimedia content to users. One content-delivery method I have researched is the one-to-many communication facility called "multicast," first deployed as the Multicast Backbone, a virtual overlay network supporting one-to-many communication. Multicasting is one technique that can be used on the Internet to provide streaming media support for complex applications like video-on-demand, distance learning, distributed collaboration, distributed games, and large-scale wireless communication. The delivery of media through multicasting often involves using Internet infrastructure, devices and protocols, including protocols for routing and TCP/IP.

12. Starting in 1997, I worked on a project to integrate the streaming media capabilities of the Internet together with the interactivity of the web. I developed a project called the Interactive Multimedia Jukebox (IMJ). Users would visit a web

page and select content to view. The content would then be scheduled on one of a number of channels, including delivery to students in Georgia Tech dorms delivered via the campus cable plant. The content of each channel was delivered using multicast communication.

13. In the IMJ, the number of channels varied depending on the capabilities of the server including the available bandwidth of its connection to the Internet. If one of the channels was idle, the requesting user would be able to watch their selection immediately. If all channels were streaming previously selected content, the user's selection would be queued on the channel with the shortest wait time. In the meantime, the user would see what content was currently playing on other channels, and because of the use of multicast, would be able to join one of the existing channels and watch the content at the point it was currently being transmitted.

14. The IMJ service combined the interactivity of the web with the streaming capabilities of the Internet to create a jukebox-like service. It supported true Video-on-Demand when capacity allowed, but scaled to any number of users based on queuing requested programs. As part of the project, we obtained permission from Turner Broadcasting to transmit cartoons and other short-subject content. We also connected the IMJ into the Georgia Tech campus cable television network so

that students in their dorms could use the web to request content and then view that content on one of the campus's public access channels.

15. More recently, I have also studied issues concerning how users choose content, especially when considering the price of that content. My research has examined how dynamic content pricing can be used to control system load. By raising prices when systems start to become overloaded (*i.e.*, when all available resources are fully utilized) and reducing prices when system capacity is readily available, users' capacity to pay as well as their willingness can be used as factors in stabilizing the response time of a system. This capability is particularly useful in systems where content is downloaded or streamed on-demand to users.

16. As a parallel research theme, starting in 1997, I began researching issues related to wireless devices and sensors. In particular, I was interested in showing how to provide greater communication capability to "lightweight devices," *i.e.*, small form-factor, resource-constrained (*e.g.*, CPU, memory, networking, and power) devices. Starting in 1998, I published several papers on my work to develop a flexible, lightweight, battery-aware network protocol stack. The lightweight protocols we envisioned were similar in nature to protocols like Bluetooth, Universal Plug and Play (UPnP) and Digital Living Network Alliance (DLNA).

17. From this initial work, I have made wireless networking—including ad hoc, mesh networks and wireless devices—one of the major themes of my research. My work in wireless networks spans the protocol stack from applications through to the encoding and exchange of data at the data link and physical layers.

18. At the application layer, even before the large-scale "app stores" were available, my research looked at building, installing, and using apps for a variety of purposes, from network monitoring to support for traditional computer-based applications (*e.g.,* content retrieval) to new applications enabled by ubiquitous, mobile devices. For example, my research has looked at developing applications for virtually exchanging and tracking "coupons" through "opportunistic contact" among mobile wireless devices (*i.e.,* communication among devices moving into communication range with each other). In many of the courses I have taught there is a project component. Through these projects I have supervised numerous efforts to develop new "apps" for download and use across a variety of mobile platforms.

19. Toward the middle of the protocol stack, my research has also looked to build wireless infrastructure support to enable communication among a set of mobile devices unaided by any other kind of network infrastructure. These kinds of networks are useful either in challenged network environments (*e.g.*, when a natural disaster has destroyed existing infrastructure) or when suitable support for network

communication never existed. The deployment of such networks (or even the use of traditional network support) are critical to support services like disaster relief, catastrophic event coordination, and emergency services deployment.

20. Yet another theme of my research has been monitoring wireless networks, in particular different variants of IEEE 802.11 compliant networks, to (1) understand the operation of the various protocols used in real-world deployments, (2) use these measurements to characterize use of the networks and identify protocol limitations and weaknesses, and (3) propose and evaluate solutions to these problems. I have successfully used monitoring techniques to study wireless data link layer protocol operation and to improve performance by enhancing the operation of such protocols. For wireless protocols, this research includes functions like network acquisition and channel bonding.

21. One theme in my wireless network research has been cross-layer solutions and innovations. As mentioned above, with greater wireless device use and network support, we envisioned new application paradigms and services, for example, when mobile devices come into contact with each other. Instead of relying on existing infrastructure to relay communication, mobile devices are able to discover each other and communicate directly. Other examples include discovering and using location information to enhance users' experiences. Network support and

novel applications span the use of a variety of network architectures supporting users on foot, in vehicles, and across varying terrains and environments. Finally, we studied how communication efficiency can be supported through intelligent handoffs as well as location and movement prediction.

22. Protecting networks, including their operation and content, has been an underlying theme of my research almost since the beginning of my research career. Since 2000, I have been involved in several projects that specifically address security, network protection, and firewalls. After significant background work, a team on which I was a member successfully submitted a $4.3M grant proposal to the Army Research Office (ARO) at the Department of Defense to propose and develop a high-speed intrusion detection system. Key aspects of the system included associating streams of packets and analyzing them for viruses and other malware. Once the grant was awarded, we spent several years developing and meeting the milestones of the project. Several of my students worked on related projects and published papers on topics ranging from intrusion detection to developing advanced techniques to be incorporated into firewalls. I have also used firewalls, including their associated malware detection features, in developing techniques for the classroom to ensure that students are not distracted by online content.

23. My recent work ties some of the various threads of my past research together. I have investigated content delivery in online social networks and proposed reputation management systems in large-scale social networks and marketplaces. On the content delivery side, I have looked at issues of caching and cache placement, especially when content is shared and the cache has geographical relevance. We were able to show that effective caching strategies can greatly improve performance and reduce deployment costs.

24. As an important component of my research program, I have been involved in the development of academic research into available technology in the marketplace. One aspect of this work is my involvement in the Internet Engineering Task Force (IETF). The IETF is a large and open international community of network designers, operators, vendors, and researchers concerned with the evolution of Internet architecture and the smooth operation of the Internet. I have been involved in various IETF groups including content delivery-related working groups like the Audio Video Transport (AVT) group, the MBone Deployment (MBONED) group, Source Specific Multicast (SSM) group, the Inter-Domain Multicast Routing (IDMR) group, the Reliable Multicast Transport (RMT) group, the Protocol Independent Multicast (PIM) group, etc. I have also served as a member of the Multicast Directorate (MADDOGS), which oversaw the standardization of all things

related to multicast in the IETF. Finally, I was the Chair of the Internet2 Multicast Working Group for seven years.

25. My involvement in the research community extends to leadership positions for several academic journals and conferences. I am the co-chair of the Steering Committee for the ACM Network and System Support for Digital Audio and Video (NOSSDAV) workshop and on the Steering Committees for the International Conference on Network Protocols (ICNP), ACM Sigcomm Workshop on Challenged Networks (CHANTS), and IEEE Global Internet (GI) Symposium. I have served or am serving on the Editorial Boards of IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Network, ACM Computers in Entertainment, AACE Journal of Interactive Learning Research (JILR), and ACM Computer Communications Review. I have co-chaired a number of conferences and workshops including the IEEE International Conference on Network Protocols (ICNP), IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), International Conference on Communication Systems and Networks (COMSNETS), IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS), the International Workshop On Wireless Network Measurement (WiNMee), ACM Sigcomm Workshop on Challenged Networks (CHANTS), the Network Group

Communication (NGC) workshop, and the Global Internet Symposium, and I have served on the program committees for numerous conferences.

26. Furthermore, in the courses I taught at UCSB, a significant portion of my curriculum covered aspects of the Internet and network communication including the physical and data link layers of the Open System Interconnect (OSI) protocol stack, and standardized protocols for communicating across a variety of physical media such as cable systems, telephone lines, wireless, and high-speed Local Area Networks (LANs). The courses I have taught also cover most major topics in Internet communication, including data communication, multimedia encoding, and mobile application design. My research and courses have covered a range of physical infrastructures for delivering content over networks, including cable, Integrated Services Digital Network (ISDN), Ethernet, Asynchronous Transfer Mode (ATM), fiber, and Digital Subscriber Line (DSL). For a complete list of courses I have taught, see my curriculum vitae (CV) (Ex-1003).

27. In addition, I co-founded a technology company called Santa Barbara Labs that was working under a sub-contract from the U.S. Air Force to develop very accurate emulation systems for the military's next generation internetwork. Santa Barbara Labs' focus was in developing an emulation platform to test the performance characteristics of the network architecture in the variety of

environments in which it was expected to operate, and, in particular, for network services including IPv6, multicast, Quality of Service (QoS), satellite-based communication, and security. Applications for this emulation program included communication of a variety of multimedia-based services, including video conferencing and video-on-demand.

28. In addition to having co-founded a technology company myself, I have worked for, consulted with, and collaborated with companies for nearly 30 years. These companies range from well-established companies to start-ups and include IBM, Hitachi Telecom, Turner Broadcasting System (TBS), Bell South, Digital Fountain, RealNetworks, Intel Research, Cisco Systems, and Lockheed Martin.

29. Through my graduate education, leadership with CITS, involvement in TMP, role in the development of the Internet2 infrastructure, and consulting with ISPs, I have gained a strong understanding in the role of the Internet in our society and the challenges of deploying large-scale production networking infrastructure. CITS, since its inception, has looked at the role of the Internet in society, including how the evolution of technology has created communication opportunities and challenges, including, for example through disruptive technologies like P2P. TMP looks to focus on non-purely technical issues, including, for example, state-of-the-art business methods, strategies for successful technology commercialization, new

venture creation, and best practices for fostering innovation. Through my industry collaborations and Internet2 work, I have developed significant experience in the challenges of deploying, monitoring, managing, and scaling communication infrastructure to support evolving Internet services like streaming media, conferencing, content exchange, social networking, and e-commerce.

30. I am a Member of the Association of Computing Machinery (ACM) and a Fellow of the Institute of Electrical and Electronics Engineers (IEEE).

III. MATERIALS REVIEWED

31. The opinions contained in this Declaration are based on the documents I reviewed, my professional judgment, as well as my education, experience, and knowledge regarding, for example, electronic meeting tools, methods of displaying and transmitting audiovisual media content, audiovisual display systems, wireless network communication, user interfaces, plug-and-play architectures, and video conferencing applications.

32. In forming my opinions expressed in this Declaration, I reviewed the following materials and information:

EXHIBIT	DESCRIPTION
Ex-1001	U.S. Patent No. 11,966,347 ("'347 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. 11,966,347
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)

33. I also reviewed any other materials I refer to in this Declaration in support of my opinions.

34. My opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my appreciation of how a person of ordinary skill in the art ("POSA") would have understood the state of the art, the teachings of the prior art, and the claim terms and the specification of the '347 patent at the time of the alleged invention. My opinions reflect how a POSA (which I have described below) would have understood the '347 patent, the prior art, the knowledge of a POSA and the state of the art at the time of the alleged invention. I have been asked to initially consider that the time of the alleged invention of the '347 patent is around December 17, 2017 (the earliest date to which the '347 patent claims the benefit of priority). However, even if a modestly earlier or later date were selected it would not alter my opinions.

35. Based on my experience and expertise, it is my opinion that the prior art discloses and/or suggests all the features recited in challenged claims 1-31 of the '347 patent, as I discuss in detail below.

IV. LEVEL OF ORDINARY SKILL IN THE ART

36. In determining the skills of a hypothetical POSA of the '347 patent at the time of the claimed invention, I considered several things, including various prior art techniques for screen scraping, wireless transmission of media content, wireless

networking, user input/control, peripheral device interfaces, and device drivers. I also considered the type of problems that such techniques gave rise to and the rapidity with which innovations were made. I also considered the sophistication of the technologies involved and the educational background and experience of those actively working in the field.

37. For the purposes of my analysis, I have been asked to assume that a POSA in the field of art of the '347 patent would have had at least a Master's Degree in Electrical Engineering with at least five years of work experience in computer science and embedded systems, or a Master's Degree in Computer Science with at least five years of work experience in electrical and computer engineering and embedded systems. Additional educational experience could substitute for some of the work experience. My opinions below have taken that into account and reflect that level of skill in determining the content of the prior art and what it would have suggested to a POSA.

V. BACKGROUND OF THE TECHNOLOGY

38. At the time of the alleged invention, media sharing between electronic devices was well established and used in an increasing variety of applications to share media data between devices. In the decades before the alleged invention, a wide array of electronic tools were developed to facilitate meetings and share content

among individuals, particularly in business and educational settings. As acknowledged by the '347 patent, there has been "an explosion" of such tools by the time of the alleged invention. Ex-1001, 1:25-33. By the 2000s, there was already "widespread acceptance of using computers to facilitate group communications." Ex-1014, ¶4.

39. The oldest solutions involved wired connections between electronic devices. As wireless networking techniques became more common, wireless applications to electronic tools became prevalent. Indeed, by the time of the alleged invention in late 2017, acknowledged by the '347 patent and discussed in more detail below, wireless networks were commonplace and widespread from classrooms to boardrooms.

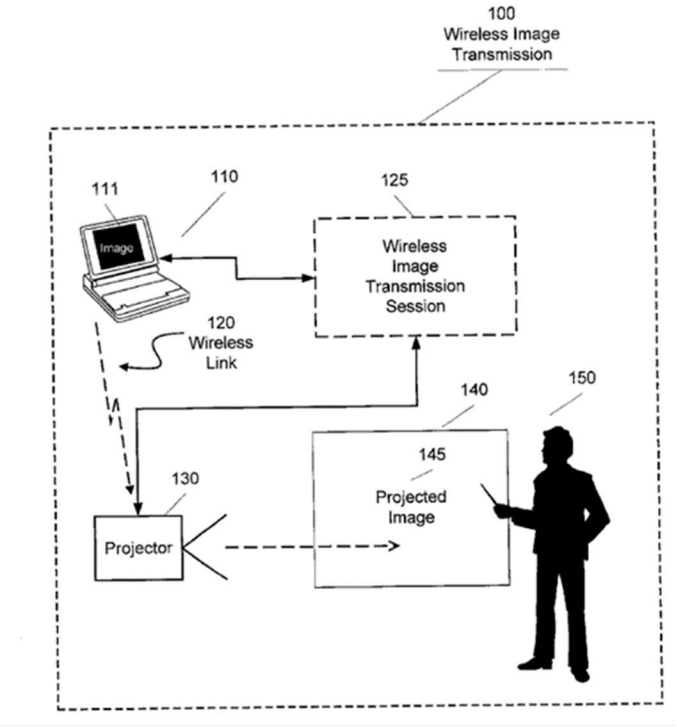
40. Wireless media sharing arose, in part, from the recognition that sharing media content from one device to one or more separate devices (in settings such as a meeting, presentation, *etc*.) using physical cable connections presented certain physical limitations. For example, one limitation with physical cable connections was the case in which multiple presenters wish to perform presentations while taking

turns using respective personal computers (PCs). Ex-1015, ¶4; *see also* Ex-1016[1], ¶3 (recognizing the limitation of physical cable connections in meetings requires physically reconnecting each electronic device to share media on separate electronic devices). By designing systems utilizing wireless communication, between a media device (*i.e.*, computer) and a display device (*i.e.*, a second computer, projector, or similar device), "the cable can be prevented from becoming an obstacle." *Id.*

41. Techniques developed for wirelessly sharing media content included sharing content displayed on a laptop computer or other portable electronic device with another, separate display, for example, in a conference room. Although early on bandwidth of the wireless systems was a potential issue, to address this problem, US Patent Application Publication No. 2002/0196378 ("Slobodin") proposed a method and apparatus for wireless transmission of "screen scraped" images to a projector to reduce the amount of transmission bandwidth. Ex-1014, Title, Abstract, ¶¶12-14. As shown in FIG. 1 of Slobodin (reproduced below), an image-generating device 110 (*e.g.*, a laptop computer) generates a digital image on a display device

[1] This is the English Translation (Ex-1016) to JP Patent Application Publication No. 2007-208606 (Ex-1017). All citations are to the English Translation (Ex-1016). Ex-1018 is the corresponding certificate of certified translation.

111 that is transmitted over a wireless link 120 to a remote presentation projector 130 for projection 145 by a presenter 150. Ex-1014, ¶33. Screen scraping was used to capture display data that was then transmitted to the projector. Ex-1014, ¶¶12-14. The '347 patent borrows this same screen scraping technique from Slobodin. *See* Ex-1001, 8:34-38.



Ex-1014, FIG. 1.

42. As wireless networking technology progressed, focus shifted to making the tools more user-friendly and pluralistic. For example, efforts focused on making it easier for multiple users to establish network connections to implement wireless communication for image sharing. *See*, *e.g.*, Ex-1019, ¶¶1-8. U.S. Patent Application

Publication No. 2002/0174254 ("Kita") (Ex-1019) describes a system in which network interface cards were preconfigured to connect to a wireless LAN, such that multiple computers 11 could be wirelessly connected to a projector 16 by merely inserting one of these interface cards 11 without participants needing to configure a network connection. *See*, *e.g.*, Ex-1019, ¶¶14-17, FIGS. 3 and 18, reproduced below.

FIG. 3

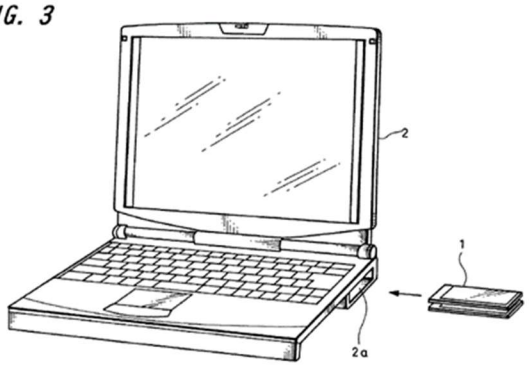
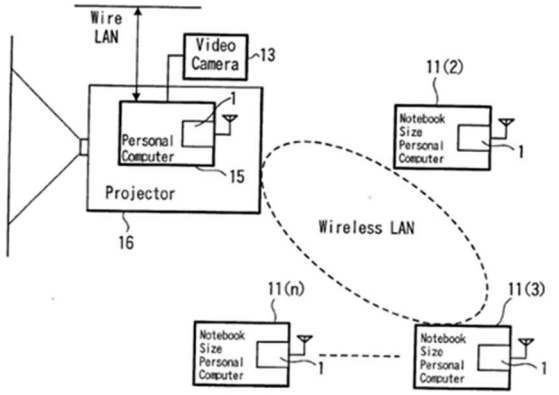


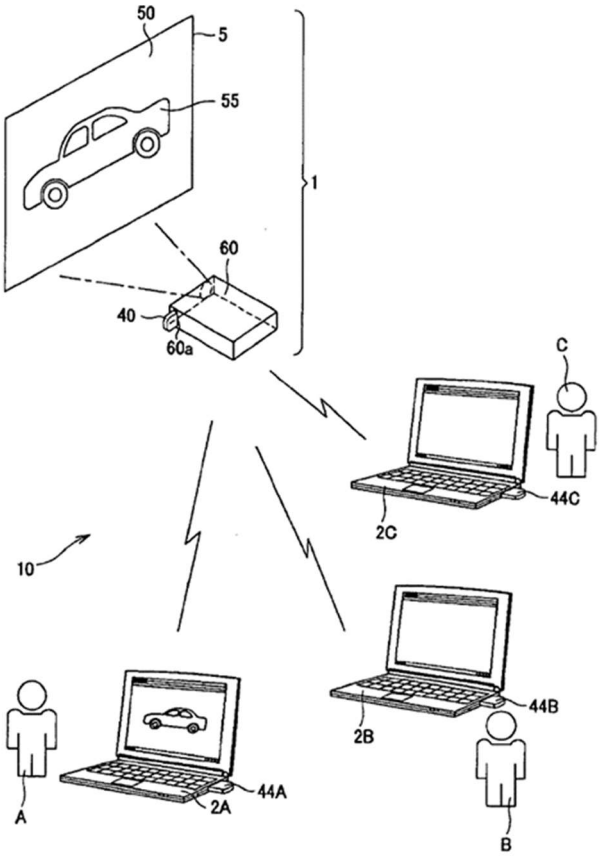
FIG. 18



Ex-1019, FIGs. 3, 18.

43. During the 2000s, wireless technology shifted from wireless LAN cards, as described by Kita, to the increasingly more ubiquitous USB standard, which stands for Universal Bus Standard. A range of plug-and-play USB-type devices emerged for sharing both image and audio. For example, U.S. Patent Application Publication No. 2005/0210390 ("Ono") proposed the use of USB-type "communication modules" to wirelessly connect an image projector with multiple "information terminal apparatuses," depicted below as laptop personal computers. Ex-1020, ¶¶36-39. The communications modules plug into a USB port of the

information terminal apparatuses and wirelessly transmit images via a wireless network from the laptop display to a corresponding wireless connection module coupled to the image projector. Ex-1020, ¶¶36-39, 54. Further, it was already taught in the prior art to use pre-installed drivers to operate a standard class of USB computer peripheral devices such as human interface devices (HID). *See* Ex-1021, ¶10; *see additionally*, Ex-1022, ¶3. In fact, "HID and MSD [mass storage device] drivers [were] known per se in the art." Ex-1021, ¶10.



Ex-1020, FIG. 1.

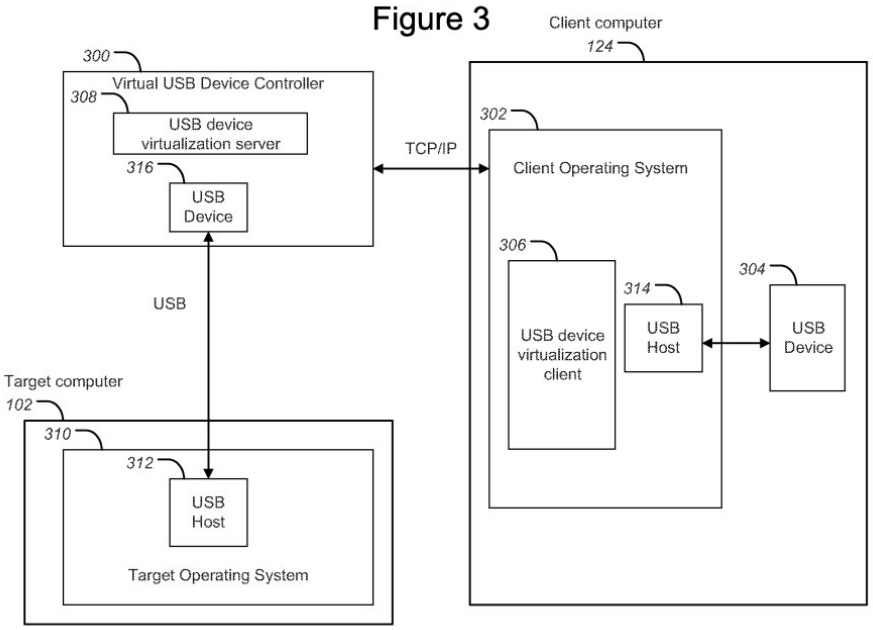
44. By the priority date of the '346 patent, a POSA would have understood that the USB protocol had become widely accepted as a standard for connecting devices and/or sharing data between devices. A POSA would have further understood that USB devices must implement and adhere to the USB standard for compatibility across USB devices or devices compatible with USB devices.

45. Specifically, USB utilizes "endpoints." As discussed in the Universal Serial Bus Specification, Revision 2.0, an "endpoint is a uniquely identifiable portion of a USB device that is the terminus of a communication flow between the host and device. Each USB logical device is composed of a collection of independent endpoints." Universal Serial Bus Specification, Revision 2.0, pg. 33 (April 27, 2000) (last accessed Jan. 15, 2025) (http://www.poweredusb.org/pdf/usb20.pdf). Essentially, data flows through the endpoints of a USB device from one data source/sink (*i.e.*, the USB device) to another data source/sink (*i.e.*, the host). Hence, data can be sent to or from an endpoint, and each end of the communication channel between connected USB devices has its own endpoint for the data to be sent to or from.

46. A USB functional device can have multiple endpoints, *i.e.*, the client software and the firmware on the device can exchange multiple separate streams of data. Endpoint zero is reserved on each device for control communication with the

USB system. USB devices can have additional endpoints as required to implement their functions. *Id.*, at 34.

47. USB device technology expanded to include wirelessly connected USB devices. For example, WIPO Publication No. WO 2012/128972 ("Scragg") described a system to wirelessly connect USB devices over a distance. Scragg's system disclosed the ability to "virtualize" a USB device attached to a local/client user computer which could "remotely connect to a server." Ex-1032, ¶15. In this way, a USB device attached to a local/client user's computer system could be used by a second/target computer "anywhere in the world." *Id.* The second/target computer could then "interact[] with the local user's computer and USB device over a network." *Id.* Scragg further discloses that the connection between the USB devices at the local/client and target computer is capable of transmitting video and mouse/keyboard data. *Id.*, at ¶¶20, 24. Scragg's system further discloses the video data is capable of rendering, such as display on a client monitor 108. *Id.*, at ¶26. Scragg explains that the USB device is "virtualized" because the USB device attached to the target computer "emulates the signals received" from the USB device attached to the local/client computer. *Id.*, at ¶35. FIG. 3 demonstrating Scragg's system is reproduced below:

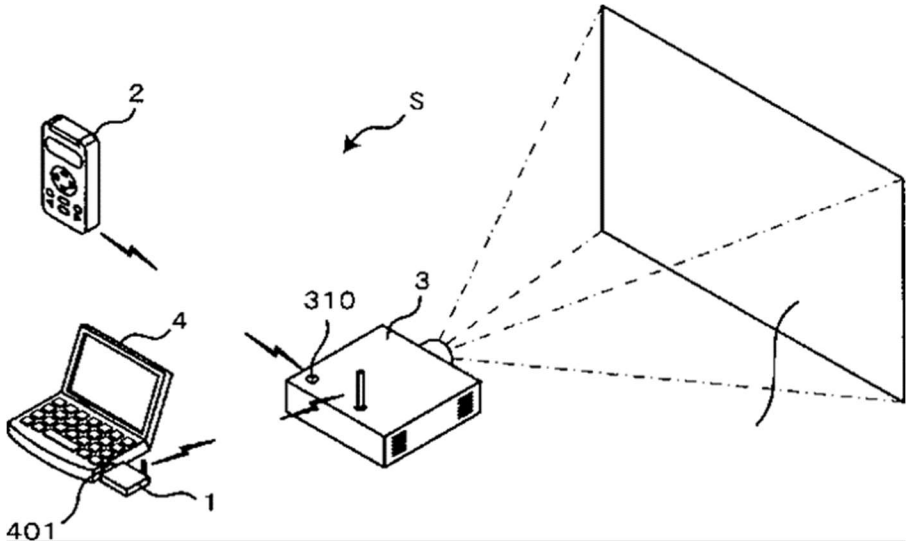


Ex-1032, FIG. 3.

48. Japanese Patent Application Publication No. 2008-165007 ("Uchida") (Ex-1023[2]) described a similar image projection system. Uchida describes a personal computer device 4 wirelessly connected to an image projection device 3 (*e.g.*, a projector) via a wireless device 1. *See*, *e.g.*, Ex-1023, ¶39 and FIG. 1, reproduced below. The wireless device 1 is described as a USB dongle. Ex-1023, ¶39. The wireless device 1 is connected to the computer 4 and transmitted image data from

[2] This is the English Translation (Ex-1023) to JP Patent Application Publication No. 2008-165007 (Ex-1024). All citations are to the English Translation (Ex-1023). Ex-1025 is the corresponding certificate of certified translation.

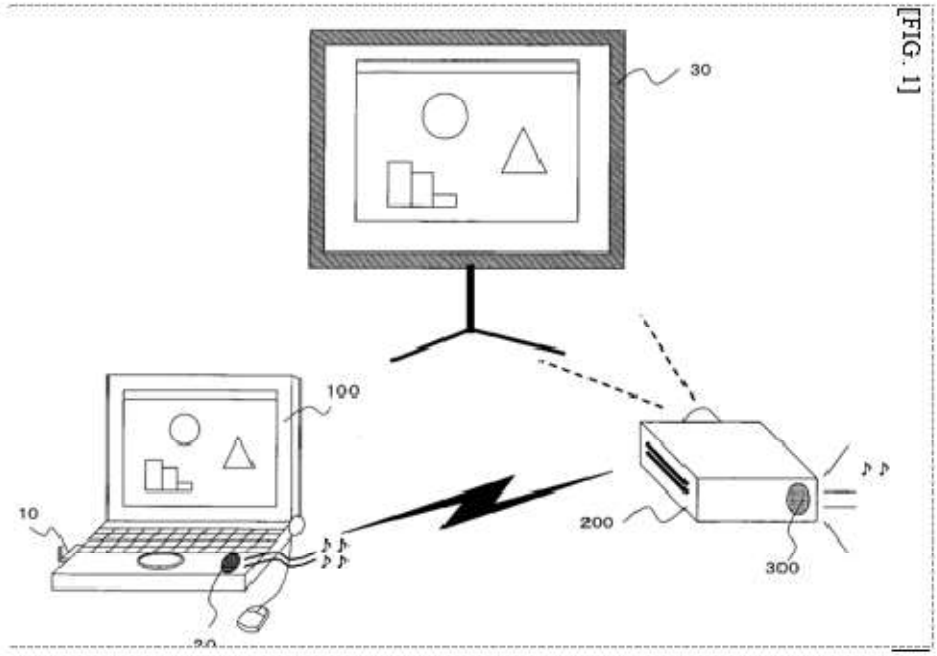
the computer 4 to the image projection device 3 for display. Wireless setting information is automatically provided without requiring a user to enter this information—thereby making it more convenient for the user to make use of the tool. Ex-1023, ¶¶41-44.



(Ex-1023, FIG. 1.)

49. Likewise, Japanese Patent Application Publication No. 2007-208606 ("Maeda") disclosed using a PC as an image generation device to generate images and audio, to be transmitted to a projector using a wireless local area network (LAN). Ex-1016, ¶15. In operation, the "screen displayed on the display of PC 100 is transmitted from PC 100 to projector 200 and the screen received by projector 200 is projected onto a screen 30. A wireless LAN card 10 containing a wireless LAN chip is attached to PC 100, thereby transmitting image signals and audio signals to

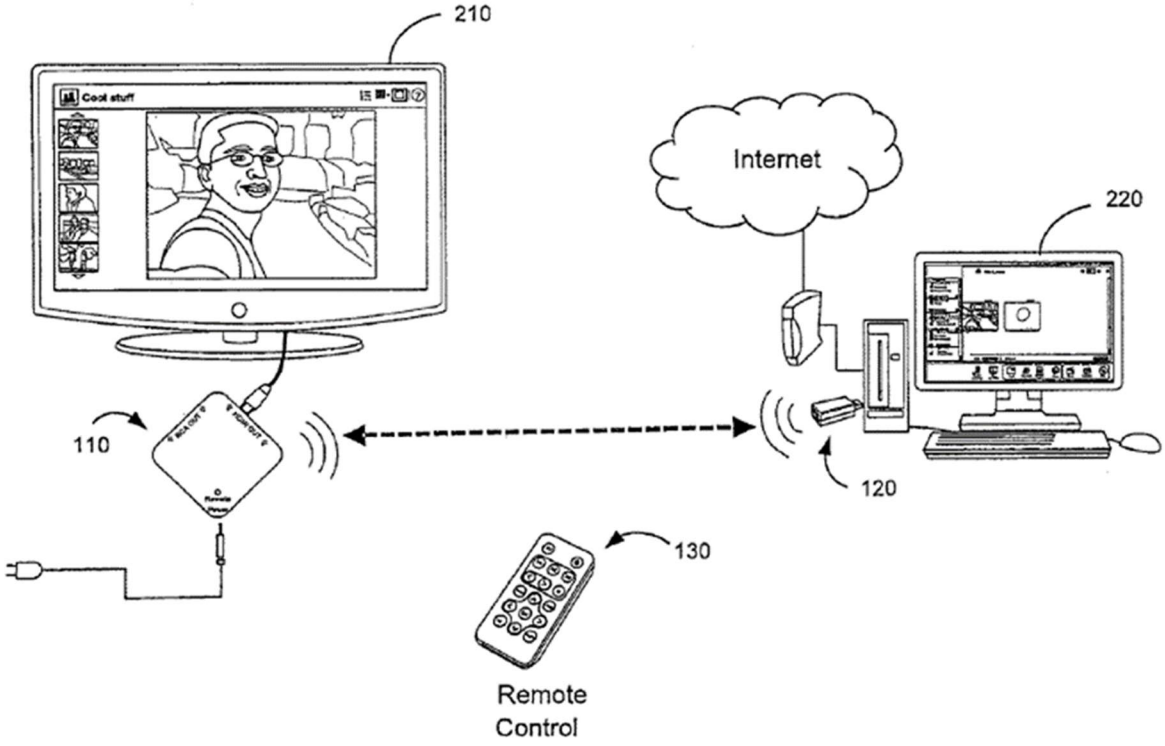
projector 200 via the wireless LAN." Ex-1016, ¶17. I discuss Maeda in greater detail below.



Ex-1016, FIG. 1

50. Near the end of the 2000s, the availability of greater wireless bandwidth led to greater amounts of media content being streamed wirelessly to different devices. For example, using wirelessly connected USB devices connected to separate devices similar to the system of Scragg described above, U.S. Patent Application Publication No. 2010/0295994 ("Kaplan") (Ex-1008) describes a communications system 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. The transmitter is pre-paired with a receiver 110 connected to

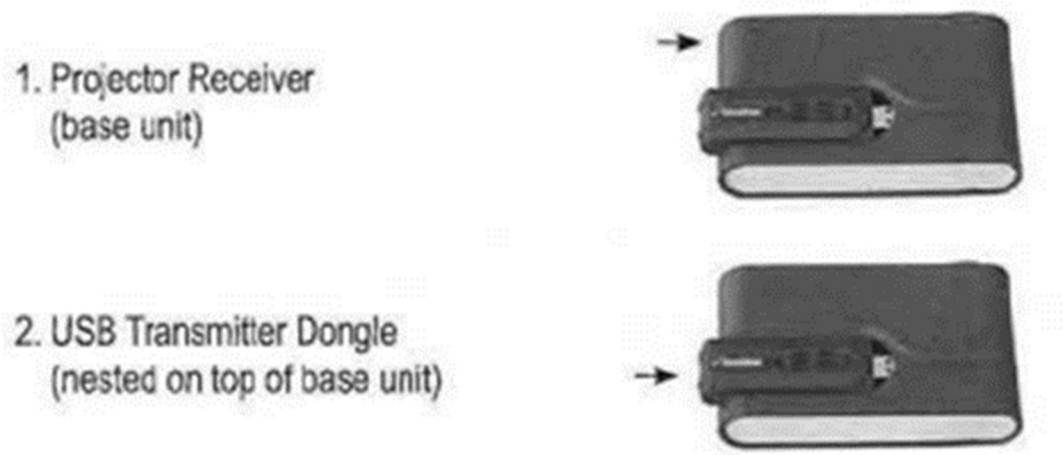
the display device 210, such that a user does not need to configure the wireless connection *See* Ex-1008, ¶18. I discuss Kaplan in greater detail below.



Ex-1008, FIG. 1.

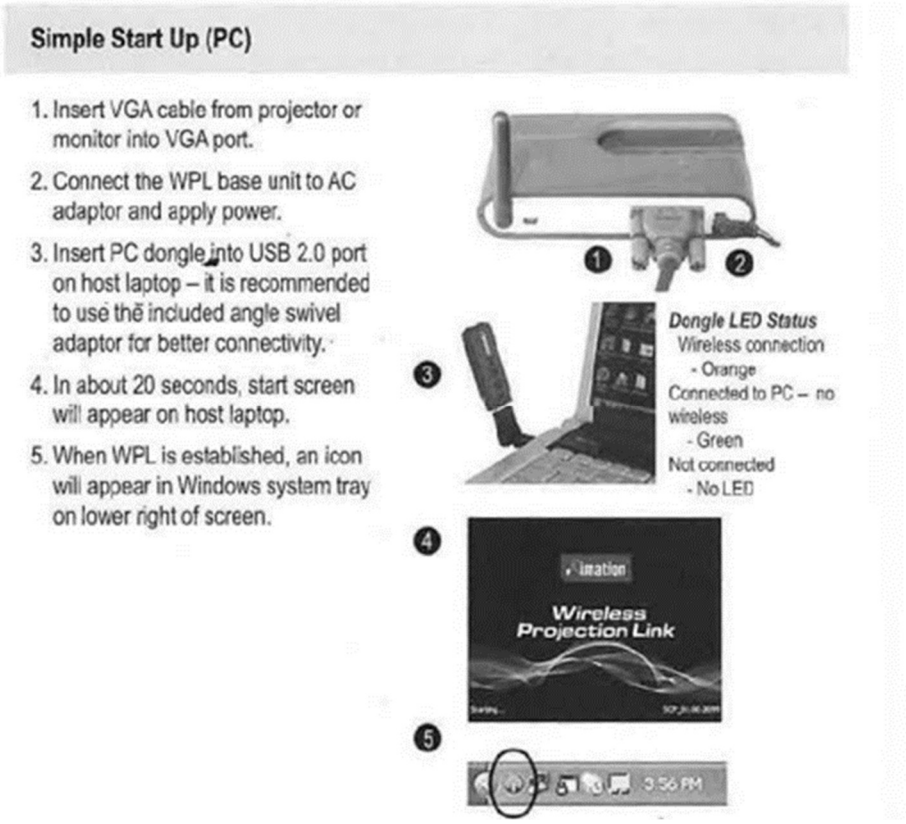
51. Around the same time, several commercial products were available that employed similar USB dongles for wireless communication between a personal computer and a projector or other display. One example was sold by Imation from at least during 2008 Ex-1026 (Imation), p. 8. The Imation system included a USB transmitter dongle that plugged into a personal computer and allowed communication with a base unit that was connected to a projector or monitor. *See* image below reproduced from Ex-1026 (Imation), p. 2. Imation's system adaptable for use at a conference or meeting with multiple wireless adapters able to

communicate with the same projector/monitor Ex-1026 (Imation), p. 6 "Associate a New Dongle to the WPL Base Unit".



Ex-1026, p. 6 (excerpted).

52. The Imation system had a simple startup that only required attaching the base unit to the projector/display and to power and inserting the USB transmitter dongle into the personal computer. After only about 20 seconds, a start screen appeared that allowed transferring an image from the computer to be displayed on the projector/monitor. *See* image reproduced below from Ex-1026 (Imation), p. 2 "Simple Start UP (PC)". Although an optional special driver was available, this driver was not necessary for operation Ex-1026 (Imation), "Installing DisplayLink™ Driver (PC)".



Ex-1026, p. 2 (excerpted).

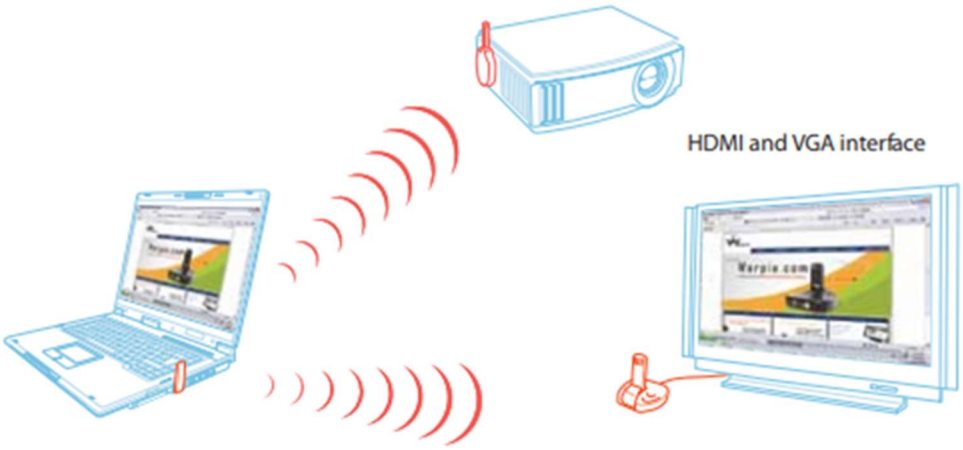
53. As example of another system employing this technology at the time of invention, another wireless adapter system was sold under the EZAir brand from around 2010 (Ex-1027 (EZAir), p. 1.) According to promotional materials for the EZAir, "[t]he products operate via a Plug&Play USB dongle that plugs into a USB port available in any PC/Laptop and an adapter that connects to the target device (such as flat TV, speaker system or PC peripherals)." Ex-1027 (EZAir), p. 2. The adapter was also marketed for use in small business and education where multiple participants commonly need to interact with the same projector/display (Ex-1027 (EZAir), p 2.) An image from the EZAir marketing material (Ex-1027 (EZAir))

illustrates the Plug&Play USB dongle transmitting image and audio data wirelessly to the adapter connected to a television. The image of an undersea scene from the laptop connected to the dongle is reproduced on the television.

Ex-1027, p. 1 (excerpted).

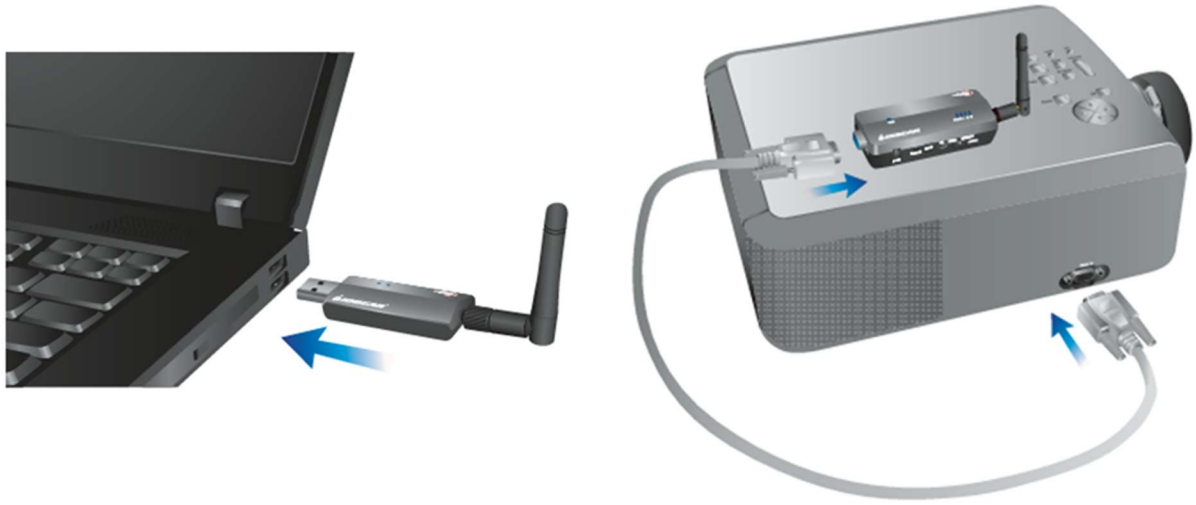
54. Wireless adapters with a similar form factor were also sold under the Warpia (Ex-1028 (Warpia) and Q-Waves (Ex-1029 (Q-Waves)) brands. According to marketing materials from 2009, the Warpia system allowed wireless connectivity from a notebook or PC to displays, such as projectors, TVs, and monitors (Ex-1028 (Warpia), p. 1, "Key Features," "Overview".) The Warpia system included pre-associated (*i.e.*, pre-paired) adapters that provided audio and video communication to the display. Ex-1028 (Warpia), p. 1, "Key Features". The system was easy and quick to set up. Ex-1028 (Warpia), p. 1, "Key Features". An image from the Warpia marketing material (Ex-1028 (Warpia)) is shown below, illustrating image transfer

from a PC Adapter connected to a laptop computer to A/V Adapters connected to a projector and a television. The PC Adapter was able to connect to a USB port, which were common to all notebooks & PCs at the time, and the A/V Adapter connected to an HDMI port or VGA port of a display device. Ex-1028 (Warpia), p.1 "Overview".



Ex-1028, p. 1 (excerpted).

55. As yet another system implementing a wireless adapter, IOGEAR sold another wireless media communication kit from at least 2008. Ex-1030 (IOGEAR), p.44 (copyright date). The kit included a wireless USB host adapter that plugged into a computer from which media was transmitted wirelessly to a wireless VGA adapter connected to a projector or other display. *See* images below reproduced from Ex-1030 (IOGEAR), pp.13,16.



Ex-1030, pp.13 (left – wireless host adapter), 16 (right – wireless VGA adapter) (excerpted).

56. The IOGEAR product anticipated that the host computer operating system would have included pre-installed USB drivers that allowed the USB host adapter to be set up automatically. For instance, IOGEAR indicated that one can "[p]lug the Wireless USB Host Adapter to your computer via option 1 or 2. Windows will detect the device and complete the driver installation process automatically." Ex-1030 (IOGEAR), p. 13. The wireless USB host adapter and wireless VGA adapter were pre-associated (or pre-paired) to improve ease of use, such that no network configuration needs to be entered by a user. Ex-1030 (IOGEAR), p. 40. The IOGEAR kit was also adaptable for use by multiple participants in a meeting. For example, additional wireless USB host adapters could be paired with the same wireless VGA adapter. Ex-1030, p. 28. A "HOST" button on the wireless VGA

adapter could then be used to switch between which wireless USB host adapter was transferring data to the VGA adapter for display. *See* Ex-1030 (IOGEAR), p. 28, "Wireless USB Host Adapter Selection" reproduced below.

Ex-1030, p. 28 (excerpted).

57. As the technology in this space evolved and bandwidth issues were resolved, applications for hosting group communications, or unified communication calls, were developed. For example, by at least 2012, the Skype™ platform widely became available for business or general purpose users. *See* Ex-1009. Ex-1009 demonstrates Skype was available at least as early as September 14, 2012—well before the alleged invention. This software application allowed the users to have "video calling" between members of the call, wherein audio/video captured by the user device's camera function was shared/streamed to a user on a separate user device, and vice versa.

58. At least as early as 2015, Skype expanded their technology, largely using technology the ’347 patent allegedly discloses as novel. *See* Ex-1013. By November 28, 2015, approximately two years before the earliest priority date of the ’347 patent, Skype included the ability for users to host a unified communication call, or “[g]roup video calls” with multiple users. These calls, as before, allowed the user’s device to capture audio/visual images with the device’s camera function and share/stream the audio/visual images to other user devices that were connected to the call. Further, Skype expanded their technology to also allow “[s]creen sharing,” by which a user, similar to the camera function, could capture the data/image of the user device’s screen, and share/stream that data/image to other user devices connected to the call.

59. It is apparent from the example prior art patent and product literature discussed above that content sharing techniques were well-established by the time of the invention. It is further apparent that applications and systems for hosting unified communication between user processing devices was well-established and widely used through the industry at the time of the alleged invention. I have discussed several examples of techniques to transfer image data from a computer to a display routed through a wireless USB dongle or similar set of devices, so that data from the computer display can be presented on another display. The USB technology

of these various products utilized standardized USB drivers and communication protocols available to allow a plug-and-play experience. See, e.g., Ex-1026 (Imation), p. 2 "Simple Start Up (PC)." I have also discussed examples of unified communication applications and how these applications were used to host audio/visual communications between groups of users.

VI. OVERVIEW OF THE '347 PATENT

A. Prior Art Techniques Acknowledged by the '347 patent

60. The '347 patent is directed to tools for making functional devices available to participants of meetings. Ex-1001, 1:15-18. In this vein, the '347 patent recognizes a recent "explosion of electronic communication tools" allowing ad hoc communication, such as "synchronous and asynchronous conferencing, online chat, Instant Messaging, audio conferencing, videoconferencing, data conferencing, application sharing, remote desktop sharing, electronic meeting systems, collaborative management (coordination) tools, project management systems, knowledge management systems, and social software systems." Ex-1001, 1:22-33.

61. The '347 patent acknowledges that web conferencing tools, such as those used for hosting a unified communication (*e.g.*, a Skype call), "can take over audio and/or visual data provided from a host processing device." Ex-1001, 8:12-16. Skype is referenced repeatedly in the '347 patent and has been known since at least 2012. *See*, *e.g.*, Ex-1001, 3:11-14, 8:12-33, 13:27-35, 15:7-25, 16:46-49, 19:13-26,

21:4-10, 23:25-27, 23:43-46, 23:53-59, and Ex-1009. The ’347 patent also acknowledges that Beel (Ex-1005) shows an arrangement of components (FIG. 11 of Beel) that can be used in embodiments (FIG. 4) of the purported invention of the ’347 patent. *See* Ex-1001, 5:47-52 incorporating WO 2013/037980 entitled ‘Electronic tools and methods with audio for meetings’ by reference. Referring to components of FIG. 4 that also appear in FIG. 11 of Beel, the ’347 patent also acknowledges “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, 18:4-9.

B. The Purported Invention

62. The ’347 patent purports to solve problems associated with “a need for high quality audio as well as visual signals to be made available to participants at a meeting.” Ex-1001, 1:49-52. Yet, the claims of the ’347 patent are simply directed to connecting devices in a communications network and using a device to host a unified communication, such as a Skype call—much like the acknowledged prior art discussed in the previous subsection and further below. *See*, *e.g.*, *id*., 1:22-33, 5:47-52. Although presented as disclosing a new approach, the ’347 patent fails to explain any concrete distinction from these prior art methods. As I discussed above and in

further detail below, all features recited in the challenged claims were already known.

C. Prosecution History

63. I have reviewed the prosecution history of the '347 patent and note that a Non-Final Rejection of the independent claims was issued based on a combination of two prior art references, "Brands" (U.S. Publication No. 2015/0121466) and "Christison" (U.S. Patent No. 7,761,627). Ex-1004, at 424-34. Several dependent claims were rejected based on the combination of Brands, Christison, and in further view of "Beel" (U.S. Publication No. 2015/0169477).

64. The examiner found allowable subject matter in dependent claims 12, 14, and 26-28. Ex-1004, at 433. Claims 12 and 26-27 recited:

> the base unit receives the second processed data, and decodes and/or enhances the second processed data and forwards it to a functional device which is connected or attached to the base unit through a serial connection

(the "Second Processed Data Limitation"). Claims 12 and 26-27 depended from earlier dependent claims that recited:

> wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, is sent to an endpoint of the first peripheral device via a standard generic driver, the first peripheral device receiving the third video

> data and processing the third video data to form second processed video data.

(the "Third Video Data Limitation"). The examiner believed that Brands did not disclose "receiving second processed data, decoding/enhancing said data, and forwarding it to a function[al] device through a serial connection." Ex-1004, at 433.

65. The other claims found as allegedly allowable, claims 14 and 28, recited:

> the base unit being configured to expose and make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device

(the "Translation Limitation"). The examiner did not specifically indicate why the Translation Limitation claims were considered allowable subject matter. Ex-1004, at 433.

66. In response to the rejection, the Patent Owner amended the two initial independent claims, corresponding to allowed claims 1 and 12, to additionally recite the Second Processed Data Limitation and the Third Video Data Limitation. Ex-1004, at 504-05. The Patent Owner further added a new independent claim, corresponding to allowed claim 23, which recited the Second Processed Data Limitation, the Third Video Data Limitation, and the Translation Limitation. Ex-

1004, 504-510. A second new independent claim, corresponding to allowed claim 27, was also added which only additionally recited the Translation Limitation. Ex-1004, 504-510. A Notice of Allowance was subsequently issued based on the amendments. Ex-1004, at 553, 681. As described below, in my opinion, the Second Processed Data Limitation, the Third Video Data Limitation, and the Translation Limitation were well-known and disclosed by the prior art.

VII. CLAIM CONSTRUCTION

67. I understand that claim terms are typically given their ordinary and customary meanings, as would have been understood by a POSA at the time of the alleged invention, which, as I explained above, I have been asked to assume is around December 17, 2017.

68. In considering the meaning of the claims, however, I understand that one must consider the language of the claims, the specification, and the prosecution history of record. In general, I have been asked to consider the claim terms under their plain and ordinary meanings and thus considered the claims, specification, and prosecution history for the ’347 patent in doing so in support of my opinions concerning the ’347 patent and the prior art discussed herein.

69. I have been told that the ’347 patent is related to European Patent No. 3,732,827 B1 (the “’827 patent”). I have also been told that the ’827 patent is

involved in Unified Patent Court proceeding UPC_CFI_582/2024. I understand that the laws and regulations concerning patentability, including novelty, obviousness, and claim construction, in Unified Patent Court proceedings are different than the laws and regulations of the United States. I further understand that the ’347 patent and the ’827 patent contain different specification disclosures, prosecution histories, and claim limitations. Therefore, while I have considered the ’827 patent in my analysis herein, my opinions may not necessarily reach the same conclusion as, and are not intended to apply to, any other proceedings.

70. However, I have also been asked to consider the following descriptions for the terms below. Where the terms appear in the claims, I have read the terms in light of their corresponding descriptions from the ’347 patent in so far it was necessary to apply them to the prior art. I have accounted for these descriptions in forming my opinions whether or not I have specifically addressed those descriptions in further detail in the following sections.

71. However, in my view, my analyses below remain valid as long as any reasonable construction is applied to the terms below. Further, to the extent the Patent Owner or the Patent Trail and Appeal Board asserts and/or adopts any other proposed construction for the terms below, I reserve the right to address any such construction.

A. "host application" (Claims 1, 12, 23, 27, 28)

72. The '347 patent defines the "host application" as part of the client software stored on the processing device, stating: "a processing device 160 with a processor and memory and executing and optionally storing a client software 70 comprising also a host application." Ex-1001, 23:54-56. The '347 patent does not define the functions of the "host application" nor is it a recognized term of art. The '347 patent describes the processing devices as a host processing device. Ex-1001, 9:13-14. Based on these disclosures, a "host application" is "an application running on the processing device."

B. "exposed on the first peripheral device" (Claims 1, 12, 23, 27)

73. The following sections of the '347 patent are relevant to this term:

> The system has the ability to expose second peripheral devices connected to the Base Unit to the first peripheral device transparently as if it were attached to the processing device to which the first peripheral device is connected.

Ex-1001, 9:16-20.

> "A specific device exposes a peripheral device or other device" means that the specific device configures one or more endpoints with specific descriptor fields.

Id., 10:21-23.

74. "Exposed" is not a recognized term of art. The specification clarifies that "exposed" means the act of transferring data, such as audio or visual data, between the peripheral device and the functional device. *Id*. 18:36-19:55. Based on these disclosures, this limitation means the endpoint "is capable to send/receive data on the first peripheral device."

C. "functional device" (Claims 1, 11, 12, 17, 21-27, 29-31)

75. The '347 patent defines the "functional device" as "a second peripheral device connected in some way to a base unit. Ex-1001, 9:15-16.

76. I also note that the '347 patent further states that the "functional device" can be a data generating device such as "one or more of a microphone, a speakerphone, a speaker, a display, a touchscreen, a projector, a camera, a video camera, [or] a webcamera." Ex-1001, 2:25-27. This description aligns with the broad definition provided in the patent and identifies specific categories of devices that fall within the scope of the term.

D. "at least one fixed or configurable endpoint" (Claims 1, 12, 23, 27, 28)

77. I note that the '346 patent does not provide a definition for this phrase. The '346 patent states that:

> "Endpoints" can be described as data sources or sinks and are defined for USB Devices which can be physical devices or virtual devices. In the present invention endpoints 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, 9:23-29 (emphasis added).

78. A POSA would recognize and understand that a buffer, as commonly understood in computing, is temporary storage for digital data in transit, such as data held in a video buffer before being decoded for display presentation.

79. Further, I note that the '347 patent does not define the difference between "*fixed*" and "*configurable*" endpoints, and these are not commonly understood terms of art. However, the '347 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 160 and the base unit 100.

Ex-1001, 18:2-13.

80. In my view, the context of the terms suggest that the "endpoint" is either "configurable" or it is not, *i.e.*, it is "fixed." I note that a POSA would recognize this "fixed or configurable" language does not further limit the claim because all devices must fall into one of these two categories, *i.e.*, every endpoint is either "fixed" or "configurable," there is no other option. This limitation therefore encompasses both

possibilities and does not impose additional constraints. Alternatively, I note that a POSA would recognize that a fixed endpoint could correspond to a mass storage device, while a configurable endpoint could correspond to an HID or audio device capable of pairing with a base unit.

81. Accordingly, it is my view that this limitation means "a data source or sink that is fixed or configurable and used to transfer data."

E. "generic communications protocol" (Claims 1, 12, 23, 27)

82. In note that the '346 patent does not provide a specific definition of "generic communications protocol," the '346 patent describes the use of a "generic communications protocol" in enabling communication between the processing device and the first peripheral device. For example, I note that the '346 patent explains that a "video signal" is transported "over the plug and play interface using a generic driver, such as over a USB interface using generic pre-installed drivers." Ex-1001, 17:7-11. In this context, the plug and play interface, depicted in Figs. 1B and 1C as arrow 53, facilitates communication between the first peripheral device 130 and the processing device 160.

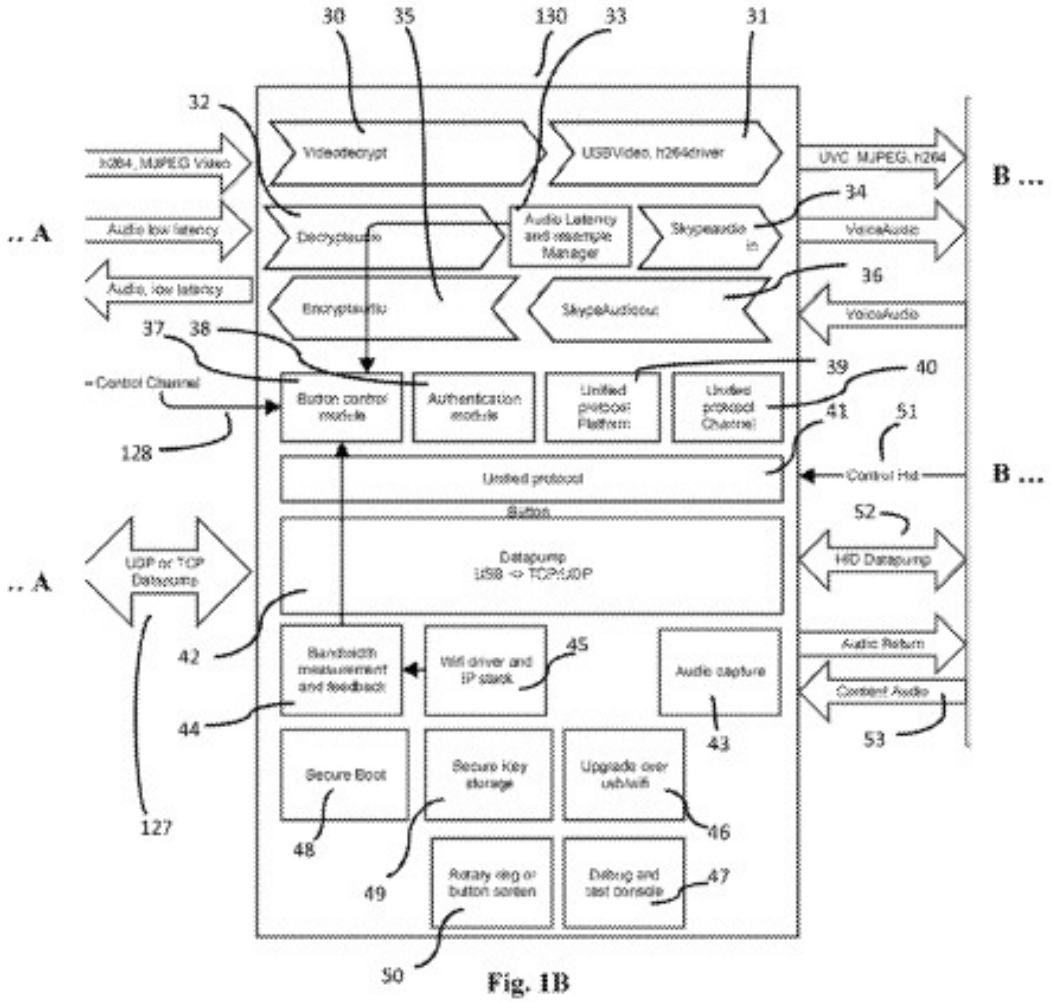


Fig. 1B

Ex-1001, FIG. 1B.

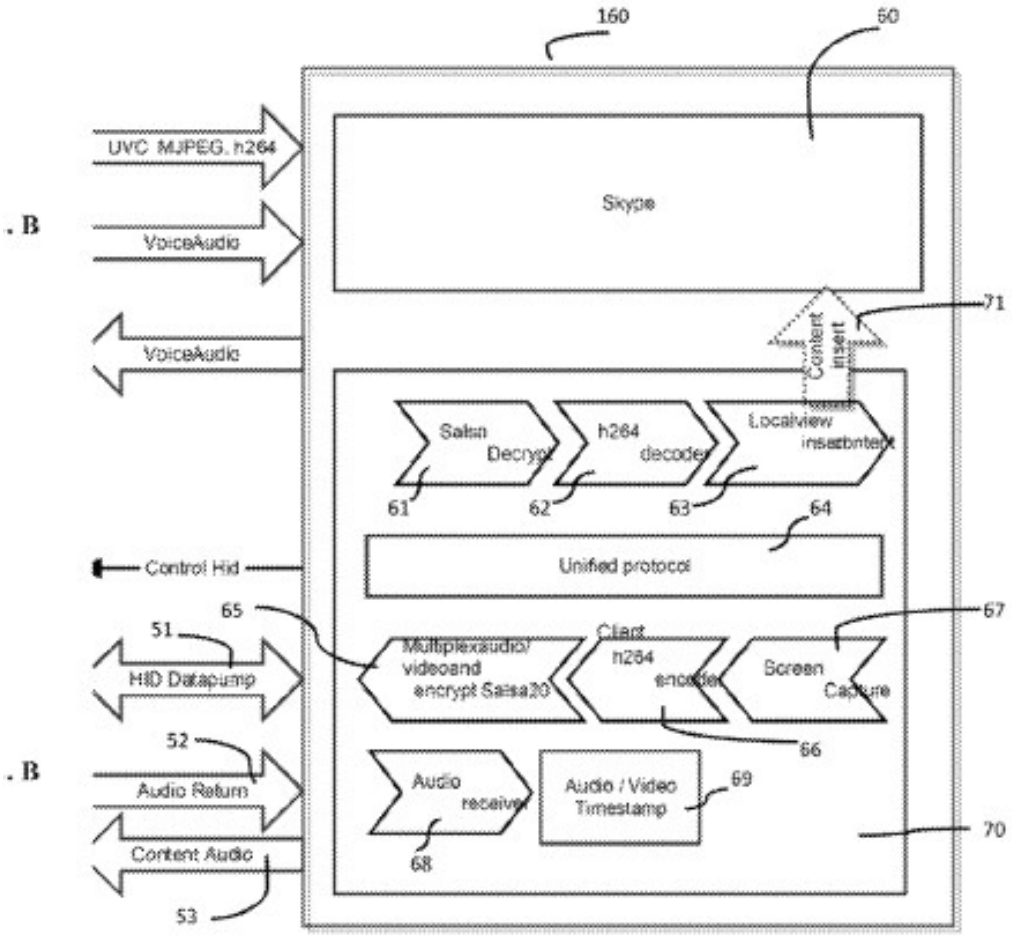


Fig. 1C

Ex-1001, FIG. 1C.

83. I note that a POSA would recognize and understand that a "plug and play interface" is the interface connecting the first peripheral device and the processing device. I further note that a protocol is a set of rules used by two modules or devices to communicate. Ex-1031. Accordingly, the "generic communications protocol" is the protocol used by the pre-installed generic drivers to

interface/communicate between the first peripheral device and the processing device.

F. "Unified Communication" (Claims 8, 20)

84. I note that the '347 patent describes the "Unified Communications systems or tools" as "audio or audio visual communications such as provided by 'Skype™' or 'Skype™ for Business'". Ex-1001, 8:12-16. The '347 patent further explains that such software "can take over audio and/or visual data provided from a host processing device." Ex-1001, 8:12-16. Additionally, the '347 patent explains that "processing devices ... shar[e] the Unified Communication (UC) call such as the Skype call or a Skype for Business call." Ex-1001, 19:18-21. Thus, a POSA would understand "unified communication" as "audio or audio/visual communication between two or more processing devices."

G. "standard driver / generic driver" (Claims 1, 12, 23, 27, 28)

85. I note that the '347 patent defines "pre-installed generic driver" as "a driver which is installed on a processing device such as a computer [sic] as a standard driver, e.g. is installed with the installation of the operating system." Ex-1001, 8:65-9:1.

VIII. OVERVIEW OF THE PRIOR ART

A. Beel (Ex-1005)

86. Beel was published as U.S. Pre-Grant Publication No. 2015/0169477 on June 18, 2015, qualifies as prior art under § 102(a)(1). Ex-1005, abstract. Beel was considered during the prosecution of the '347 patent, but was examined minimally for a rejection of certain dependent claims. However, the '347 acknowledges that Beel's related publication "shows an arrangement of components that can be used in embodiments of the present invention." Ex-1001, 5:47-52; FIG. 4. Beel, which is assigned to Barco NV, features a different inventive entity and was published more than a year before the '347 patent's priority date.

87. Like the '347 patent, Beel discloses systems and methods for wirelessly transmitting media content between an electronic device, or multiple devices, and one or more display devices, specifically, by using peripheral devices connected to the electronic devices and a base node which is connected to the display device. Ex-1005, ¶¶23, 40, 48. Beel uses nearly identical language to describe its systems and methods to that of the '347 patent, indicating significant overlap in the disclosed subject matter.

B. Dinka (Ex-1006)

88. Dinka, issued as U.S. Patent No. 8,369,498 on February 2, 2013, constitutes prior art under § 102(a)(1). Ex-1006, abstract. This reference was not substantively considered during the prosecution of the '347 patent.

89. Dinka is assigned to Skype and discloses methods and systems for facilitating communication between multiple computer terminals and televisions. Ex-1006, abstract, 1:12-15. For example, Dinka describes a communication client application on a local user device, which allows the local user to participate in "communication sessions with other remote users via the network." Ex-1006, 2:44-55. Dinka discloses the use of bidirectional transmission of audio and visual data, which is encoded, decoded, and (de)multiplexed in both directions. Ex-1006, abstract, 8:7-51, 9:32-50, 13:1-24, 15:24-32.

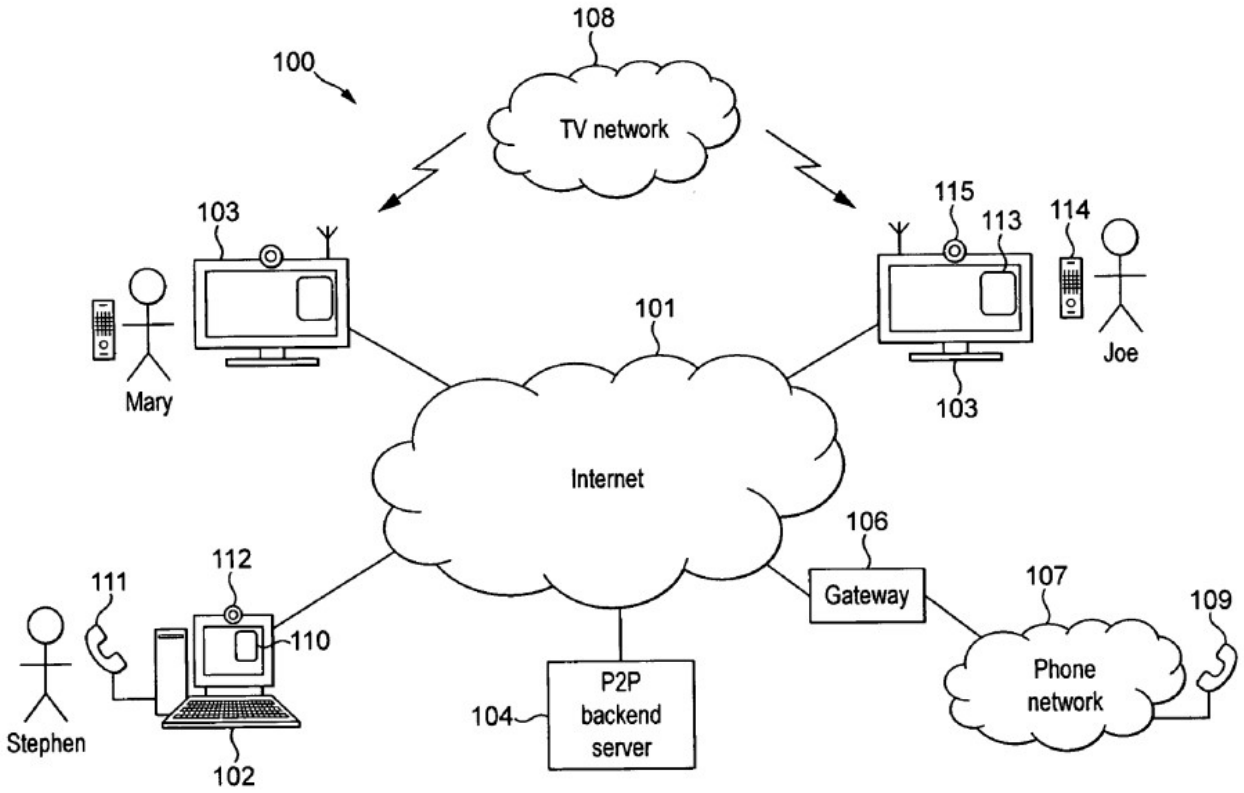


FIG. 1

Ex-1006, FIG. 1.

C. Kaplan (Ex-1008)

90. Kaplan was published November 25, 2010, as U.S. Patent Application Publication No. 2010/0295994. Kaplan is prior art under 35 U.S.C. § 102(a)(1). Kaplan was not considered during prosecution of the ’347 patent.

91. Like the ’347 patent, Kaplan discloses methods for transmitting video content between a computing device and a display device. Ex-1008, abstract. In particular, Kaplan addresses the challenge of simplifying the wireless connection setup process for users, recognizing that traditional network configurations were

often "difficult and frustrating" for many. Ex-1008, ¶3. Kaplan further highlights that the complexity of such setups contributes to the high return rate of wireless networking equipment. *See id.*

92. To address these issues, Kaplan proposes a communications system 100 where a computer 220 is wirelessly connected to a display device 210 via a USB transmitter 120. Ex-1008, ¶¶16-18 and FIG. 2, reproduced below. The transmitter 120 and receiver 110 are pre-paired, with the receiver 110 which is connected to the display device 210. This pre-pairing eliminates the need for users to perform any wireless configuration. Ex-1008, ¶18. Kaplan's system allows the user to select a video for playback, transmitting the selected video footage from the computer 220 through the transmitter 120 to the receiver 110, where it is displayed on the display device 210. Ex-1008, ¶28. Kaplan also specifies that data can be communicated in the alternate direction from the receiver 110 to the transmitter. Ex-1008, ¶39 ("It should be noted that communications both downstream (*i.e.*, transmitter to receiver) and upstream (*i.e.*, receiver to transmitter) are provided by embodiments of the present invention").

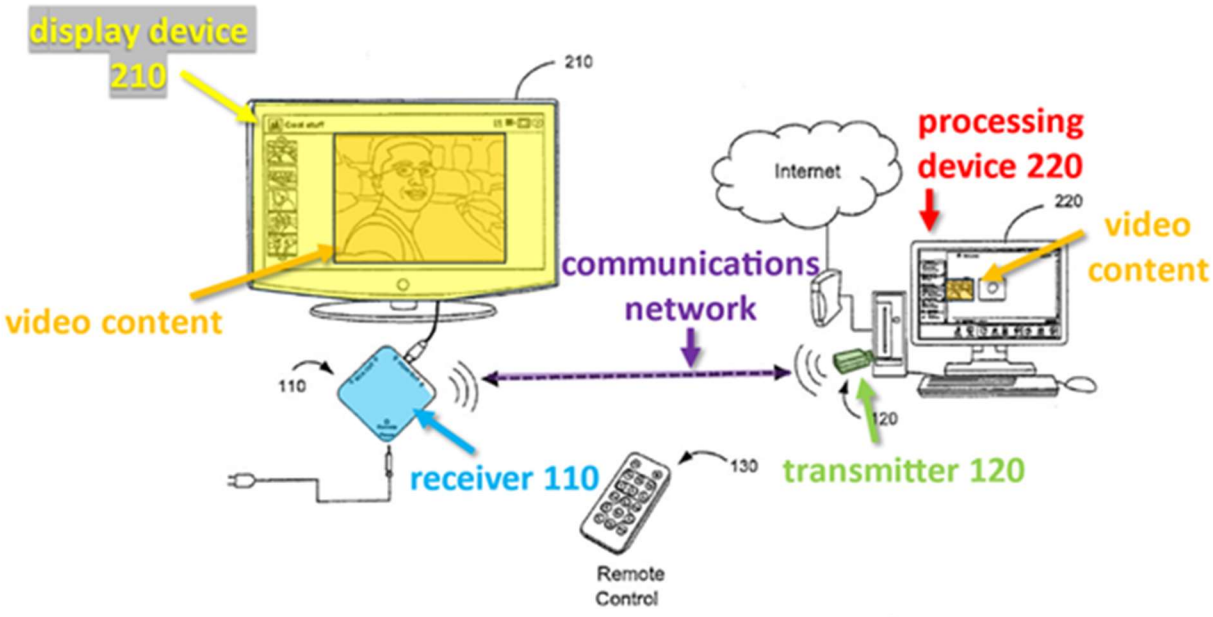


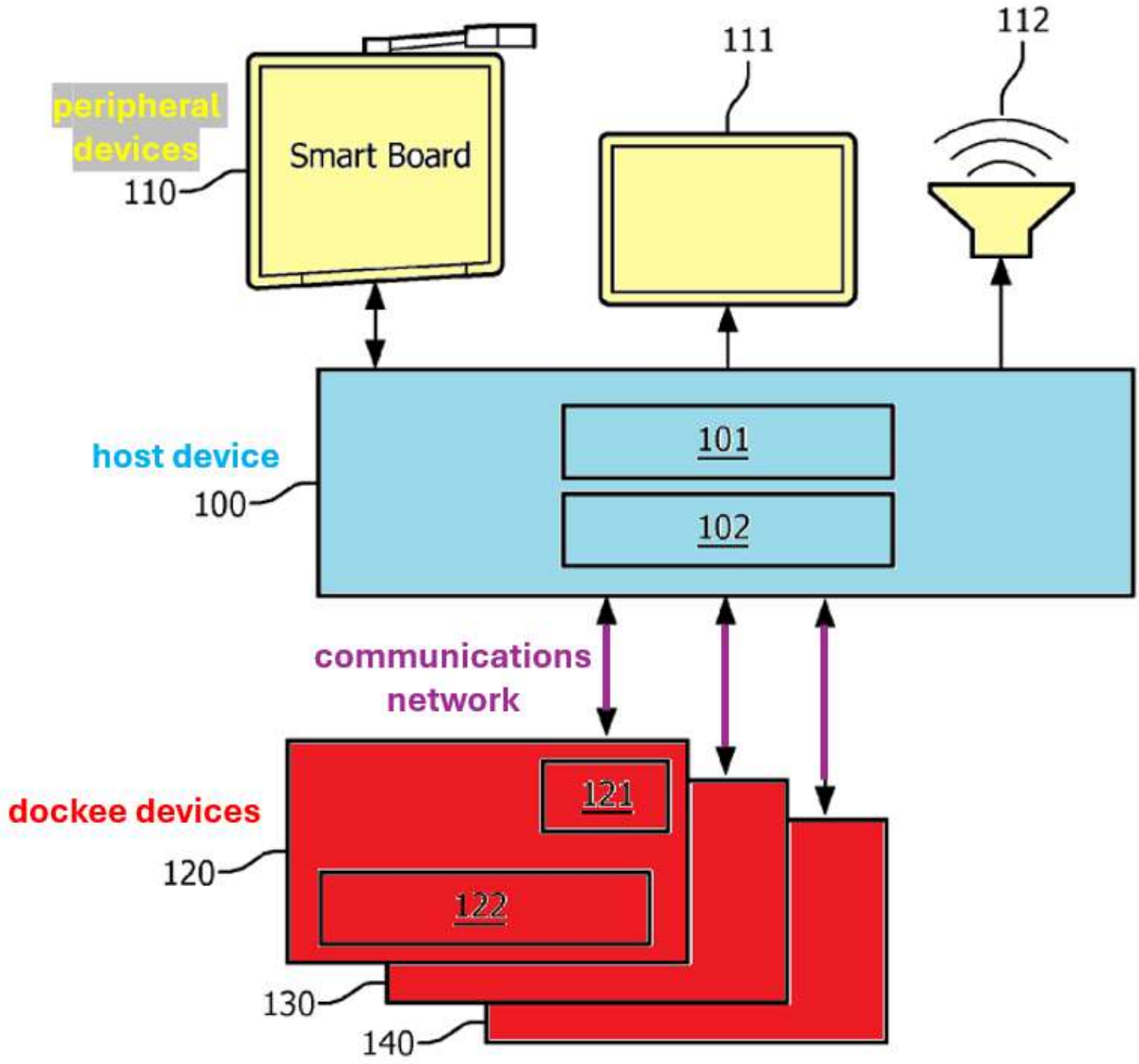
FIG. 2

Ex-1008, FIG. 2.

D. Van de Laar (Ex-1007)

93. Van de Laar, published as U.S. Pre-Grant Publication No. 2016/0014172 on June 18, 2015, qualifies as prior art under § 102(a)(1). Ex-1007, abstract. This reference was not substantively considered during the prosecution of the ’347 patent.

94. Like the ’347 patent, Van de Laar discloses a system for connecting mobile devices, referred to as “dockees,” such as laptops, to one or more peripherals to control those peripherals in performing their intended functions. Ex-1007, ¶¶55, 73-74, 80, 82.



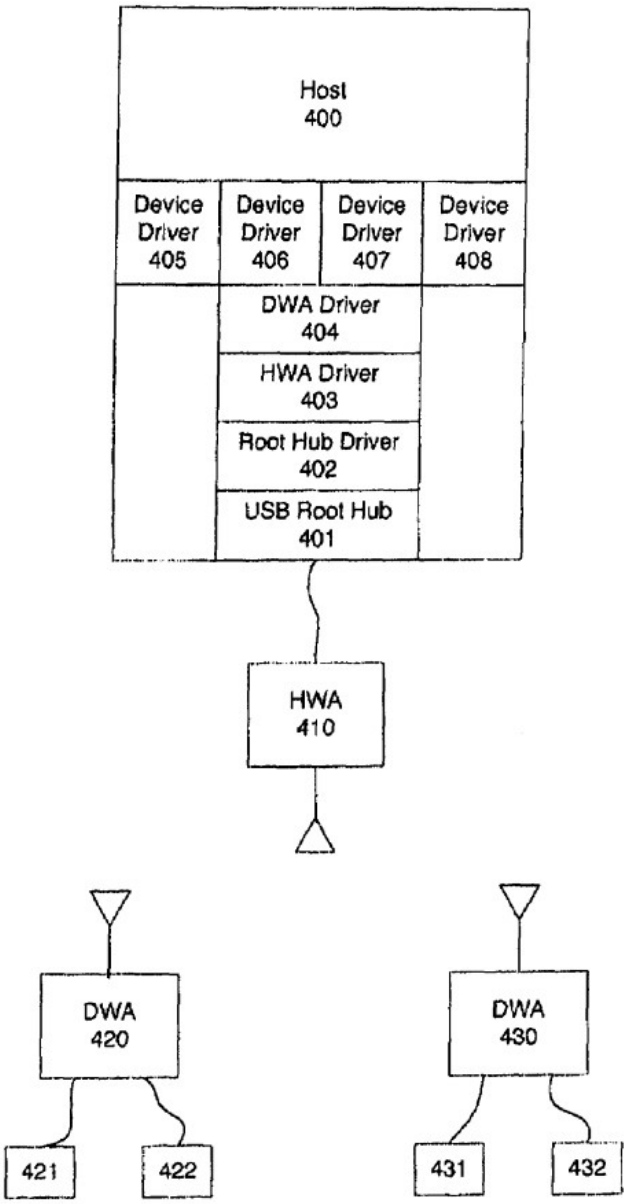
Ex-1007, FIG. 1.

95. The dockees communicate with a host device via a wireless communications network. Ex-1007, ¶¶74-76. Communication between the host device and the peripheral devices can occur through a wired connection, such as HDMI or USB. Ex-1007, ¶¶54, 110. Additionally, the system supports

communication using a unified communication protocol, such as Skype. Ex-1007, ¶128.

E. Christison (Ex-1011)

96. Christison was published on July 20, 2010, as U.S. patent no. 7,761,627, and is prior art under § 102 (a)(1). It was considered on the record during prosecution. In my view, during prosecution of the '347 patent, Christison's teachings were overcome with the amendment that added the "decodes and/or enhances the second processed data" and "interpreting, processing, and translating the electronic signals coming from the functional device" limitations.



Ex-1011, FIG. 4.

97. Like the '347 patent, Christison discloses a Host Wire Adapter (HWA) 410 and Device Wire Adapters (DWA) 420/430 for mimicking wired USB devices (421, 422, 431, 432), allowing the USB devices to appear to a PC as wireless USB (WUSB) devices. Ex-1011, 3:59-4:16. This functionality is achieved by configuring

USB device descriptor fields to align with the values compliant for WUSB devices. Ex-1011, 6:66-7:5, 9:36-38. By presenting wireless USB devices as "native devices," Christison introduces throughput efficiencies over prior art systems. Ex-1011, 6:13-19.

F. Applicant-Admitted Prior Art ("AAPA")

98. I note that the '347 patent acknowledges that web conferencing or unified communication tools (*e.g.*, Skype) "can take over audio and/or visual data provided from a host processing device." Ex-1001, 8:12-33. Skype is a well-known and widely accepted and adopted communication application, since at least 2012. Ex-1009. Further, Skype expanded its functionality to include many of the limitations presented by the claims of the '347 patent prior to the alleged invention of the '347 patent. *See* Ex-1013.

99. Additionally, the '347 patent admits that Beel demonstrates an arrangement of components that may be utilized in embodiments of the present invention. Specifically, the arrangement depicted in FIG. 11 of Beel is incorporated by reference. Ex-1001, 5:47-52.

100. Regarding Beel's FIG. 11 (which is copied as FIG. 4 in the '347 patent), the '347 patent further states, "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, 18:4-9.

IX. THE PRIOR ART DISCLOSES AND/OR SUGGESTS THE RECITED FEATURES OF CLAIMS 1-31 OF THE '347 PATENT

A. Claims 1-31 of the '347 Patent Are Unpatentable as Obvious Over Beel in View of Dinka, AAPA, and Optionally in View of Christison

1. Rationale to Combine

101. In my opinion, Both Beel and Dinka disclose systems for conducting online audio/visual conferences through various communication applications. Ex-1005, abstract, ¶¶85-89, 118, 253, 259; Ex-1006, FIG. 1, abstract, 2:44-3:5. Dinka, as a Skype patent, is a patent directed to the systems involving commonly used Microsoft Skype platform, and Skype is an example of an application that allows for bidirectional unified communication calls, as defined by the '347 patent. Ex-1001, FIG. 1C, 3:11-19. Further, nearly two years before the '347 patent's disclosure, the Skype technology allowed for unified communication between groups of users in which a device's camera function could be utilized to share/stream video data and, further, the ability to "screen share" contents from one user's screen to another user's screen. *See* Ex-1013.

102. Beel, for example, discloses systems using similar software for "electronic meeting systems," "groupware," and "web conferencing systems." Ex-1005, ¶¶85-89. Additionally, Beel also discloses embodiments where the software

does not need to be "zero footprint" and may be installed directly on the processing device. *Id*., ¶¶215-248.

103. Furthermore, the '347 patent itself acknowledges that Skype and pre-installed generic drivers were known mechanisms for web conferencing, as shown in its admission of prior art (AAPA) disclosed by Beel. Ex-1001, 8:12-33; *see also* Ex-1009 (showing Skype was available online in 2012). Since Skype was a well-known and established technique for improving similar systems in the same manner, a POSA would have been motivated to combine the teachings of Beel and Dinka, resulting in the use of Skype or similar prior art software for bidirectional unified communication calls with Beel's technique for connecting multiple users to a separate base node and functional device. The combination of these teachings would yield the predictable result of a bidirectional web conferencing system employing software, such as Skype, for hosting unified communication calls while also utilizing one or more functional device's capabilities.

104. Christison discloses a method for wirelessly connecting functional devices to personal computers via a wireless peripheral device. Ex-1011, abstract. I note that a POSA would be familiar with and understand that connecting and presenting a remote functional device as a virtual device to a user computer was well known in the art. *See* § V (discussing Scragg and other wirelessly connected USB

devices). Christison discloses one example of achieving the prior art bidirectional communication by presenting wireless USB devices as "native devices." Ex-1011, 6:13-19. Beel teaches connecting remote virtual devices to a client computer. Ex-1005, ¶¶43, 50, 313, 314. Christison discloses a known technique of presenting a remote device as "native" to improve or suggest one way for Beel to implement its disclosed virtual devices. *Id*. A POSA would have recognized that Christison's method of presenting wireless USB devices as "native" devices provides an effective way to implement Beel's virtual devices.

105. In my view, the combination of Beel, Dinka, and Christison would have been obvious to a POSA. By incorporating Christison's known technique of presenting remote devices as native, the combination would improve or suggest one method for Beel to implement its disclosed virtual devices. The resulting system would create the predictable result of a bidirectional web conferencing system capable of using USB protocols to present remote functional devices as local or "native" functional devices to host a unified communication call, while utilizing one or more functional device's capabilities.

2. Claim 1

a. 1. ***A method for connecting a processing device to a functional device, the functional device being connected to or in a base unit of a communications network,***

106. In my view, Beel discloses, "A system for connecting a processing device to a communications network." Ex-1005, claim 92. Besides, Beel also discloses, "Another node of the network 50 is the base or display node 36. This node 36 may optionally be a wireless access point." Ex-1005, ¶119; *see also id*. ¶¶40, 93, 117, 194-99, 225, 288, 319, 321, 323. Beel further discloses, "*connecting a processing device to a functional 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*, ¶¶41, 88, 310, FIG. 1a and 1b. Examples of "*functional device[s]*" include "a microphone, a speakerphone, a speaker, a display, a touchscreen, a projector, a camera, a video camera, a webcamera." Ex-1001, 2:25-27.

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

107. In my view, Beel discloses "*the processing device having a memory, a display device, an operating system*" nearly *verbatim*. *See, e.g.*, Ex-1005, ¶¶41 ("the

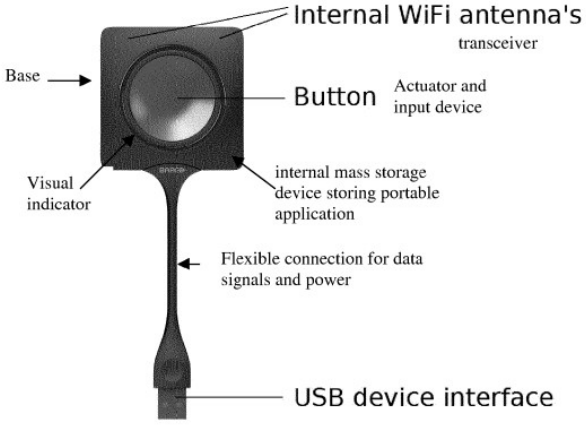
processing device having a memory, a display and an operating system with pre-installed generic drivers"), 56, 310, and claims 82 and 92; see also id., abstract, ¶¶45, 64, 68, 71, 94, 125, 196.

108. In my view, Beel also defines the "processing device" as a "host device," such that the processing device "hosts a host application": "Each of the processing devices 31 can be a host device." *Id.*, ¶117; see also ¶¶142, 196, 221.

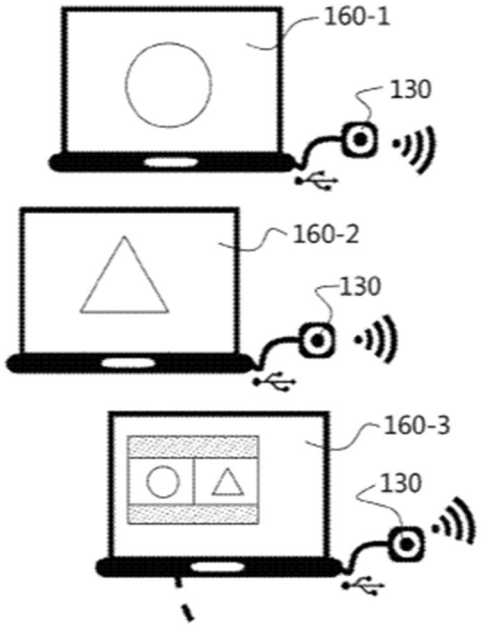
109. Beel also discloses that applications, such as a "client application" and "screen scraping application," with the same apparent functionality as the "host application." *Id.,* ¶¶51, 59, 247, 248; *see* Ex-1035.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

110. In my view, Beel and the '347 patent disclose similar peripheral devices as "a USB dongle" Ex-1005, ¶¶54, 58, 195; Ex-1001, 9:13-14 and 10:39-57. The figures also illustrate similar dongles:



Ex-1005, FIG. 10



Ex-1001, FIG. 5 (peripheral device 130)

111. Additionally, Beel discloses "a first peripheral device being configured to be coupled to the processing device" (*e.g.*, "peripheral device comprising a connector adapted to couple to a port of a user processing device 31." Ex-1005, ¶125 (emphasis added).

112. Beel also discloses that, beyond the physical coupling achieved at the port of the processing device, a communicative coupling is achieved "via a generic communications protocol" (*e.g.*, "the processing device having … at least one pre-installed generic driver providing a generic communications protocol for communication between processing device and a standard class of peripheral devices.") Ex-1005, ¶56 (emphasis added); see also, id. ("setting up, by means of the

pre-installed generic driver of the operating system, a means for communication between the peripheral device and the processing device").

d. the base unit having a transmitter and

113. In my view, Beel discloses "*the base unit having a transmitter*":

> 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 ("The base preferably includes electronics such as having…a wireless transmitter/receiver such as for WiFi or LiFi").

e. the first peripheral device having a receiver and

114. In my view, Beel discloses, "the first peripheral device having a receiver":

> The connection unit 47 for communicating with said base node 36 has a network interface e.g. comprising a transmitter 62. The transmitter 62 is preferably a transceiver. Optionally the transmitter/receiver can be a wireless transmitter/receiver.

Ex-1005, ¶128 (emphasis added); *see also id.*, ¶¶120, 125.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

115. In my view, Beel discloses that the "*at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device*," *e.g.*, "Mass storage device 12," "USB audio device 14," and "USB HID device 13." Ex-1005, FIG. 11, ¶¶320-23. Indeed, the '347 patent discloses the identical figure illustrating the same endpoints. Ex-1001, FIG. 4, 5:47-53. Additionally, these endpoints are either "*fixed*" (*e.g.*, a mass storage device) or "*configurable*" (*e.g.*, virtual audio device). *See* Ex-1005, ¶¶43, 50, 313-17; *see also* ¶¶45-47, *supra*.

116. Here, the '347 patent also admits that Beel's FIG. 11 (which the '347 patent copied as FIG. 4 and incorporated by reference) 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, 5:47-53 and 18:4-9; *compare* Ex-1001, FIG. 4 *with* Ex-1005, FIG. 11.

117. Beel further explains that the "at least one fixed or a configurable endpoint is exposed on the first peripheral device" can be a virtual device to stream A/V data from the "peripheral device" to the "exposed" "endpoint":

> 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*. ¶¶132, 313-316 ("… the user of the processing device will see an additional audio out interface displayed on the processing device display to which it can stream the audio.").

118. Thus, Beel's endpoints allow the "*functional device*," for example, A/V components connected to the base unit, to be "*exposed on the first peripheral device*." *Id*., ¶71 ("a third software code portion [on the peripheral device] for receiving media content from the network and for displaying the media content on the display"); ¶120 (the base node may be coupled to a "microphone or microphones 38 that can be used to transfer audio, e.g. to the processing devices 31") (emphasis added); *see also* ¶¶50, 56, 75, 93, 119-122, 126, 298, 310-11. Therefore, the peripheral device of Beel can have a composite device able to store and emit virtual audio or visual data to endpoints, such as a speaker or display.

119. To the extent Patent Owner argues Beel does not disclose a narrow construction of "natively exposed," Christison discloses presenting remote devices as "native." Ex-1011, 6:32-37; 6:66-7:5; 7:25-35. Christison claims,

> intercept a device descriptor request from said first wireless USB enabled device;
>
> read a device descriptor from said wired USB enabled device;
>
> modify said device descriptor so that it is consistent with a device descriptor for any wireless USB enabled device as specified by a predetermined wireless USB standard; and
>
> present said wired USB enabled device as said native wireless USB enabled device by providing said modified device descriptor to said first wireless USB enabled device.

Id., 9:21-32; *see also id.*, 9:36-38, claims 9, 13. The person of ordinary skill would have know this is one of a finite number of ways to connect a remote functional device to a processing device to achieve the predictable result of remote transfer of media content.

g. the method further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

120. In my view, Beel discloses that "*the base unit being configured to transmit*":

> 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 ("The base preferably includes electronics such as having…a wireless transmitter/receiver such as for WiFi or LiFi").

121. Beel also that "*the first peripheral device being configured to receive first processed video data over the communications network*": "[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." Ex-1005, ¶71; *see also id.*, ¶¶50, 56, 75, 93, 118-122, 126, 128, 298, 310-11. The POSA would have understood that the "*first processed video data*" would be the same across the processing devices and base unit(s) because Beel is directed to remote video conferencing. *Id*., ¶¶252-71. The analysis of the next limitation shows that Beel teaches "*first processed video data*."

h. the functional device being configured for first video data to flow into the base unit or first video data is captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

122. In my view, Beel discloses "the functional device being configured for first video data to flow" from cameras "into the base node or first video data is captured in the base unit" ("base node"):

> 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.

123. Beel also discloses,

> A whiteboard 45 can optionally be provided that can be optionally coupled to the display 44 and/or the base node 36, e.g. when the whiteboard can record electronically what is written on it. Optionally, a camera 35 may be provided to record the entries on the whiteboard 45. The camera 35 may have a third connection unit 52 for connecting the camera 35 to the network 50 so that the data from the whiteboard can be recorded and stored or transmitted to other networks via router 42.

Ex-1005, ¶119 (emphasis added). Beel also explains how video data is processed by encoding video data, which is either at least obvious way of processing video data

received by the cameras 35, 39, 40, and 41. *Id.,* ¶¶315-323. Moreover, Beel discloses that the data is capable of being sent to the processing device. *See* Ex-1005, ¶¶71 (the peripheral device connected to the processing device includes "third software code portion for receiving media content from the network"), 72 ("eleventh code for providing means for receiving, decrypting and decoding incoming arbitrary media content").

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

124. *See* § IX.A.2.g. In my view, Beel describes how received media content, such as "*first processed video data*" can be processed to "*generate second video data*." For example, Beel discloses decoding the encoded video data before display to "*generate second video data*": "On the peripheral device 32 the video packets are received, … 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." *Id*., ¶322; *see also id.*, ¶72 (tenth video code, "eleventh code for providing a means for receiving, decrypting and decoding incoming arbitrary media content," , twelfth video code). Therefore, this is an obvious way that computer systems process video data.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

125. *See* § IX.A.2.f. Beel discloses that the "*first peripheral device*" communicates the "*second video data*" from the functional device, *e.g.*, cameras 35, 39, 40, 41, or microphones 38, and sends that data "to the processing device". Ex-1005, ¶¶56 ("generic communications protocol for communication between processing device and … peripheral device"), 119-20. As such, Beel discloses "*the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device*" because the data flows through the endpoint.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

126. In my view, Beel discloses "the operating system of the processing device being configured to capture the second video data" because the "*second video data*" is "*made available … to … the host application or 3rd party application*." For example, Beel discloses "interactive network-connect white boards and videoconferencing appliances, are available for the benefit of those who share the same room as well as those who are in remote locations." Ex-1005, ¶5; *see also*, ¶¶14, 71 ("third software code portion for receiving media content from the network), 72 ("means for receiving, decrypting and decoding incoming arbitrary

media content"), 85, 119, FIG. 1 (cameras 39, 40, 41 connected by network 51 to base node).

127. Based on the '347 patent, "a third party application 60…can be adapted to execute a unified communications call such as a Skype™ call or a Skype™ for business call." Ex-1001, 23:57-59.

128. Beel further discloses or suggests at least making video data "*available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices*." For instance, Beel discloses various custom and standard drivers (*see, e.g.*, Ex-1005, ¶¶23, 25, 41-43, 79, 95, 137, 174, 187, 205, 221, 317-23) and also discloses electronic meeting and web conferencing systems (*see, e.g., id.*, ¶¶85-89, 252-53, 313), which involve "a 3rd party application," such as for Skype™, to access the captured video or video otherwise presented on the processing device data during a video conference. Ex-1001, 8:12-33; Ex-1006, 9:40-45; Ex-1009.

129. Dinka also explains how video data is made available "*to either the host application or a 3rd party application*" (*e.g.*, a video engine) *running on the processing device or to other processing devices*," for example, to transmit the video data over the internet for a video conference:

> The I/O layer further comprises a video engine comprising a video codec. The video engine is arranged to accept video signals from the

> webcam input 308, and to encode those video signals for transmission over the Internet 101 via the network interface 302.

Ex-1006, 9:40-45; *see also*, Ex-1001, 8:12-33; Ex-1009. A POSA would recognize and find it obvious to use Dinka's process of "making available" webcam input 308 for the bidirectional video conference (*i.e.*, Skype) to integrate Beel's wirelessly connected functional device connected to the base unit.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, is sent to an endpoint of the first peripheral device via a standard generic driver,

130. *See* § IX.A.2.k. In my view, Beel discloses "*third video data*" from "*host application and/or from the 3rd party application running on the processing device*" in order to host or attend the electronic meeting or web conference can be captured by the processing device:

> That software 30 when executed on the processing device 31 captures the video data that is available on the processing device, e.g. from a presentation or video that is running on the processing device.

Ex-1005, ¶320. Beel further discloses that the captured "*third video data*" is "*sent to an endpoint of the first peripheral device via a standard generic driver*":

> [T]he processing device [has] … at least one pre-installed generic driver providing a generic communications protocol for communication between processing device and a standard class of

> peripheral devices, the method comprising the steps of: … transferring the screen scraped data between the processing device and the peripheral device.

Ex-1005, ¶56 (emphasis added); *see also*, *id*. ¶¶40-42, 50-51, 56 ("communications protocol" to transfer data between peripheral device and processing device), 64, 66, 68, 70-71, 73-74, 161, 205.

m. the first peripheral device receiving the third video data and processing the third video data to form second processed video data, and

131. In my view, Beel discloses "transferring the media content between the processing device and the peripheral device," which at least obviously involves "*the first peripheral device receiving the third video data*." Ex-1005, ¶68; s*ee also*, *id*. ¶¶41-42, 56, 64, 71, 73-74, 205, 321.

132. Beel also discloses "the first peripheral device receiving the third video data and processing the third video data to form second processed video data":

> On the peripheral device 32 the video packets are received at the corresponding plug and play port, e.g. the USB port 11, read by the Human Interface Driver (HID) interface handler 13, unpacked to remove HID protocol headers in an unpacker 20 and then transmitted to the communications network by a transmitter 21.

Ex-1005, ¶321. Unpacking the video packets to remove HID protocol headers is inherently or at least obviously a form of "*processing the third video data* (video

data packets with HID protocol headers) *to form second processed video data* (video data packets without HID protocol headers)." Furthermore, the POSA would have understood that the video packets are encoded, *i.e.*, processed, so that the base unit can decode them and present them on a display.

133. Dinka also discloses "processing the third video data [received from the host application and/or from the 3rd party application running on the processing device] to form second processed video data," e.g., via decoding:

> The video engine is also arranged to decode video signals received over the Internet 101 via the network interface 302, for output to the UI frame buffer 322, video hardware 326 and screen 309.

Ex-1006, 9:45-48.

n. wherein the base unit receives the second processed data, and decodes and/or enhances the second processed data and forwards it to a functional device which is connected or attached to the base unit through a serial connection.

134. In my view, Beel discloses, "the base unit receives the second processed data":

> [A] base or display node 36 being a processing device, e.g. a host computer adapted to receive user selected arbitrary media content.

Ex-1005, ¶123; *see also*, *id*., ¶¶67, 70, 139, 142 ("media content from the client processing device display, which is then sent over the connector unit 47 to the base node), 144 ("media content is being sent by that connection unit 47 to the base node

36 for display"), 162, 169, 211, 316-17, 322, Fig. 11 (WiFi access point 22 receives data).

135. Beel also discloses that "the base unit…decodes and/or enhances the second processed 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*. ¶¶72 ("The executable software code can comprise eleventh code for providing a means for receiving, decrypting and decoding incoming arbitrary media content"), 119 ("The display node 36 is coupled to and adapted to allow display of media on some kind of display 44"), 155 ("Eighth code for providing a means or a method step for receiving, decrypting and decoding incoming arbitrary media content"), 315 ("decrypt and decode … and deliver the resulting signal to the physical audio device in the base unit"), 322-23, Fig. 11 (decoders 24 and 26).

136. Additionally, Beel discloses that "*the base unit…forwards it to a functional device which is connected or attached to the base unit*": "The display node 36 is coupled to and adapted to allow display of media on some kind of display

44." Ex-1005, ¶119. Beel further discloses using the universal "*serial*" bus (USB) to send the data. *Id.*, ¶23 ("Connecting a projector to a computer using the standard USB port hence might become commonplace."); (USB stands for Universal Serial Bus). The media must inherently or at least obviously be forwarded to the display 44 ("*a functional device*") in order to allow display of the media.

3. Claim 2

a. The method of claim 1, wherein the first video data is interpreted and/or encoded in the base unit to form the first processed video data.

137. In my view, Beel discloses "*first video data is interpreted and/or encoded in the base unit*." For example, Beel discloses that a "whiteboard 45 can … be optionally coupled to the display 44 and/or the base node 36." Ex-1005, ¶119. A "camera 35 may be provided to record … the whiteboard," which can be "stored or transmitted to other networks." *Id*. Beel further discloses that executable software code can include code "for encoding, compressing and optionally encrypting" data and sending the data over a communications network. *See id.*, ¶¶ 67, 70-72. The "Base Node Software" additionally includes code for "receiving, decrypting and decoding incoming arbitrary media content." *Id.*, ¶155.

138. To the extent Patent Owner argues the combination of Beel and Dinka is inadequate, I note that a POSA would recognize and find it obvious to modify the well-known disclosed technology to move code for encoding/encrypting or

deconding/decrypting from the peripheral device onto the base node with the Base Node Software.

4. Claim 3

a. The method of claim 2, wherein the first video data is enhanced, mixed, multiplexed, and/or encrypted in the base unit.

139. *See* § IX.A.3.a above. In my view, Beel discloses "the first video data is enhanced, mixed, multiplexed, and/or encrypted in the base unit":

> The executable Software code can comprise tenth code for providing a means for auto-composing of different incoming arbitrary media streams and rendering of composited image on display.

Ex, 1005, ¶72 (emphasis added). Auto-composing different media streams is the same as "*mix*[*ing*]" or "*multiplex*[*ing*]" "*first video data*." For example, Beel discloses mixing audio and data streams to synchronize them. *Id*., ¶¶314-18, 323.

5. Claim 4

a. The method of claim 2, wherein the first processed video data is received by the first peripheral device, and the first peripheral device is configured to decode and/or interpret the first processed video data and to generate the second video data.

140. Claim 1.g, above, already recites "the first peripheral device being configured to receive first processed video data," which is the same as "the first processed video data is received by the first peripheral device."

141. *See* § IX.A.2.g, 2.i above. In my view, Beel further discloses "the first peripheral device is configured to decode and/or interpret the first processed video data and to generate the second video data." Beel discloses data being "unpacked to remove HID protocol headers in an unpacker 20." Ex-1005, ¶321; *see also*, ¶72 ("decrypting and decoding").

6. Claim 5

a. The method of claim 4 wherein the first peripheral device demultiplexes, and/or decrypts, the first processed video data received by the first peripheral device to generate the second video data.

142. *See* §§ IX.A.2.i. and IX.A.5.a above.

7. Claim 6

a. The method according to claim 4, wherein the first processed video data is sent to the first peripheral device through a wireless.

143. *See* §§ IX.A.2.d-e, g. In my view, Beel discloses that the peripheral device has a memory with executable software code, including a "third software code portion for receiving media content from the network." Ex-1005, ¶71. If the peripheral device attached to the processing device can "receive" media content, then the video data must, inherently, be "*sent to the first peripheral device through a wireless link*." *See also id.*, ¶¶117 (wireless network), 254.

144. Additionally, to the extent Patent Owner argues the disclosures of Beel are inadequate, it would have been obvious to simply modify the well-known technology of sending data from one device to another processing device to include bi-directional communications.

8. Claim 7

a. The method according to claim 1, wherein the first video data is for display on a display.

145. In my view, Beel discloses, "*the first video data is for display on a display.*" *See*, *e.g.*, Ex-1005, 53 ("The real-time content is shown on a central display"), 58 ("…content to be displayed on the central screen or display"); 314-15.

9. Claim 8

a. The method according to claim 1, wherein the 3rd party application is a hosted Unified Communication.

146. In my view, Beel discloses, "*the 3rd party application* (*e.g.*, a client application) *is* [for hosting] *a hosted Unified Communication*" because it discloses the same communication between users at different endpoints:

> [T]he present invention 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. It is my opinion that Beel also discloses use of the meeting tool in 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").

147. In my view, Dinka also discloses using the well-known Skype "unified communication call" application, which allows users at one endpoint to communicate with users at another endpoint: "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, 2:51-55. Dinka's "unified communication" application would have been one obvious example of an application to run on Beel's system.

10. Claim 9

a. The method according to claim 1, wherein the third video data is enhanced, and/or encoded to form the second processed data and the second processed data is sent through a wireless link to the base unit.

148. In my view, Beel discloses "the third video data is enhanced, and/or encoded to form the second processed data and the second processed data is sent through a wireless link to the base unit":

> The executable software code can comprise sixth code for providing a means for encoding, compressing and optionally encrypting the video frames and sending them over a secure link to the base node.

Ex-1005, ¶70 (emphasis added); *see also id.*, ¶117 ("wireless network"), 162.

11. Claim 10

a. The method of claim 9, wherein the base unit decrypts the second processed data.

149. *See* § IX.A.2.n. In my view, Beel discloses, "the base unit decrypts the second processed data":

> The executable Software code can comprise eleventh code for providing a means for receiving, decrypting and decoding incoming arbitrary media content.

Ex-1005, ¶72 (emphasis added), *see also*, *id*. ¶¶155, 315.

150. To the extent Patent Owner argues the combination of Beel and Dinka is inadequate, I note that a POSA would recognize and find it obvious to modify the well-known disclosed technology to move code for encoding/encrypting or deconding/decrypting from the peripheral device onto the base node with the Base Node Software.

12. Claim 11

a. The method of claim 10, the base unit being configured to expose and make available the functional device that is connected to the base unit, simultaneously with a

plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

151. *See* § IX.A.2.f above, explaining that Beel discloses "at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device." In a similar manner, Beel discloses, "the base unit" (e.g., base node 36) "being configured to expose and make available the functional device" (e.g., a display 44, a microphone, a camera, etc.) "that is connected to the base unit" (e.g., base node), "simultaneously with a plurality of first peripheral devices" (e.g., connection units 47 connected to processing devices 31). For example, Beel discloses display 44 (e.g., "the functional device") being "expose[d] or [made] avaialble, simultaneously with" a plurality of connection units 47 (e.g., a plurality of first peripheral devices") connected to processing devices 31 in order for A/V data from the processing devices 31 to be presented simultanesouly on the display 44 (e.g., "the functional device"). *See, e.g.*, Ex-1005, ¶54, 139, 143, Figs. 1a, 1b, and 2 (showing simultaneous display of data from multiple processing devices).

152. *See* § IX.A.3.a - 4.a above ("interpreting, processing and translating the electronic signals from the functional device").

13. Claim 12

a. A system for making a functional device available to a processing device, the functional device being connected to or in a base unit of a communications network,

153. See § IX.A.2.a above.

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

154. *See* § IX.A.2.b above.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

155. *See* § IX.A.2.c above.

d. the base unit having a transmitter and

156. *See* § IX.A.2.d above.

e. the first peripheral device having a receiver and

157. *See* § IX.A.2.e above.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

158. *See* § IX.A.2.f above.

g. the system further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

159. *See* § IX.A.2.g above.

h. the functional device being configured for first video data to flow into the base unit or first video data to be captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

160. *See* § IX.A.2.h above.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

161. *See* § IX.A.2.i above.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

162. *See* § IX.A.2.j above.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

163. *See* § IX.A.2.k above.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, are sent to an endpoint of the first peripheral device via a generic driver,

164. *See* § IX.A.2.l above.

m. the first peripheral device being configured to receive the third video data and to process the third video data to form second processed video data, and

165. *See* § IX.A.2.m above.

n. wherein the base unit is configured to receive the second processed video data, to decode and/or to enhance the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

166. *See* § IX.A.2.n above.

14. Claim 13

a. The system of claim 12, wherein the base unit is configured to interpret and/or encode the first video data to form the first processed video data.

167. *See* § IX.A.3.a above.

15. Claim 14

a. The system of claim 13, wherein the base unit is configured to enhance, mix, multiplex, and/or encrypt the first video data.

168. *See* § IX.A.4.a above.

16. Claim 15

a. The system of claim 13, wherein the first peripheral device is configured to decode, and/or interpret the first processed video data received by the first peripheral device to generate the second video data.

169. *See* § IX.A.5.a above.

17. Claim 16

a. The system of claim 15, wherein the first peripheral device is configured to demultiplex and/or decrypt, the first processed video data received by the first peripheral device.

170. *See* § IX.A.6.a above.

18. Claim 17

a. The system according to claim 12, wherein the functional device is configured to be exposed natively on the first peripheral device.

171. In my view, Beel discloses a similar native support of USB devices without the need for specific or proprietary drivers:

> This has the major advantage that no specific driver is required, since all these devices are natively supported in every personal computer system that has a USB port.

Ex-1005, ¶208 (emphasis added). Based on this disclosure and the apparent meaning of "*to be exposed natively*" in the '347 patent, it is inherent or at least obvious that "*the functional device is configured to be exposed natively on the first peripheral device*" because the peripheral device can communicate with the functional device, thereby being "*exposed natively*."

172. The ’347 patents suggests that “to be exposed natively” means that USB communication can be established without the need for proprietary software or drivers:

> When a functional device, e.g. a second peripheral device is exposed natively or as a mimic of such a device in hardware, use can be made of endpoints such as USB endpoints on the first peripheral device or the user processing device which can expose the corresponding second peripheral devices such as USB devices connected to or plugged into the base unit (as is done in a hub), so no proprietary software or drivers need to be installed to support this.

Ex-1001, 12:21-29 (emphasis added).

173. Christison provides an example of why it would have been obvious that the functional device could be “*exposed natively*” because, for example, it discloses “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. The USB devices attached to the WUSB Hub appear “as if they are native WUSB [wireless USB] devices.” *Id*. It is my opinion that the POSA would interpret this as the functional device appears to the host computer as if it were attached because it uses the same word, “native,” as the ’347 patent. Ex-1011, 6:25-26; s*ee also*, Ex-1011, 3:18-25, 6:32-58; Ex-1001, 9:16-20.

174. A POSA would have found it obvious to modify the combination of Beel and Dinka to use Christison's "native" configuration because it is a simple substitution of one of a limited number of options for communmicating data between the processing device to the functional device. A POSA would have recognized the native device could "mimic" the functionality of Beel or Dinka's peripheral devices for use in bidirectional communications between multiple users.

19. Claim 18

a. The system according to claim 12, wherein base unit is configured to transmit the first processed video data to the first peripheral device through a wireless link.

175. *See* § IX.A.7.a above. *See* Ex-1005, ¶129 (wireless transmitter/receiver).

20. Claim 19

a. The system according to claim 12, wherein the first video data is for display on a display.

176. *See* § IX.A.8.a above.

21. Claim 20

a. The system according to claim 12, wherein the 3rd party application is a hosted Unified Communication.

177. *See* § IX.A.9.a above.

22. Claim 21

a. The system of claim 12, wherein the base unit is configured to receive the second processed video data,

and to decrypt the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

178. *See* §§ IX.A.2.n and IX.A.11.a above.

23. Claim 22

a. The system of claim 12, wherein the base unit is configured to expose and to make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

179. *See* § IX.A.12.a above.

24. Claim 23

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

180. *See* § IX.A.2.a above.

b. the processing device having a memory, a* display *and an operating system, wherein the processing device hosts a host application,

181. *See* § IX.A.2.b above.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

182. *See* § IX.A.2.c above.

d. the base unit having a transmitter and

183. *See* § IX.A.2.d above.

e. ***the first peripheral device having a receiver and***

184. *See* § IX.A.2.e above.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

185. *See* § IX.A.2.f above.

g. the method further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

186. *See* § IX.A.2.g above.

h. the functional device being configured for first video data to flow into the base unit or first video data is captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

187. *See* § IX.A.2.h above.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

188. *See* § IX.A.2.i above.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

189. *See* § IX.A.2.j above.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

190. *See* § IX.A.2.k above.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, is sent to an endpoint of the first peripheral device via a standard generic driver,

191. *See* § IX.A.2.l above.

m. the first peripheral device receiving the third video data and processing the third video data to form second processed video data,

192. *See* § IX.A.2.m above.

n. wherein the third video data is enhanced, and/or encoded to form the second processed data and the second processed data is sent through a wireless link to the base unit,

193. *See* § IX.A.10.a above.

o. wherein the base unit decrypts the second processed data, and

194. *See* § IX.A.11.a above.

p. wherein the base unit is configured to expose and make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

195. *See* § IX.A.12.a above.

25. Claim 24

a. The method according to claim 23, wherein the functional device is exposed natively on the first peripheral device.

196. *See* § IX.A.18.a above.

26. Claim 25

a. The method of claim 23, wherein the functional device is a second peripheral device.

197. Beel discloses that the base node is coupled to "*a second peripheral device*," *e.g.*, "connection unit 52" coupled to "*the functional device*," e.g., "plug-and-play device," such as a "camera" or "loud speaker." Ex-1005, ¶118 (The base node 36 … may be coupled to a second connection unit 49.); *see also* ¶¶120 ("loud speakers … attached to the base node"), 124, 126, 129 and Fig. 1a; Ex-1001, 2:24-27, 15:56-59.

27. Claim 26

a. The method of claim 23, wherein the base unit receives the second processed data, and decodes and/or enhances the second processed data and forwards it to a

functional device which is connected or attached to the base unit through a serial connection.

198. *See* § IX.A.2.n above.

28. Claim 27

a. ***A system for making a functional device*** **available to a processing device, the functional device being** ***connected to or in a base unit of a communications network,***

199. *See* § IX.A.2.a above.

b. ***the processing device having a memory, a*** **display** ***and an operating system, wherein the processing device hosts a host application,***

200. *See* § IX.A.2.b above.

c. ***further comprising: the first peripheral device being configured to be coupled to the processing device via a generic communications protocol,***

201. *See* § IX.A.2.c above.

d. ***the base unit having a transmitter and***

202. *See* § IX.A.2.d above.

e. ***the first peripheral device having a receiver and***

203. *See* § IX.A.2.e above.

f. ***at least one fixed or configurable endpoint of*** **the** ***functional device is exposed on the first peripheral device,***

204. *See* § IX.A.2.f above.

g. the system further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

205. *See* § IX.A.2.g above.

h. the functional device being configured for first video data to flow into the base unit or first video data to be captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

206. *See* § IX.A.2.h above.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

207. *See* § IX.A.2.i above.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

208. *See* § IX.A.2.j above.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices, and

209. *See* § IX.A.2.k above.

l. wherein the base unit is configured to expose* and *to make available the functional device that is connected

to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

210. *See* § IX.A.12.a above.

29. Claim 28

a. The system according to claim 27, wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, are sent to an endpoint of the first peripheral device via a generic driver, the first peripheral device being configured to receive the third video data and to process the third video data to form second processed video data.

211. *See* §§ IX.A.2.l – 2.m above.

30. Claim 29

a. The system according to claim 28, wherein the base unit is configured to receive the second processed video data, to decode and/or to enhance the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

212. *See* § IX.A.2.n above.

31. Claim 30

a. The system of claim 29, wherein the base unit is configured to receive the second processed video data, and to decrypt the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

213. *See* §§ IX.A.11.a and IX.A.2.n above.

32. Claim 31

a. The system according to claim 27, wherein the functional device is configured to be exposed natively on the first peripheral device.

214. *See* § IX.A.18.a above.

B. Claims 1-31 of the '347 Patent Are Unpatentable as Obvious Over the Combination of Van de Laar in View of Kaplan, AAPA, and Optionally Christison

1. Rationale to Combine

215. In my view, Van de Laar and Kaplan disclose systems for wirelessly presenting audio or visual content. Ex-1008, abstract, FIG. 2; Ex-1007, abstract, FIG. 1. Van de Laar describes that the content can include information from a unified communications call, such as Skype. Ex-1007, ¶128. Kaplan discloses well known ways for presenting information using a standard operating system and data transformations. Ex-1008, ¶32, 44-49. The POSA would have understood that Van de Laar's system could leverage Kaplan's known technique of using a standard operating system and data transformations to improve a similar device in the same

way and, therefore, motivated to modify the transmission system of Kaplan with Van de Laar's WDH because it would improve the useability of the system to connect multiple wireless devices to access and use connected functional devices in a unified communication call.

216. Additionally, the '347 patent itself includes AAPA, which acknowledges that Skype and pre-installed generic drivers were known ways to facilitate web conferencing, as disclosed by Van de Laar. Ex-1001, 8:12-33, 8:65-9:12; *see also* Ex-1009 (showing Skype was available online in 2012). Combining Kaplan, Van de Laar, and AAPA would therefore result in the use of Skype or similar prior art unified communication software as a known technique for improving similar devices. This combination would creat the predictable result of using a unified communication system (such as Skype) wherein the system could utilize one or more connected functional devices' capabilities.

217. Christison discloses a method of wirelessly connecting functional devices to personal computers through a wireless peripheral device. Ex-1011, abstract. Christison emphasizes the efficiency advantages of presenting wireless USB devices as "native devices." Ex-1011, 6:13-19. Kaplan further teaches the connection of remote virtual devices to a client computer. Ex-1008, ¶¶43, 50, 313, 314. Christison further teaches one way of effecting Kaplan's virtual devices by

presenting a wireless USB device as "native." Ex-1011, abstract. 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. Therefore the combination would create the predictable result of a unified communication system that used USB protocols to present remote functional devices as local or "native" functional devices.

2. Claim 1

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

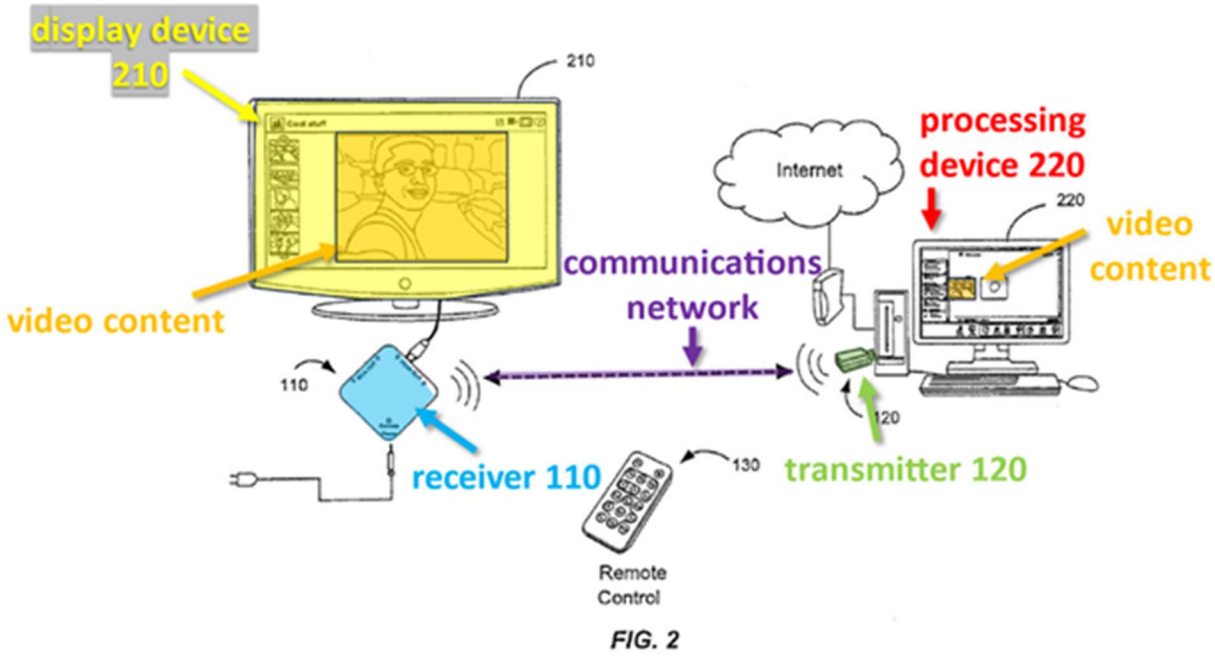
218. In my view, Van de Laar also discloses a method that "enables multiple dockee devices (such as smartphones, laptops, tablets) to be simultaneously docked to a wireless docking host (WDH) which is connected to a set of peripherals (such as display, mouse, shared local storage, lights/blinds controls, internet connection)" Ex-1007, ¶82; *see also*, *id*., ¶¶92 ("A central element in the wireless docking system is the wireless docking host (WDH) device that enables handling simultaneous wireless docking of multiple docking devices (Dockees). The "dockees" are "*processing devices*" and the "WDH" is the "*base unit*," which host device 100, which includes the docking processor 101. 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 through a set of wireless messaging and streaming protocols, whereby the WDH distinguishes the multiple dockees between primary dockees and secondary dockees, for example a presenter and attendees"), 94 ("The benefit of doing this is that it allows primary dockees to be able to present content using the peripherals connected to a WDH, Such as a large screen and a USB presentation remote control"), 97 ("[T]he WDH device is further configured to receive audio streams from primary and/or secondary dockees to be rendered and/or mixed via the audio output of an audio peripheral so that all people in the room can hear it"), 106, 119, 128.

219. Thus, in my view, this method provides wireless communication between dockee devices and *functional device[s]*, which are referred to as "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 ("Optionally, the at least one peripheral comprises at least one of a set of output peripherals like a beamer, a smart-bord, a display screen, a loudspeaker system; or at least one of a set of input peripherals like a mouse, room control unit; or a bidirectional peripheral like a data storage unit").

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

220. In my view, Kaplan discloses a *processing device* like Van de Laar's Dockee (*e.g.*, computer 220) *having a memory, a display* (*e.g.*, as illustrated in FIG. 2 above), *and an operating system*, such as Windows®. *See*, *e.g.*, Ex-1008, ¶¶47¬49, 59, FIG. 2.



Ex-1008, FIG. 2

221. Furthermore, Van de Laar discloses a "dockee" or "laptop" (*e.g.*, "*a processing device*") having "an application running locally," which may include "*a host application*" (*e.g.*, "Skype"). Ex-1007, ¶¶53-54, 58-60, 73-74, 81, 93, 121-128 and 164.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

222. Van de Laar discloses "The dockee device 120 has a dockee communication unit 121 [*i.e.*, "*first peripheral device*"] for accommodating said wireless communication with the host." In my view, Kaplan discloses "*a first peripheral device*" (*e.g.*, transmitter 120) "*being adapted to be coupled* (*e.g.*, "connector 122…inserted into USB port") *to the processing device*" (*e.g.*, computer 220) "*via a generic communications protocol*" (*e.g.*, "the Universal Serial Bus (USB) standard"). Ex-1008, ¶17; *see also*, *id*., ¶¶45 ("The ubiquity of the USB standard and the availability of USB ports, either on the computer or on a USB extender connected to the computer, make the use of a USB connection a suitable connector for embodiments of the present invention"), 58 ("The method 600 also includes establishing a connection between a transmitter and a computer (612)"); claims 10-11.

d. the base unit having a transmitter and

223. Van de Laar also discloses, "The host device 100 has a host communication unit 102 for accommodating said wireless communication, for example a WiFi unit, well known as such." Ex-1007, ¶75; *see also*, *id*. FIG. 1.

e. the first peripheral device having a receiver and

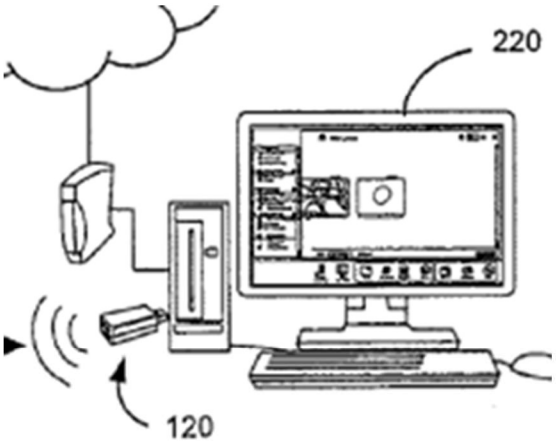
224. Van de Laar discloses having "*a reciever*" due to the wireless connection between the base unit/host device and the dockees:

> A host device for wireless communication with multiple dockee devices, the host device being arranged for coupling to at least one peripheral for rendering audio or video data, the host device comprising:
> a host communication unit configured for accommodating said wireless communication;
> a docking processor configured for docking at least one dockee device for providing access to the at the least one peripheral for the dockee device, the dockee device comprising
> a dockee communication unit configured for accommodating said wireless communication;

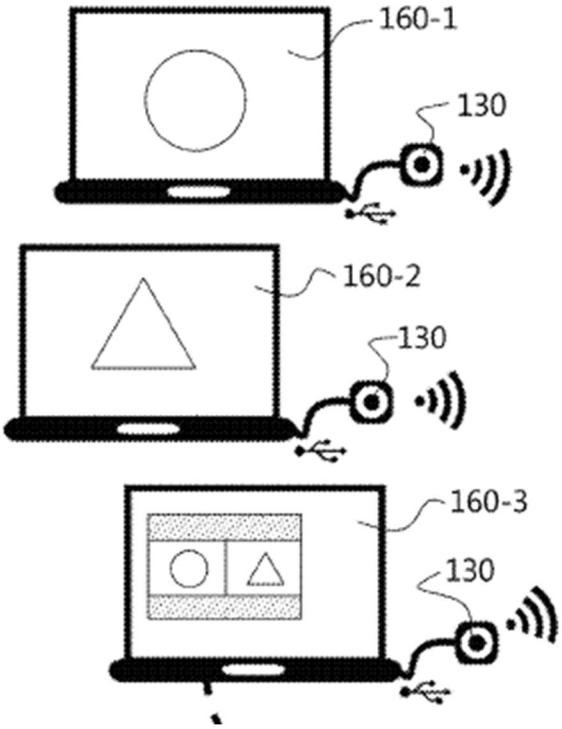
Ex-1007, claim 1.

225. In my view, Kaplan further demonstrates that wireless communication requires recievers: "The transmitter 120 also includes transceiver 450 and antenna 452, providing for two-way communications with the receiver 110 paired with the transmitter 120"), 16-17 ("[T]he transmitter 120 includes a wireless transceiver 450 that is operable to transmit data from the computer to the receiver 110"), 19, FIG. 4.

226. Thus, Kaplan and the '347 patent disclose similar peripheral devices as "a USB dongle." Ex-1008, ¶¶17, 58; Ex-1001, 9:13-14 and 10:47-51. The figures also illustrate similar dongles:



Ex-1008, FIG. 2 (transmitter 120)



Ex-1001, FIG. 5 (peripheral device 130)

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

227. In my view, Van de Laar discloses data sources and data sink that are therefore "*endpoints*":

> The primary dockee will function as a [Wi-Fi Miracast] WFM source and the [wireless docking host] 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.* ¶123-125, FIG. 3 (reproduced below).

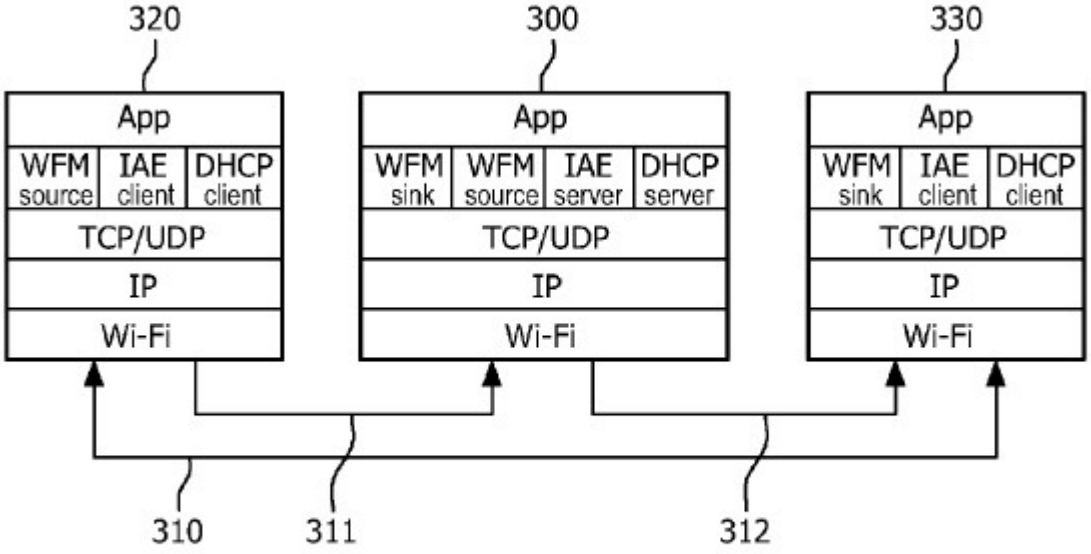


FIG. 3

228. Additionally, Van de Laar also discloses a "*functional device is exposed*":

> [V]arious dockees receive different sets of peripheral functions that can be accessed. In particular, the host, e.g. a PC, may make available to dockee shared peripherals as well as exclusive peripherals.

Ex-1007, ¶106 (emphasis added). *See also*, *id*. ¶¶82, 92, 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" (emphasis added)), 140-50.

229. It is my opinion that these endpoints are either "*fixed*" (*e.g.*, "simulated" "storage") or "*configurable*" (*e.g.*, simulated AV device, such as a webcam) as defined by the '347 patent because the POSA would undsrstand that all endpoints are one or the other. Ex-1001, 18:2-13; Ex-1005, ¶¶43, 50, 54, 124 ("the WFM source of the WDH may be replaced by a WSB video peripheral (e.g. a simulated webcam) or as a video component stream for a web browser or a messaging service client.") 313-17; *see also* § VII.B.4. Further, it is well-known in the art that USB devices include "endpoints" to transfer data. CITE Almeroth (113-114).

230. The Patent Owner might argue that "*exposed or made available*" means something narrow, such as "configuring one or more endpoints with descriptor fields" as the related European Patent No. EP3732827B1 recites after amendments. In that case, Petitioner relies optionally on Christison, which renders obvious configuring descriptor fields, which every USB device has. Ex-1011, 6:66-7:5. Christison claims,

> intercept a device descriptor request from said first wireless USB enabled device;
>
> read a device descriptor from said wired USB enabled device;

> modify said device descriptor so that it is consistent with a device descriptor for any wireless USB enabled device as specified by a predetermined wireless USB standard; and
>
> present said wired USB enabled device as said native wireless USB enabled device by providing said modified device descriptor to said first wireless USB enabled device.

Id., 9:21-32. Consequently, to the extent that the combination of Kaplan and Van de Laar does not disclose a narrower, unsupported construction of "*exposed*," the additional combination with Christison does. A POSA would recognize and find it obvious to combine Christion's remotely connected devices using endpoints with Kaplan's trnasmission system and Van de Laar's multiple peripheral devices.

g. the method further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

231. Van de Laar discloses "*the base unit*" (e.g., "docking processor," or "WDH") transmitting "*first processed video data*" to the "*first peripheral device*" (*e.g.*, communication unit 121 connected to the dockees):

> When multiple people come together during a meeting or lecture, there's a need to exchange information, collaborate, share meeting results such as meeting notes, presentations, whiteboard or smartboard contents. Furthermore there is a need to easily switch presenters,

> conduct polls/surveys/exams, generate a presence list, share agenda's etc.

Ex-1007, ¶80; *see also*, ¶123.

> 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 through a set of wireless messaging and streaming protocols, whereby the WDH distinguishes the multiple dockees between primary dockees and secondary dockees, for example a presenter and attendees.

Id., ¶92; *see also*, ¶115.

232. The "*first processed video data*" is the data coming from the WDH to the dockee. *Id*., ¶55.

h. the functional device being configured for first video data to flow into the base unit or first video data is captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

233. In my view, Van de Laar discloses *the functional device* (*e.g.*, "peripherals") sending "*first video data…into the base unit*" (e.g., "A/V stream" sent to wireless docking host (WDH)), which processes the data and sends it to the "*first peripheral device*" (e.g., communication unit 121 connected to the dockees):

> The WDH provides an A/V stream representing the output being sent by presenter P to the WDH peripherals. 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, in addition to following the presentation by looking at and/or listening to the WDH peripherals.

Id., ¶115; *see also*, ¶166. The A/V stream is processed by packetizing, encoding, and/or encyprting it using a secure communication link. "). Ex-1007, ¶¶56, 118-119, 123-126, FIG. 3,

234. Van de Laar discloses how the "*first video data*" is processed into "*first processed video data*":

> [T]he 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.

Ex-1007, ¶96; *see also* ¶73-74 (peripherals may be "webcams" or a "smartboard"), FIGs. 1-2 (peripherals (including webcams) flow into host device 100 and sent to dockee devices 120); ¶¶1, 2, 74, 115, 124, 166-167, FIG. 2. Van de Laar also discloses "*the first video data being processed*" (*e.g.*, merged, mixed, scaled, encoded, etc.) "*in the base unit*" (*e.g*., the "host device 100" or "WDH 200") "*to generate the first processed video data*":

> [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; *see also*, *id*. ¶¶56 ("Optionally, in the host device, the docking processor is arranged for providing, to the primary dockee device, write access to the at least one peripheral for said determining the AV data to be rendered, and for providing, to the secondary dockee device, read access to the at least one peripheral for transferring at least part of the AV data to be rendered. For example, 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" (emphasis added)), 59-60.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

235. In my view, Van de Laar discloses that "the first peripheral device" (*e.g.*, "communication unit") is "*configured to process the first processed video data received by the first peripheral device to generate second video data*" (*e.g.*, received AV data processed for rendering):

> the docking processor is arranged for providing,…to the secondary dockee device, read access to the at least one peripheral for transferring at least part of the AV data to be rendered. For example, 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. By…getting read access the secondary dockee device is enabled to receive the AV data as rendered via the peripheral.

Id., ¶56 (emphasis added), *see also*, ¶¶93, 115. "*Processing the first processed video data*" for rendering requires decoding the data and preparing it for transmission to a display as "*second video data*."

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

236. *See* § IX.B.2.c, f. In my view, Van de Laar describes "*mak[ing] the second video data available*" (*e.g.*, received AV data processed for rendering): "Moreover, the A/V output may be offered to a secondary dockee through a simulated peripheral (e.g. simulated webcam)"). Ex-1007, ¶¶56, 93, 115. Van de Laar further discloses that the data is made "*available through at least one fixed or configurable endpoint of the first peripheral device*" (*e.g.*, WFM sink or source.) *Id*., ¶¶124-26, FIG. 3.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

237. *See* § IX.B.2.j. Van de Laar discloses to "*the operating system of the processing device being configured to capture the second video data and to make*

[*video data*] *available…to either the host application or a 3rd party application running on the processing device*" (*e.g.*, Skype):

> [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, Wi-Fi Direct Play Service, VoIP, XMPP, Skype, DLNA or other audio streaming mechanism.

Ex-1007, ¶128 (emphasis added).

238. In my opinion, the person of ordinary skill would have understood that the dockees would have an operating system configured to perform tyese steps because the disclosed dockees (*e.g.*, mobile phones, laptops or tablet computers") were known to use operating systems, such as Windows. *Id*., ¶ 73.

239. In my view, Van de Laar also discloses "*to make* [*video data*] *available through a custom or standard driver…to other processing devices*." Such as, Van de Laar makes video data available using "custom or standard driver," such a driver associated with "Wi-Fi Serial Bus and Wi-Fi Miracast." Ex-1007, ¶73 ("These peripherals are considered to support standards such as Wi-Fi Serial Bus and Wi-Fi Miracast to make their functionality available through the wireless network to other devices such as dockees and WDHs."). Van de Laar also provides "direct communication between dockee devices of the group. Contained by such group, all members are now enabled to communicate." Ex-1007, ¶60. Such direct

communication enables the dockee devices (*e.g.*, "*processing devices*") to make video data available to other dockee devices (*e.g.*, "*other processing devices*") in the group. *See also*, *id*., ¶¶60, 74-76, 120, 124, 166-167.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, is sent to an endpoint of the first peripheral device via a standard generic driver,

240. In my view, Van de Laar teaches that the secondary dockee can also generate "*third video data…from the…application*" (*e.g.*, shared content from an application, such as Skype) that "*is sent to an endpoint of the first peripheral device*" (*e.g.*, WFM sink or source):

> [T]he docking processor may be arranged for managing shared AV output for the multiple primary dockee devices by providing at least one of split screen, overlaying, at least one window, video scaling, audio mixing. This shared control may for example enable multiple primary dockees control a shared A/V output peripherals (such as TV or beamer) in a meeting room.

Ex-1007, ¶¶59, 124-26, FIG. 3; *see also*, ¶¶60, 79-86. That is, a dockee may both receive and transmit A/V content that can be mixed, split, or presented picture-in-picture (PIP). *Id*., ¶123 and claim 7. This can be accomplished using "*the host application and/or from the 3rd party application*," such as "Skype." Ex-1007, ¶128.

241. Van de Laar also discloses this is accomplished "through a standard generic driver," such a driver associated with "Wi-Fi Serial Bus and Wi-Fi Miracast." Ex-1007, ¶73 ("These peripherals are considered to support standards such as Wi-Fi Serial Bus and Wi-Fi Miracast to make their functionality available through the wireless network to other devices"). Van de Laar provides "direct communication between dockee devices of the group" which allows dockees to make video data available to other dockees (e.g., "other processing devices"). *See also*, *id*., ¶¶60, 74-76, 120, 124, 166-167.

m. the first peripheral device receiving the third video data and processing the third video data to form second processed video data, and

242. In my view, Van de Laar discloses that "*the first peripheral device*" (*e.g.*, "communication unit 121") "*receiving the third video data*" (*e.g.*, "shared content") "*to form second processed video data*" (*e.g.*, generated "WFM packets"). Ex-1007, ¶¶124-126, FIG. 3.

n. wherein the base unit receives the second processed data, and decodes and/or enhances the second processed data and forwards it to a functional device which is connected or attached to the base unit through a serial connection.

243. See § IX.B.2.d-e (base unit receives data). In my view, Van de Laar teaches that "*the base unit*" (*e.g.*, "docking processor," also called wireless docking

host (WDH) or host device 100) "*receives the second processed data, and decodes and/or enhances the processed data and forwards it to a functional device*":

> [T]he docking processor may be arranged for managing shared AV output for the multiple primary dockee devices by providing at least one of split screen, overlaying, at least one window, video scaling, audio mixing. This shared control may for example enable multiple primary dockees control a shared A/V output peripherals (such as TV or beamer) in a meeting room.

Ex-1007, ¶59 (emphasis added); *see also*, ¶¶60, 79-86. The dockees both receive and transmit A/V content that can be mixed, split, or presented picture-in-picture (PIP). Id., ¶123 and claim 7. Van de Laar also discloses sending the data "*through a serial connection*" (e.g., "USB interface 211," "HDMI 212," or "Wi-Fi Serial bus"). *Id*., ¶73, 110, abstract, FIG. 2.

3. Claim 2

a. The method of claim 1, wherein the first video data is interpreted and/or encoded in the base unit to form the first processed video data.

244. *See* § IX.B.2.h – 2.i. In my view, Kaplan discloses performing processing tasks that include video processing, buffering, storage, and the like, which would inherently or at least obviously include "*interpret and/or encode*." Ex-1008, ¶27.

245. In my view, Van de Laar also discloses using standard encrypted "secure direct link" Wi-Fi connections. *Id.*, ¶¶118-119. Secure wi-fi 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. Ex-1033. Therefore, a POSA would have understood the secure communication protocols between devices (including base unit) referred to in both Kaplan and Van de Laar would include encryption/encoding of the data sent. It also teaches encoding data into "WFM packets." *Id*., ¶126.

4. Claim 3

a. The method of claim 2, wherein the first video data is enhanced, mixed, multiplexed, and/or encrypted in the base unit.

246. *See* §§ IX.B.2.h – 2.i, 3.a.

5. Claim 4

a. The method of claim 2, wherein the first processed video data is received by the first peripheral device, and the first peripheral device is configured to decode and/or interpret the first processed video data and to generate the second video data.

247. *See* § IX.B.2.g, 2.i. In my view, Kaplan discloses performing processing tasks that include video processing, buffering, storage, and the like, which would inherently or at least obviously include "*to decode and/or interpret*." Ex-1008, ¶27.

248. Additionally, Van de Laar also refers to a "transcoded…representation of the primary AV data." Ex-1007, ¶56. Use of "transcoded" AV data inherently or at least obviously requires that an associated device, such as "the peripheral device" be able to "*decode and/or interpret*" the video data. Indeed, all video is encoded/decoded based on various protocols or codecs, such as the known H.264. Ex-1001, 14:9.

6. Claim 5

a. The method of claim 4 wherein the first peripheral device demultiplexes, and/or decrypts, the first processed video data received by the first peripheral device to generate the second video data.

249. *See* §§ IX.B.2.i and IX.B.5.a. In my view, Van de Laar explains that "video mixing" is a known video processing task. *See* Ex-1007, ¶123. "[*D*]*emultiplex*[*ing*]" is a related video processing that splits rather than mixes video data. A POSA would request the ability to "*demultiplex*" data obtained through the video mixing disclosed by Van de Laar . Moreover, the POSA would also recognize how to "*demultiplex*" video data using standards algorithms, for instance, to separate mixed or multiplexed video data with a known outcome and reasonable expectation of success.

7. Claim 6

a. The method according to claim 4, wherein the first processed video data is sent to the first peripheral device through a wireless link.

250. *See* §§ IX.A.2.d-e, g. In my view, Kaplan discloses "*the first processed video data is sent to the first peripheral device through a wireless link*" (*e.g.*, a "communications channel," which may use WiFi standard IEEE 802.11n):

> [T]he communications channel between the transmitter 120 and the receiver 110 is provided in accordance with commercially available wireless communications standards. For example, using the IEEE 802.11n wireless standard, bandwidth suitable for high definition (HD) videos (*e.g.*, 1012 megabits per second) is provided.

Ex-1008, ¶31 (emphasis added); *see also*, *id*. ¶54 ("Typically, the pairing signal includes an encrypted code that enables a secure communications channel between the paired devices" (emphasis added)), Table 1 ("Compliance with…WiFi requirements").

251. Additionally, Van de Laar describes a WiFi connection, such as is disclosed by Kaplan, as an example of a "*wireless link*":

> The wireless docking station may be a wireless docking host (WDH) that enables a mobile device (called dockee) to access to a set of peripherals locally attached through a wire or wirelessly connected to the host device (such as USB mouse, HDMI display, Bluetooth headset) through a set of message exchange protocols over a wireless link (*e.g.* Wi-Fi).

Ex-1007, ¶6 (emphasis added).

8. Claim 7

a. The method according to claim 1, wherein the first video data is for display on a display.

252. *See* § IX.B.2.h. In my view, Kaplan discloses that "*first video data*," which "*flow[s] into the base unit*" (*e.g.*, "receiver 110"), is "*for display on a display*" (*e.g.*, "display 210" coupled to "receiver 110"). *See*, *e.g.*, Ex-1007, ¶¶21-22, 26, 28-34, FIG. 2. Van de Laar also discloses that "*first video data*," which "*flow[s] into the base unit*," is "*for display on a display*" (*e.g.*, "display screen 111" coupled to "host device 100"). *See*, *e.g.*, Ex-1008, ¶74, FIG. 1. It is also obvious to a POSA that "*video data is for display on a display*" on the dokee's display or the display connected to the WDH. *Id.*, ¶¶92, 115.

9. Claim 8

a. The method according to claim 1, wherein the 3rd party application is a hosted Unified Communication.

253. In my view, 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). Skype would be an example of a "*Unified Communication*." *See* Ex-1009, Ex-1013; CITE Almeroth. Van de Laar also discloses "a host device 100

for wireless communication with multiple dockee devices." Ex-1007, ¶74 (emphasis added); *see also*, *id*., ¶¶60 (" multiple dockee devices to a group and accommodating direct communication between dockee devices "), 75-76, 98 ("everyone in the meeting room…collaborate[s], easily share meeting materials/results"), 120, 124, 166-167).

10. Claim 9

a. The method according to claim 1, wherein the third video data is enhanced, and/or encoded to form the second processed data and the second processed data is sent through a wireless link to the base unit.

254. In my view, Van de Laar discloses that "*the third video data*" *i.e.*, data sent from a secondary dockee to the WDH ("*base unit*") "*is enhanced, and/or encoded [and] is sent through a wireless link to the base unit*" at least because the data is encoded to be sent through a "secure direct link" Wi-Fi connections. *Id.*, ¶¶118-119; *see also*, § IX.B.3a. It is also my opinion that Van de Laar teaches encoding data because it encodes them into "WFM packets." *Id*., ¶126.

255.

11. Claim 10

a. The method of claim 9, wherein the base unit decrypts the second processed data.

256. *See* § IX.B.2.h and IX.B.3a – 6.a. In my view, Van de Laar discloses using standard Wi-Fi encryption, which involves decryption on the receiving end. Ex-1007, ¶¶118-119; see also, § IX.B.2.h, 3.a.

12. Claim 11

a. The method of claim 10, the base unit being configured to expose and make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

257. *See* § IX.B.2.f. In my view, Van de Laar further explains how this may be reached "*simultaneously with a plurality of first peripheral devices* (*e.g.*, "transmitters 120" of Kaplan coupled to dockee devices 120, 130, 140 of Van de Laar). For example, Van de Laar discloses display screen 111 (*e.g.*, "*the functional device*") being "*expose*[*d*] or [*made*] *available, simultaneously with"* a plurality of dockee devices 120, 130, 140 *(e.g.*, *a plurality of first peripheral devices"*) in order for A/V data from the dockee devices 120, 130, 140 to be presented simultanesouly on the display screen 111 (*e.g.*, "*the functional device*"). *See*, *e.g.*, Ex-1007, ¶¶55 ("the primary dockee gets access to a display, whereas the secondary dockee is enabled to monitor the output on the display by receiving a video data stream of a peripheral similar to a camera function"), 72, 92 ("the peripherals or peripheral

functions different from the set of peripherals Y being made available by the WDH to secondary dockees."), 106, 110 ("A second set of secondary dockee devices (attendees A) 221 is shown to receive the same data from the host, for example by a broadcast signal 241"), 119, FIG. 1).

258. Van de Laar discloses "*interpreting, processing and translating the electronic signals coming from the functional device*." For example, Van de Laar discloses:

> If two or more primary docking devices send output to the same display peripherals simultaneously, 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. In this case, Van de Laar 's WDH (*e.g.*, "*the base unit*") "*interpret*[*s*], *process*[*es*] *and translat*[*es*]" the display output coming from the display (*e.g.*, "*the functional device*"). *See also* §§ IX.A.3.a – 4.a.

13. Claim 12

a. A system for making a functional device available to a processing device, the functional device being connected to or in a base unit of a communications network,

259. *See* § IX.B.2.a.

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

260. *See* § IX.B.2.b.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

261. *See* § IX.B.2.c.

d. the base unit having a transmitter and

262. *See* § IX.B.2.d.

e. the first peripheral device having a receiver and

263. *See* § IX.B.2.e.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

264. *See* § IX.B.2.f.

g. the system further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

265. *See* § IX.B.2.g.

h. the functional device being configured for first video data to flow into the base unit or first video data to be captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

266. *See* § IX.B.2.h.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

267. *See* § IX.B.2.i.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

268. *See* § IX.B.2.j.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

269. *See* § IX.B.2.k.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, are sent to an endpoint of the first peripheral device via a generic driver,

270. *See* § IX.B.2.l.

m. the first peripheral device being configured to receive the third video data and to process the third video data to form second processed video data, and

271. *See* § IX.B.2.m.

n. wherein the base unit is configured to receive the second processed video data, to decode and/or to enhance the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

272. *See* § IX.B.2.n.

14. Claim 13

a. The system of claim 12, wherein the base unit is configured to interpret and/or encode the first video data to form the first processed video data.

273. *See* § IX.B.3.a.

15. Claim 14

a. The system of claim 13, wherein the base unit is configured to enhance, mix, multiplex, and/or encrypt the first video data.

274. *See* § IX.B.4.a.

16. Claim 15

a. The system of claim 13, wherein the first peripheral device is configured to decode, and/or interpret the first processed video data received by the first peripheral device to generate the second video data.

275. *See* § IX.B.5.a.

17. Claim 16

a. The system of claim 15, wherein the first peripheral device is configured to demultiplex and/or decrypt, the first processed video data received by the first peripheral device.

276. *See* § IX.B.6.a.

18. Claim 17

a. The system according to claim 12, wherein the functional device is configured to be exposed natively on the first peripheral device.

277. In my view, the '347 does not define what it means "*to be exposed natively*." Yet, the '347 patents does suggest that "*to be exposed natively*" means that USB communication can be established without the need for proprietary software or drivers:

> When a functional device, e.g. a second peripheral device is exposed natively or as a mimic of such a device in hardware, use can be made of endpoints such as USB endpoints on the first peripheral device or the user processing device which can expose the corresponding second peripheral devices such as USB devices connected to or plugged into the base unit (as is done in a hub), so no proprietary software or drivers need to be installed to support this.

Ex-1001, 12:21-29 (emphasis added).

278. In my view, Kaplan also discloses "*a functional device*" (*e.g.*, "display 210") "*configured to be exposed natively on the first peripheral device*" (*e.g.*, the transmitter 120), such as by using a standard USB communications protocol

"compliant with the Universal Serial Bus (USB) standard" employed by the "*peripheral device*" (*e.g.*, "transmitter 120"). Ex-1008, ¶17; *see also*, *id.*, ¶¶45 ("The ubiquity of the USB standard and the availability of USB ports, either on the computer or on a USB extender connected to the computer, make the use of a USB connection a suitable connector for embodiments of the present invention"), 58.

279. Additionally, Van de Laar also discloses peripheral devices "*exposed natively*" using "standards such as Wi-Fi Serial Bus and Wi-Fi Miracast to make their functionality available through the wireless network to other devices such as dockees and WDHs." Ex-1007, ¶73. Thus, a POSA would understand how to implement these standards on a "*first peripheral device*" (*e.g.*, the "transmitter 120" of Kaplan) with a reasonable expectation of success.

280. Christison provides an example of why it would have been obvious that the functional device could be "*exposed natively*" because, for example, it discloses "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. The USB devices attached to the WUSB Hub appear "as if they are native WUSB [wireless USB] devices." It is my opinion that the POSA would interpret this as the functional device appears to the host computer as if it were

attached because it uses the same word, "native," as the '347 patent. Ex-1011, 6:25-26; s*ee also*, Ex-1011, 3:18-25, 6:32-58; Ex-1001, 9:16-20.

281. A POSA would have found it obvious to modify the combination of Van de Laar and Kaplan to use Christison's "native" configuration because it is a simple substitution or one of a limited number of options for communmicating data between the processing device to the functional device. A POSA would have recognized the native device could "mimic" the functionality of Van de Laar's and Kaplan's peripheral devices for use in bidirectional communications between multiple users.

19. Claim 18

a. The system according to claim 12, wherein base unit is configured to transmit the first processed video data to the first peripheral device through a wireless link.

282. *See* § IX.B.7.a.

20. Claim 19

a. The system according to claim 12, wherein the first video data is for display on a display.

283. *See* § IX.B.8.a.

21. Claim 20

a. The system according to claim 12, wherein the 3rd party application is a hosted Unified Communication.

284. *See* § IX.B.9.a.

22. Claim 21

a. The system of claim 12, wherein the base unit is configured to receive the second processed video data, and to decrypt the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

285. *See* §§ IX.B.2.n and IX.B.11.a.

23. Claim 22

a. The system of claim 12, wherein the base unit is configured to expose and to make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

286. *See* § IX.B.12.a.

24. Claim 23

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

287. *See* § IX.B.2.a.

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

288. *See* § IX.B.2.b.

c. further comprising: a first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

289. *See* § IX.B.2.c.

d. the base unit having a transmitter and

290. *See* § IX.B.2.d.

e. the first peripheral device having a receiver and

291. *See* § IX.B.2.e.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

292. *See* § IX.B.2.f.

g. the method further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

293. *See* § IX.B.2.g.

h. the functional device being configured for first video data to flow into the base unit or first video data is captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

294. *See* § IX.B.2.h.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

295. *See* § IX.B.2.i.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

296. *See* § IX.B.2.j.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices,

297. *See* § IX.B.2.k.

l. wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, is sent to an endpoint of the first peripheral device via a standard generic driver,

298. *See* § IX.B.2.l.

m. the first peripheral device receiving the third video data and processing the third video data to form second processed video data,

299. *See* § IX.B.2.m.

n. wherein the third video data is enhanced, and/or encoded to form the second processed data and the second processed data is sent through a wireless link to the base unit,

300. *See* § IX.B.10.a.

o. wherein the base unit decrypts the second processed data, and

301. *See* § IX.B.11.a.

p. wherein the base unit is configured to expose and make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

302. *See* § IX.B.12.a.

25. Claim 24

a. The method according to claim 23, wherein the functional device is exposed natively on the first peripheral device.

303. *See* § IX.B.18.a.

26. Claim 25

a. The method of claim 23, wherein the functional device is a second peripheral device.

304. In my view, Van de Laar discloses wireless communication between dockee devices and several *functional devices*, which are referred to as "peripheral devices" or "peripherals," including "*a second peripheral device.*" *See*, *e.g.*, Ex-1007, Abstract, ¶¶1, 8-9, 62, 73, 160, FIG. 1 (showing three peripheral devices 110–112).

27. Claim 26

a. The method of claim 23, wherein the base unit receives the second processed data, and decodes and/or enhances the second processed data and forwards it to a functional device which is connected or attached to the base unit through a serial connection.

305. *See* § IX.B.2.n.

28. Claim 27

a. A system for making a functional device available to a processing device, the functional device being connected to or in a base unit of a communications network,

306. *See* § IX.B.2.a.

b. the processing device having a memory, a display and an operating system, wherein the processing device hosts a host application,

307. *See* § IX.B.2.b.

c. further comprising: the first peripheral device being configured to be coupled to the processing device via a generic communications protocol,

308. *See* § IX.B.2.c.

d. the base unit having a transmitter and

309. *See* § IX.B.2.d.

e. the first peripheral device having a receiver and

310. *See* § IX.B.2.e.

f. at least one fixed or configurable endpoint of the functional device is exposed on the first peripheral device,

311. *See* § IX.B.2.f.

g. the system further comprising: the base unit being configured to transmit and the first peripheral device being configured to receive first processed video data over the communications network,

312. *See* § IX.B.2.g.

h. the functional device being configured for first video data to flow into the base unit or first video data to be captured in the base unit, the first video data being processed in the base unit to generate the first processed video data, wherein the first processed video data is sent to the first peripheral device,

313. *See* § IX.B.2.h.

i. the first peripheral device being configured to process the first processed video data received by the first peripheral device to generate second video data,

314. *See* § IX.B.2.i.

j. the first peripheral device being configured to make the second video data available through the at least one fixed or configurable endpoint of the first peripheral device,

315. *See* § IX.B.2.j.

k. the operating system of the processing device being configured to capture the second video data and to make it available through a custom or standard driver to either the host application or a 3rd party application running on the processing device or to other processing devices, and

316. *See* § IX.B.2.k.

l. wherein the base unit is configured to expose and to make available the functional device that is connected to the base unit, simultaneously with a plurality of first peripheral devices by interpreting, processing and translating the electronic signals coming from the functional device.

317. *See* § IX.B.12.a.

29. Claim 28

a. The system according to claim 27, wherein third video data, received from the host application and/or from the 3rd party application running on the processing device, are sent to an endpoint of the first peripheral device via a generic driver, the first peripheral device being configured to receive the third video data and to process the third video data to form second processed video data.

318. *See* §§ IX.B.2.l – 2.m.

30. Claim 29

a. The system according to claim 28, wherein the base unit is configured to receive the second processed video data, to decode and/or to enhance the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

319. *See* § IX.B.2.n.

31. Claim 30

a. The system of claim 29, wherein the base unit is configured to receive the second processed video data, and to decrypt the second processed video data and to subsequently forward it to a functional device or a second peripheral device which is connected or attached to the base unit through a serial connection.

320. *See* §§ IX.B.11.a and IX.B.2.n.

32. Claim 31

a. The system according to claim 27, wherein the functional device is configured to be exposed natively on the first peripheral device.

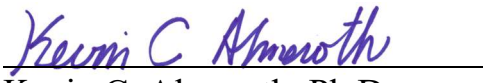
321. *See* § IX.B.18.a.

X. CONCLUSION

322. My opinions are based upon the information that I have considered to date. I am unaware of any evidence of secondary considerations with respect to the '347 patent that would render any of the asserted claims non-obvious. I reserve the right, however, to supplement my opinions in the future to respond to any arguments raised by the owner of the '347 patent and to consider new information that becomes available to me.

323. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the

like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

By: 
Kevin C. Almeroth, Ph.D.

Date: February 10, 2025