UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

YEALINK (USA) NETWORK TECHNOLOGY CO., LTD., AND YEALINK NETWORK TECHNOLOGY CO., LTD.,

Petitioner,

v.

BARCO N.V.,

Patent Owner.

CASE: IPR2025-00597

U.S. PATENT NO. 11,966,346

DECLARATION OF MICHAEL C. BROGIOLI, Ph.D.

BARCO EXHIBIT 2004
Yealink v. Barco
IPR2025-00597

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I, Dr. Michael C. Brogioli, declare as follows:

1. I am over eighteen years of age, and I am competent to testify regarding the matters set forth in this declaration if called upon to do so.

2. I have been retained in this matter by K&L Gates LLP on behalf of Patent Owner, Barco NV ("Barco").

3. I am being compensated at my standard consulting rate for my time spent on this matter through Elysium Digital LLC, who I understand charges $950 per hour of my time. My compensation is not contingent upon the testimony I provide or the outcome of this matter. I submit this declaration at the request of K&L Gates as counsel for Patent Owner in this proceeding.

4. I understand that Yealink (USA) Network Technology Co., Ltd., and Yealink Network Technology Co., Ltd. (collectively, "Petitioner") and its expert, Dr. Kevin C. Almeroth, have submitted papers in this proceeding arguing that Claims 1 to 22 (the "Challenged Claims") of U.S. Patent No. 11,966,346 (the "'346 Patent") (Ex. 1001) are unpatentable under the United States Patent and Trademark Office's *inter partes* review standard of a preponderance of the evidence. I provide certain technical opinions regarding the scope and content of the prior art, including how those skilled in the art as of 2017 would have understood certain references, the industry as a whole, and what factors were driving innovation in this space.

5. In preparing this declaration, I have analyzed the '346 Patent (Ex. 1001), its file history (Ex. 1004), the declaration of Dr. Kevin C. Almeroth (Ex. 1002), and several prior art references, including Beel (Ex. 1005), Dinka (Ex. 1006), Van de Laar (Ex. 1007), Kaplan (Ex. 1008), and Christison (Ex. 1011). I also considered the other documents or references cited in this declaration.

6. In forming the opinions expressed below, I have considered the documents listed above, the relevant legal standards as provided to me by counsel, and my own knowledge and experience. My opinions are offered from the perspective of a person of ordinary skill, as that term is defined, as of December 29, 2017.

7. I understand Dr. Almeroth has already provided his opinions in Exhibit 1002; however, if he is permitted to offer additional opinions, I reserve my right to respond to those should I be asked.

I. QUALIFICATIONS AND BACKGROUND

8. Below is a summary of my education and experience. My *curriculum vitae* ("CV"), provided as Exhibit 2005 provides additional context regarding my professional background, experience, publications, patents, and other qualifications relevant to providing expert opinions. Here, I highlight experiences that are relevant to the technology described in the patent at issue.

9. I am currently an Adjunct Professor of Electrical and Computer Engineering at Rice University in Houston, Texas, and Managing Director of Polymathic Consulting in Austin, Texas. I received my Bachelor of Electrical Engineering from Rensselaer Polytechnic Institute in 1999, my Master of Science in Electrical and Computer Engineering from Rice University in 2003, and my Doctorate of Electrical and Computer Engineering from Rice University in 2007.

10. While at Rice University, I developed various computer architecture designs for embedded and high-performance systems, including multi-core and low power systems used in processing various workloads, including multimedia and other workloads. For example, from 1999 to 2003, I worked in the area of low-power computing, specifically focusing on dynamic power management and performance of configurable computing and memory systems with workloads, including multimedia and signal processing. From 2002 to 2004, I developed Spinach, a computer architecture design and modeling toolset, which models system components common to all programmable computing environments, including memory systems, multi-core microprocessor systems, and related hardware components. These systems targeted networking hardware and software solutions. From 2004 to 2009, I developed Spinach DSP-FPGA, a modular and composable simulator design infrastructure for programmable and reconfigurable embedded SOC architectures specifically targeting mobile, low-power, and embedded and

portable computing devices running networking and multimedia workloads. From 2005 to 2009, I developed and published a retargetable compiler infrastructure and hardware design exploration toolkit for systems microprocessor design, which facilitated the design space exploration of microprocessors and multi-core processor designs. Many of these tools have been used at United States universities in the area of electrical and computer engineering research.

11. In the late 1990s, I was a hardware and software developer at Vicarious Visions in New York, developing third-party titles for Nintendo's handheld consoles, in addition to various hardware and software interfaces and solutions. These were used for the optimization and transfer of audio and graphics streams from developer workstations (desktop computers) to the peripheral consoles, via custom hardware and software solutions. During my career, I have served as Chief Technology Officer, advisory board member, and board of directors' member, often in co-founding roles.

12. From June 2006 to August 2007, I worked as the Technical Co-Founder of Method Seven LLC in Boston, MA, working with high-performance software and hardware systems architecture. I am currently a co-founder, co-inventor, and Chief Technology Officer of Network Native, an Internet of Things technology company as well as others that are detailed on my CV.

13. I have held the position of Adjunct Professor at Rice University since 2009 and the position of Managing Director at Polymathic Consulting since 2011. At Rice University, I instruct graduate-level curriculum in the areas of computer architecture, hardware and software systems, including multimedia processing and various codecs and optimizations for emerging architectures. I also advise on university research and various design initiatives, including the design of audio and media processing solutions for multiprocessor systems. At Polymathic Consulting, I work with a range of technologists from early-stage start-ups to Fortune 500 companies on similar technologies.

14. From 2008 to 2009, I was Senior Engineer working in high-performance compiler designs and next-generation multi-core microprocessors and architectures at Freescale Semiconductor in Austin, Texas. From November 2009 to October 2011, I was Chief Architect, Senior Member Technical Staff, at Freescale Semiconductor in Austin, Texas (formerly Motorola), responsible for management of technology, engineering roadmaps, design lead on software infrastructure, and next-generation multi-core microprocessor architectures. During my tenure at Freescale Semiconductor, I was in charge of system developer tools. These included tools used for the programming of processors, simulation and modeling, and related technologies including digital networking and multimedia solutions.

15. I have previously worked for Texas Instruments' Advanced Architecture and Chip Technology division in Houston, Texas, in the areas of high-performance mobile and embedded systems design at the hardware and systems software level, specifically around heterogeneous computing, including solutions used in multimedia processing. I also have worked at Intel Corporation's Microprocessor Research Labs in the areas of computer architecture and compiler technologies.

16. I am recognized as an expert in the field of computer architecture, computer hardware and computer software systems as they relate to the subject matter at hand. I am a member of the Institute of Electrical and Electronics Engineers (IEEE) and Association for Computing Machinery (ACM) and have been a steering committee member for the IEEE and ACM Design Automation Conference since 2011 and have previously held the role of Program Chair of Design Automation Conference in the area of Embedded Computing. I have also been a reviewer and contributor to a number of IEEE and ACM technical conferences during the course of my career.

17. Over the past 20 plus years, I have authored numerous peer-reviewed publications, as well as engineering books in the area of computer hardware and software design, including solutions for and optimization of codec technologies. Many of these incorporate technologies specific to the subject matter at hand. These

publications are disclosed in my CV. I have previously served as an engineering consultant and testifying witness on matters related to, and including, microprocessors and multi-core technology as well as audio and video processing technology, peripherals and interfaces similar to those mentioned in the patents at suit in this matter.

18. My curriculum vitae (Ex. 2005) contains more information on my background and experience, as well as the cases in which I have served as an expert witness over at least the past four years.

II. LEGAL STANDARD

19. Although I am not a lawyer, I have been advised on the relevant legal principles by counsel and have used them as a basis for my opinions.

A. Claims

20. I have been informed and understand that terms in the patent claims must be read as they would have been understood by a "person of ordinary skill in the art" ("POSITA") at the time of the claimed invention.

21. I understand that a POSITA is a person to which the claimed subject matter pertains with the capability of understanding the scientific and engineering principles applicable to the pertinent art. I understand that the following factors may be considered in determining the level of ordinary skill:

- the type of problems encountered in the art;

- prior art solutions to those problems;
- the speed with which innovations are made;
- the sophistication of the technology; and
- the educational level of active workers in the field.

I also understand that not every factor may be present and that one or more factors may predominate others.

22. I understand that the claims within a patent set forth what the inventors have presented as their inventions. I understand that claims can be independent or in dependent form, meaning that they depend from the identified independent claims and add requirements to those claims.

B. Specification

23. I understand that there are other parts of a patent, including the abstract, the figures of a patent, the background of the invention, the summary of the invention, and the detailed description of the invention. I understand that these portions often are collectively referred to as the "specification" of a patent. I understand that technically, the claims are part of the specification, but that referring to the "specification" typically means referring to the written description of the inventions rather than the claims. I understand that the specification informs the understanding of the claims by, for example, describing the claimed invention and providing preferred examples of the claimed invention.

24. I have also been informed and understand that terms of a claim should be understood in the context of the claim as a whole. I also understand that the specification of the patent is relevant to the meaning of a claim term. I further understand that the claims must be read in light of the specification.

C. Prosecution History

25. I understand that the correspondence back and forth between the representative of the applicant, and the U.S. Patent and Trademark Office, leading up to the issuance of a patent is called the "file history" or "prosecution history." It has been explained to me that, in the process of obtaining a claim of a patent, the inventors and the examiner may make statements explaining their understanding of the scope of their claimed invention. It has also been explained to me that for a statement by the inventors to narrow the scope of a claimed invention, the statement must clearly and unambiguously limit the scope of an invention. I understand this is called "prosecution disclaimer" or "prosecution disavowal." I understand that the claim language, specification, and file history are referred to as "intrinsic evidence" or "the intrinsic record."

D. Burden of Proof

26. I understand that, unlike at the district court, an *inter partes* review, such as this proceeding, apply a lower burden of proof to judge the patentability of

challenged claims. Unlike the district court's "clear and convincing" burden, here, a "preponderance of the evidence" burden exists.

E. Anticipation

27. I understand that a patent claim is invalid as "anticipated" by a single "prior art" reference if the reference discloses every single element of the claim with sufficient precision and detail to establish that the subject matter of the claim existed in the prior art. In particular, I understand that it is not sufficient to establish that all of the elements are collectively disclosed within the four corners of a particular document. Instead, the operative question is whether a person of ordinary skill would have understood the elements as being arranged as in the claim itself. I also understand that a prior art reference cannot "anticipate" a patent claim unless that reference enables one of ordinary skill in the art to make and use what is disclosed without undue experimentation. Thus, if the reference does not enable one of ordinary skill to make or use each and every claim limitation, then the claim cannot be "anticipated" by the reference.[1]

28. I understand that a prior art reference can disclose a given claim element actually or inherently.

[1] I understand that the Petition and Dr. Almeroth are not advancing any anticipation-based theories of unpatentability.

29. In the case of actual disclosure, I understand that a person of ordinary skill would need to have understood that the disclosure corresponds to the claim element in question. I also understand that such disclosure may be implicit rather than explicit. For example, prior art need not use the same words as the claimed invention. However, I understand that ambiguous references do not anticipate.

30. In the case of alleged "inherent" anticipation, I understand that the claim element in question must necessarily be present when practicing the described technology even though the prior art reference itself contains no express description of the element in question. In particular, I understand that "possibilities or probabilities" are not sufficient to establish inherency. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. Instead, the essence of inherency is that one of ordinary skill in the art would recognize that a reference unavoidably teaches the property in question.

F. Obviousness

31. I understand that a patent claim may describe an invention that was new (*i.e.*, not anticipated by any prior art reference), but nevertheless be invalid for "obviousness" if the differences between the patented subject matter and the prior

art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention was made.[2]

i. *Analogous Art*

32. I understand that in order to rely on a reference to establish an obviousness theory the reference must be analogous to the claimed invention. I understand that in order to be analogous, the reference may either be part of the same "field of endeavor" or the reference may be "reasonably pertinent" to the problem addressed by the claimed invention.

33. I understand that to determine the field of endeavor of a patent, the focus should be on the subject matter of the application, including function, structure, and the claimed invention. I understand that to determine the field of endeavor of the reference, the primary focus should be on what the reference actually discloses. I understand to determine what is reasonably pertinent to a patent, one should consider the problem faced by the inventor as reflected in the specification, either explicitly or implicitly. A reference is only considered pertinent to that problem if a person of skill in the art would have considered it when faced with the problem the inventor was trying to solve.

[2] I understand that the Petition and Dr. Almeroth are advancing two "obviousness" theories with Grounds 1 and 2.

ii. *Reasonable Expectation of Success*

34. I understand that an invention is not rendered obvious simply on the basis of two or more different disclosures that collectively disclose all of the claimed elements. In other words, an invention is not obvious just because all of the elements that comprise the invention may have been known in the prior art. Instead, a person of ordinary skill in the art must have had a reasonable expectation of success in pursuing the possibility that turns out to succeed and is claimed. In particular, I understand that knowledge of a goal does not itself render achievement of that goal obvious.

35. I also understand that determining whether or not a claimed invention would have been obvious requires assessing facts related to (1) the scope and content of the prior art, (2) the differences between the prior art and the claimed invention, (3) the level of ordinary skill in the art, and (4) any objective evidence ("secondary considerations") of non-obviousness. I understand that this is known as consideration of the "Graham Factors."

iii. *Motivation to Combine*

36. I further understand that an invention is not obvious just by demonstrating that each of its elements were, independently, known in the prior art. To prove that an invention is obvious, I understand that there must be a reason or reasons, such as a teaching, suggestion, or motivation, which would have prompted

a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does. While an express teaching, suggestion, or motivation need not be found in a reference itself, I understand that there still must be an articulated reason why a person of ordinary skill in the art would make the proposed modification or changes. I understand that this is because inventions in most (if not all) instances rely upon building blocks already known, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known; therefore, it can be important to point to such a reason or reasons. I understand that in identifying such a reason, the analysis need not require precise teachings in the prior art references themselves directed to the reason, and that the reason can come from other sources, such as the testimony of an expert.

37. I understand that it will often be necessary for a court to look to interrelated teachings of multiple patents and the background knowledge possessed by a person having ordinary skill in the art in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. I understand that when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. I understand that

the combination of familiar elements according to known methods may be obvious when it does no more than yield predictable results.

38. I also understand that a claim is not invalid as obvious if it is more than the predictable use of prior art elements according to their established functions.

39. Further, I understand that while predictability is a touchstone of obviousness, the concept of a "predictable result" under the law refers not only to the expectation that prior art elements are capable of being combined, but also that the combination would have arrived at the challenged claims.

40. I also understand that if the prior art "teaches away" from combining known elements in the manner claimed by the invention at issue, discovering a successful way to combine them is less likely to be obvious. In particular, I understand that a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant, or would understand based on the reference that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. Likewise, I understand that similar subject matter may not be sufficient motivation for a person of skill in the art to combine references if the references have conflicting elements.

41. Further, I understand that even if a reference does not necessarily "teach away," the reference's statements regarding preferences are relevant to a finding regarding whether a person of ordinary skill would have had reason to combine that reference with another reference.

iv. *Hindsight*

42. I also understand that one must be cautious and resist the temptation to rely on hindsight reasoning when attempting to combine references to suggest that a claim may be obvious. It is important to analyze validity based on the perspective of one of skilled in the art at the time of the invention, which for this case I have been asked to assume is December 29 2017, and which I understand is approximately the date Dr. Almeroth used as the priority date of the '002 Patent. Ex. 1002, ¶34 ("I have been asked to initially consider that the time of the alleged invention of the '346 patent is around December 29, 2017."). I understand that objective indicia (or "secondary considerations") of non-obviousness or obviousness may be particularly probative and helpful in avoiding hindsight.

v. *Secondary Considerations*

43. I understand that as part of the obviousness analysis, one must also consider "objective indicia of non-obviousness" sometimes referred to as "secondary considerations." These include commercial success, industry praise, unexpected results, copying, industry skepticism, licensing, and long-felt but

unsolved need. I further understand that secondary considerations have greater applicability when there is a sufficient "nexus" between the evidence of secondary consideration and the claimed invention. This "nexus" is established when the evidence is tied to a product that embodies the patented features and is coextensive with them. I understand that the obviousness inquiry itself, and the weighing of secondary considerations, is a question of fact left to the fact finder, as a result I am not providing any opinions on the impact of any secondary considerations on the obviousness analysis.

III. LEVEL OF ORDINARY SKILL IN THE ART

44. I understand that Dr. Almeroth opines that a POSITA "in the field of art of the '346 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." Ex. 1002, ¶37. I understand that Dr. Almeroth has further opined that additional experience could substitute for professional experience. Ex. 1002, ¶37.

45. Given the disclosures of the '346 Patent, the claim scope, and what I have been informed is the educational level of the inventors and their work experience, I agree that this is an appropriate level of skill in this art.

46. Accordingly, my analysis and opinions below are given from the perspective of a POSITA in this technological field in the relevant time frame, unless stated otherwise.

47. I satisfied the definition of a POSITA before the filing date of the application leading to the ’346 Patent. I now consider myself an expert in the relevant field of technology for the ’346 Patent.

48. In forming my opinions for this declaration, I have used the perspective of one of ordinary skill in the art as defined above. My opinions, however, would not be affected if a POSITA is defined as someone who has slightly more or slightly less experience than described above.

IV. SUMMARY OF THE ’346 PATENT

A. Technical Overview

49. The ’346 Patent describes a “method and system for making functional devices available to participants of meetings.” Ex. 1001, Title. As set forth by the inventors, mobile devices and laptops often utilize lower quality integrated functional device (e.g., cameras, microphones, speakers) for audio and video communications. Ex. 1001, 1:37-39. By providing access to higher quality audio and video devices, ad hoc groups of people can communicate with each other while still using their mobile devices. Ex. 1001, 1:12-15, 1:39-42. So, the ’346 Patent describes

a system and software where functional devices may be made available to the mobile devices of participants in a meeting to improve communications. Ex. 1001, 1:46-49.

50. An example implementation of the system disclosed in the specification of the ’346 Patent is depicted below in Figure 5. Figure 5 shows four laptops 160-1, 160-2, 160-3, and 160-4, where one of the four laptops 160-4 participates remotely in a meeting over a unified communication while another laptop 160-3 attends the same unified communications call this time in the same location as the remaining two laptops 160-1 and 160-2. Ex 1001, 19:3-16. Processing devices 160-3 and 160-4 may require additional device configuration in order to participate in the unified communications call. Three of the laptops 160-1, 160-2, and 160-3 are connected to peripheral devices 130, which allows them to communicate to the system base unit 100. Ex. 1001, 19:10-13. Multiple functional devices are connected to the base unit 100 (E.g., a camera 95, microphone 96, and speaker 97) which communicate data to the laptop 160-3 via its peripheral device 130. Ex. 1001, 18:34-46, 19:17-24.

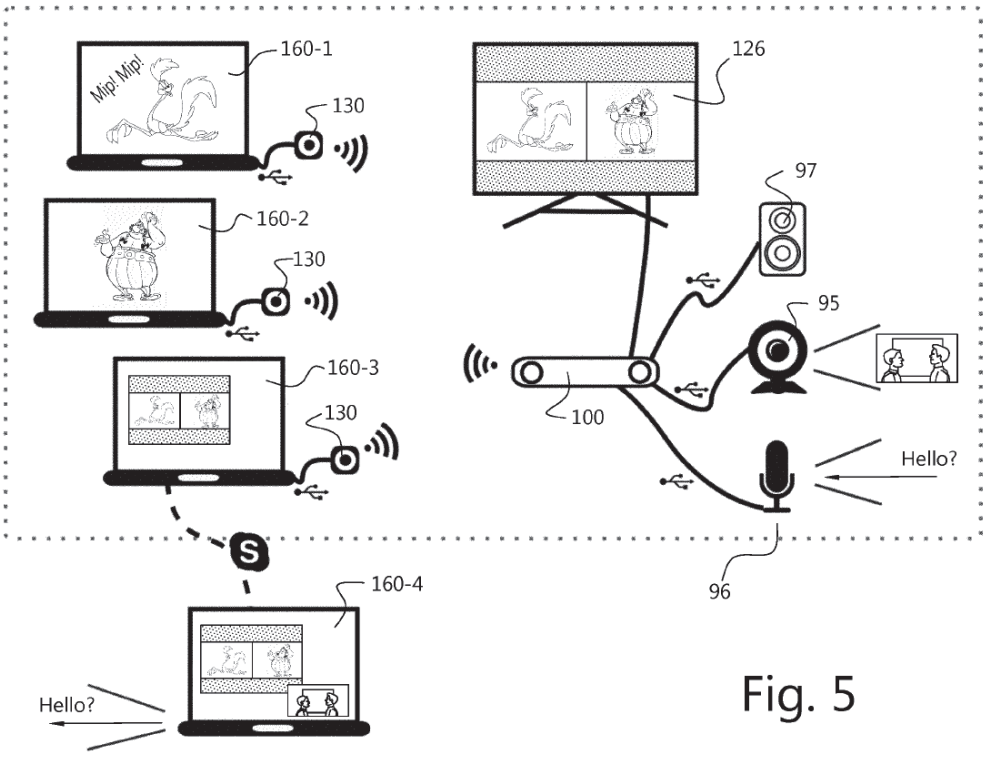


Fig. 5

Ex. 1001, Fig. 5.

51. The data received by the laptop 160-3 can be used by the laptop on a host application or a third-party application, like Skype. Ex. 1001, 18:46-52. Advantageously, the functional devices connected to the base unit 100 are exposed natively through an endpoint on the peripheral device 130. Ex. 1001, 19:54-57.

52. While this system is disclosed in the ’346 Patent, the claims of the ’346 Patent (Claims 1 and 11, for example) are direct to a system which makes functional devices available to processing devices without using a first peripheral device. Ex. 1001, 10:20-23, 10:36-40, 10:54-60, 12:19-23, 16:29-35, 22:1-23:41, 23:45-47. The specification of the ’346 Patent describes a system where “the processing device

160' has no first peripheral device 130, e.g., none is available." Ex. 1001, 22:54-55. In these systems, "client software 70' can be adapted to interact directly with the base unit 100 over a wireless connection 127'[.]" Ex. 1001, 22:55-57.

53. Claims 1 and 11 of the '346 Patent cover this embodiment. Claim 1 recites the limitation of "a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection[.]" Ex. 1001, Cl. 1. Claim 11 recites that "the client software, when executed by a processor on the processing device: interacts directly with the base unit over a wireless connection[.]" Ex. 1001, Cl. 11. In these embodiments, the various functional devices (e.g., a microphone, speaker, webcamera) are simulated as virtual devices to the processing device. Ex. 1001, 22:54-65, 23:17-20, 23:24-38. When the data from the virtual functional devices is received on the processing device, it can be used by software applications, such as one for hosting Unified Communication calls. Ex. 1001, 23:20-22, 23:38-41.

B. Claim Construction

54. I do not provide an opinion on any claim construction issues in this matter. I have applied the plain and ordinary meaning, as understood by a POSITA in view of the specification. I understand that Petitioner has proposed additional claim constructions which I have not identified here. My failure to respond to these

constructions does not mean I agree with these proposed constructions, and I reserve the right to later opine about these proposed constructions.

V. SUMMARY OF THE ART

A. Beel (Exhibit 1005)

55. Beel is U.S. Patent Pub. No. 2015/0169477 is assigned to Patent Owner. Ex. 1005, Title Page. *Beel* is also a continuation of a patent application that issued as U.S. Patent No. 8,756,348. Ex. 1005, Title Page..

56. Beel provides "electronic tools for meetings with audio including methods or devices for providing connection to a communications network." Ex. 1001, Title. Beel's inventors recognized modifications necessary to improve collaborating and presenting in a meeting room context. Ex. 1005, [0015]-[0038], [0113]-[0116].

57. Most computers include standard built-in support for a USB device, and thus standard generic audio drivers are also available for use. Ex. 1005, [0312]. Accordingly, the standard computer interfaces, including the pre-installed generic drivers, can be leveraged to provide wireless presentation functionality without requiring additional PC configuration or special driver installation. Ex. 1005, [0312].

58. In one example implementation, Figure 1a "shows a meeting room that can be used with embodiments of the present invention." Ex. 1005, [0096]. As shown below, multiple participants 37 are in meeting room 30. Ex. 1005, [0117].

Each participant 37 has a processing device 31, which is a host device with a first connection unit 47 (or peripheral devices) coupled to network 50. Ex. 1005, [0117]. Connection unit 47 is also coupled to input device 48. Ex. 1005, [0117]. Network 50 further includes base node 36 connected to display 44. Ex. 1005, [0118]. Thus, the base node, user processing devices, and connection units form a communication network that links with central display device 44. Ex. 1005, [0119], [0122].

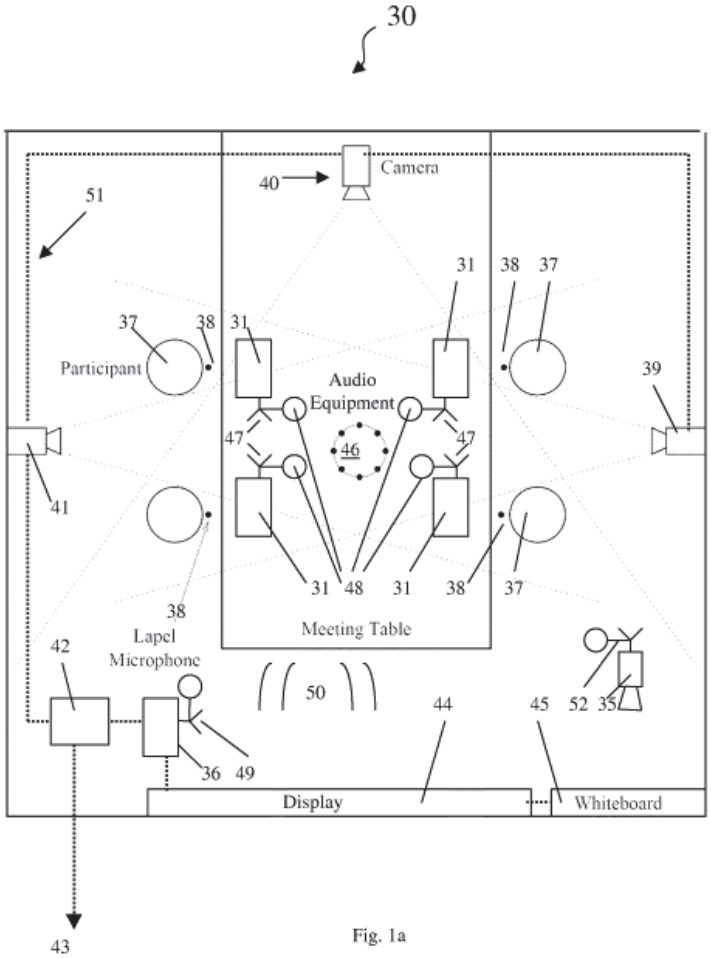


Fig. 1a

Ex. 1001, Figure 1a.

59. By connecting the peripheral device to the processing device, the user can also share audio data to the peripheral device's audio device, which can be streamed to the base node. Ex. 1005, [0316]. This sharing process is done using only standard drivers and does not require special software installation in or on the processing device. Ex. 1005, [0317]. Audio data is then transmitted over the communication network to the base node. Ex. 1005, [0317]. The audio data may then be shared from the base node. Ex. 1005, [0319].

60. Other optional components include cameras 39, 40, 41 and microphones 38. Ex. 1005, [0120]. These elements can be used to record meetings or lectures to provide an accurate sequence of events and to be reviewed at a later time. Ex. 1005, [0121]. The cameras 39, 40, 41 may be linked to the network via a router 42 or the base node 36 whereas the microphones 38 may be connected to the processing device 31 to transfer audio. Ex. 1005, [0120]. Alternatively, the microphones 38 may be connected to loud speakers attached to the base node 36 or part of the display 44. Ex. 1005, [0120].

61. The peripheral device can also share display data. Namely, the peripheral device stores a software application, which is then loaded on the processing device. Ex. 1005, [0320]. The software, then running on the processing device, captures the video data that is available on the processing device. Ex. 1005, [0320]. Because the software application is stored on the peripheral device and

loaded onto the processing device when coupled, the software is implemented as a portable application thereby leaving a zero-footprint on the processing device once disconnected. Ex. 1005, [0159], [0320]. The video encoder than encodes the video signal for a packetizer to packet and share to the peripheral device using another pre-installed generic driver. Ex. 1005, [0320]. In an example, the pre-installed generic driver is a human interface device driver. Ex. 1005, [0320]. Once received at the plug and play port, the HID header on the video data is removed and the data is transmitted over the communications network with the audio data. Ex. 1005, [0321]. The base node receives the audio and video data, which is unpacked and decoded, before synchronizing and sharing the data over the display and other output devices. Ex. 1005, [0323].

B. Dinka (Exhibit 1006)

62. Dinka is a patent which is assigned to Skype. It describes a television set with integrated functionality to host bidirectional communication sessions between remote users over the network. Ex. 1006, Title, Abstract. The inventors of Dinka appreciated that packet-based communications are most often completed between users on personal computers, and taught that it would be more desirable to utilized the packet-based communications on a television set or set box plugged into a television instead. Ex. 1006, 2:1-4, 2:19-24.

63. So, Dinka proposed a television designed with secondary embedded functionality of VoIP communications. Ex. 1006, 7:20-21. Said televisions include components in addition to a screen, speaker, and audio-video input, such as a processing apparatus, RAM, non-volatile storage, flash memory, magnetic storage medium, one-time writable ROM, a video frame buffer, user interface frame buffer, video hardware, a receiver, a webcam input, a network interface, a first remote interface, and a Bluetooth transceiver. Ex. 1006, 7:22-27, 7:44-56.

C. Van de Laar (Exhibit 1007)

64. Van de Laar is a patent application publication signed to Koninklijke Phillips. Ex. 1007, Title Page. Van de Laar describes a system where multiple mobile devices (e.g., laptops, phones tablets, portal media players, cameras, and electronic watches), or "dockees" are wirelessly docked to the same host device which enables shared usage of A/V peripherals. Ex. 1007, [0006], [0009], [0072].

65. The wireless docking station has a host device coupled to a number of peripherals which render audio or video data, and the host device provides wireless communication to the dockee devices. Ex. 1007 [0074]. The peripherals may be of various types, for example, a display, a graphical input/output devices (e.g., smartboards, touch screens), audio output devices (e.g., loudspeakers, headphones) or control devices (mouse, room control units) and data processing devices (e.g., storage units, printers). Ex. 1007, [0074].

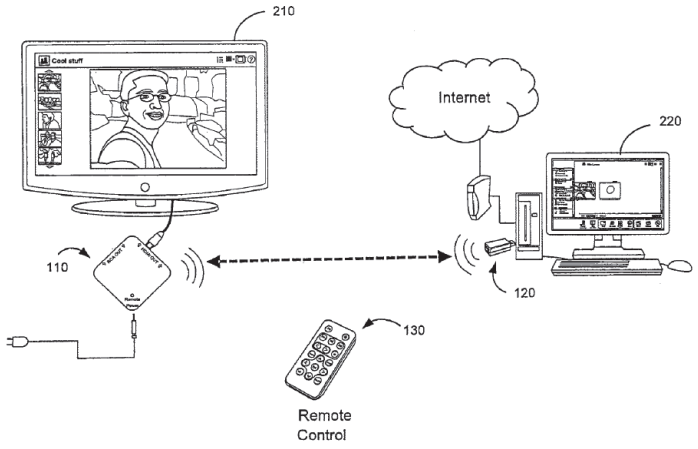
66. The docking process is arranged for docking a primary dockee device and a secondary dockee device. Ex. 1007, [0078]. The primary dockee and secondary dockee are given different access levels. A primary dockee is granted control to at least one peripheral, while the secondary dockee is not granted control but merely receives the AV data rendered on the peripherals. Ex. 1007, [0078], [0082].

D. Kaplan (Exhibit 1008)

67. Kaplan provides a "method of transmitting video content between a computing device and display device" using a data connection between a transmitter and receiver. Ex. 1008, Abstract. In an illustrative example, Figure 1 provides a communication system having transmitter 120 and receiver 110. Ex. 1008, Figure 1, [0016]. The transmitter is a dongle with USB connector 122; the USB connector can be inserted into a USB port of a computer. Ex. 1008, [0017]. The receiver connects to a display device and as shown below, includes one or more video outputs and one or more audio outputs. Ex. 1008, [0017], Figure 1.

68. The communication system also includes remote control 130, which is used to communicate with the receiver and control the playback of video on the display. Ex. 1008, [0019]. Collectively, the components of Figure 1 provide a system that can take footage stored on a computer and display the video footage on a display device. Ex. 1008, [0019]. Figure 2 provides an illustration example of this

relationship; the receiver 110 is connected to display device and transmitter 120 is connected to computer 220. Ex. 1008, Figure 2 (reproduced below).



Ex. 1008, Figure 2.

69. To access video footage stored on a computer and thereby display such footage on a display device, the transmitter includes software. Ex. 1008, [0022]. Kaplan explains that, when the transmitter is plugged into the computer for the first time, the software is uploaded and installed onto the computer. Ex. 1008, [0022]. Then, using this installed software, a user can access the video footage stored on the computer and view the footage on the display device. Ex. 1008, [0022]. In this example, the software is automatically installed onto the computer. Ex. 1008, [0022].

70. Another aspect of Kaplan which the inventors identified as advantageous is Kaplan's "walled-garden" approach. In Kaplan, the transmitter and receiver are paired to each other prior to shipment and initial use by the customer. Ex. 1008, ¶21. This is beneficial because it ensures that when a user receives the

device, they do not need to pair the different components of the system. Ex. 1008, ¶21. Additionally, there is a decreased risk that the system components will communicate or interfere with non-system components. Ex. 1008, ¶21.

E. Christison (Exhibit 1011)

71. Christison is a patent assigned to Qualcomm. Ex. 1011, Title Page. Christison describes a wireless USB hub which improves throughput for USB systems which contain both wired and wireless components. Ex. 1011, Title, 2:18-20. As shown in Figure 2, the system includes a host 200 and external USB device 210 with built-in wireless adapters 201, 211 which communicate a signal provided by antennae 220, 221 wirelessly rather than through a wired cable. Ex. 1011, 3:34-41.

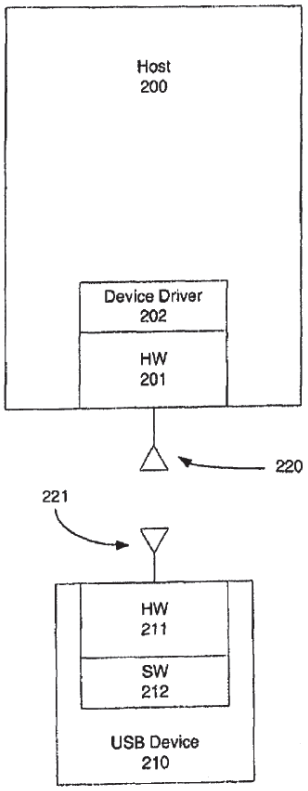


Fig. 2

Ex. 1011, Fig. 2. The wired USB devices may also be plugged in to a device wire adapter DWA to connect with the USB host. Ex. 1011, 3:48-53.

VI. OPINIONS

A. Ground 1: Dr. Almeroth Fails to Establish that the Combination of Beel, Dinka, and Christison Renders Obvious Any of the Challenged Claims

72. Dr. Almeroth opines that Claims 1 to 22 of the '346 Patent are obvious over the combination of Beel, Dinka, and Christison. Ex. 1002, Section IX.A. I disagree with Dr. Almeroth for seven main reasons.

73. First, it is my opinion that Dr. Almeroth relies on a reference, Dinka, that teaches away from the claimed subject matter of the '346 Patent.

74. Second, it is my opinion that a POSITA would not be motivated to combine Beel, Dinka, Christison.

75. Third, it is my opinion that the combination of Beel, Dinka, and Christison do not teach the limitation that "the processing device having… a third party software for a Unified Communication call, a driver, a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection," as required by claims 1, or the similar limitation of "the client software, when executed by a processor on the processing device: interacts directly with the base unit over a wireless connection…" as required by Claims 1 and 11.

76. Fourth, it is my opinion that the combination of Beel, Dinka, and Christison do not teach the limitation that "wherein the base unit, via the transmitter, is configured to transmit data over the wireless connection to the processing device" as required by Claim 1, or the similar limitation of "wherein the base unit transmits data over the wireless connection to the processing device" as required by Claim 11.

77. Fifth, it is my opinion that the combination of Beel, Dinka, and Christison do not teach the limitation "and wherein the client software and the driver, when executed on the processing device, are configured to present the at least one

functional device to the operating system of the processing device as a virtual functional device," as required by Claim 1, or the similar limitation of "the client software and a driver, when executed on the processing device, present the functional device to the operating system of the processing device as a virtual functional device," as required by Claim 11.

78. Sixth, it is my opinion that the combination of Beel, Dinka, and Christison do not teach the limitation "wherein the client software is further configured to provide data transformations based on a type of functional data from the at least one functional device to the processing device" as required by Claim 1 and Claim 11.

79. Seventh, it is my opinion that the combination of Beel, Dinka, and Christison is also insufficient regarding multiple dependent claims, including claims 2, 3, 5, 6, 10, 12, 13, and 20.

i. Dinka teaches away from the claimed subject matter of the '346 Patent.

80. It is my opinion that Dinka teaches away from the subject matter claimed by the '346 Patent. Rather than lead a POSITA to construct a system which provides functional devices of a base unit to a processing device directly over a wireless connection with a base unit, Dinka instead teaches to avoid using a processing device to host a unified communications call and instead, provides for a

television or television set box with embedded systems that provide for unified communications over VoIP services without the need for a user processing device.

81. The inventors of the ’346 Patent identified that laptops or other mobile devices often utilize low quality microphones, speakers, video cameras, and other functional devices during virtual meetings. Ex. 1001, 1:12-14, 1:31-34, 1:37-42. To overcome this issue, the ’346 Patent identifies a system which provides higher quality functional devices to laptops by allowing communication from these laptops to a base unit with higher quality functional devices. Ex. 1001, 1:46-49, 9:10-22.

82. Rather than improve the functional devices available to a laptop (like the ’346 Patent) Dinka discourages use of laptops to host the virtual meeting and instead advocates for participating in packet-based communication from a television or set-top box with these embedded functions. Ex. 1006, 2:4-30.

83. The ’346 Patent claims are directed to “[a] system for connecting a processing device to a functional device connected to or in a base unit of a connection[.]” Ex. 1001, Cl. 1. *see also,* Cl. 11. As disclosed in the ’346 Patent, a processing device is a laptop, computer, PDA, smartphone or other similar devices. Ex. 1001, 8:42-47.

84. The ’346 Patent claims cover systems where a processing device communicates directly with a base unit, and functional devices connected to the base unit are made available to the processing devices. Ex. 1001, Cls. 1, 11. This system

is available without using a peripheral device which is used in other systems described in the '346 Patent. Ex. 1001, 10:20-23, 10:36-40, 10:54-60, 12:19-23, 16:29-35, 22:1-23:41, 23:45-47. This is accomplished by a client software executed on the processing device that simulates the functional devices (e.g., Webcams, speakerphones, microphones, and speakers) as virtual functional devices that are presented to the processing device. Ex. 1001, 22:54-65, 23:17-20, 23:24-30, 23:33-38.

85. In contrast, Dinka discredits this approach, and provides a competing solution. Dinka teaches that accessing packet-based communications on a laptop is disadvantageous because the user must be sufficiently technically competent to download, install, and operate the call on their personal computer. Ex. 1006, 2:4-12. Additionally, laptops and other mobile devices do not have the processing resources and displays to provide a full range of features of these communications. Ex. 1006, 2:15-18, 11:35-50.

86. Rather than seeking to provide improved resources to a mobile device, Dinka addresses this problem by embedding voice or video call functionality into a television or set-box. Ex. 1006, 2:19-25, 2:34-38. In this system, the television still has the primary purpose of displaying televised content, but it may also be used for VoIP calling, which obviates the need for a user to rely on their own laptop. Ex. 1006, 7:17-21.

87. So, unlike the ’346 Patent which provides better resources and displays to the user devices, Dinka discourages such systems and instead advocates for using embedded functions of a special purpose television. So, a POSITA would not arrive at the invention claimed by the ’346 Patent based on the teachings of Dinka.

ii. A POSITA would not be motivated to combine Beel, Dinka, and Christison

88. It is my opinion that a POSITA of the ’346 Patent would not be motivated to combine the teachings of Beel, Dinka, and Christison to arrive at the claimed invention. First, Beel and Dinka provide competing solutions which cannot be predictably combined with a reasonable expectation of success. Further, it is my opinion that the supposed “motivations to combine” provided by Dr. Almeroth are unpersuasive.

89. As I noted above in paragraphs 80-87, Dinka teaches away from systems that provide improved functional devices to a laptop, instead embedding communication functionality into a television set itself. However, Beel is focused on providing greater features to a mobile device. Ex. 1005, [0040].

90. In other words, Beel and Dinka provide competing options to address the limited functionality of laptop computers. A POSITA would not consider combining the teachings of these diametrically opposed solutions, nor would such combination be predictably achieved with a reasonable expectation of success.

91. It is also my opinion that the supposed motivations provided by Dr. Almeroth are also unpersuasive, and would not actually motivate a POSITA to combine the teachings of the cited references.

92. For example, Dr. Almeroth opines that because Dinka is assigned to Skype, and that the use of Skype was well known at the time, that a POSITA would combine the teachings of Beel and Dinka. Ex. 1002, ¶117. However, Dr. Almeroth does not articulate how Skype improves, Beel, a system which allegedly already acknowledges the existence of web conferencing systems as noted by Dr. Almeroth himself. Ex. 1002, ¶116 (citing Ex. 1005, [0085]-[0089]). Further, Dr. Almeroth does not say what is actually improved in Beel.

93. It is also my opinion that disclosure of Skype in the '346 Patent as a unified communications system or tool does not suggest such a combination. The mere existence of Skype does not motivate a POSITA to combine two very different systems. *Compare* Ex. 1005, [0039] ("electronic tools with audio for meeting as well as providing connections to a communications network"); Ex. 1006, 1:13-15 ("a television apparatus having an embedded processing apparatus for conducting voice or video calls via a packet-based network"). While Beel makes use of a peripheral device to communicate content, Dinka's television participates in VoIP communicates without even relying on a processing device that the peripheral device connects to. Ex. 1005, [0041]; Ex. 1006, 7:17-21.

94. It is also my opinion that Dr. Almeroth's motivation to combine Christison with Beel and Dinka is also insufficient. For example, Dr. Almeroth concludes that "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." Ex. 1002, ¶118. Dr. Almeroth provides no explanation of why a POSITA would be motivated to modify Beel to use this method over any teachings already disclosed in Beel.

95. Lastly, it is my opinion that Dr. Almeroth fails to provide a coherent combination, but instead simply relies on separate elements from different cited references. For example, Dr. Almeroth relies "optionally" on the teachings of Christison. Ex. 1002, ¶120. Further, Dr. Almeroth's identification of aspects of the references as allegedly "well-known" does not indicate why a POSITA would combine the cited references. E.g., Ex. 1002, ¶¶132, 145.

96. I also note that Dr. Almeroth's motivation to combine in this proceeding is very similar to the motivation to combine in proceedings for other patents in the '346 Patent's family, which use a peripheral device for communication rather than direct communication between a processing device and base unit. Ex. 2020, ¶¶107-111 (Dr. Almeroth's declaration in IPR2025-00491). In my opinion, a POSITA would not arrive at two competing systems based on the same combination of references and motivations to combine.

i. "the processing device having… a third party software for a Unified Communication call, a driver, a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection,"

97. It is my opinion that the combination of Beel, Dinka, and Christison does not teach this limitation. Rather than relying on a system where the processing device interacts directly with the base unit over a wireless connection, Dr. Almeroth relies on features of a peripheral device throughout his opinion. Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶163-171.

98. It is my opinion that Beel is directed to, primarily, a system where a peripheral device that connects to a processing device is used to share or communicate user selected content from a processing device to a base unit. Ex. 1005; *see* Section V.A. I understand Dr. Almeroth and I largely agree regarding our interpretations of Beel. Ex. 1002, ¶101 ("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").

99. It is my opinion a system which relies on a peripheral device to communication between a processing device and a base node do not render this claim

limitation obvious as the processing device and base unit are not interacting directly as claimed. *See* Ex. 1001, Cls. 1, 11. This is also consistent with disclosure of the '346 Patent, which explains that when the processing device does not have a peripheral device, the client software can be adapted to interact directly with the base unit over a wireless connection. Ex. 1001, 22:54-60.

100. I understand Beel discloses a Third Embodiment and Fourth Embodiment do not include a peripheral device to communicate between the processing device and the base node. Ex. 1005 [0215]-[0250]. The Third Embodiment explains that, rather than using a peripheral device with a transmitter, a USB memory stick that stores a portable application is used. Ex. 1005 [0215]. In The Third Embodiment, a transmitter on the client processing device is used. Ex. 1005 [0217]. In the Fourth Embodiment, rather than using a peripheral device or USB memory stick, the software is installed directly on the client processing device. Ex. 1005 [0247].

101. It is my opinion that the teachings of Beel's other embodiments, and more specifically the functions and features of the peripheral device, cannot be attributed to Beel's Third Embodiment and Fourth Embodiment. The Third Embodiment and Fourth Embodiment specifically exclude using a peripheral device. Ex. 1005 [0215]-[0250]. It is also my opinion that Dr. Almeroth does not articulate any reason why such teachings which expressly reference using a peripheral device

should be attributed to embodiments which exclude using a peripheral device. Likewise, it is my opinion that Dr. Almeroth has not opined that a POSITA would be motivated to combine the separate embodiments of *Beel*.

102. Dr. Almeroth relies on features of the peripheral device for multiple claim elements. For example, Dr. Almeroth actually references the peripheral device in his argument for limitation 1f, 1g, 1i, 1k, Claims, 5, 10, 20, 21 and 22. Ex. 1002, ¶¶133, 136-137, 140, 143-145, 151, 158, 162, 180-181. Dr. Almeroth also references multiple paragraphs that describe features of the peripheral device when opining that Beel discloses the "interact directly" limitation of the '346 Patent. Ex. 1002, ¶127 (citing Ex. 1005, ¶¶205, 208, 213-214).

103. In Claims 1 and 11, the processing device and base unit interact directly over a wireless connection. Accordingly, a system which communicates via a peripheral device cannot render this limitation obvious. Ex. 1001, 22:54-60, 23:1-8, 23:23-30, Fig. 12 (User 2 Laptop), Fig. 13 (User 2 Laptop), Fig. 14 (User 2 Laptop). Therefore, it is my opinion that the Beel-Dinka-Christison combination fails to render Claims 1 and 11 obvious for at least this reason alone.

ii. <u>"wherein the base unit, via the transmitter, is configured to transmit data over the wireless connection to the processing device"</u>

104. It is my opinion that the combination of Beel, Dinka, and Christison does not teach this limitation. Also, as Dr. Almeroth incorporates his opinions for

Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶163-171.

105. Dr. Almeroth identifies multiple passages without providing any kind of explanation for how these passages teach the claim limitation. Ex. 1002, ¶133 (citing Ex. 1005 [0071], [0129], [0221]-[0248], [0288]). First, many of these passages do not relate to the Third Embodiment or Fourth Embodiment of Beel. Ex. 1002, ¶133 (citing Ex. 1005 [0071], [0129], [0288]). Moreover, these passages make explicit reference to a peripheral device (or a connection unit) so they do not describe communication from the base unit to the processing device. Ex. 1005 [0071], [0129], [0288]. These passages also make no reference to data being transmitted from the base unit to the processing device. Ex. 1005, [0129], [0288].

106. Dr. Almeroth also identifies a 27-paragraph section ([0221] to [0248]) that allegedly supports a display of the processing device receiving media content from the network. Ex. 1002, ¶133. However, the discussions of the processing device display in these passages describe providing "visual feedback" on a GUI of the display, but do not describe the display of the processing device receiving data from the base unit. Ex. 1005, [0227]. Other passages describe client software being run on the processing device to route screen scraped data from the processing device. Ex. 1005 [0221], [0225]-[0226]. It is my opinion that none of these portions describe

the cited limitation. Therefore, it is my opinion that the Beel-Dinka-Christison combination fails to render Claims 1 and 11 obvious for at least this reason alone.

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

107. It is my opinion that the combination of Beel, Dinka, and Christison does not teach this limitation. Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶163-171.

108. Beel does not provide an embodiment that does not rely on the functionality of a peripheral device, which also is configured to present a functional device as a virtual functional device. For example, each of the cited portions of Beel identified by Dr. Almeroth for this limitation relating to a virtual device is describing the function of the peripheral device in embodiments that utilize a peripheral device. *See* Ex. 1005, [0071]-[0072], [0313]-[0317]. While Beel includes embodiments which do not rely on a peripheral device (Ex. 1005, [0247]-[0250]) as I explained at Paragraph 101, it is my opinion that features of the other embodiments, and particularly the features of the peripheral device, cannot be attributed to embodiments without the peripheral device transmitter.

109. Likewise, it is my opinion that Christison is insufficient to disclose this limitation. In Christison, "[t]he Proxy USB HUB 1000… present[s] wired USB devices 1010, 1020 as if they are 'native' WUSB devices." Ex. 1011, 6:17-19. Christison explains that this WUSB Hub feature eliminates control packet overhead used by the standard Wire Adapter Protocol. Ex. 1011, 6:28-31. Dr. Almeroth provides no opinions in his declaration the virtual device in Christison is presented as a result of the client application or driver executed on a processing device.

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

110. It is my opinion that the combination of Beel, Dinka, and Christison does not teach this limitation. Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶163-171.

111. Beel discloses encoding audio data into Orgg/Vorbis. Ex. 1005, [0314]-[0315]. Beel also discloses a video encoder. Ex. 1005, [0320]. This disclosure does not teach performing data transformations based on a type of functional data. While different types of data *can* be encoded differently, they can also be encoded the same way. These disclosures in Beel do not teach that it would be obvious to provide data transformations based on a type of functional data.

112. Likewise, Dinka discloses of a voice engine and a video engine. Ex. 1006, 9:32-50. However, this still does not teach that it would be obvious to provide data transformations based on a type of functional data. There is nothing in this passage which explains that different functional data must, inherently, undergo different transformations.

v. Dependent Claims

113. It is my opinion that the combination of Beel, Dinka, and Christison does not teach "wherein the client software and the driver are configured to present a simulated speakerphone to the operating system to create a virtual microphone and a virtual speakerphone" as required by Claim 2 and Claim 12. Dr. Almeroth provides no citation of a microphone being presented as a virtual microphone in *Beel*. *See* Ex. 1002, ¶147.

114. It is my opinion that the combination of Beel, Dinka, and Christison does not teach "wherein the client software and driver are configured to present a simulated videocam to the operating system to create a virtual videocam device" as required by Claim 3 and Claim 13. Dr. Almeroth provides no citation of a camera being presented as a virtual videocamera in Beel. *See* Ex. 1002, ¶148.

115. It is my opinion that the combination of Beel, Dinka, and Christison does not teach "wherein the functional data includes video data received from the base unit via the transmitter over the wireless connection" as required by Claim 5.

Dr. Almeroth specifically relies on communications of a peripheral device, which is improper based on Claim 5's dependency on Claim 1. *See* Ex. 1002, ¶151.

116. It is my opinion that the combination of Beel, Dinka, and Christison does not teach disclose "wherein the data transformations of the video data comprises decoding and compositing or decrypting the video data." as required by Claim 6. Dr. Almeroth specifically relies on communications of a peripheral device, which is improper based on Claim 6's dependency on Claim 1. *See* Ex. 1002, ¶151.

117. It is my opinion that the combination of Beel, Dinka, and Christison does not teach disclose "at least one fixed or a configurable endpoint of the virtual functional device, wherein the at least one fixed or a configurable endpoint is a data source or a data sink which is configured to store or emit data of the virtual functional device" as required by Claim 10 and Claim 20. Dr. Almeroth specifically relies on communications of a peripheral device, which is improper based on Claim 6's dependency on Claim 1. *See* Ex. 1002, ¶151.

B. Ground 2: Dr. Almeroth Fails to Establish that the Combination of Kaplan, Van de Laar, and Christison Renders Obvious Any of the Challenged Claims

118. Dr. Almeroth opines that Claims 1 to 22 of the '346 Patent are obvious over the combination of Kaplan, Van de Laar, and Christison. Ex. 1002, Section IX.B. I disagree with Dr. Almeroth for four main reasons.

119. First, it is my opinion that a POSITA would not be motivated to combine Kaplan, Van de Laar, and Christison.

120. Second, it is my opinion that the combination of Kaplan, Van de Laar, and Christison do not teach the limitation that "the processing device having… a third party software for a Unified Communication call, a driver, a client software, when executed on the processing device, is configured to have the processing device interact directly with the base unit over a wireless connection," as required by Claim 1, or the similar limitation of "the client software, when executed by a processor on the processing device: interacts directly with the base unit over a wireless connection…" as required by Claim 11.

121. Third, it is my opinion that the combination of Kaplan, Van de Laar, and Christison do not teach the limitation that "the processing device being configured to host the Unified Communication between two or more other processing devices," as required by Claim 1 or the similar limitation of "wherein the processing device hosts the Unified Communication call between two or more processing devices" of Claim 11.

122. Fourth, it is my opinion that the combination of Kaplan, Van de Laar, and Christison do not teach the limitation "wherein the client software is further configured to provide data transformations based on a type of functional data from

the at least one functional device to the processing device" as required by Claim 1 and Claim 11.

123. Fifth, it is my opinion that the combination of Kaplan, Van de Laar, and Christison is also insufficient regarding multiple dependent claims, including claims 2, 3, 5, 7, 12, 13, 16, and 18.

i. A POSITA would not be motivated to combine Kaplan, Van de Laar, and Christison

124. It is my opinion that a POSITA would not be motivated to combine Kaplan, Van de Laar, and Christison.

125. First, it is my opinion that Dr. Almeroth does not clearly articulate what, if any, modification is made to Kaplan in light of Van de Laar's teachings.

126. Kaplan provides a system where video content is transmitted between a computer and display device using a transmitter and a receiver. Ex. 1008, Abstract. Kaplan discloses the transmitter as using a USB connector to connect to a port of a processing device. Ex. 1008, [0017]. The receiver connects to a display with one or more video and audio outputs, like HDMI for example. Ex. 1008, [0016]. Further, a remote controller controls the playback of video footage on the display device. Ex. 1008, [0019]. With the transmitter, receiver, and remote, a user can provide video footage from a computer to a display device. Ex. 1008, [0019].

127. Figure 2 of Kaplan (reproduced below) shows a transmitter 110 connected to a computer 220, the remote control 130, and receiver 110 connected to a display device 210. Ex. 1008, [0021].

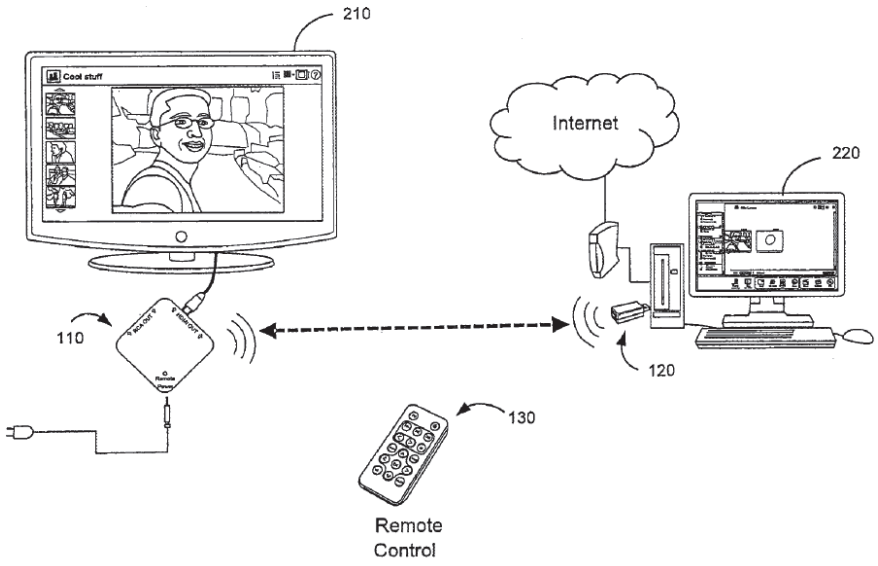


FIG. 2

Ex. 1008, Fig. 2.

128. In Van de Laar, wireless docking is enabled by utilizing multiple "dockees" which wireless dock to a host device to enable shared usage of peripherals. Ex. 1007, [0009]. The dockee may be a laptop, phone, tablet, portal media player, camera, electronic watch, or other mobile device. Ex. 1007, [0006], [0072]. The wireless docking station includes a wireless docking host (WDH), a number of peripherals which render audio and video data, and a host device that communicates to the dockee devices. Ex. 1007, [0072], [0074].

129. The docking station can connect to a primary dockee and a secondary dockee. Ex. 1007, [0078]. Primary dockees are able to control at least one peripheral device that renders AV data, whereas the secondary dockees do not gain control but instead just receive the rendered AV data. Ex. 1007, [0078], [0082].

130. Additionally, in *Van de Laar*, a peripheral device is not used to communicate to between a laptop to the wireless docking host. Instead a computer's integrated transmitter is used. Ex. 1007 [0076], Fig. 1.

131. Based on Dr. Almeroth's declaration it is unclear to me whether it is Dr. Almeroth's opinion that the Ground 2 combination would use the USB peripheral transmitter of Kaplan with the receiver of the base node, or the wireless communication technique described in Van de Laar. For example, Dr. Almeroth states:

> A POSA would have been motivated to modify Kaplan's receiver 110 to incorporate features of Van de Laar's WDH to enhance usability and to use the functionality of the receiver's connected peripheral devices. This modification would enable the use of multiple functional devices, beyond the display in Kaplan, to access functional devices in a unified communications call.

Ex. 1002, ¶182.

132. On the one hand, Dr. Almeroth seemingly relies on the USB transmitter of Kaplan. For example, Dr. Almeroth emphasizes the use of a USB protocol in

Christison, which would indicate a USB peripheral transmitter is used. Ex. 1002, ¶¶185-186. Similarly, Dr. Almeroth references Kaplan's receiver is capable of communicating with its matched transceiver, which I understand to be the USB transmitter device. Ex. 1002, ¶193. Also, while Dr. Almeroth indicates that a POSITA would modify Kaplan's receiver, Dr. Almeroth does not make any reference to Kaplan's USB transmitter. Ex. 1002, ¶182. This all suggests that *Kaplan's* USB transmitter is used.

133. On the other hand, Dr. Almeroth relies on transmissions techniques described in Van de Laar. Ex. 1002, ¶197. More specifically, Dr. Almeroth states that "the dockee and base unit '*interact directly'* as there is no peripheral device between them." Ex. 1002, ¶197. This would suggest that Van de Laar's communication technique is used in the combination.

134. Irrespective of which communication technique Dr. Almeroth meant to elect, Dr. Almeroth has not provided any testimony why a POSITA would be motivated to modify Kaplan to use Van de Laar's transmission technique, or vise-versa.

135. The claims of the '346 Patent specifically require direct communication between the processing device and base unit. Ex. 1001, Cls. 1, 11. This would mean that communications using the USB transmitter of Kaplan would not render obvious any claim of the '346 Patent. However, I also understand that Dr. Almeroth relies on

the same references with similar motivations to combine to challenge the validity of another patent related to the '346 Patent, and that this other patent requires use of a peripheral device. Ex. 2020, ¶¶182-186. Accordingly, it is unclear to me what combination Dr. Almeroth is opining on.

136. Second, it is my opinion that Kaplan and Van de Laar rely on very different protocols for wireless connectivity, so a POSITA would not consider the combination. For example, the combination does not address the difference in wireless communication between Kaplan and Van de Laar.

137. Kaplan's system utilizes a "walled garden approach" where one receiver is matched to one transmitter. Ex. 1008, [0053]. This system is beneficial for a number of reasons. Ex. 1008, [0053]. First, these devices are pre-paired before shipment, so a user is not require to configure the devices themselves providing a streamlined approach. Ex. 1008, [0021]. For example, the user simply plugs in the devices to operate them. Ex. 1008, [0021]. In fact, this solution is more much user friendly, and "contrasts sharply" than the primary and secondary dockee systems described in Van de Laar. *See* Ex. 1007, [0078], [0082]; Ex. 1008, [0021].

138. The WDH communicates with the dockees through Wi-Fi direct, where the WDH is the Wi-Fi Direct Group Owner (GO). Ex. 1007, [0111]. Wi-Fi direct is a conventional wireless networking system that "contrasts sharply" with the system described in Kaplan. Ex. 1008, [0021]. For example, this system requires a user

pairing process for new Wi-Fi Direction connections, like when a new dockee is being used. Ex. 1007, [0116]. This is very different from the pre-paired transmitter peripheral Kaplan uses. Ex. 1008, [0053].

139. It is my opinion that a POSITA would not be motivated to combine Kaplan's receiver with Van de Laar's WDH because of these differences. A POSITA would not combine Kaplan's system with Van de Laar's system, which does not include a peripheral device, but instead uses a dockee device with integrated Wi-Fi or Bluetooth capabilities. Ex. 1007, [0076], [0111], Fig. 1. To the extent that Dr. Almeroth alleges Kaplan is improved by Van de Laar, the very "improvements" are results of the tradeoffs between the two competing approaches of Van de Laar and Kaplan which Dr. Almeroth did not analyze. Van de Laar's WDH renders the dongle superfluous in favor of allowing multiple flexible connections, where Kaplan's paired transmitted seeks to maximize simplicity A POSITA would not combine these teachings absent the hindsight attempt to reconstruct the claims.

140. Further, Kaplan's transmitter and receiver have a 1-to-1 pairing, walled garden, approach. Ex. 1008 [0018], [0021]. Kaplan does not discuss using more than one transmitter. Ex. 1008. There is no evidence that Kaplan could manage multiple transmitters given its pre-paired requirements. Further, there is no basis to conclude that Kaplan could facilitate the primary and secondary dockee classes while still using the transmitter dongle. Based on this teaching, to utilize more than one

transmitter, more than one receiver would be required which would ***significantly impair*** usability. This is not compatible with Van de Laar's system that uses Wi-Fi direct to flexibly pair new dockees to the WDH. Ex. 1007, [0116]. These differences are irreconcilable.

141. Additionally, Van de Laar is designed to operate in a lecture or classroom environment where many different dockees may connect to the WDH at any time. Ex. 1007, [0053]. Use of multiple transmitter dongles in this context would be impractical because one dongle would be needed for each dockee used at any given time, irrespective of whether it was a primary or secondary dockee.

142. In summary, any combination between Kaplan and Van de Laar would require abandoning the "walled-garden" approach, an approach that is specifically designed to streamline user experience. Ex. 1008, [0021]. Likewise, the proposed combination would also require using a peripheral transmitter, which is unnecessary since Van de Laar performs such functions through direct connection between the dockee and WDH. Rather than improve useability, the proposed modification of Kaplan based on Van de Laar hampers usability and is only arrived at based on hindsight.

143. It is also my opinion that the supposed motivations provided by Dr. Almeroth are also unpersuasive, and would not actually motivate a POSITA to combine the teachings of the cited references.

144. For example, Dr. Almeroth opines that the combination of Van de Laar and Kaplan would "predictably result in a system of two or more client processing devices and functional devices used in a Skype unified conferencing call." Ex. 1002, ¶183. It is also my opinion that disclosure of Skype in the '346 Patent as a unified communications system or tool does not suggest such combination. The existence of Skype does not motivate a POSITA to combine two very different systems. Instead, this is merely a conclusion based on a hindsight driven analysis to construct a system which performs a certain function. A POSITA would not be motivated to construct the system absent such hindsight, namely, hosting a unified communications call. Skype's alleged status of "well known" does not show that a POSITA would combine the references.

145. Further, because of the difference in communication protocol, these systems could not be predictably combined. Also, as I articulated above, it is my opinion that a modification of Kaplan by Van de Laar does not improve usability as Dr. Almeroth opines. Ex. 1002, ¶186; *see supra* Paragraph 140-142.

146. It is also my opinion that Dr. Almeroth's motivation to combine Christison with Beel and Dinka is also insufficient. For example, Dr. Almeroth concludes 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." Ex. 1002, ¶185. Dr. Almeroth provides no explanation of why a POSITA would be motivated to modify Kaplan or Van de Laar to use this method.

147. Lastly, it is my opinion that Dr. Almeroth fails to provide a coherent combination, but instead simply relies on separate elements from different cited references. For example, Dr. Almeroth relies "optionally" on the teachings of Christison. Ex. 1002, ¶208. Further, Dr. Almeroth's identification of aspects of the references as allegedly "well-known" does not indicate why a POSITA would combine the cited references. E.g., Ex. 1002, ¶184.

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

148. It is my opinion that the combination of Kaplan, Van de Laar and Christison does not teach this limitation. Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶231-239.

149. In Van de Laar, the dockee devices, (laptops and other mobile devices) fall into a class of a primary dockee or a secondary dockee. Ex. 1007, [0077]. The docking station can connect to a primary dockee and a secondary dockee. Ex. 1007, [0078]. Primary dockees are able to control at least one peripheral device that renders

AV data, whereas the secondary dockees do not gain control but instead just receive the rendered AV data. Ex. 1007, [0078], [0082].

150. Dr. Almeroth relies on the primary dockee with respect to certain limitations, such as "the third party software for the Unified Communication call is presented with the virtual functional device for the Unified Communication call[.]" Ex. 1002, ¶206. At the same time, Dr. Almeroth relies on secondary dockees with respect to other limitations, such as "wherein the client software and the driver, when executed on the processing device, are configured to present the at least one functional device to the operating system of the processing device as a virtual processing device[.]" Ex. 1002, ¶204. In Van de Laar, only the secondary dockees are presented with the simulated peripherals. Ex. 1007 [0054]. The Unified Communications Call (on the primary dockee) cannot be presented with virtual functional data (presented on the secondary dockee) as these are two separate devices. Ex. 1007, ¶54.

151. It is my opinion, that Dr. Almeroth provides no testimony to reconcile the differences between these different devices, but instead draws upon them indiscriminately. In my opinion, it is improper to rely on two separate dockees (a primary and a secondary) to allege a processing device executing the claimed elements. It is also my opinion that teachings from Christison also do not resolve

this indiscriminate use, as Christison's teachings are not related to or applied to any one of the devices described in Van de Laar.

152. Additionally, Dr. Almeroth does not identify any disclose in the cited references which discloses a driver. Ex. 1002, ¶¶204-205. In fact, the word driver does not appear in this section. Ex. 1002, ¶¶204-205. In an earlier section, Dr. Almeroth testifies that "Van de Laar either necessarily or obviously includes pre-installed drivers to operate physical or simulated peripherals." Ex. 1002, ¶199. However, I disagree with this statement. For example, it is my understanding that operating a simulated peripheral does not necessarily require using a driver.

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

153. It is my opinion that the combination of Kaplan, Van de Laar and Christison does not teach this limitation Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶231-239.

154. It is my opinion that Van de Laar, does not teach using Skype to host a unified communication call between two or more processing devices. Van de Laar discloses a wireless docking station or host (WDH) which is connected to one or more peripheral devices locally and allows for dockee devices to communicate with

these peripherals. Ex. 1007, ¶6. An example implementation of Van de Laar is depicted in Figure 3 below:

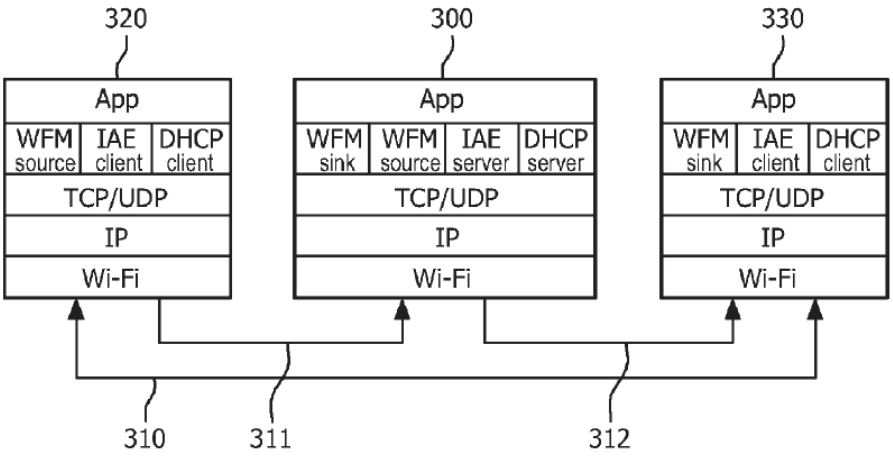


FIG. 3

Ex. 1007, Fig. 3.

155. The WDH 300 communicates wirelessly with the primary dockee 320 and a secondary dockee 330 via a unicast link 311 and broadcast link 312 respectively. Ex. 1007, [0124]. A Wi-Fi Miracast (WFM) sink, a WFM source, an interactive activity engine (IAE) server, and a DHCP server occupy a layer of the WFH 300. Ex. 1007, [0124]. The WFM sink receives data from the primary dockee's 320 WFM source, and the WFM source provides data to the secondary dockee's 330 WFM sink. Ex. 1007, [0124].

156. The WDH 300 shares data from the primary dockee 320 to the secondary dockee 330. A docking application is run on the primary dockee 320 using

WFM over IP and connects to the host. Ex. 1007, [0126]. The WDH receives the data and broadcasts the data as packets to the secondary dockee 330.

157. In addition to using Wi-Fi Miracast, Van de Laar teaches that "the 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." Ex. 1007, [0128]. One example protocol to accomplish this is Skype. Ex. 1007, [0128].

158. Van de Laar provides no further articulation of how Skype is used in its system. More specifically, there is no disclosure of Skype being used to host unified communications between the primary dockee and the secondary dockee. Skype is only used for communication between the primary dockee and the WDH. Ex. 1007, [0128].

159. Further, it is my opinion that Van de Laar does not describe a system which uses both Miracast and Skype. Skype and Miracast are different protocols. In my opinion, Van de Laar references Skype as an alterative mechanism to achieve the functions of Miracast. Ex. 1007, [0128]. Dr. Almeroth relies on the Miracast in addition to Skype in its challenge. Ex. 1002, ¶198. Dr. Almeroth provides no explanation for how the system disclosed in Van de Laar would utilize both Miracast and Skype to perform the same communication functions. Ex. 1007, [0073], [0124], [0128].

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

160. It is my opinion that the combination of Kaplan, Van de Laar and Christison does not teach this limitation. Also, as Dr. Almeroth incorporates his opinions for Claim 1 by reference for Claim 11, Claim 11 is insufficient for the same reasons. Ex. 1002, ¶¶231-239.

161. Kaplan discloses scaling video. Ex. 1008, [0032]. However this does not teach that data transformations are performed based on the type of functional data. While different data transformations *can* be used based on data type, there is nothing identified in Dr. Almeroth's declaration that a POSITA would obviously perform different transformations based on the type of functional data. Moreover, nothing in Dr. Almeroth's declaration indicates that the transformations are provided by the relied upon client software. *See* Ex. 1007, [0056], [0059]-[0060]; Ex. 1008, [0032]

v. Dependent Claims

162. It is my opinion that the combination of Kaplan, Van de Laar, and Christison does not teach "wherein the client software and the driver are configured to present a simulated speakerphone to the operating system to create a virtual microphone and a virtual speakerphone" as required by Claim 2, "wherein the client software and the driver are configured to present a simulated videocam to the

operating system to create a virtual videocam device" as required by Claim 3, "wherein the client software and the driver present a simulated speakerphone to the operating system thus creating a virtual microphone and a virtual speaker" as required by Claim 12 and "wherein the client software and a driver present a simulated videocam to the operating system thus creating a virtual videocam device" as required by Claim 13. For example, to the extent Van de Laar discloses simulated peripherals, it is in the context of these simulated peripherals being presented to the secondary dockee. Ex. 1007, [0054], [0093], [0124]. As explained in Paragraph 151-152, it is my opinion that the indiscriminate reliance on these elements is improper. Dr. Almeroth identifies communications from the primary dockees to the WDH as well, but this does not teach the identified claim limitations. *See* Ex. 1003, ¶214 (citing Ex. 1007, [0128]).

163. It is my opinion that the combination of Kaplan, Van de Laar, and Christison does not teach "wherein the functional data includes video data received from the base unit via the transmitter over the wireless connection" as required by Claim 5. For example, Dr. Almeroth again relies on features of the secondary dockee (Ex. 1002, ¶220 (citing Ex. 1007, [0077])) which, in my opinion is improper as I explained in paragraphs 151-152.

164. It is my opinion that the combination of Kaplan, Van de Laar, and Christison does not teach "wherein the at least one functional device which is

presented to the operating system as a virtual functional device, is one or more of a data capturing device, a microphone, a speakerphone, a speaker, another display, a touchscreen, a projector, a camera, a video camera, and a webcamera" as required by Claim 7 and "wherein the functional device which is presented to the operating system as the virtual functional device is any one or more of a data capturing device, a microphone, a speakerphone, a speaker, another display, a touchscreen, a projector, a camera, a video camera, a webcamera" as required by Claim 16. For example, Dr. Almeroth again relies on features of the secondary dockee (Ex. 1002, ¶224 (citing Ex. 1007, [0093])) which, in my opinion is improper as I explained in paragraphs 151-152.

165. It is my opinion that the combination of Kaplan, Van de Laar, and Christison does not teach "wherein the virtual functional device is presented to the unified communication between the two or more other processing device" as required by Claim 9 and Claim 18. For example, Dr. Almeroth does not provide any additional analysis for these claims. Ex. 1002, ¶226. Additionally, Dr. Almeroth improperly interprets Van de Laar's disclosure of Skype as I explained in Paragraph 159.

VII. RESERVATION OF RIGHTS

166. 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. I also

declare 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 18 U.S.C. §1001. I declare under the penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated: 1/13/2025

By: Signed by: Michael C. Brogioli A19F56ED78AB449...
Michael C. Brogioli, Ph.D.