UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

YEALINK NETWORK TECHNOLOGY CO., LTD.,

Petitioners,

v.

BARCO N.V.,

Patent Owner

_____

U.S. Patent No. 10,684,972

IPR2025-00491

DEPOSITION OF
MICHAEL C. BROGIOLI, PH.D.

REMOTELY HELD VIA VIDEOCONFERENCE TECHNOLOGY
DECEMBER 18, 2025

REPORTED BY:
LYNETTE MARIE NELSON,
CA CSR No. 11585, OR CSR No. 250121,
TN LCR No. 896, RPR, CRR, CCRR, CRG,
REALTIME SYSTEMS ADMIN.

DEPOSITION OF MICHAEL C. BROGIOLI, PH.D., taken by the Petitioner, commencing at the hour of 9:03 a.m. Central Time on Thursday, December 18, 2025, held remotely via videoconference, before Lynette Marie Nelson, Certified Shorthand Reporter in and for the State of California, Oregon, and Tennessee.

APPEARANCES:

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I N D E X

REMOTE DEPOSITION;

THURSDAY, DECEMBER 18, 2025, 9:03 CENTRAL TIME

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THE STENOGRAPHER: Good morning.

This marks the beginning of the deposition of Michael C. Brogioli, Ph.D., in the matter of Yealink Network Technology, petitioners, versus Barco NV, patent owner, IPR2025-00491, U.S. Patent No. 10,684,972 in the United States Patent and Trademark Office, before the Patent Trial and Appeal Board.

This deposition is being held via Zoom videoconference technology on December 18, 2025. The time is 9:03 Central.

My name is Lynette Nelson, RPR, CSR No. 11585, with principal offices in Knoxville, Tennessee.

Would counsel state your appearances for the record.

MR. GREENLEAF: This is Kevin Greenleaf, counsel for petitioner Yealink.

MR. ANDREWS: And this is Joshua Andrews,

counsel for patent owner Barco-NV, and I'm joined today by my colleague Erik Halverson.

THE STENOGRAPHER: Please raise your right hand to be sworn.

(Witness sworn.)

THE WITNESS: Yes, I do.

THE STENOGRAPHER: Thank you.

MICHAEL C. BROGIOLI, Ph.D.,
having been duly sworn by the Certified Shorthand Reporter, was examined and testified as follows:

EXAMINATION

BY MR. GREENLEAF:

Q. Good morning, Dr. Brogioli. How are you?

A. Good. Good morning. I'm doing well.

Q. Nice to hear. And you're in K&L Gates' offices in Austin, I'm assuming?

A. That's correct.

Q. All right. How much time did you spend preparing for this deposition today?

A. Maybe 20 hours, something in that range.

Q. Okay.

A. 25.

Q. And I see you have a computer in front of you. You have all of the exhibits in this proceeding; is that correct?

A. I -- I should. I've got at least unmarked copies, electronic copies, of my report, the patent, and the various references in my declaration. And then I have physical copies as well.

Q. All right.

So I'll just assume that you have things that we're going to discuss as you've listed. There may be an exhibit or two that I might upload, but other than that, if you need something, let me know, but I'll just otherwise assume that you have it. Is that okay?

A. Sure. Thanks.

Q. All right. So there are a couple of grounds in this case, one based on the Beel reference and another using a combination of Kaplan and Van de Laar; is that correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: That's -- mostly correct. One of the -- Ground 1 involves a Beel reference, whereas -- and others, whereas Ground 2, I believe, does not involve the Beel reference.

BY MR. GREENLEAF:

Q. Yeah. All right. Let's talk about the Beel reference first of all.

Do you have a copy of that?

A. I do.

Q. And for Ground 1, one of the arguments in your declaration is that the combination of Beel and Dinka does not disclose the limitation starting out the base unit and the first peripheral device being adapted to transmit and receive data respectively.

Is that correct?

A. That's one of the topics I discussed in my Ground 1; that's correct.

Q. All right. If you go to paragraph -- let's just start at page 43 of your declaration.

We have a picture with highlighted portions of Figure 1A of Beel?

A. Okay.
Q. And you identify microphones in red and cameras in yellow; correct?
A. That's correct, yes.
Q. If you could turn to paragraph 120 in Beel. Let me know when you're there.
A. Okay.
Q. The last sentence of that paragraph states:

> "Another optional item is a microphone or microphones 38 that can be used to transfer audio, e.g., to the processing devices 31."

Do you see that?
A. I do.
Q. And your position is that the microphones transfer audio data directly to the processing device 31 and -- and -- is that correct?
A. Let me just go back to my declaration for you.
Q. I think it's on the next paragraph that we were just looking at. It's actually 102, I

think.

A. That's what I discussed in this paragraph 1 of 2 of my declaration, that the microphones you were asking about can talk or communicate on the processing device.

Q. So if you go to Figure 10 of Beel.

A. Okay.

Q. What does Figure 10 illustrate?

A. It looks like it is a picture of a Barco -- one of the Barco dongles.

Q. And that's the same as the claimed peripheral device or an example of a claimed peripheral device; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: I would say this is a picture of a Barco dongle as it's used in the Beel reference in the '972 patent. I don't recall seeing an image -- that same image in the '972.

BY MR. GREENLEAF:

Q. But you understand that Beel discusses a peripheral device; correct?

A. That Beel uses the phrase "peripheral

device" in various places, yes.

Q. And Figure 10 is an example of a peripheral device; correct?

A. Let me just go back to Beel's description of that figure for you.

Q. Paragraph 103.

A. Okay. So paragraph 103 of Beel states:

> "Figure 10 shows an embodiment of a peripheral device in accordance with an embodiment". . .
>
> Of this invention here in the Beel reference.

Q. And then if you look at Figure 5 of Beel, what does Figure 5 illustrate?

A. Figure 5 of Beel describes as it's in Beel's paragraph 98:

> "Show a base node and a peripheral device."
>
> Let me start over.
>
> "Figures 3 to 5 show a base node and a peripheral device and a client processing device in accordance with

embodiments of the present invention."

And in Figure 5 we see this block C labeled "Computer" with various components within it.

BY MR. GREENLEAF:

Q. Figure 5 is an example of a client device; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: It states that Figure 5 is -- or 3 to 5 are showing peripheral device and client processing device as described in the Beel -- or as part of embodiments in the Beel reference.

MR. GREENLEAF: Josh, what was the objection? Could you explain your objection, please, to my question?

MR. ANDREWS: Your question -- my objection to your question?

MR. GREENLEAF: Yeah. What was the problem with its form?

MR. ANDREWS: I thought it presupposed

facts. And I'm happy to give a more -- do you need more than that?

MR. GREENLEAF: Yes, please.

MR. ANDREWS: Yeah. So my understanding is that it presupposed facts that Dr. Brogioli had not already testified to.

BY MR. GREENLEAF:

Q. So in paragraph -- right above paragraph 170, Dr. Brogioli, in Beel. Do you see the word "client device" there?

A. "Client" in paragraph --

Q. It's paragraph 169. It's right above paragraph 170. Paragraph 169 is kind of long. So just go to paragraph 170 and look at the sentence above it, you will see the term "client device"; is that correct?

A. I see that phrase in paragraph 169, that's correct.

Q. Can you identify an example of a client device in the figures of Beel, please?

A. So it looks like the way Beel describes various figures in paragraph 96 referring to

Figure 1A talks about a combination of a client processing device; continuing down, paragraph 98 describes Figures 3 to 5 where we were discussing a moment ago mentioning Beel reference client processing device.

It looks like paragraph 101 refers to Beel's Figure 8, which is showing Beel's processing device in accordance with embodiment of present invention.

Figure 9 is also mentioning Beel's client processing device.

And then I guess I would stop there, at least for the figures in Beel.

Q. So it is your opinion that Figure 5 does not illustrate a client processing device?

MR. ANDREWS: Objection. Form.

THE WITNESS: It looks like what Figure 5 is showing, according to Beel, a reference to a client processing device in Beel for what Beel states in paragraph 98 at least.

BY MR. GREENLEAF:

Q. From the embodiment of Figure 5, how

would a client processing device receive microphone data in Beel's system?

MR. ANDREWS: Objection. Form.

MR. GREENLEAF: Can you please explain the objection?

MR. ANDREWS: Yeah, I think that it's a very vague question, and there's no -- you're asking a very open-ended question not tied to any specific passage or testimony already provided by Dr. Brogioli.

BY MR. GREENLEAF:

Q. Dr. Brogioli, do you recall talking about paragraph 120 and the disclosure of about:

"Microphones 38 that can be used to transfer audio data, e.g., to the processing devices 31."

Correct?

A. I believe that was a discussion in reference to, I think, my paragraph 102.

Q. Yes. And it's discussion of paragraph 120 of Beel; correct?

A. That's -- at least 120 of Beel references

the microphone; correct.

Q. And we've already established that Figure 5 illustrates a client processing device; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: Looks like.

MR. GREENLEAF: Can you explain your objection, Josh?

MR. ANDREWS: Yep, I'm happy to.

So the -- this is just presupposing -- it's mischaracterizing Dr. Brogioli's testimony. You can refer to the record, but that's not on the exact language he provided so I objected to the form of that question.

MR. GREENLEAF: Dr. Brogioli testified, according to the record:

> "Figures 3 to 5 show a base node and peripheral device and a client processing device."

Does that clarify the fact that your objection was improper, Josh?

MR. ANDREWS: That's your

characterization.

I'm here to reserve the rights -- preserve the rights of my client. I think we can move on.

MR. GREENLEAF: I'm just reading you the transcript. That's not my characterization. I read verbatim from the transcript.

So you can continue to object. I just would like to avoid frivolous objections and coaching is my concern. And if this continues, I'm willing to call the Board on your objections to my very simple questions that are seemingly --

MR. HALVERSON: Your objections are not -- the objections are not frivolous.

You're welcome to call the Board if you would like to do that. Why don't we start it now because it oftentimes takes a couple of hours to get that taken care of. But so far, the characterization of certain testimony that has then been reiterated in different context as something that has been said when it has not been said is not a proper question. So if you would

like to call the Board, why don't we go off the record and you can start that process now.

MR. GREENLEAF: I do not want to call the Board right now. If you want to call the Board right now, you're welcome to do it, but I'm just warning you that character -- mischaracterizations of my questions as mischaracterizing the record when I am literally reading verbatim from the court reporter's transcript, make the appearance of coaching the witness. And I will call the Board.

MR. HALVERSON: If you don't want to call them, you don't have to call them. We can keep going.

MR. GREENLEAF: Mr. Halverson, I will, at some point, be willing to call the Board, but I do not want to do that right now. It's up to you whether to call the Board at this point. I'm not ready, but I may soon.

MR. HALVERSON: Sounds good.

BY MR. GREENLEAF:

Q. Dr. Brogioli, according to your own

testimony, Figure 5 shows a base node and peripheral -- let me -- let me restart that just to make sure I get it correct. Scratch that question.

You testified earlier it looks like what Figure 5 is showing, according to Beel, a reference to a client processing device; is that correct?

A. I was reading back the -- what Beel states in his paragraph 98 that:

> "Figures 3 to 5 show a base node and a peripheral device and a client processing device in according with the present embodiments" of the invention of Beel.

Q. So does Figure 5 display a base node, a peripheral device, or a client processing device?

A. It looks like if we go back to Figures 3 through 5, Beel, Figure 3 has text within the larger labeled B block, it says "Base Unit."

Figure 4 has a block, a block D labeled "Dongle."

And it has a Figure 5 as the outer block labeled C as "Computer."

It looks like this may be a high-level Figure 5 being a high-level illustration of a client processing device showing that there is a GUI and a WAN, things like that.

Q. The question again was: Does Figure 5 display a base node, a peripheral device, or a client processing device?

A. It looks like Figure 5 is illustrating what would be, at a high level, a -- per the language of paragraph 98, client processing device.

Q. If we go to Figure 1A, it illustrates elements 31. Do you see that?

A. Figure 1A, there's a block 31. That's right.

Q. And Beel describes them alternatingly as processing devices or user processing devices or client processing devices. For example, in paragraph 127, it describes 31 as a client processing device; is that correct?

A. Paragraph 127 of Beel, second-to-third line down, does reference client processing device 31.

Q. So if we go back to paragraph 120, it discusses processing devices 31; is that correct?

A. It mentions processing devices 31; correct.

Q. An example of a processing device is Figure 5 of Beel; correct?

A. That sounds right. Figure 5 is that high-level illustration of a client processing device or processing device of Beel.

Q. In that example of a processing device, how would it receive audio as described in paragraph 120 of Beel?

MR. ANDREWS: Objection. Form.

MR. GREENLEAF: What is the problem with my question, Mr. Andrews?

MR. ANDREWS: So the question is asking for testimony limited to a specific paragraph and to the extent that there are other avenues or other -- other potential ways audio can

communicate -- be communicated, not just to -- not just in the ways described in paragraph 120, I was objecting to show that.

I still am permitting Dr. Brogioli to answer the question, of course, but I'm preserving our rights for the record.

MR. GREENLEAF: So you're attempting to show that Dr. Brogioli -- sorry. Let me clarify.

You're attempting to show that I'm asking a question for testimony limited to a specific paragraph and that there are other avenues or potential ways that audio can be communicated. And you're attempting to show that to Dr. Brogioli?

MR. ANDREWS: I'm not attempting to show anything to Dr. Brogioli. I'm merely raising an objection to the form of the question.

MR. GREENLEAF: Who are you attempting to show what you're attempting to show?

MR. ANDREWS: I'm not attempting to show anything. I am preserving our rights based on the form of the question.

MR. GREENLEAF: Well, you said you were objecting to show something, and I'm wondering who you are objecting to show something to.

The point, Mr. Andrews, is I believe that you are leading the witness and it's getting a bit absurd.

So we can continue and, again, renew my call -- my suggestion that we call the Board to avoid these --

MR. HALVERSON: Go ahead. Do it, Kevin. If you want to call the Board, call the Board. Stop threatening Josh, call the Board. His objection is a proper objection.

BY MR. GREENLEAF:

Q. Dr. Brogioli, the question is: How would the processing device illustrated in Figure 5 of Beel receive audio data as described in paragraph 120 of Beel?

A. I would say I could connect a microphone by a physical wire connection or otherwise.

Q. For example, a USB microphone could be connected to that interface 2 to receive audio

data at the client device; correct?

A. I guess I was referring to an audio input/output jack that's on laptops, things like that, or I could connect a microphone directly to the laptop in other ways, Bluetooth, something like that.

Q. So you're saying it would be obvious to include an audio jack or Bluetooth receiver on the computer illustrated in Figure 5?

MR. ANDREWS: Objection. Form.

THE WITNESS: No, I would say that a person of skill reading Beel at the time of Beel would realize that things such as laptops have that functionality.

BY MR. GREENLEAF:

Q. So it would not be obvious to use a USB microphone, that's your opinion; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: I would say taken outside the confines of the claims of the patent we're talking about, there are USB-flavored microphones that were available for purchase or USB-wired

headsets or something like that to connect directly to a -- a laptop.

BY MR. GREENLEAF:

Q. Are there other ways that a person of ordinary skill in the art would have understood, based on the disclosure of Beel, that the processing device illustrated in Figure 5 could receive audio data from a microphone?

A. So in the context of the processing device receiving, in this example, microphone audio directly from a microphone, two examples are a wired connection or some, you know, Bluetooth or something like that. There may be other examples. I haven't performed that analysis.

Q. Would a person of ordinary skill in the art understand that the dongle illustrated in Figure 4 could be connected to the USB interface 2 illustrated in Figure 5?

A. As I recall, and I'm looking at Figure 4 and 5, they both disclose a USB interface 2.

Q. Would a person of ordinary skill in the art have understood that the dongle in Figure 4

could be plugged into the USB interface of Figure 5?

A. I think that's fair. That's what it's illustrating in -- in these various figures that they have the same USB interface -- or a USB interface.

Q. You testified a moment ago that in the context of the processing device receiving in this example microphone audio data directly from a microphone, two examples are a wired connection or some, you know, Bluetooth or something like that.

Would Wi-Fi be another example of a way that audio data could be transferred to the processing device?

A. It sounds like there's two different questions in there.

What I was talking about earlier was, and as I discuss in my declaration in -- at least in paragraph 102, is that a microphone can connect directly to a processing device such as a laptop.

Q. Does paragraph 120 of Beel use the word "directly"?

Let me reask the question.

Paragraph 120 of Beel does not use the word "directly"; correct?

A. I don't see the word "directly" used verbatim in that paragraph.

Q. But it's your opinion that the audio data would not be transferred through the processing -- sorry, let me restate the question.

It's your opinion that the person of ordinary skill in the art reading paragraph 120 would not have understood that the audio data being transferred would go through the dongle illustrated in Figure 4 to the processing device of Figure 5; correct?

A. I would answer that in that what paragraph 120 is disclosing, and as I talk about in my paragraph 102, is that the microphone can be used to transfer audio to the processing device just as I say in my 122 and as Beel says in paragraph 120.

Q. You gave the example of a USB microphone or a Bluetooth interface on the processing device.

But those aren't illustrated in Figure 5; correct?

A. If I go back to Figure 5, looks like what Figure 5 is illustrating is a graphical user interface 18, an app icon 17, and a run-time execution context client software and RAM 25. And the upper label says "Computer."

Q. You're familiar with Barco system; correct?

A. That's -- well, at least the Barco systems I talk about in my declaration; that's correct.

Q. I would like to go to page 64 of your declaration. Let me know when you're there, please.

A. Okay.

Q. This is discussing the limitation that we've been discussing here about the first peripheral device being adapted to transmit and receive data respectively; correct?

A. That looks correct. And in one note on my end, I have the Subheading D above that. I stated '951 patent, it should be '972. And I may

have that in one or two other places as well.

Q. Okay.

A. But we're talking about the '972 patent.

Q. Thank you.

Are there any other mistakes you want to identify at this point?

A. I think it's just there may have been places where I said '951 versus '972 in one or two other places.

Q. So if you go to the next page on 65, what -- would it -- well, here, why don't I just share my -- well, no, I won't do that. I can share my screen if you want me to, but on page 65, it has a picture of the Barco dongle and your laptop; correct?

A. That's right.

And actually, I want to add to my prior answer. I think in my Ground 2 somewhere, I mention the combination of references from Ground 1, maybe one of the first sentences, versus the combination for Ground 2. It should be pretty self-evident, but I think that was the other --

one other issue that I noticed.

Q. Those are pretty obvious typos. That's fine.

So back to page 65, again, it illustrates Barco's dongle connected to your laptop; correct?

A. That's correct. Barco dongle connected to the test machine.

Q. And that's fairly similar to Figure 10 of Beel; correct? The dongle, that is?

A. I would say they look visually similar. In terms of the visual in Figure 10 and the visual of the -- or the picture in my report and the physical appearance of the dongle I used.

Q. And Figure 4 of Beel is a more abstract illustration of the dongle illustrated in Beel's Figure 10; correct?

A. It looks like a -- an abstraction of the dongle or components that comprise that dongle of Beel and it looks like where Figure 10 has -- an illustration of a Barco dongle in relation to Beel.

Q. And it's your opinion that the dongle

illustrated on page 65 of your declaration is configured to transmit and receive data over the communications network from the functional device; correct?

A. I think you're reading back the language I have for Claim Limitation 1C in my paragraph 148, that is the base unit and peripheral device.

Q. I was. And the question again is --

THE STENOGRAPHER: Mr. Greenleaf, I think you were frozen.

MR. GREENLEAF: Yeah, let's keep going. Man. Let's go off the record for a minute.

THE STENOGRAPHER: We're off the record.

(A recess was taken.)

MR. GREENLEAF: Are we back on the record? All right.

BY MR. GREENLEAF:

Q. Sorry for the technical difficulties. So back to the question.

That the dongle illustrated on paragraph -- sorry, page 65 of your declaration is

configured to transmit and receive data over the communications network from a functional device; correct?

A. The dongle that I discuss in this section of my report per the claim, that's correct.

Q. And it's your opinion the dongle illustrated in Figure 10 of Beel is not configured to transmit and receive data over the communications network from a functional device; correct?

A. That's per the claim language, the dongle or peripheral described in Beel is not -- does not do that.

Q. And the basis for your opinion is the fact that paragraph 120 of Beel does not say microphone data goes through the peripheral device; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: I would say it would be the opinions in my declaration as a whole. But one of the things I discuss is that paragraph 120 and I think the surrounding paragraphs of Beel.

BY MR. GREENLEAF:

Q. If you look at Figure 9 of Beel.

A. Okay.

Q. It states it's a "Client operating device"; correct?

A. I see that. Yes.

Q. And we could also call that a client processing device; correct?

A. One moment.

That looks like, in fact, what Beel states in paragraph 102 that it refers to a client processing device.

Q. And it illustrates a Wi-Fi interface; correct?

A. That's correct, yes.

Q. So one way that the client operating device in Figure 9 could receive microphone audio data is through that Wi-Fi interface; correct?

A. I would say it looks like Beel is describing this client operating device that has a Wi-Fi interface. Looks like that could be used to connect to a Wi-Fi network of some kind.

Q. And the processing device could receive audio data, for example, through the Wi-Fi interface; correct?

A. I guess in a general sense if I were to use a laptop and stream Capital Music or something over a Wi-Fi network, I could receive music over a Wi-Fi network.

Q. Or an example of paragraph 120 of Beel, the processing device could receive the microphone audio data using Wi-Fi interface; correct?

A. I don't think that that's what 120 is talking about. The sentence I was discussing earlier talks about the microphone used to transfer audio to the processing device.

Q. And how would the processing device receive the audio data?

A. Just as we talked about before the break, I mean, I could have a microphone that's wire connection to the processing device or some other connection. I think we had discussed something like a Bluetooth microphone.

Q. Where does Beel disclose a wire

connection from the processing device to a microphone?

Wait. Let me ask a different question.

Beel does not disclose a wired connection between a processing device and a microphone; correct?

A. I would answer that back in the context of paragraph 120 of Beel, it talks about a microphone or microphones that can be used to transfer audio, e.g., to the processing device. At the time of Beel, laptops had, you know, audio in-and-out jacks, things of that nature. They still do today.

(Discussion held off record.)

BY MR. GREENLEAF:

Q. So I would like to talk to you, Dr. Brogioli, about the limitation beginning "at least one fixed or configurable endpoint."

A. Okay.

Q. Do you recall that limitation from the '972 patent?

A. I do.

Q. What is an "endpoint"?
A. Go back to the patent.
So it talks about this in a few places, one being in the summary of the invention, or around line 58, where it describes having fixed or configurable endpoint. It's an endpoint of the functional device and that's going to be exposed on the peripheral device.
And let me see a few other places for you.
There's other descriptions, I guess, starting bottom of Column 7, again, in the '972. It talks about endpoints, it sources or sinks. It makes reference to USB devices in this section and then says in another example at the bottom, line 66 of Column 7:
"In the present invention, endpoints should be interpreted broadly as data sources and data sinks."
And continues on the top of Column 8.
Q. You didn't provide a construction of

endpoint in your declaration; correct?

A. That's correct. I don't believe I provided any constructions in my declaration.

Q. So in the petition on page 14, it provided some analysis and a construction of endpoint.

Do you have a copy of the petition you can refer to?

A. Give me one moment. I should.

Okay. Can you repeat the paragraph again?

Q. It's page, sorry, 14 to 19.

A. So I've got the -- sorry. Go ahead.

Q. And if you go to page 19 of the petition, there's a final construction of the term. Let me know when you're there.

A. Okay. I'm on page 19.

Q. It says:

> "Accordingly, this limitation means a data source or sink that is fixed or configurable and used to transfer data between the peripheral

device and the functional device."

Do you see that?

A. Just reviewing the paragraph above. I see that last sentence that you just read.

Q. Do you disagree with that construction?

A. I haven't performed an analysis or opinion on it one way or the other.

Q. Let's go to paragraph -- sorry. Let's go to page 15, which includes a portion of Figure 6 of the '972 patent. Let me know when you're there.

A. Okay.

Q. It illustrates a mass storage device endpoint -- well, I guess before we do that, in the -- in the sentence above that figure, it talks about peripheral device 130 having endpoints 132, 134, and 136.

Do you see that?

A. The last few words directly above the figure, I see that.

Q. Do you agree that 132, 134, and 136 are endpoints?

A. I'm going back to this portion of the patent.

Q. You can look at example -- for example, at Column 19, line 37, talks about the mass storage device 132 and USB endpoint 134.

A. Okay. So 132, 134, 136.

Q. If you look at the next column, 20, at the top, it talks about speakerphone endpoint 136.

The question, again, was whether 132, 134, and 136 are endpoints.

A. Bear with me one moment. I'm just figuring out where I am here.

Okay. So we have Figure 6 of the '972 here and then top of Column 20, it looks like the bottom of 19 and top of Column 20 are a reference to the Figure 6 mentioned at line 30 of 19.

Okay. So maybe I can hear your question once more. I was just figuring out where I was.

Q. Sure.

The question was whether 132, 134, and 136 illustrated in Figure 6 of the '972 patent are endpoints.

A. So looks like around Column 19 at 39 says:

"The client software 70 also has a USB endpoint 134, which can be a USB HID endpoint and, if necessary, a vendor-specific endpoint."

That's at least within regard -- one statement with regard to 134. And -- give me a moment.

Q. And then in Column 20, it identifies that the speakerphone 136 has USB endpoint, too; correct?

A. It says at line 9 of that column:

"In this embodiment, the speakerphone" -- I'm sorry -- "In this embodiment, the speaker of the speakerphone has its USB endpoint 136 on the peripheral device 130."

Q. And 136 is the speakerphone; correct?

A. 136 is a speaker of the speakerphone has its USB endpoint 136 on that first peripheral device 130.

Q. And then if we look at line 37 of Column 19, it talks about:

"A generic driver allows the client software 20 [sic] to transfer data to and receive data from a mass storage device 32 [sic]."

Correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: So it says -- I think the numbers were not quite correct. So it says:

"A generic driver allows the client software 70 to transfer data to and receive data from mass storage device 132 on the first peripheral device 130 via a USB interface 131."

BY MR. GREENLEAF:

Q. I apologize for the mistake, you're right, it's 132.

So mass storage device 132, is that a USB endpoint?

And just for the sake of efficiency, I'm pretty sure 132, this is the only portion that uses that number, 132, for the mass storage

device. And it obviously does not use the word "endpoint" there, but my question to you, would a person of ordinary skill in the art have understood the mass storage device 132 to be an endpoint?

A. I would say I don't see that it's referring to the mass storage device here at the top of -- starting at line 1 -- at line 37, that is an endpoint in this section. I would say -- in this section in the context of the '972.

Q. So in the context of the '972 patent, a person of ordinary skill in the art would not have understood the mass storage device 132 to be an endpoint; correct?

A. I don't see that the patent is saying that in this context, at least in these sentences here.

Q. Are you familiar with what a USB endpoint is?

A. Yes.

Q. What is a USB endpoint?

A. They are constructs where you can send

from a host side, send data to or get data from. They have different characteristics associated with them.

Q. And those characteristics can include descriptor fields; correct?

A. I -- we need to go back and confirm on the exact language there. But they're used as -- there's information associated with them that's part of an enumeration process for organizational or kind of bookkeeping purposes within USB.

Q. And as part of the enumeration, the descriptor fields can identify a device type; correct?

A. They have information related to different devices, I would say, within USB.

Q. One device type is a mass storage device; correct?

A. Within USB, that's correct.

Q. And so a mass storage device is a type of endpoint in the USB specification; correct?

A. As I recall, that's correct.

Q. So the person of ordinary skill in the

art would have understood that the mass storage device 132 of the '972 patent would be an endpoint; correct?

A. I would say a person of skill reading the USB specification would probably see language describing mass storage devices in relation to endpoints within that specification.

I don't see that per where we were just reviewing in the '972 patent and how endpoints fit into the overall claims whether -- that that mass storage device was described as the endpoint one way or the other.

Q. Because it didn't use the word "endpoint"; correct?

A. At least in that discussion of element -- item 132, I didn't see that.

Q. So it's your opinion that to disclose an endpoint, you must use the word "endpoint," otherwise, it doesn't describe an endpoint; correct?

A. That wasn't what I said. We were talking about the language and I think it was perhaps

Column 19 you had referred me to. I haven't performed an analysis of what the universe of things that may or may not be endpoints within the confines of the patent. I don't believe Dr. Almeroth did either.

Q. All right. I disagree.

Dr. Almeroth testified that element 132 was an endpoint because he agreed with the claim construction in the petition we were just looking at that identified element 132 as being an endpoint. So you disagree with Dr. Almeroth's opinion that 132 is an endpoint, then; correct?

A. I guess where in my declaration are you referring to?

Q. Well, you don't really address this directly. You stated earlier you did not form an opinion one way or the other of whether the claim constructions were correct. And so you did not opine explicitly in Dr. Almeroth's construction. So I assume you applied some sort of construction to the term "endpoint" when you formed your opinions; correct?

A. That's right.

Q. And so I'm trying to understand what you mean when you use the word "endpoint." So I want to understand whether you disagree with Dr. Almeroth's opinion that element 132 is an endpoint.

A. I would say I don't recall discussing Dr. Almeroth's specific statements around item 132, either they were in his declaration or perhaps something he spoke about in his deposition.

Q. Do you have Dr. Almeroth's declaration with you?

A. Yes, if you give me one moment.

Okay.

Q. Can you go to his construction of endpoint, please. Looks like on page 52.

A. Yeah.

Q. Beginning on page 52. And he has the same figure we were just looking at from the petition and he testifies paragraph 53, for example, peripheral device has endpoints 132, 134,

and 136. And it seems you agree elements 134 and 136 are endpoints because the '972 refers to them using the word "endpoint." Is that correct?

A. That is how the patent describes them.

Q. And it's your opinion that the patent does not describe element 132 as an endpoint; correct?

A. I don't see that explicit language.

I also note that the block 132 of Figure 6 is arranged a bit differently where it seems to just be the arrow to the client. But I -- presumably for the loading of information and storage.

I don't know -- I guess what I'm saying is I haven't offered an opinion as to whether the '972 is characterizing mass storage 132 as an endpoint in the context of how the claims are discussed.

Q. And you're not prepared to offer an opinion right now whether 132 is an endpoint; is that correct?

A. What I discuss in my declaration, that's

correct.

Q. Let's look at the next page of Dr. Almeroth's declaration. It has a portion of Figure 17 of the '972 patent.

Do you see that?

A. I see Figure 17, yes.

Q. And it has element 130, which is labeled "USB device."

Do you see that?

A. I do.

Q. It also uses the term "USB peripheral" so 130 is a USB peripheral device; correct?

A. I think that's right. It's a peripheral device that, as illustrated here, would connect to this PC using a USB interface.

Q. And the PC is an example of a processing device; correct?

A. That's -- in the context of the '972, that's correct.

Q. And then the two elements highlighted in yellow are a fixed USB endpoint and a configurable USB -- sorry, it says:

"Fixed USB endpoints and configurable USB endpoints."

Do you see those?

A. I do.

Q. What's an example of a fixed USB endpoint?

A. Going back to the patent. Some descriptions, it refers to in Column 2 around line 5, the configure -- it talks about one fixed or configurable endpoint in reference to a human interface device. And continuing on -- trying to find the passage I'm looking for.

And so in talking about contrast to the fixed endpoint, in paragraph 16 -- I'm sorry, Column 16, around 57, it talks about:

"The configurable USB endpoints" of the patent "are configured either when pairing a first peripheral device with a base unit or over the wireless connection between the processing device and the base unit."

Q. Let's go to Column 2, line 12, please.

A. Okay.
Q. It says:
"The at least one fixed or configurable endpoint of the functional device exposed on the first peripheral device can be a mass storage device."
Correct?
A. That's correct.
Q. So would you like to change your opinion of whether the mass storage device illustrated in Figure 6 of the '972 patent is a endpoint?
A. What I had said earlier was I didn't recall offering an opinion on that one way or the other.
I would say the sentence that you just referred me to in Column 2 says what it says, that at least one fixed or configurable endpoint of this functional device exposed -- of the functional device exposed on the first peripheral device can be a mass storage device.
I know that this sentence is referring to

endpoints of functional devices that are exposed on that first peripheral device.

Q. So a mass storage device on a functional device can be an endpoint, but a mass storage device on a peripheral device is not an endpoint?

A. It looks like this sentence at Column 2 at 12 is stating that the -- the fixed or configurable endpoint of that functional device exposed on the first peripheral device can be a mass storage device. That's right.

Q. Is a peripheral device a functional device?

A. I don't think that's something I've addressed in my declaration.

The peripheral device has -- that I talked about is with regard to the patent the peripheral device described in the patent.

Q. Let's look at paragraph 14 of the '972 patent, please.

A. Did you say paragraph 14 or Figure 14?

Q. Sorry. Figure 14.

A. Okay.

Q. You see element 132 listed there as well; correct?

A. I do.

Q. You don't have an opinion one way or the other whether element 132 is a endpoint; correct?

A. I would say I don't have an opinion one way or the other whether element 132 of Figure 14 is the endpoint described in the claims.

Q. Do you have an opinion one way or the other whether element 138 is an endpoint?

A. I would need to go back to my declaration for you on that.

Q. How about I suggest you go to Column 1 -- sorry, Column 20, line 21, of the '972 patent.

A. I'm just rereading.

Okay. I see that paragraph at line 21.

Q. Element 138 is an endpoint; correct?

A. I'm just rereading the paragraph. And your question is about the -- I'm sorry, the speaker or the speakerphone? It's the speaker you're asking about?

Q. 138 is a speaker. The question is

whether that's an endpoint.

A. I see that the sentence at -- starting at line 24 of this column states:

"But if there is additional audio data which is not part of the UC call, this data is sent by the speaker endpoint 138."

I don't think I have addressed this item in my declaration as to whether it's an endpoint of the claims or not.

Q. So you don't have an opinion one way or the other whether element 138 is an endpoint?

A. Whether it's the endpoint of the claims, that sounds correct. It sounds outside what I analyzed in my -- in my declaration.

MR. GREENLEAF: All right. We've been going for about an hour. Anybody want to take a break? I can keep going. Lynette?

MR. ANDREWS: Take a break.

MR. GREENLEAF: All right.

(A recess was taken.)

BY MR. GREENLEAF:

Q. All right. Dr. Brogioli, so we've taken two breaks today. Have you spoken with counsel about the subject matter of our depositions during the breaks?

A. No, I haven't.

Q. So if we go back to Figure 7 of the '972 patent, you testified earlier that elements 134, 138, and 136 are endpoints; correct?

A. So I'm back at Figure 7, and you're asking about 132, 134, and 136?

Q. No. Sorry. 134, 138, and 136.

A. So it looked like, as we discussed earlier, for example, if I look for 138 in the patent, and I think we may have talked about this earlier, there was language in reference to Figure 7 has a similar configuration to that of Figure 6 in that there are two USB endpoints the patent refers to, 136 and 138, for that speakerphone and the speaker.

Q. 134 is also identified as a vendor HID endpoint; correct?

A. In that same paragraph where I was, Column 20, at 12, it states the language of the patent is the:

> "As previously, the HID endpoint 134 makes the HDMI display available to any processing device 160 with first peripheral device 130."

Q. Are those three endpoints you identified of the functional device?

A. I don't think I've addressed this in my declaration. The language of this paragraph uses the phrase "endpoint" in regard to some USB endpoints. I haven't -- point me in my declaration if I did, but I don't recall doing an analysis of claim -- I'm sorry, Column 20, the paragraph at line 12, as to whether these components are the endpoints of the claims.

Q. I don't think you did that analysis. I think all you did was identify that the prior art did not disclose endpoints of the functional device. I don't think you explained what the

endpoint of a functional device is. And I would like to understand better where in these figures I can find an endpoint of the functional device.

A. So what is your question again?

Q. Please identify an endpoint of the functional device in any figure of the '972 patent.

A. I would say the figures speak for themselves and talk about various components within the system. For example, the processing device or laptop and base unit peripherals, et cetera.

And just as the claims talk about, that there's base unit and a first peripheral device and they can:

> . . . "transmit and receive data respectively over that communications network from the functional device to the processing device via the" -- you know, "at least one configurable or fixed endpoint."

Q. Were you reading from somewhere --

A. I was.
Q. -- just now?
A. Column -- I was in Claim 1, Column 23, at line 11 -- or the limitation at line 11.
Q. Can you identify what element number is consistent with the claim limitation of the functional device referring to, in your opinion, the endpoint?
A. I guess I would refer to the specification as a whole. There's also language in Column 3 at 41 and 44 talking about:

> "The method can include presenting the at least one fixed or configurable endpoint of the functional device exposed on the first peripheral device."

And talks about:

> "As one of a human interface device, a mass storage device, a composite device, a microprocessor,"

et cetera.
I haven't done analysis of, to your

question, the subblocks of the visual figures as to which of those blocks are or are not. I think your question was around the fixed or configurable endpoint.

Q. Could you please do that analysis now?

A. Is there a specific example you want to point me to? This sounds like an analysis I haven't done within my declaration.

Q. It is not. I'm asking you to do it now. Because I need to understand what a endpoint of the functional device is. So if we look at, for example, Figure 7, could you please identify an endpoint of the functional device?

A. So we discussed Figure 7 earlier. As to the various components described within, I guess, the larger block 130, I haven't done an analysis as to which of those are the endpoints of the -- of Claim 1, for example.

Q. How long would it take you to do that analysis?

A. I don't know.

Q. So if we go to Column 12 of the '972

patent.

A. Okay.

Q. It says at about line 15:

"Group 90 can be used to expose, for example, the peripheral devices. a webcam 91; a speakerphone 92; a number of HID endpoints 93."

Do you see that?

A. I do.

Q. Is the speakerphone 92 an endpoint of the functional device?

A. Looks like all I see the paragraph -- the paragraph above is stating that:

"With reference to Figure 1, group 90 is a microprocessor or FPGA-based device comprising one or more peripheral devices" that can be connected -- "which can be connected to, e.g., plugged into that base unit 100."

Q. You don't have an opinion one way or the other whether speakerphone 92 is an endpoint of

the functional device; is that correct?

A. I have not addressed the speakerphone 92, no.

I should say I haven't done an analysis of that speakerphone 92 specifically I think in my declaration.

Q. Let's go to line 64 of that column. Which reads:

"Audio signals from speakerphone 92 connected to base unit 100 are decrypted in block 32, processed and exposed as microphone signal from the USB speakerphone endpoint 92."

So there, it refers to 92 as a USB speakerphone endpoint. So now is it your opinion that Speakerphone 92 is an endpoint?

A. I would say the sentence speaks for itself. It talks about the speakerphone 92 connected to the base unit and process and exposed as a microphone signal from the USB speakerphone endpoint 92.

I haven't done an analysis of that block 92 in the larger context of this column and whether that's something covered in the claim language or not.

Q. The '972 patent be used in the context of data conferencing -- let me ask a different question.

Can the invention of the '972 patent be used in the context of data conferencing? You can look at, for example, Column 6, line 31.

A. I'm reading the paragraph. I see what it describes for data conferencing. I haven't -- I haven't done an analysis of these claims -- through the specific lens of what the patent describes as data conferencing.

Q. Claim 1 recites:

"Unified communication between two or more processing devices."

Correct?

A. That's -- that's right. The very last limitation of Claim 1.

Q. Is data conferencing an example of a

unified communication?

A. I haven't -- I haven't done that analysis.

Q. Is Skype an example of a unified communication?

A. I think that's been talked about in some of the various references and even within the patent, I'm just finding the cite for you. I think it's at the bottom of Column 6. Skype is one example given of unified communication system or tools.

Q. Is Skype an example of data conferencing?

A. I don't think I've done that analysis.

Q. How long would it take you to do that analysis?

A. I'm not sure. I'd need to look at what's data conferencing in the patent and what Skype was or was not comprised of at the time of the patent.

Q. Would the unified communication of Claim 1 allow for participants to join a meeting from remote destinations?

A. I'd need to go back and look. This may

be a concept that's discussed in the -- possibly in the context of Figure 5. Maybe you can refer me back to my declaration on that.

Q. I don't think I have a cite for you. Sorry.

A. Excuse me one second.

Q. I think you have a point. Figure 5 might be good. It has an illustration of a box and then a line that says "Skype." So presumably this 160-4 would be user joining the meeting from a remote destination.

Would that be your interpretation of the figure?

A. So I'm -- I'm pointing us back, I guess, we were on Figure 5. And in my declaration at 50, I refer to Figure 5 where there's the four laptops and one of those processing devices, 160-4, participates remotely in a meeting over a unified communication while the other -- another laptop, 160-3, in the same location as the remaining laptops.

Q. Does Figure 5 illustrate an example of

data conferencing?

A. I haven't done that analysis as to whether the patent's definition of data conferencing is something encompassed in Figure 5 specifically one way or the other.

Q. So in that Figure 5, we have what appears to be two computers, 160-1 and 160-2, that have media content on them; correct?

A. It looks like the way 160-1 and 160-2 are visualized, there's some content being displayed on the -- the screen.

Q. It looks like the roadrunner on one and, unfortunately, we can't make out what the image is on 160-2; is that correct?

A. That's -- that's my impression as well.

Q. And those images are appearing on the display 126; correct?

A. That looks correct, yes.

Q. And those images are also appearing on the processing device 160-3; correct?

A. That looks correct in a -- sort of in a window frame on 160-3.

Q. And those images also appear on the processing device 160-4; correct?
A. That's correct.
Q. All right. So let's go to Column 16, line 29. Let me know when you're there.
A. Okay.
Q. Actually let's look at the heading there:
"Sending Data from the Processing Device to the Base Unit."
Do you see that?
A. I do.
Q. So how does the data from the processing device 160-1 get to the base unit 100?
A. Let's go back to the figure for you. And your question is from the processing device 160-1 to the base unit 100?
Q. Yes.
A. I would go back to an example in Claim 1 perhaps.
Q. Okay.
A. I think. One moment.
I would point at least in part to Claim 1

at that limitation starting at 11, line 11, where there is a base unit in the first peripheral device to transmit/receive data respectively over that communication -- communications network from the functional device to the processing device by at least one fixed or configurable endpoint using imaginary communications protocol for communicating data between processing device and that first peripheral. There's this flow of the processing device, peripheral device, communication network, and the base node. For the direction going from the processing device to the base node in that example.

Q. Could the data from the processing device 160-1 be transmitted to the base unit 100 via a Wi-Fi transceiver integrated into the processing device 160-1?

A. I don't see that that's what the claims are talking about. At least as I'm addressing them.

Q. So you don't have an opinion one way or the other whether the image of the roadrunner in

processing device 160-1 could be transmitted to the base unit 100 via a Wi-Fi transmitter integrated into the processing device 160-1; is that correct?

A. As I recall in addressing claims, as I recall, all of the claims involve the -- well, they all include the peripheral device.

Q. So I didn't get that last part you said, they all include the what?

A. In looking at the claims of the '972, it looks like each of them include the use of the peripheral device.

Q. I'm referring to Figure 5. Do each of the processing devices in that Figure 5 use the peripheral device to transmit and receive data to and from the base unit 100?

A. It looks like the units 160-1, 160-2, and 160-3 of Figure 5 are shown having a peripheral device.

Q. And how is data received by processing device 160-4?

A. I'm sorry, how is what?

Q. Data received by processing device 160-4.
A. It looks like 160-4 is described in Column 17, 62:

"One processing device, 160-4, can be the host of a unified communications call such as a Skype call" --

(Stenographer clarification.)

THE WITNESS: (Reading:)

"One processing device 160-4 can be the host of a Unified Communication (UC) call such as a Skype call or a Skype For Business call."

BY MR. GREENLEAF:

Q. And by what means does the processing device 160-4 communicate data to the unified communication?
A. I'm just revisiting this section.
Q. I have a citation that might be helpful.
A. Okay.
Q. Column 18, line 13 states:

"The host processing device 160-4 has preinstalled UC client software. This software interacts with USB endpoints on the peripheral device 130 connected to, e.g., plugged into the host."

Do you see that?

A. I do.

Q. So do I understand this correctly that the communication between the processing devices 130-3 and 1- -- sorry -- the processing devices 160-3 and 160-4 is through the unified communication software?

A. The unit 5 communication client software installed on the device 160-4.

Q. Yes. So the communication between those two processing devices is through the unified communication client software; correct?

A. That looks like what the first and second sentence of this paragraph in Column 18 seem to be referring to.

Q. Do you have any opinion by what means

that unified communication data is being transmitted from the processing device 160-4?

A. I don't recall doing an analysis of what the patent says about that.

Q. Could it be through an ethernet connection and then through the Internet onto the processing device 160-3?

A. I don't know that the patent says that device 160-4 is specifically connected to an ethernet connection or otherwise.

Q. Could the connection from processing device 160-4 to the unified communication session be through Wi-Fi?

A. I don't -- I'm looking back to the language of what the patent says or doesn't say about 160-4. I don't think it's specific around that specific phrase "Wi-Fi."

Q. I would like to return to the idea of the at least one fixed or configurable endpoint.

Do you recall that claim limitation?

A. Yes.

Q. What's an example of a fixed endpoint?

A. I think an example is just the line the patent states in it, the peripheral device would have at least one fixed or configurable endpoint in where those fixed endpoint or the configurable endpoint is a data source or a data sink able to store or emit data. In this case of a functional device.

Q. Let's look at Column 16, line 44.

A. Okay.

Q. Where it talks about Figures 1 to 4.

A. Okay.

Q. And then at about line 49, it says:

"In embodiments of the present invention, fixed USB endpoints on the peripheral device 130 are provided for the basic functionality."

Do you see that?

A. Yes.

Q. And if we look at Figure 4, we see a peripheral device 130; correct?

A. There's block 130 labeled "External USB dongle."

Q. And it's labeled -- yeah, 130, which corresponds to the first peripheral device, 130; correct?

A. One second. That's -- that sounds right, yes, Column 12. It mentions over a first peripheral device 130.

Q. And that sentence that we just read referred to fixed USB endpoints on the first peripheral device 130.

My question is: Where are the fixed USB endpoints on the first peripheral device 130 in this illustration in Figure 4?

A. I don't see, at least explicitly, how that block 130 of Figure 4 is visualized. It has a label for the -- the fixed endpoint or the fixed USB endpoint referenced at -- starting at line 49 of this column.

Q. You don't have an opinion one way or the other whether Figure 4 illustrates a fixed endpoint?

A. What I'm saying is there isn't a block there that uses that language. As the passage in

this column states when these are fixed and are a combination of vendor-specific endpoints a number of standard endpoints and here it says can be interpreted or understood as a custom driver, a default OS driver or other host application that's been described with reference.

So some of this is referring to an OS driver which would be on the machine running an operating system.

And I note that this paragraph really is referring to Figures -- refers back to Figures 1 through 4.

Q. It does. And at the end, it says -- with reference to Figure 4, specifically without mentioning the other figures; correct?

A. It states -- I'll just read the sentence:

"There are fixed and are a combination of vendor-specific endpoints and a number of standard endpoints that 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 Figure 4 do screen sharing and audio."

Q. Do you have an opinion one way or the other whether any of the elements in Figure 4 illustrate a endpoint?

A. I don't see that the sub -- you're asking about Figure 4 as a whole or block 130?

Q. Either.

A. I don't see it in Figure 4.

Q. Any element of --

A. Yeah, I'd have to go back and look as to whether the elements or the couple dozen or two dozen elements within Figure 4 as a whole are described as the endpoints of the patent or not.

Q. Well, you know, I would hope that with your decades of experience in engineering, you could identify a endpoint in this figure without having to read the word "endpoint" in the specification.

You're welcome to read the specification, but I'd like a yes-or-no answer of whether you can

identify an endpoint in Figure 4 anywhere.

MR. ANDREWS: Objection. Form.

THE WITNESS: I would say I haven't done an analysis of Figure 4 in 28 or 29 or 32 blocks that comprise it as to which of those are the endpoints of the claims.

BY MR. GREENLEAF:

Q. All right. So let's go back to Claim 1. And the limitation beginning in Column 23, line 4.

Are you there?

A. Okay.

Q. Says:

"The base unit having a transmitter and the first peripheral device having a receiver and at least one fixed or a configurable endpoint."

And then there's a phrase there, says, comma, "where," and then it ends "of the functional device."

Do you see that?

A. Yes.

Q. And you're aware of this issue of my confusion of whether the claim requires the endpoint to be on the peripheral device or the functional device.

Are you aware of this issue?

A. I -- I am, yes.

Q. And what is your opinion of where the functional device exists, whether it's on the functional device -- maybe I'll reask that question. I messed it up.

What is your opinion of which device has the endpoint? Is it the functional device or the peripheral device?

A. That it is the -- there's the first peripheral device per this claim limitation with the receiver and has a fixed or configurable endpoint. That endpoint is the data point or data sink, and that is exposed on or made available on that first peripheral device.

Q. Is the endpoint hardware or software?

MR. ANDREWS: Objection. Form.

THE WITNESS: I don't recall having a

section discussing whether the endpoint itself is limited -- the endpoint of the patent is a software construct or a software-hardware construct.

BY MR. GREENLEAF:

Q. Is it your opinion that the endpoint can be any combination of hardware and software, whether it's all hardware, all software, or a combination of the two?

A. In terms of the endpoint of the patent, I haven't done that analysis.

Q. Can you do that analysis now, please?

A. I don't know that I can. I would need to start reviewing the patent again through that lens. I don't recall Dr. Almeroth having -- going from recollection of his declaration, I don't recall him addressing that.

Q. Can you identify in any figure an endpoint as defined by Claim 1 of the '972 patent?

A. I think we discussed that earlier. I didn't perform an analysis of the figures of the '972 patent and their subcomponents as to which of

those blocks may or may not be the endpoint of the claims of the patent.

Q. What's the difference between a fixed and configurable endpoint?

A. Just going back to the specification for you. And I think we talked about this earlier in the context of Column 16 where it talks about configurable USB endpoint configured either when pairing a first peripheral device, 130 device, with a base unit 100 or over a wireless connection between a processing device 130 and a base unit 100.

Q. Can you identify a fixed endpoint in any of the figures of the '972 patent?

A. I would say similar answer to before. I haven't done an analysis of the figures of the patent and the components that comprise them as to which of those may or may not be the endpoints of the claims or, to your question, the fixed endpoints of the claims.

Q. Can you identify a difference between a fixed and configurable endpoint?

A. That was what I was -- I believe I was just answering that question a moment ago referring back to -- I think my Zoom session dropped -- back to that language in Column 16.

Q. Which line of Column 16?

A. When we were discussing earlier at least the passage starting at line 57 around the configurable USB endpoints, at least talking about configurable USB endpoints here.

Q. What is a "configurable USB endpoint"?

MR. ANDREWS: Objection. Asked and answered.

THE WITNESS: Excuse me. I guess I would go back to our discussion in Column 16 again where it talks about the configurable USB endpoints roughly starting around line 57.

BY MR. GREENLEAF:

Q. What are some of the functions of a configurable USB endpoint?

A. I think the patent talks about endpoints in Column 7 at the bottom saying the endpoints can be described as data sources or data sinks and are

defined for USB devices which can be physical devices or virtual devices. The paragraph there continues to the top of Column 8 as well.

Q. Is that disclosure referring specifically to fixed USB endpoints only?

Sorry. Let me -- let me reask that question.

So the question before was what are some functions of configurable USB endpoints and you read some disclosure here in Column 7.

Is that disclosure limited to configurable USB endpoints?

A. I would say, as I look at this paragraph, it's referring to endpoints as a whole.

Q. So it could be fixed or configurable?

A. I don't see that this paragraph of -- or this description of the patent is talking specifically about fixed or configurable, but rather, talking about endpoints.

Q. Is there another type of endpoint that is not a fixed or configurable?

A. I haven't -- I haven't done that

analysis. The patent mentions fixed endpoints; it mentions configurable endpoints.

MR. GREENLEAF: We've been going about an hour. I'm assuming people want a break; is that a correct assumption?

MR. ANDREWS: Yeah. I think a break is good.

Do you anticipate this being a break for lunch or . . .

THE STENOGRAPHER: Did you want to go off the record?

MR. GREENLEAF: Yes, please.

MR. ANDREWS: Yes.

(A lunch recess was taken.)

MR. GREENLEAF: All right. Let go back on the record.

BY MR. GREENLEAF:

Q. So did you have a good lunch, Dr. Brogioli?

A. Yes.

Q. Did you have Taco Deli?

A. Unfortunately, we did not.

Q. Too bad.

So one of the limitations of the claims of the '972 patent says:

"The functional device exposed or made available on the first peripheral device."

Do you recall that limitation?

A. Give me one second.

I see that, yes.

Q. What does that limitation mean?

MR. ANDREWS: Objection. Form.

THE WITNESS: I would say just as the claim states; that the functional device that's talked about in the system is exposed or made available on that first peripheral device.

BY MR. GREENLEAF:

Q. Is there a difference between being exposed and being made available?

A. Not that I have analyzed in my declaration one way or the other.

Q. Do you recall our discussion earlier about the endpoint being fixed or configurable?

A. I do.
Q. Is there a third option for an endpoint to be fixed or configurable or something else?
A. I don't recall discussing that in my declaration or analyzing that in the patent.
Q. Do you have an opinion today on whether there's a third option between fixed or configurable?
A. I haven't done that analysis. I don't have an opinion today.
Q. Do all USB devices have endpoints?
A. I -- if you're asking in the context of the USB specification, I would need to go back and look. If there are cases where a USB device doesn't have an endpoint as defined in the USB specification.
Q. Do you know whether there are any USB devices that do not have endpoints?
A. Going from memory, I don't recall if there are USB devices that within the USB specification wouldn't have some form of endpoint.
Q. Do you have an opinion on whether it's

inherent to every USB device that it must have an endpoint according to USB specification?

A. Similar answer. I don't recall the universe of the USB spec or, more specifically, a specific version as to whether there are some cases where a USB device might not have an endpoint zero or something like that.

Q. Do you have the Dinka patent with you?

A. I do. One moment.

Q. Exhibit 1006. I would like to draw your attention to Figure 1, please, when you have it.

A. Okay. I've got it up.

Q. The elements 103 -- well, let me just pull up the spec. Make sure I use the correct terminology.

Dinka describes 103 as television sets; correct?

A. I'm sorry, did you say 103?

Q. Yes. In Figure 1.

A. That's correct, in Column 6.

Q. And Figure 1 only illustrates one element labeled 102; correct?

A. Figure 3. Sorry. I was looking at Figure 1.

Q. Yeah, I was talking about Figure 1.

The question is whether Figure 1 only illustrates one element labeled 102.

A. Okay. One minute.

That looks correct, yes.

Q. I would like to draw your attention to Column 5 around line 45, please.

It says:

"A plurality of computer terminals 102 are shown coupled to the Internet 101."

Do you see that?

A. I see that at line 45, 46.

Q. Is your opinion that Dinka does not include a plurality of computer terminals 102 communicating via Skype?

A. I don't recall in my declaration talking about Dinka in a plurality of computer terminals.

Q. You don't have an opinion one way or the other whether Dinka contemplates a plurality of

computer terminals communicating via Skype?

A. I don't -- I'm just getting back to my declaration for you. Yeah, I don't think I discuss that in my declaration, no.

Q. I see that you didn't discuss it in your declaration, but do you have an opinion, sitting here today, whether Dinka contemplates a plurality of computer terminals communicating via Skype?

A. No, not beyond what's in my declaration.

Q. Is it your opinion that Dinka is limited to communication from a computer terminal to a plurality of televisions?

A. Your question one more time.

Q. Is it your opinion that Dinka's invention is limited to communication between a computer terminal and a plurality of television sets?

A. I don't -- I don't recall talking about that aspect of Dinka in my declaration. It was mostly about the television set device itself.

Q. I would like to turn your attention to paragraph 118 of Beel, please.

A. Okay.

Q. And in the middle of it, it says that:

"A second connection unit 49 that provides access to the network 50, thus linking all of the processing devices 31, 36 together."

Do you see that?

A. I do.

Q. Why are all of the processing devices linked together?

A. I don't see that this paragraph says beyond what this sentence reads:

The "second connection unit 49 that provides access to the network, thus linking all of the processing devices 31, 36 together."

Q. Let's look at Figure 10 of Beel, please. The picture of the dongle.

A. Okay.

Q. Figure 10 illustrates an internal Wi-Fi antenna. Actually, it says "internal Wi-Fi antenna's" with an apostrophe. And then it also says "transceiver."

Do you see that?

A. I see that in Figure 10, yes.

Q. What is a "transceiver"?

A. It's generally something that's used to send and receive.

Q. So the dongle in Figure 10 is adapted to both send and receive data; correct?

MR. ANDREWS: Objection. Form.

THE WITNESS: I'll say all I see is that, for instance, in 48 of Beel, that halfway down, it states the transmitter can be a wireless transmitter or receiver. Sorry. A wireless transmitter or transceiver. So I see it just uses the word "transceiver" in certain places.

BY MR. GREENLEAF:

Q. You don't have an opinion one way or the other of whether the dongle in Figure 10 is adapted to transmit and receive data?

A. I don't recall discussing that. I recall discussing the transmit aspect of Beel.

And I just note that as you pointed out, it does use the phrase "transceiver" in certain

places. In other places it talks about receivers are preferably -- that's with regard to the base node. So I see it uses that word "transceiver."

Q. But do you have an opinion one way or the other whether the dongle in Figure 10 is adapted to transmit and receive data?

A. I don't recall doing that analysis in the context of Beel. Beyond the language of the transceiver.

As I talk about in my declaration, Beel is the -- discussing in certain parts the transmission of this information to the base node.

Q. I'd like to direct your attention to paragraph 119 of Beel, please.

A. Okay.

Q. It discusses a camera 35 and states:

> "That data from the whiteboard can be recorded and stored or transmitted to other networks via Router 42."

Do you see that?

A. I will read it back. I didn't follow you

entirely.

"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."

Q. Why would the data from the camera be transmitted to other networks via the router 42?

A. Not sure that this paragraph 119 is -- is specific about that.

I note that in the background section of Beel -- I'll point us there -- it talks about the notion of lecture hall or seminar formats and the presentation or involving a presentation or presentation of software. But I don't see, at least in the confines of 119, additional description on the, quote, other networks via router 42.

Q. Is it possible that the camera data transmitted to other networks as described in paragraph 119 would go to remote users where they can view what's being written on the whiteboard?

A. One more time, please.
Q. Is it possible that the camera data that is sent to the other networks as described in paragraph 119 could be sent to remote or local users to view what's being written on the whiteboard?
A. I don't know. It's just saying that the camera is involved in its connecting a camera 35 to a network 50 and so that the data can be recorded and stored or transmitted to other network via a router.
Q. I would like to turn your attention to paragraph 253, please.
Talks about a remote meeting participant. It also says:
"In this embodiment, one or multiple client operating devices are not in the direct vicinity of the base node but on a remote location."
Do you see that?
A. I do.
Q. So we talked earlier about the camera

data and the possibility of whether it could be sent to a remote meeting participant.

Does this refresh your recollection at all about whether Beel's disclosure includes the possibility of remote meeting participants receiving media data?

A. I don't see that it explicitly says that one way or the other. But it's stating that one or more of these client operating devices aren't local to the base node but in some remote location.

Q. It also talks about in the next paragraph:

"To accommodate this case, the following adaptations are needed: Further compression and/or scaling of the arbitrary media content to allow use of low bandwidth connection."

Do you see that?

A. I do.

Q. Could you please explain to me what that means?

A. It looks like it's saying there may be somebody -- a client operating device from 253 that may be on a low bandwidth connection so they can't get as many bits effectively at a certain rate, for example, and so you may want to compress the media content that's being sent to them or scale it -- probably scale it down, I think it's referring to.

Q. Scaling is a form of compression, right?

A. Sounds like you're talking about compression and scaling or scaling.

Q. So, for example, the resolution of the stream could drop from 10 ADP to whatever the other one is, seven ADP?

A. That's what I was referring to, something like that. Changing a resolution.

Q. So then that way, that would allow the remote meeting participant to view the video data from the meeting; correct?

A. I would say that whatever's referred to here is they -- they are describing using either a compression and/or scaling to accommodate for this

lower bandwidth connection. And that's being done on the arbitration media content.

Q. Let's look at Figure 1A, please.

It illustrates a display of 44; correct?

A. That's right.

Q. Could the display 44 be a television?

A. I think the patent just -- the Beel reference, sorry, just discusses the display as being just that, a projector or a screen. I don't see that it describes it as a television.

Q. So you don't have an opinion one way or the other whether display 44 could be a television?

A. I haven't done that analysis and I know the phrase "television" is used in certain ways in some of the other references. I haven't looked at the similarities or differences there.

Q. I would like to turn your attention to paragraph 75 of your declaration, please.

A. Okay.

Q. And the last sentence talks about "higher-quality functional devices" and it's

talking in the context of microphones, for example, speakers, et cetera; correct?

A. That is -- that's correct. Those are two examples.

Q. And it's your opinion that Beel utilizes low-quality microphones, speakers, video cameras, and other functional devices; correct?

A. I don't recall discussing that in the context of Beel.

Q. So this section is titled "Dinka Teaches Away."

Do you see that?

A. That's correct.

Q. So what's the relevance of this paragraph in that context?

A. I'm just reviewing the prior paragraph.

Well, this paragraph 75 needs to be taken in context to paragraph 74 and 76 where the '972 is talking about these low-quality, for example, microphone, speakers, et cetera, and the ability to provide higher-quality functional devices to laptops, for example. And Beel -- sorry, Dinka is

in contrast to this.

Dinka is talking about using this television or set-top box with all of its functionality embedded. Also discover the use of laptops which may have these lower-quality microphones, et cetera.

Q. The claims of the '972 patent require higher-quality functional devices?

A. I don't -- in skimming through the claims for you, the claims frame it in terms of functional devices. I don't recall the claims using the specific word "higher quality" or "lower quality." That's discussed elsewhere in the specification.

Q. Would you construe the word "functional device" in the context of Claim 1 to require a high-quality functional device based on the description of the '972 patent?

A. I haven't offered a construction on that term.

Q. So you don't have an opinion one way or the other whether the functional devices of Claim

1 1 must be high or low quality?
2 A. I don't see the Claim 1 specifies that
3 one way or the other. The notion of low-quality
4 devices is mentioned in the specification.
5 Q. I'd like to turn your attention to
6 paragraph 76, please.
7 It says:
8 "Dinka discourages use of laptops
9 to host a virtual meeting."
10 Do you see that?
11 A. Yes.
12 Q. And if you go back to Figure 1 of Dinka,
13 we had the computer terminal 102. Could computer
14 terminal 102 be a laptop?
15 A. I don't see Dinka saying that; although,
16 maybe there is somewhere in Dinka you're referring
17 to.
18 Q. You don't have an opinion one way or the
19 other of whether the computer terminal 102 can be
20 a laptop?
21 A. I don't see Dinka saying the phrase
22 "laptop" with regard to Box 102 of Dinka that you

are asking about in Figure 1 -- or, yeah, Figure 1.

Q. All right. Back to paragraph 74, sorry, 76 of your declaration.

You say:

"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."

Do you see that?

A. With these embedded functions, yes.

Q. And then paragraph 79 talks about this packet-based issue again; correct?

A. What I -- what I discuss Dinka teaches access in packet-based communications:

"A laptop is disadvantageous because the user may be sufficiently technically competent to download, install, and operate the call on a personal computer."

Q. And it's your opinion that saying

something is disadvantageous is equivalent to teaching away from a proposed combination?

A. That sounds right, that these aspects of Dinka are teaching away from such a combination.

Q. All right. Do you have a copy of Exhibit 1007, Van de Laar?

A. I do. One moment.

Okay.

Q. And Van de Laar disclosed embodiments that communicate through the Wi-Fi direct protocol; correct?

A. I'm just confirming that for you.

Q. For example, paragraph 98.

A. That's -- that's correct.

Q. In your opinion, is Van de Laar limited to embodiments that use the Wi-Fi direct protocol?

A. Looks like my declaration I discuss Van de Laar around paragraph 115, 116 in the Wi- -- around Van de Laar's Wi-Fi direct, use of Wi-Fi direct.

If there are other aspects of or embodiments of Van de Laar that don't use Wi-Fi

direct, I don't recall discussing them. I don't recall if Dr. Almeroth did either.

Q. You don't have an opinion one way or the other of whether Van de Laar's invention could be used in systems that do not rely on Wi-Fi direct?

A. I don't recall. It doesn't look like I addressed that in my declaration. I'm guessing because from memory, it wasn't a point Dr. Almeroth raised.

Q. Sitting here today, you still don't have an opinion one way or the other whether Van de Laar's invention could be used in systems that don't rely on Wi-Fi direct; correct?

A. I don't have an opinion on that today, no.

Q. Let's look at paragraph 86 of Van de Laar, please.

Talks about:

"Sharing of content and messages between all docked devices."

Do you see that?

A. I do.

Q. So Van de Laar contemplates sharing of media data amongst several docked devices simultaneously; correct?

A. Looks like in the sense that paragraph 86 is talking about broadcast multicast, things like that, to send the content messages.

Q. The docked devices can both send and receive content; correct?

A. As I talk about in my declaration, give me one moment. That there's a host device that enables the sharing in Van de Laar as I talk about in 15 or shared usage of peripherals and let me go back up in my declaration for you a bit.

MR. ANDREWS: Did we lose Kevin?

THE STENOGRAPHER: It looks that way.

MR. GREENLEAF: I'm sorry, I'm still here. I just muted myself for a second. Go back on the record.

BY MR. GREENLEAF:

Q. My question, again, being whether the docked devices in Van de Laar can both send and receive content.

A. So as I discuss in my paragraph 116, there are primary dockees, secondary dockees in Van de Laar, and the primary are able to control at least one peripheral. The secondary dockees don't gain control, they just receive the rendered AV data.

Q. Does Van de Laar contemplate docking multiple primary dockees?

A. I don't recall discussing that in my declaration.

Q. You don't have an opinion one way or the other whether Van de Laar contemplates docking multiple primary dockees?

A. That's not something I recall discussing or offering an opinion on in my declaration.

Q. That's dockees, D-O-C-K-E-E-S.

A. That's right.

Q. If you look at paragraph 59 of Van de Laar, please.

A. Okay.

Q. First sentence, it says:

"Optionally, the docking

processor is arranged for docking multiple primary dockee devices."

Do you see that, Dr. Brogioli?

A. I do. I'm just reading the paragraph. I see that sentence.

Q. So Van de Laar does contemplate allowing for the docking of multiple primary dockee devices; correct?

A. I see it has the sentence:

"Optionally, the docking processor is arranged for docking multiple primary dockee devices."

Q. So in Van de Laar's system, multiple devices can both send and receive data; correct?

A. I don't know that it says that. It just says that in this.

"Optionally, the docking processor is arranged for docking multiple primary dockee devices."

And it talks about:

"Shared control over the at least one peripheral for determining the AV

data to be rendered."

Q. Can you give me an example of shared control over at least one peripheral?

A. Van de Laar just states:

"The shared control may, for example, enable multiple primary dockees to control the volume of a shared loudspeaker system."

I also note that this passage seems to be talking about a docking processor. Or this paragraph.

Q. It does talk about a docking processor. What is a "docking processor"?

A. It's not something I believe I addressed in my declaration. There seem to be statements about it in Van de Laar's paragraph -- yeah, Van de Laar's paragraph 60.

Q. So what is a "docking processor"?

A. One thing Van de Laar states in paragraph 60 is:

"Optionally, the docking processor is arranged for, upon

instruction of a primary and/or secondary dockee device, transforming a secondary device into a primary dockee device or a primary dockee device into a secondary device."

It seems to be mentioned in a few other paragraphs here.

Q. Do you have an opinion one way or the other of whether a secondary docking device can transmit and receive data?

A. It looks like in my declaration I discuss the secondary dockee where it receives the AV data rendered on the peripherals.

Q. Do you have an opinion of whether a secondary dockee can also transmit data?

A. I don't recall discussing the secondary dockees transmitting data. Beyond what's in my declaration, I don't have an additional opinion.

Q. Do you have an opinion about whether the docking processor can modify an assignment of a dockee from being primary to secondary?

A. I don't offer an opinion on that in my

declaration.

Q. Do you have any additional opinions today about whether the docking processor can modify an assignment of a dockee from being primary to secondary?

A. No additional opinions, no.

Q. Do you have a copy of the Kaplan reference, Exhibit 1008?

A. I do.

Q. All right. So I'd like to direct your attention to Figure 1.

A. Okay.

Q. What is element 110?

A. It looks like it is described as the receiver by Kaplan in paragraph 16.

Q. Can the receiver be a transceiver?

A. It looks like Kaplan's language is continuing in that sentence, page 2, left-hand column, his words are:

> "Includes a receiver 110 operable to communicate with a display device. The receiver, which may be a

transceiver."

I note the figures of Kaplan, which I discuss, for example, in Figure 2 on that block 110 just shows outputs for an HDMI out.

Q. A transceiver can both transmit and receive; correct?

A. In a -- I would say in the general engineering sense, it is something that can transmit and receive.

Q. Figure 2 illustrates a receiver 110 communicating bi-directionally with the transmitter 120; correct?

A. I would say there's a bi-directional arrow in this figure.

Q. Would a person of ordinary skill in the art have understood that there is bi-directional communication between the receiver 110 and the transmitter 120?

A. I would say Kaplan talks about, as I discuss in my declaration, the sharing of this content from the right-hand-side terminal 220 to the display we see connected on the left-hand side

at 210.

Q. Do you have an opinion one way or the other of whether there would be bi-directional communication between the transceiver 110 and the transceiver 120?

A. I would say, as I discuss in my paragraph 112, that Kaplan is a system where the video content is transmitted between the computer and the display device using that transmitter and receiver.

Q. So you don't have an opinion one way or the other whether there is any bi-directional communication between those elements, 110 and 120?

A. I don't see any bi-directional communication in terms of the video content that Kaplan is -- is targeted towards transmitting.

Q. Would there be bi-directional communication, at least for initialization or a handshake to establish the connection?

A. I don't know. I don't know that Kaplan discusses that.

MR. GREENLEAF: Why don't we take a break

until 20 to, and I think we're going to wrap up soon.

MR. ANDREWS: Did you say 22?

MR. GREENLEAF: 20 -- 20 to the hour, so 2 -- I guess it's 1:40 your time.

MR. ANDREWS: Perfect. Thanks.

MR. GREENLEAF: Thank you.

(A recess was taken.)

MR. GREENLEAF: Back on the record.

BY MR. GREENLEAF:

Q. Would you please go to paragraph 96 of your declaration, Dr. Brogioli.

A. Okay.

Q. Well, I guess, first of all, why don't we look at the '972 patent. And Figure 5, let me know when you're there.

A. Okay.

Q. So we talked about the roadrunner earlier. And the data the roadrunner picture is on processing device 160-1; correct?

A. That's right.

Q. And that data is transmitted to the

display 126; correct?

A. Well, the -- the data is going through that peripheral device and that base node within the '972, but is ultimately showing up on that display 126.

Q. So that display 126 is a functional device; correct?

A. I don't know that the '972 talks about that as a functional device or not. I'm trying to see where that is for you.

It looks like it just refers to it as a main display 126.

Q. So you don't have an opinion one way or the other whether display 126 is a functional device?

A. So I guess I'm referring next to Column 19 where it is referring to -- well, in the context of Figure 6, there are various functional devices such as display 126, but that's referring to in Figure 6.

Q. Because of that sentence, you now believe that display 126 is a functional device; correct?

A. Well, I'm saying that's the language that the '972 is using with regard to the display, it looks like 126 and Figure 6.

Q. So do you have an opinion of whether element 126 is a functional device?

A. I don't recall discussing that in my declaration, if that display of Figure 1 is a functional device or not in the confines of the patent.

Q. The roadrunner data, is that -- well, let's just kind of make sure we have an understanding.

The roadrunner image is data; correct?

A. In the sense that it's data that comprises the image that's on the screen here.

Q. Is that roadrunner image data of the processing device 160-1?

A. In the sense that the data -- if it's being transmitted, would be sent out over the peripheral device 130.

Q. So the roadrunner that appears on the display 126, the roadrunner data, is that of the

display or of the processing device?

MR. ANDREWS: I'm going to object to the form of the question.

THE WITNESS: I guess I would say the roadrunner image being shown on 160-1 is as it's sitting on that what's illustrated as a laptop would be, at that point, data of the laptop.

BY MR. GREENLEAF:

Q. But then when it's displayed on the display 126, is it data of the display?

A. I don't recall. Sounds like you're asking as data may move throughout the topology of Figure 1, is it data of "X" or is it data of "Y" or something like that. I don't recall offering an opinion on that in my declaration.

Q. Let's go back to paragraph 96 of your declaration.

This is talking about audio data. But for our purposes, I'm not trying to split hairs between audio data and video data. I'm just talking about data generically.

And here in this paragraph 96, you're

talking about audio data and we were just talking about video data, but we could have just as easily have talked about audio data.

The point here that I understand you're trying to make is that the peripheral device of Beel:

> "Acts as an audio-out device for the processing device, and it is the data of the processing device, not the data of the functional device, that is then communicated through the peripheral device to the base unit."

Do you see that?

A. Sounds like you're reading my sentence about six lines from the bottom.

Q. Yes.

A. Okay.

Q. So here you are distinguishing between data of the processing device and the data received by the speaker. So the example we were talking about with the roadrunner was data of the processing device or data of the display, which,

you know, is essentially a functional device in my opinion. But he didn't have that opinion.

So I'm wondering in the example of the '972 patent, Figure 5, you know, what the data of the processing device is versus what is the data of the devices attached to the process -- the base unit is.

So you seem to have formed an opinion here that Beel's data originates from the processing device and is therefore of the processing device. And the functionality of the '972 patent is essentially the same. You're transmitting data from the processing device, you know, and eventually it ends up on some sort of peripheral device or functional device attached to the base unit. So, you know, this is my long-winded way to explain, you know, what the issue here is.

So the question kind of goes back to what we were talking about, it says -- you said something along the lines of you didn't form an opinion in your declaration about this issue about

where the -- what the data is of. And here, I think you did. In terms of Beel.

Now I'm asking you to form that same analysis in terms of the '972 patent if you're able to; if you're not, you can say you don't have an opinion, which is fine. But I just wanted to refresh your recollection on this issue in the context of Beel and then maybe go back to the '972 patent and see whether you can do an additional analysis of whether similar data is of the processing device or of the display or the speaker of Figure 5 of the '972 patent.

Did that make sense to you?

MR. ANDREWS: Objection. Form.

THE WITNESS: Pieces of it. I'm not -- I'm not sure I'm understanding what the ultimate question is.

BY MR. GREENLEAF:

Q. So back to paragraph 96, I read you that sentence that begins with "Instead."

A. Okay.

Q. And you say:

"Instead, the peripheral device acts as an audio-out device for the processing device, and it is the data of the processing device, not the functional device."

And that's the key phrase I want us to focus on here.

"It is the data of the processing device not of the functional device."

And let's just say that it's the display, the functional device is the display just for sake of clarity. It is the data of the processing device, not the display -- or here, it would be a speaker. So it is the data of the processing device, not the data of the speaker.

So Beel discloses sending data -- audio data from the peripheral device to a speaker. Is that your understanding of Beel?

MR. ANDREWS: Objection. Form.

THE WITNESS: I'm having a difficult time following you.

But Beel talks about a processing device

and a peripheral device.

BY MR. GREENLEAF:

Q. So let's look at Beel paragraph 317. And if you just read the first couple of sentences about scraping audio data.

A. Okay.

Q. Do you see that?

A. I see it, but give me one second to read it.

Okay. You're at paragraph 317 of Beel; is that right?

Q. Yes.

A. Okay. I've read the first two sentences.

Q. So this is discussing how the -- Beel discloses scraping of audio data that is sent to a virtual audio speaker that could be used to, for example, play that audio data via speaker in the room as illustrated in Figure 1A; correct?

A. So it looks like it's talking about scraping audio, like the prior art. And capturing audio on the peripheral device and then that peripheral device preferably acts as a composite

device comprising, for instance, a virtual audio speaker.

Q. And then that data is transmitted to the base unit; correct?

A. The peripheral device captures the audio stream with the device driver and then that is streamed -- or the peripheral streams the audio to the base unit.

Q. And then the base unit will perform a lip-syncing function that will tie both audio and video together so that it's displayed in sync via the display and the speaker; correct?

A. It talks about halfway down the paragraph lip synchronization and then a use of a timer "present in a processing device." It time stamps audio and video. And the ALSA is, I believe, a Linux audio system, communicates stream to the peripheral device. It's then the peripheral device that encodes the time stamp into the stream, audio stream, sends it to the base unit.

And then at the receiving end, the audio and video are then recombined to take into account

the time stamp to reach lip synchronization.

Q. And the base unit would then play that video and audio data via a display and a speaker; correct?

A. I don't see that this paragraph says that, but I would think that the video is on the -- on the display like the roadrunner image, and the audio may go to a speaker connected to this base unit.

Q. When you say -- oh, connected to the base unit. Never mind.

And it's your opinion that the audio data that we just discussed in paragraph 317 is of the processing device; correct? That's exactly what you testified in paragraph 96.

A. Revisiting the paragraph for you.

It -- right. The audio data being the data of the processing device. Not -- in this case, not of the functional device.

Q. All right. I'd like to turn your attention to Column 15 of the '972 patent at the bottom.

It says:

"Sending Data from the Processing Device to the Base Unit."

Let me know when you're there.

A. Okay.

Q. All right. And then at the end of that section, there's another section that has the same label:

"Sending Data from the Processing Device to the Base Unit."

But right above that second label, it talks about lip synchronization.

Do you see that?

A. Give me one second. You said at the end of the section?

Q. Well, I mean, there's -- right about Column 16, line 24.

A. Oh, oh, I was looking below.

I see the lip synchronization at line 24, yes.

Q. So here this disclosure, to me, seems substantively identical or at least extremely

similar about sending data from the processing device, audio data, to the base unit. And so here, too, your opinion would be that the audio data on the processing device as stated on Column 15, line 62, is data of the processing device and not data of a functional device such as a speaker; correct?

A. That sounds like a similar scenario in the case of sending data from the processing device to the base unit and that the data is that of the processing device here.

Q. How does one send data -- go ahead.

A. And not of a functional device.

Q. So how does -- let's look at the claim limitation, Claim 1.

"Limitation. The base unit and the peripheral device being adapted to transmit and receive data respectively over the communications network from the functional device to the processing device" --

That's -- that's -- let me read a little

bit of the prior limitations. Scratch that question.

The prior limitation:

"The base unit having a transmitter and the first peripheral device having a receiver."

And:

. . . "at least one fixed or configurable endpoint" --

Okay. Let's -- let's look at Figure 5 of the '972 patent. It has a microphone 96.

Do you see that?

A. One moment.

I see that.

Q. The data -- is the microphone a functional device?

A. Looks like that is characterized in Column 19 around line 35.

Q. So the data -- sorry, the question again, is the microphone a functional device?

A. In the sentence of Column 19 starting at 33 states:

"Various functional devices such as a display, a speakerphone, or microphone and speaker set 96, 97," dot, dot, dot "are connected to the base unit 100."

Q. So a microphone is a functional device; correct?

A. As it's described in this paragraph, looks like -- that looks like what it's saying. Or the microphone speaker set.

Q. All right. And that -- what happens to that data when it gets to the base unit 100?

A. What data are you referring to?

Q. The data generated by the microphone. So the microphone will generate data based on the received sounds; correct?

A. I would say generally if I'm speaking into a microphone, it puts out an electrical signal and Figure -- Figure 1 looked like it shows the microphone 96 being connected to the base unit 100.

Q. You mean Figure 5?

A. Figure 5, that's right.

Q. And that electrical signal is data representation of the sound the microphone picked up; correct?

A. I don't see that the '972 gets that specific. But there is a representation of my voice or some audio that the microphone is picking up generally.

Q. And then what does the base unit do with that representation of the audio?

And I think look at Column 18, line 31, it says:

> "The microphone 96 can pick up this signal, or the base unit 100 can inject it in the microphone signal to the first peripheral device 130 connected to the host 160-4."

Do you see that?

A. I see that, that paragraph. It looks like it's referring to some of the illustrations of Figure 1 with regard to the UC client software that runs on that node, 160-4.

Q. And then in Figure 5, the 160-4, has the word "hello" to the left of it.

Do you see that?

A. Just a second.

In Figure 5, I see the illustration 160-4. It has "hello" coming to the -- I guess pointed to the left of it.

Q. It's kind of interesting, I'm looking at this webcam and it has -- you know, to the right of the webcam is sort of -- it looks like a camera image of a conference room. And you can see that same image on 160-4.

Do you see that?

A. I think you're pointing to the -- there seems to be an image to the right of -- in Figure 5, webcam 95, it's pretty low resolution, and I think a similar graphic may be shown on the lower right of the display 160-4.

Q. Yeah. And there's a similar set of, you know, angled lines, skewed lines in the microphone, but it's blank, it's empty. But on the 160-4, it has the word "hello" so presumably

the microphone is hearing the word "hello" and "hello" is being sent to the processing device, 160-4. Would you agree?

A. That's something I haven't looked at up until now.

Q. So you have no opinion one way or the other whether the hello that's coming out of 160-4 is a representation of the sound heard at the microphone?

A. I haven't looked at that in the context of this figure.

Q. Let's just assume that it is how I understand it, that the word "hello" is going into the microphone and then is being played, the processing device 160-4, that "hello" data would be of the functional device, the microphone functional device; correct?

A. Not sure I'm following you. I mean, it sounds like you're saying someone is saying hello into the microphone 96 of Figure 5?

Q. Yes. And that word "hello" is then transmitted via the path from the base node to the

processing device 160-4 and that data, the word "hello," represented digitally and then -- analog form is data of the functional device; correct?

A. I would say there, someone might say the microphone 96, as a functional device, would pick up a hello. It would traverse through base unit 100 to, ultimately, the 160-4 computer and be played as "hello."

Q. The signal representing the word "hello," is that data of the functional device?

A. I don't recall if I've done that analysis in my declaration or not. If you can point me there.

Q. I don't think you have either.

A. Yeah, I don't recall performing this analysis around this "hello" scenario in Figure 5. So I don't believe I have an opinion on your question one way or the other.

Q. Let's go back to paragraph 120 of Beel. And I want to focus specifically on the microphone 38.

Let me know when you're there.

A. Okay.

Q. I think it seems that we agree, at least, that the data from the microphone can be used to transfer audio to the processing devices 31; correct?

A. So in the context of Beel, and I think we talked about this earlier this morning, in paragraph 120, there's a microphone or microphones that are used to transfer audio to the processing device 31.

Q. Do you have an opinion one way or the other of whether the data from the microphone here would be data of the microphone?

A. I -- I didn't perform that analysis in the context of Beel as to if it's the data of the microphone, et cetera, but that the microphone data -- or sorry, the microphone or microphones can be used to transfer audio to the processing device here.

Q. I'm going to share my screen, try to speed things up.

All right. So I'm on page 31 of the

petition and we're talking again about this data of the functional device. No, this is the -- that's the wrong one here.

Let me unshare for a second. Okay.

MR. GREENLEAF: Let's take a five-minute break so I can get organized.

MR. ANDREWS: Sounds good.

(A recess was taken.)

BY MR. GREENLEAF:

Q. All right. So I've got the '972 patent up here, Dr. Brogioli, to try to speed us up.

I'm looking at Claim 1, Column 23. This claim limitation at line 11, it talks about:

"The base unit and first peripheral device being adapted to transmit and receive data respectively over the communications network from the functional device to the processing device."

So I misspoke earlier, I was talking about data of the functional device, I should have been saying from the functional device so I'm

going to kind of repeat a little bit of what we just talked about by using the proper language.

So if we go back to -- well, first off, you understand this claim limitation about the data from the functional device?

A. Yes.

Q. So let's go back and look at Figure 5.

And talking again about the microphone example, 96, the microphone is the functional device, I think we agreed on that; right?

A. That sounds right, yes.

Q. And then we talked about the potential for the word "hello" to be received by the microphone, being converted into an electrical signal representing that word "hello," which is then received by the base unit 100, and then ultimately received by the processing device 160-4, which then reproduces that sound, the word "hello" on the laptop.

Do you recall that discussion?

A. Yes.

Q. And that data, the word "hello," is from

the microphone functional device; correct?

A. That would be from the functional device 96.

Q. Mm-hmm.

A. Originating at the functional device 96.

Q. Then let's look at the petition, page 35, we have this from the functional device limitation again.

Do you see that?

A. I see that, yes. What page are you on? Just it's easier for me to see on this.

Q. 35. I'll make it bigger.

A. Okay.

Q. And it -- the analysis states:

"Beel discloses the base unit transmitting audio/visual data to the first peripheral device."

And we're, again, talking about this paragraph 120. It says:

"A microphone or microphones 38 that can be used to transfer audio, e.g., to the processing devices 31."

Do you see that?

A. Yes.

Q. And am I correct that you don't have an opinion one way or the other whether these microphones 38 are functional devices?

A. I think that's what we were talking about earlier. It sounds, in the scenario you're asking, and we discussed, the microphone is just something directly communicating to that processing device, that is what we talked about earlier.

Q. So this -- and the processing devices presumably would play the audio data that was received at -- generated by the microphones 38; correct?

A. So I don't recall that it says that.

In this scenario of Beel, I'm going to click back there on my end to 120, it's talking about a scenario of recording the progress of a meeting. I don't know that it's saying that audio would be played by the processing device in that scenario.

Q. We talked earlier about this processing device in Figure 5 of Beel, which I have up on the screen.

Do you recall that discussion?

A. I do.

Q. And you recall how you testified that this processing device could include, for example, 3.5-millimeter audio out -- output?

A. I think I, a little more generally, said there would be audio in -- hardware audio in or out kind of thing, 3.5-millimeter is an example.

Q. So this processing device, Figure 5 -- in Figure 5, a person of ordinary skill in the art would have understood could play audio; correct?

A. As a device, you know, consumer computer laptop could play audio at that time.

Q. So the microphone data received at the processing device could have played through a speaker on the computer as illustrated in Figure 5; correct?

A. I would say a laptop at the time, I could connect a microphone to it with a cable and have

that -- my voice come out of a speaker locally.

Q. So it's your opinion that these microphones disclosed in Beel must be connected locally to the computer; correct?

A. That -- as it -- as this citation states from Beel 120 that the microphone or microphones can be used to transfer audio to processing devices; correct.

Q. It does not use the word "directly"; correct?

A. I do not see the word "directly" used explicitly here, no.

Q. Why did you add the word "directly" into your statement?

A. Because that's what's being described here, rather than different flows that may be comprised at different references. It's the microphone transferring audio to the processing device.

Q. And is that data of the microphone -- or sorry, is that data from the microphone?

A. In this scenario, regarding this sentence

of Beel, it's data from that microphone, you know, on my lapel or something going to the processing device.

Q. Mm-hmm.

And a person of ordinary skill in the art wouldn't have understood that the microphone is connected to the base node which then transmits the audio data to the processing devices via a packet-based network; correct?

A. I don't believe a person of skill reading this sentence would understand it other than the microphone is transferring audio to the processing device.

Q. Well, the scenario that I just described would be transferring data from the microphone to the processing device via packet-based network. How -- how is that not transferring audio?

A. I'm not sure I understand the use case you're describing.

Q. Well, I'm trying to describe, more or less, the exact same scenario we talked about in the context of the '972 patent. You said the '972

patent transfers data from the microphone functional device to the laptop; correct?

MR. ANDREWS: Objection.

THE WITNESS: No, that wasn't what I said.

BY MR. GREENLEAF:

Q. Does -- does the microphone in Figure 5 of the '972 patent transfer audio data to the processing device in 160-4?

A. The patent talks about the functional device communicating through a base node that involves communication path to a peripheral device that is connected to a processing device.

Q. Is the microphone 96 of the '972 patent a virtual audio device?

A. I don't recall discussing that in my declaration. And/or perhaps in the passages we have discussed in the '972, I guess I would have to go back and look for you.

Q. So you have no opinion one way or the other of whether the '972 patent describes virtual audio devices?

A. I don't recall discussing virtual audio devices of the '972.

Q. Let's go to Column 22 of the '972 patent.

A. Okay.

Q. Line 8, it talks about a virtual microphone.

A. Okay.

Q. Is element 96 of Figure 5 an example of a virtual microphone?

A. I don't recall discussing that in my declaration.

It looks like Figure 5 is illustrating a microphone with a USB connection to the base node. At least in terms of how it's illustrated.

Q. Do you have an opinion one way or the other of whether the microphone is a virtual microphone as the term is used here in the '972 patent?

A. I don't think I discussed that in my declaration, no.

Q. Do you have an opinion otherwise beyond the scope of your declaration?

A. Sitting here today, I do not.
Q. Let's turn to paragraph 43 of Beel, please. Let me know when you're there.
A. Okay.
Q. All right.
"An embodiment" -- "In an embodiment, audio data is captured through a virtual sound card."
Do you see that?
A. I do.
Q. Actually it says "virtual sound card interface."
What is a "virtual sound card interface"?
A. It looks like it's describing some kind of logical device that's overlaid on the physical sound card, physical sound card interface to some degree. I haven't -- I haven't analyzed this aspect of Beel.
THE WITNESS: One moment. Do you mind if we adjust the blinds?
MR. ANDREWS: Yeah.
MR. GREENLEAF: Do you want to take a

break?

THE WITNESS: No, we should be okay.

MR. GREENLEAF: Okay.

THE WITNESS: Do I look tan?

BY MR. GREENLEAF:

Q. Let's look at the claims of the '972 patent.

Do any of the claims require multiple processing units transmitting data to a base unit?

A. As I talk about in my declaration, the claims talk about processing. Excuse me, processing device. And I don't recall analyzing the other independent or dependent claims if they require processing devices.

Q. You don't have an opinion one way or the other of whether any claim in the '972 patent requires multiple processing devices configured to transmit data to the base unit; correct?

A. I don't recall having an opinion on that in my declaration, no.

MR. GREENLEAF: Thank you, Dr. Brogioli. I have no further questions.

MR. ANDREWS: Can we take, like, a five-minute break?

MR. GREENLEAF: Yes.

(A recess was taken.)

MR. ANDREWS: Back on the record. Just a brief redirect.

EXAMINATION

BY MR. ANDREWS:

Q. So Dr. Brogioli, can you go to paragraph 140 of your declaration for me.

A. Okay.

Q. Below paragraph 140, there's an image of a ClickShare button.

A. That's right.

Q. And do you see a big button in the middle of the ClickShare button?

A. I do. This is under the image under paragraph 140.

Q. And do you see or recall a smaller button toward the top left in that image?

A. There is -- the -- there's a little artifact on the lower part that, I think, is how

the device is molded, but on the upper left in this image, there's another smaller button there.

Q. Can you please turn now to Beel, so Exhibit 1005, Figure No. 10. Let me know when you're there.

A. Okay.

Q. Do you see that same small button in Figure 10?

A. No.

Q. Do you recall when Barco released the conference version of the ClickShare button?

A. As I recall, it was around 2020.

MR. GREENLEAF: Objection. Vague.

BY MR. ANDREWS:

Q. Dr. Brogioli, there were a lot of questions about analysis that was not included or that you did not do in your declaration.

Do you recall that?

MR. GREENLEAF: Objection. Vague.

THE WITNESS: Throughout the day, yes.

BY MR. ANDREWS:

Q. Why was it you hadn't done that analysis?

A. My declaration was responding to statements Dr. Almeroth made. To the extent I didn't discuss something in my declaration or analyze it, it would be because he hadn't made arguments about it one way or the other for me to respond to.

MR. ANDREWS: No further questions.

THE STENOGRAPHER: Any redirect or recross?

FURTHER EXAMINATION

BY MR. GREENLEAF:

Q. Dr. Brogioli, what is the conference version of a ClickShare button?

A. I guess I need to go back and look at the Barco literature around those versions of the buttons. They would have been the ones I used in my -- as I recall, the ones I used in my declaration, in my testing if you will.

Q. What version of the Barco ClickShare button is illustrated in Figure 10 of Beel?

A. I'm not sure that Beel says; however, I would think it is prior to the filing date of Beel

if the image is included in there. If it was, you know, a physically available device.

Q. How do you know about the conference version of the ClickShare button?

A. I would say it would have been in the course of the various product uses I did in relation to my declaration -- in relation to my declaration here.

Q. Did you identify that document in your declaration?

A. I don't see in the "Materials Considered" section I have that. Perhaps it would have been, I would think, included with the -- possibly with the materials in the boxes of the Barco equipment that I used. There were various instruction manuals and things like that.

Q. What does that button on the so-called conference version of the ClickShare button do, the small one in the upper left that Mr. Andrews directed you to?

A. I'd have to go back and look for you. I recall using it in areas of the testing, but I

don't know that I discussed the functionality of it in this declaration in regard to my product-use scenario.

Q. Are you aware of any differences between the operation of the ClickShare button illustrated in Figure 10 of Beel and the conference version of the ClickShare button that you took pictures of in your declaration?

A. I don't recall performing a side-by-side analysis of those different devices.

Q. So besides that button and any other obvious esthetic differences between the ClickShare button illustrated in Figure 10 of Beel and the conference ClickShare button illustrated in your report on page 59, you're unaware of any other difference between those two devices?

A. I would say the analysis in my declaration was as to whether this ClickShare system practice, the claims of the '972. I didn't do an analysis of the various releases of the ClickShare button.

Q. Do you know whether the conference

version of the ClickShare button includes an internal mass storage device?

A. I -- I recall the button has the software image of the application that can be run, it's stored on some nonvolatile memory and if I go back to my declaration, I'm just flipping through my last section here on the Barco system. I'm just looking at the table or the screen capture I have on the internal page 63 from USB dead view tool. And I don't see that I -- I think you're asking about a mass storage device?

Q. Yes. Right towards the bottom, USB store dot sys mass storage device.

A. I see that.

Q. Is that referring to the Barco ClickShare device?

A. It may be referring to the storage device within the ClickShare button.

Q. And the conference version of the ClickShare button has a USB device interface; correct?

A. The end of the dongle is a USB connector,

that's correct.

Q. And the conference version of the ClickShare button also has a button; correct?

A. That's correct.

Q. The conference version of the ClickShare button also has a visual indicator; correct?

A. That is correct.

Q. The conference version of the ClickShare button also has an internal Wi-Fi antenna; correct?

A. As I recall, it does.

Q. And that Wi-Fi antenna is a transceiver; correct?

A. I don't recall specifically if that's how it's phrased.

Q. Well, it necessarily must transmit and receive; correct?

A. That sounds correct, yes.

Q. And therefore, it must have a transceiver; correct?

A. That may be the case, yes.

Q. It also has a flexible connection for

data signals and power; correct?

A. That sound correct. There's a flexible connector on it.

MR. GREENLEAF: No further questions. Thank you, Dr. Brogioli.

We'll close the record.

THE STENOGRAPHER: Mr. Andrews, did you need a copy of the transcript?

MR. ANDREWS: Yes. And we'd like to sign as well, read and sign.

THE STENOGRAPHER: And did you want a rough?

MR. ANDREWS: Yes, please.

THE STENOGRAPHER: Thank you.

Off the record?

MR. GREENLEAF: I do as well.

MR. ANDREWS: Yeah.

- - -

(Deposition was concluded at 3:06 p.m.)

- - -

DEPONENT'S CHANGES OR CORRECTIONS

Note: If you are adding to your testimony, print the exact words you want to add. If you are deleting from your testimony, print the exact words you want to delete. Specify with "Add" or "Delete" and sign this form.

DEPOSITION OF: MICHAEL C. BROGIOLI, Ph.D.

CASE: YEALINK (US) V BARCO N.V.

DATE OF DEPOSITION: DECEMBER 18, 2025

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Deponent's Signature

_____Date_____

Declaration Under Penalty of Perjury

I, MICHAEL C. BROGIOLI, Ph.D., the witness herein, declare under penalty of perjury that I have read the foregoing in its entirety; and that the testimony contained therein, as corrected by me, is a true and accurate transcription of my testimony elicited at said time and place.

Executed this _____ day of _____ 20__, at _____,_____.
(city) (state)

_____
MICHAEL C. BROGIOLI, Ph.D.

CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

I, LYNETTE MARIE NELSON, Certified Reporter for the State of California, Oregon, and Tennessee, Registered Professional Reporter, do hereby certify:

That MICHAEL C. BROGIOLI, Ph.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me before the commencement of such deposition and that such deposition was taken before me and is a true record of the testimony given by such witness.

I further certify that the adverse party, Barco N.V., was represented by counsel at the deposition.

I further certify that the deposition of MICHAEL C. BROGIOLI, Ph.D., occurred via Zoom videoconference technology on Thursday, December 18, 2025, commencing at 9:03 a.m. to 3:06 p.m. Central Time.

I further certify that I am not related to any of the parties to this action by blood or marriage, I am not employed by or an attorney to any of the parties to this action, and that I am in no way interested, financially or otherwise, in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of January, 2026.

Lynette Marie Nelson

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RPR, CRR, CCR, CRG