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Paper No. 40
Entered: October 28, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

EIGHT KHZ, LLC,
Patent Owner.

IPR2023-01084 (Patent 8,321,213 B2)
IPR2023-01128 (Patent 8,326,611 B2)

Record of Oral Hearing
Held: October 9, 2024

Before GEORGIANNA W. BRADEN, NORMAN H. BEAMER, SHEILA F. McSHANE, and SCOTT RAEVSKY, *Administrative Patent Judges*.

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The above-entitled matter came on for hearing on Wednesday, October 9, 2024, commencing at 2 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE RAEVSKY: Good afternoon, this is Judge Raevsky and welcome to the Patent Trial and Appeal Board. We're here today for oral argument in two proceedings, IPR number 2023-1084 and IPR number 2023-1128. In both proceedings, Meta Platforms, Inc. is the Petitioner and Jawbone Innovations, LLC, is the Patent Owner. At issue in the 1084 case is U.S. Patent Number 8,321,213 and at issue in the 1128 case is U.S. Patent Number 8,326,611. Because these cases are so closely related, we've consolidated the hearings today. And the panel for the 1084 case includes myself, Judge Braden, and Judge Beamer. The panel for the 1128 case includes Judges McShane, Braden, and Beamer. So, even though we have four judges here today, I just wanted to clarify that this is not an expanded panel.

Let's go ahead and enter appearances. Who do we have representing Petitioner today?

MS. WANG: Good afternoon, Your Honor. Grace Wang of Paul Hastings representing Petitioner Meta.

JUDGE RAEVSKY: Thank you, Ms. Wang. And who do we have for Patent Owner?

MR. LAMBRIANAKOS: Good afternoon, Your Honor. Peter Lambrianakos on behalf of the Patent Owner.

JUDGE RAEVSKY: Thank you, Mr. Lambrianakos. Before we begin, just some housekeeping items that you're all familiar with, but I'll repeat them anyway. When you're referring to a slide today, please kindly

tell us slide numbers so that we can follow along. You are free to share your slides if you would like, but if not, we also have copies of the slides, and we can follow along on our own.

Please also remember to mute yourself when not speaking, but when you begin your argument, identify yourself for the court reporter. Also, please be aware that members of the public may be listening to this hearing today.

Each party will have 75 minutes of argument time and you may allocate your time among the two cases however you would like. We will enter a consolidated transcript in both cases. We'll first hear from Petitioner and then Patent Owner. Petitioner may then present rebuttal arguments followed by any sur-rebuttal from Patent Owner. Petitioner, would you like to reserve time for rebuttal today?

MS. WANG: Yes please, Your Honor. I'd like to save 20 minutes for rebuttal.

JUDGE RAEVSKY: And Patent Owner?

MR. LAMBRIANAKOS: Yes, Your Honor, I'll reserve 20 minutes for sur-rebuttal.

JUDGE RAEVSKY: Very good. So, Ms. Wang you have 55 minutes. You may begin when ready.

MS. WANG: Thank you, Your Honor, and I'll just go ahead and share my slides. Good afternoon, Your Honors. Grace Wang again of Paul Hastings for Petitioner Meta. Also present with me today is Silvia Medina, in-house counsel at Meta, and Lisa Nguyen of Paul Hastings. David Tennant of Paul Hastings is also joining on the public line.

So, I'm starting with slide 2 of Petitioner's demonstratives. This is

Exhibit 1021 in both proceedings. This slide is showing a map of the grounds in both IPRs. The independent claims are bolded and underlined. So, for our purposes today, each of the independent claims is very similar across the three independent claims, and any differences among them or their corresponding dependent claims are not in dispute.

We're going to focus on the '213 patent and specifically Independent Claim 14 of the '213 patent and its dependent claims, but the same arguments for that independent claim apply to all the independent claims. And then when we get to the dependent claims, I'll focus on the '213 dependent claims, but identical language appears in corresponding dependent claims of the '611 patent. So, where applicable, I'll try my best to remember to refer to the dependent claim numbers in both patents.

So, we're going to first focus on Ground 1 in both petitions. This is relying on the prior art combination Avendano with Visser. In Ground 1, the petitions present two alternative positions. One is based on the combination Avendano with Visser. The other is based on Avendano by itself. For today, we're going to cover both and we're going to start with the combination. For the combination, there's really only one small issue in dispute. There's no claim construction in dispute. There's also no dispute that for the combination, the combination meets every limitation of the independent claim. The only thing that Patent Owner does dispute is whether there is motivation to combine Avendano with Visser. The evidence shows that there is. Patent Owner misreads the petition and misunderstands the combination. So, if Your Honors find that there is motivation to combine, then we could be done with the independent claims.

For the Avendano alone position in Ground 1, there also really

shouldn't be any issue in dispute. This is where the claim construction dispute comes up. It's specific to the position based on Avendano alone, but technically Your Honors don't even have to resolve claim construction because Avendano alone still meets the independent claims regardless, even if you were to accept Patent Owner's interpretation.

The claim construction dispute between parties boils down to Patent Owner's incorrect position that the claimed filter has to be the patent's beta filter. It cannot -- they argue that it cannot be the patent's delay filter.

JUDGE RAEVSKY: Ms. Wang?

MS. WANG: We'll get into -- yes.

JUDGE RAEVSKY: Ms. Wang, before we get too far into that, I did want to clarify something. I think your slide clarifies as well, but just to be sure, Patent Owner noted, I believe in the response, that META did not challenge Claims 37 and 38, but the other previously joined parties did. And it looked like in their footnote on page 24 of their response, they understood that those claims are no longer in this proceeding because LG and Sony are no longer in the proceeding. And I don't see them on your slide. Do you agree with that position?

MS. WANG: That is correct, Your Honor. Those claims have been found indefinite in the corresponding District Court proceedings, so we are not challenging those claims.

So, going back to the claim construction dispute, we'll get into all the different reasons for why Patent Owner's construction is wrong. But if Your Honors decide that the claimed filter can be the patent's delay filter, there is no dispute that Avendano alone, which has its own delay filter, meets the independent claims. Even if Your Honors decide that Patent

Owner is correct on the claim construction issue, that the claim filter has to be limited to the beta filter, there still is no dispute that Avendano alone meets the independent claims because of Avendano's gain block.

So, for the independent claims, those are really the only disputes. If you decide in Petitioner's favor on any one of these three issues, then the independent claims are unpatentable. One is the motivation to combine Avendano with Visser, two, if Your Honors reject Patent Owner's construction, Avendano alone is enough, and three, even if you agree with Patent Owner's construction, Avendano alone is still enough. Other than the independent claims, there are certain dependent claims that we will discuss. The evidence shows that Patent Owner's interpretation of those dependent claims is overly narrow, excludes every embodiment in the patents.

So, let's take a look at the patents, I'm on slide 8. The subject matter of both of these patents is to detect voice activity, or a voice activity detector, also known as a VAD, V-A-D. So, what we're showing on slide 8 are annotated Figures 3 and 4 from both patents. And in both figures, we see two physical microphones, 01 and 02, and Figure 1 of both patents, it's not shown on the slide, but Figure 1 of both patents shows that 01 is closer to the mouth and 02 is further from the mouth. So, both microphones are going to be picking up some combination of speech and noise, but it's the closer microphone 01, it's going to have a higher response to speech, it's going to have an earlier response to speech than 02, which is the further microphone.

The patents talk about taking advantage of the spacing to process the signals to try to isolate the speech. And the way they do that is through filters. The output of these filters are subtracted to produce two virtual microphones, V1 on the left, V2 on the right. The point is, we want to try to

isolate speech to V1 so that it is responsive to speech, and V2 should not be responsive to speech. Now, the way they do that is through these three different types of filters. There's an alpha filter, this is a calibration that basically equalizes the levels of the two signals, because 01 is closer, it's generally going to have a higher amplitude, so alpha balances them out. The beta filter is an adaptive filter that tries to cancel out the speech when calculating the second virtual microphone V2. And then the third is a delay filter. This is just a simple delay that aligns the two signals in time. The closer microphone 01, it's receiving speech earlier than the other one. So, the delay filter just compensates for this temporal difference.

JUDGE RAEVSKY: Counsel, I'll just note that we appreciate the overview of the invention. We're also very familiar with the record, so you may proceed directly to the issues if you would like to.

MS. WANG: Okay. Thank you, Your Honor. I'll try to cut to the chase more. I just wanted to point out something on slide 9. There's independent -- we're showing independent Claim 14. Just to finish out how the two virtual microphones are processed to be used as a VAD, we take the energies of the virtual microphones, divide them, and then what you have is essentially a signal-to-noise ratio that you can compare to a threshold, and that tells you whether voice activity is detected or not.

Okay. So, with that I'm going to jump ahead to slide 26. This is Avendano. Again, two microphones, 106, 108. One is closer to the mouth than the other. Jumping to slide 28, Avendano's processing is also similar to the patents. Avendano applies a gain filter that equalizes the signals and a delay filter that aligns the signals in time before subtracting the filter outputs to produce these two virtual microphones, which are labeled CF and CB.

The rest of Avendano is also similar. At block 306, there is calculation of energy of both virtual microphones, and then at block 308, we're taking their ratio of energies, which is calculated as an inter-microphone level difference. And that inter-level microphone difference is compared to a threshold. This is on slide 29. Outputs a zero, if there's no voice activity. Outputs are one, if there is yes -- if there is voice activity.

So, jumping ahead to Visser. Visser is also similar. There's two microphones, 102, 104. One is closer to the mouth and one is further from the mouth. Its goal is also ultimately the same. Process both signals to perform a VAD. The processing in Visser is called ICA, or independent component analysis, which is basically doing the same thing. It's performing signal separation to separate speech from noise.

On slide 31, the way that Visser achieves this is through cross filters W12 and W21. These are adapted based on feedback from the VAD. Now, in the combination, this is slide 32, we're taking Avendano's system that has the gain filter, the delay filter, and we're adding Visser's cross filters, which really are added here to enhance the speech separation process in Avendano. We have Visser's cross filters and with their addition to Avendano, the final result is improved separation between speech and noise. And when you have improved separation, that results in better performance for the VAD. This is discussed in our motivation to combine sections in the 1084 petition at 15 to 21, and in the 1128 petition at 16 to 23.

So, going to slide 39, what does Patent Owner have to say about this combination? Again, no dispute that the combination meets every limitation of the independent claims. There's not even a claim construction dispute. Their only dispute comes down to motivation to combine. They

argue that there are, quote, numerous errors, end quote, that arise from this combination. This is in the PORs of both proceedings at 26 to 30. Patent Owner argues that there is no VAD in the combination. They argue that without a VAD to inform when and whether to adapt Visser's cross filters, these cross filters are going to behave erratically, they will adapt continuously, and they won't operate properly to separate speech from noise. But that is entirely based on their own false premise that there is no VAD in the combination. The petition is explicit that the combination has a VAD, and this is made clear in two ways. One is we point to Visser's VAD. Two is we point to Avendano's VAD. And if Your Honors find that the combination includes either VAD, then the independent claims are met.

JUDGE RAEVSKY: Before we get to that point, Ms. Wang, I do want to clarify that it seems to me reading your reply that you don't dispute the necessity of a VAD in order to make the ICA process of Visser work. Do I understand that to be your position?

MS. WANG: That's right, Your Honor. There -- Visser does describe that the VAD is used as input to the cross filters, W12 and W21, to inform them how to adapt, when to adapt. So, that is correct, Your Honor. We don't dispute that the VAD is needed.

JUDGE RAEVSKY: Okay.

MS. WANG: So, let's look at slide 40. We're going to start with Visser's VAD. What we're showing on slide 40 are excerpts from the petition, specifically the motivation to combine section, where we're talking about why you would combine Avendano with Visser. We explicitly refer to Visser's VAD 106. This includes the ICA, independent component analysis process, that separates speech from noise as all part of the VAD.

This is in the 1084 petition at 17, the 1128 petition at 18 to 19. It's also in our replies at 16 to 19. Patent Owner is going to point Your Honors to portions of the deposition transcript of Meta's expert, Dr. Kenny, as support for its position that the combination excludes a VAD. This is in Patent Owner's demonstratives at slide 14. But if you actually read his testimony, this is at Exhibit 2004, 59, 13 to 61, 4. What he actually states is that the combination incorporates, quote, the components around, end quote, the cross filters, which includes Visser's VAD.

JUDGE RAEVSKY: But counsel, how does that generic testimony about the components around help you when Mr. Kenny more explicitly said, I don't believe I explicitly rely on the VAD in Visser?

MS. WANG: Explicit -- him -- his statement, that statement during his deposition does not change the ultimate reliance on Visser's VAD that is stated in the petition and in his declaration that he submitted.

JUDGE RAEVSKY: But he said, I don't rely on it. So, I think that tells us a lot about what he felt his declaration said. Would you agree?

MS. WANG: He said he doesn't explicitly rely on it because during the deposition he was -- he couldn't identify where in his declaration he was referring to the Visser VAD, but it's in the petition. And really that statement is taken out of context because if you continue reading, this is at page 61, line 25, if you continue reading the rest of his testimony, he stated -- this goes on to page 62, line 12, he states, quote, just to be clear, though, one of ordinary skill would read the entirety of Visser, and think about what's taught in Visser when thinking about the ways that one might combine the features in order to obtain the combined benefits of the two systems, end quote. This is cited in our replies at 17 to 18.

So, what he's really saying there is, even if you're just taking those cross filters, you wouldn't just be taking those cross filters in isolation. You're looking at the components around those cross filters, and those cross filters include the VAD because you can't really have one without the other. The cross filters need to be informed of when to adapt, how to adapt, and you can only do that through Visser's VAD. So, if Your Honors determine that the combination uses Visser's VAD for adapting the cross filters, then we could be done with the independent claims, and you don't even need to resolve the issue of Avendano's VAD.

JUDGE RAEVSKY: Could you better explain how your petition includes the VAD and the combination? I know that you pointed to page 16 of the petition that says what Visser's VAD does, but then your slide points to page 17 of the petition that says that a POSITA would have incorporated Visser's ICA process. It doesn't say Visser's VAD there. So, what's your explanation for how we should read Visser's VAD into the actual combination?

MS. WANG: Yes, thank you, Your Honor. So, our reading is that the ICA process must necessarily include the VAD. Right? Because in order for the ICA process to work properly, in order to be able to separate speech from noise, you need some input from the VAD that tells you whether there is voice activity, whether there is speech occurring or not. And that is what helps you perform the ICA process. So, we consider when we say in the petition that we are incorporating Visser's ICA process into Avendano's system, we are including Visser's VAD as part of that ICA process.

JUDGE RAEVSKY: So, at this point, it sounds like you're reading

between the lines. What I would like to see is some citation to, if you could provide a citation to Visser, for instance, that helps us concretely understand how the magic words ICA process must include Visser's VAD in your petition. That would be better.

MS. WANG: Okay. Understood, Your Honor. I will, if it's okay, I'll try to get that in during my rebuttal.

JUDGE RAEVSKY: That's fine.

JUDGE MCSHANE: And counsel, this is Judge McShane, and I think my colleague also was kind of referring to your slide 41, where you talk about using Avendano's VAD, okay? And this refers to this snippet that you have on your slide 41. It refers to a discussion of Avendano kind of generally. But I'm not seeing that there's any specific discussion about the combination of Avendano's VAD with Visser's cross filters. And Patent Owner -- so let me get to my question. So, Patent Owner here is asserting that adapting the Visser cross filters using Avendano's VAD is a new argument, a new theory, if you will. And what's your response to that?

MS. WANG: My response to that, Your Honor, is that it can't be a new theory because the independent claims explicitly require a VAD to be there. And in the petitions, we map explicitly to Avendano's VAD as meeting those limitations. This is in the 1084 petition at 33 to 34, also the 1128 petition at 34 to 35. Patent Owner actually does not dispute that mapping to Avendano's VAD as meeting the claimed VAD. This is also discussed in our replies at page 18. So, for Patent Owner now to be arguing that the combination can't include a VAD or that this is a new argument that we're now relying on Avendano's VAD, that's just not correct because it's right there in our petition.

JUDGE MCSHANE: Thank you.

JUDGE RAEVSKY: Judge Raevsky here with a follow-up question. So, on page 18 of the reply, it says even in the absence of Visser's VAD, the adaptation of Visser's cross filters would have been controlled based on Avendano's VAD, which operates similarly to Visser's VAD. In my review of the references, I see where Visser's VAD feeds back information to the ICA process, but I do not see a similar feedback from Avendano's VAD to its DMA process, which seems like it would be required in order to have that control that you claim would be there. Do you have a response to that?

MS. WANG: So, if I can find the right slide for this, I guess we can look at slide 39 together. My interpretation of Avendano is that there has to be a VAD that's input into the G calculation, and also into the delays because those are -- so, for example, the G is performing equalization, signal, speech compensation between the two microphones, and we know from Avendano that the microphones are positioned differently at different distances from the mouth. So, without knowing that speech is taking place or without that input, we wouldn't know, or Avendano wouldn't know how to calculate the value for that G block.

Similarly, for the delay blocks 402 and 404 in Avendano, those are there to compensate for temporal differences in times of arrival between the two microphones for speech. And so, the VAD input into those two delayed blocks would also be informative as to how and whether to compensate for that temporal shift.

JUDGE RAEVSKY: So, that's an interesting theory. I think the problem we might have is that the VAD in this figure, as I understand it,

happens in the noise reduction system 310 on the right. You're welcome to disagree, but I don't see any feedback from that to the DMA module. Do you see what the problem is?

MS. WANG: I think I can understand where Your Honor is coming from, that the feedback is not explicitly shown in Figure 4a, but that doesn't mean that the, you know, it comes down to what's obvious, right? And in view of the teachings of Avendano and Visser, even if Your Honors were to find that Visser's VAD is not explicitly part of the combination, there can't really be a dispute that Avendano's VAD is part of the combination. And with the teachings, with those teachings, combined with the Visser's teachings of that feedback, then I would say that in the combination the feedback has to be there, even if it's not explicitly shown in Figure 4a of Avendano.

JUDGE RAEVSKY: Except the petition doesn't say that. It's only on page 18 of the reply that we perceive that theory, and I don't see any citation to your expert declaration supporting that. So, how can we find in your favor on that point?

MS. WANG: So, this was a reply argument that was made in response to Patent Owner's -- to a new argument that Patent Owner raised in their response. And in that case, my understanding is that the Board should be allowed -- and really should consider Petitioner's counter-arguments, even if they don't appear explicitly in the petition.

JUDGE RAEVSKY: I might disagree with how you stated that, but I understand your position. You can move on.

MS. WANG: Thank you, Your Honor. So, I think where we left off was slide 41, actually. And so, our position is -- Meta's position is that

we rely on either Visser's VAD or Avendano's VAD. And so, with that, we're actually done with the combination of Avendano and Visser for the independent claims in Ground 1.

And again, if Your Honors find that the combination uses either VAD from Visser or Avendano, then Your Honors should find that there is motivation to combine, the independent claims are met, and we don't even have to get to the Avendano alone position. Unless there's other questions about this position, I will turn to the other position in Ground 1, Avendano alone.

And with that, I'll go to slide 12. So, we need to start here with the claim construction dispute. The term in dispute, as Your Honors probably know, is the term is a filter that describes a relationship for speech between the first physical microphone and the second physical microphone. Meta is proposing this term should have its plain and ordinary meaning. Patent Owner's current construction is that this has to be a filter that, quote, alters a signal based on the non-temporal components of relative responses to speech of the first and second physical microphones, end quote. It might not be obvious from the current wording of their construction, but the dispute boils down to whether the filter can be a delay.

We'll get into it, but the term should have its plain and ordinary meaning. It is broad enough to encompass the patent's own delay filter. Patent owner now wants to rewrite this claim. They want to rewrite the term to be a negative limitation, not delay, to avoid Avendano's delay filter. But there's no support for that. There's no lexicography and there's no disavowal. This is not Patent Owner's first attempt at construing the term. Pre-institution, they provided a different construction, this is shown in the

middle of the slide, and they're now trying to change -- to move away from it to change it because of our pre-institution arguments explaining why that construction couldn't be correct. And the fact that they have now tried multiple times and still can't find the right wording, that only confirms that there is no support, intrinsic or extrinsic, for their position.

Going to slide 13, there's four separate reasons for why their construction is wrong. We're going to go through all of them, but if Your Honors have any specific issues to highlight, I can start there. Otherwise, I'm happy to go through each, and I'll be jumping around in the slides. So, we're actually going to start with slide 18. This is the first reason. There's no disavowal. Patent Owner argues that there is disavowal. The only evidence they point to as support is a single paragraph in the patent. This paragraph is reproduced in the PORs, and the excerpt from the POR with emphasis added by the Patent Owner is shown on slide 18. Patent Owner alleges this is clear and unmistakable disavowal of the delay filter of Figures 3 to 4 from the claimed filter. But that's just wrong. One, this is not lexicography because filter is not even mentioned anywhere in this paragraph. Two, there's also no mention of delay filters of Figures 3 and 4. This paragraph refers to using time and phase differences of each individual microphone, not a delay filter that compensates for differences in time of arrival for speech.

The facts here are similar to cases that we cited in our replies at pages 7 to 9, where no disavowal was found. This is Continental Circuits, this is CUPP Computing, and this is Intellectual Ventures I. Patent Owner did not rebut any of these cases in its sur-replies. They also tried to argue that there is implicit disavowal and they rely on the Techtronic case. This is

in the POR at pages 18 to 19. That case is not applicable here because as Patent Owner admits, every single embodiment in the patents necessarily includes all three filters, including the delay filter. This is discussed in our replies at 10 to 11. Patent Owner does not rebut this point in its sur-replies.

JUDGE RAEVSKY: I have a question, a question here about the language of this passage. It says that it uses a difference in frequency content between two microphones to calculate that relationship. If we assume just for sake of argument that perhaps that somehow refers to the beta filter, is it possible that that can refer to both embodiments of the beta filter? In other words, there's an adaptive embodiment, perhaps that arguably refers to differences in frequency content. But there's also a fixed beta. Is it possible that this also refers to the fixed beta, or is that not possible?

MS. WANG: Usually when you talk about difference in frequency content you discuss -- it has to do with the way the signal or the filter is going to change the signal differently for different frequencies. And that is applicable to beta's adaptive filter. By the way, it is also applicable to the adaptive filter which is the calibration filter which can also be adaptive. But that wasn't your question.

So, going back to your question you asked about the fixed beta filter. Usually people -- that fixed beta filter applies a fixed gain to all frequencies. So, I guess it really comes down to how you interpret this -- what they meant when they said difference in frequency content between the two microphones. If the difference has to differ across different frequencies, then it would only be the adaptive filter. If it can be a difference in frequency content, but a fixed difference across all frequencies, then it could

refer to the fixed gain beta filter.

JUDGE RAEVSKY: Okay. So, it's unclear from this paragraph in your view whether this could cover the fixed filter?

MS. WANG: I think Your Honor that it could, but then all that means is that the filter would need to be an adaptive filter, and there is a dependent claim, which I can show in the slides somewhere, that requires the filter to be limited to an adaptive filter. So --

JUDGE RAEVSKY: I'm sorry, I'm confused. I think you just said that this passage could be covering the fixed filter, but then you said it would have to be an adaptive filter. I'm trying to figure out if this passage is strictly limited to explaining at best to the adaptive filter, or if it also could be considered to cover the fixed filter as well.

MS. WANG: I think the answer to that, Your Honor, is that it's ambiguous, that it's not clear from this paragraph, whether it's referring to an adaptive filter, a fixed filter, the beta filter, which could be either fixed or adaptive, or the alpha filter, which can also be fixed or adaptive.

JUDGE RAEVSKY: Okay.

MS. WANG: So, our understanding of this paragraph is that it's much, much too ambiguous to serve as lexicography, let alone disclaim or disavowal.

JUDGE RAEVSKY: So, another point that I didn't see addressed squarely in the briefing, maybe because it's tangential, but I'd like to explore it, is whether this paragraph applies to all embodiments in the sense that it refers to the NAVSAD and PSAD systems at the beginning of this paragraph. And I believe in the column previous, column 10, there's a new section about detecting voice-to-unvoiced speech using both acoustic and

non-acoustic sensors where these systems are addressed.

However, if you look at column 4, where I believe the PSAD methods are first mentioned, it strikes me as it's possibly the specification is using PSAD in a different way, and I wanted to explore that. So, more specifically, column 4, line 26 says that the PSAD VAD methods can then be used to determine when speech is taking place. That then comes after the creation of the virtual microphones. So, would you agree with me that this is talking about a different embodiment from the quoted passage on the slide, because the quoted passage on the slide isn't saying calculate the virtual microphones and then apply PSAD. It seems to include it all in one system.

MS. WANG: That's an interesting question, Your Honor. I was not reading the PSAD to be referring to two different embodiments when comparing column 4 to column 11. The way I interpret column 4 PSAD VAD is just that it's part of the VAD. I mean, it's just saying that the PSAD VAD is used to determine when speech is taking place. That's all that a VAD does. And I don't necessarily see that as being inconsistent with the PSAD VAD that is being discussed in column 11.

JUDGE RAEVSKY: If you look a few lines further, on line 31 of column 4, it says the PSAD algorithm as described here and calculates the ratio of the energies of two different microphones. And then it gives an equation for that ratio. And so, it strikes me as PSAD is something separate from the creation of the virtual microphones. So, I wonder if it's then the case that this paragraph referring to NAVSAD and PSAD doesn't really refer to the virtual microphones at all.

MS. WANG: I just want to look at column 11 in context. I guess

it is possible because, Your Honor, what you pointed out in column 4, line 36, or line 31 to 36 --

JUDGE RAEVSKY: I'm sorry, counsel, could you start your response over? I momentarily lost connection.

MS. WANG: Sorry about that. What I was saying was I can see your point that the column 4 PSAD is not even really using virtual microphones at all. It's only taking the energies of the physical microphones. It's honestly quite unclear to me what -- which PSAD is being referred to then in column 11 because I agree with you that the column 4 PSAD is different from calculating -- from the claims, right, which require the calculation of the virtual microphones and taking the ratio of their energies. But it's not clear upon reading column 11 which PSAD the patent is trying to refer to. So, under that interpretation then that the PSAD could be referring to the column 4 PSAD, then this paragraph really would not be relevant to understanding or trying to limit the scope of the claims.

JUDGE RAEVSKY: Okay. I understand your position. Thank you.

MS. WANG: Thank you. Okay. So, we finished the first reason. I'd like to turn to slide 23, this is the second reason. There's no support for their construction. They require -- Patent Owner wants the filter to be based on, quote, non-temporal components of relative responses, end quote. But Patent Owner points to nothing in the patent because there's nothing they can point to that describes any components of relative responses, let alone temporal versus non-temporal components. So, what they're doing is really the same thing that the Fed. Circuit rejected in the Source Vagabond case. This is in our replies at 13 to 14. They are adding language without support

and altering otherwise unambiguous claim language and Patent Owner does not dispute Vagabond in its sur-reply.

Third reason --

JUDGE RAEVSKY: I have a question about this. So, if you go back to the construction where it says non-temporal components. There's no -- as we were talking about this yesterday, we were looking at equation three in the specification, which is at the top of column 6. And it writes the beta filter, which I believe Patent Owner relies on largely for its construction, and it writes a beta filter in equation form as including a Z component which, correct me if I'm wrong, but that's a -- that represents a delay, so that would be a temporal component. So, would you agree it's not correct to say that there are no temporal components in that filter?

MS. WANG: Yes, I agree with you, Your Honor.

JUDGE RAEVSKY: Okay.

MS. WANG: I was going to go to slide 9. So, this is -- there's a third reason. The claims, independent claims and dependent claims confirm that Patent Owner's position is wrong. So, on slide 9 we'll focus on the second yellow highlight. Patent Owner tries to limit the filter to beta, excluding alpha, excluding beta delay, but at the same time they agree that Figures 3 and 4 are embodiments of the claims. This is in your PORs at 3 and 16. The problem with their position is that Figure 3 does not support their construction. The claim requires the filter needs to operate on the first signal, that's O_1, and it has to produce an intermediate signal and that intermediate signal must be summed.

When we look at Figure 3 there's only one signal that comes out of the bottom branch and is summed and that is the output of the combined beta

and delay filter. This means that the claimed intermediate signal must refer to the output of that combined beta and delay filter because that is the signal that is summed. This is in our replies at 19 to 20. So, in order to cover the patent's own embodiments, the filter must include at least the delay, so Patent Owner is wrong to exclude the delay, and Your Honor is correct that in equation 3 at the top of column 6 of the patents that calculation of beta does involve a temporal component.

Turning to slide 14, the dependent claims also confirm that Patent Owner is wrong. They rely on certain dependent claims as supporting their position, but if we actually look at what the dependent claims say claim differentiation just confirms the proper construction that the claim filter can include any of these three filters in the specification including the delay filter. So, if we look at Dependent Claim 15 this is also Dependent Claim 5 of the '611. This is Dependent Claim 15 of the '213. This claim requires applying a calibration. Dependent Claim 17 of the '213 which is the same as Dependent Claim 7 of the '611, requires applying a delay. These claims do not recite that these functions are performed outside or only after the filter. They leave open the case that these functions can be performed as part of the filter.

JUDGE MCSHANE: Ms. Wang, you raised Dependent Claim 17. In your direct here, you're kind of running a little close to time, but would you be so nice as to address Claim 17 when you get a chance?

MS. WANG: Yes, thank you, Your Honor. Actually, this is -- in the interest of time, I'm just trying to figure out what I can do. So, I'm going to really quickly jump to how Avendano -- under either claim construction, how Avendano meets the claim filter, and then I'll do Claim 17.

JUDGE MCSHANE: Thank you.

MS. WANG: So, is that --

JUDGE MCSHANE: Yes, I just said thank you.

MS. WANG: Okay, thank you. So, on slide 36, we rely on Avendano's delay nodes. No dispute if Your Honors agree that the filter should have plain and ordinary meaning, then Avendano's delay node meets the filter.

Slide 37, even if Your Honors decide that Patent Owner is correct on the claim construction dispute to limit the filter to beta, we have an alternative position that's based on Avendano's gain block, 406, because this is the same as the fixed beta filter that's highlighted in green on slide 37.

Okay. So, with that, I'll turn straight to the dependent claims. We'll start with 17 of '213. This is Claim 7 of '611. So, Patent Owner's arguing that this -- sorry, what slide am I on? I went to the wrong slide. Forty-seven. Okay. So, Patent Owner argues this term -- this limitation is not met because they focus on the yellow language, but ignore the red. So, the red language confirms that it is the intermediate signal that has to be summed that can only be the output of the delay filter. So, in order for Claim 17 to have support in the patent, the claim needs to be interpreted to cover that scenario where the intermediate signal refers to the signal after the delay is applied, and where the same aggregate block can apply both the filter and the delay. And when that's the case, the intermediate signal is the output of the delay. For this claim, Petitioner, again, has two positions. One is based on Avendano with Visser, and the other is based on Avendano alone. We're going to start with slide 49. This is the Avendano with Visser.

JUDGE MCSHANE: Yeah, counsel, I'm sorry. Could you just --

returning to your interpretation of the claim. There's sort of two ways, or two sides of this coin here. I think in your papers, I think you presented the argument a little differently here than in your papers, but we'll get to your representation in a minute. But in the papers, what I read is that basically you said, okay, well, there's all the embodiments, okay? They don't include the scenario where the delay -- how does this work? I always forget the language of this claim. It's where the, you're going to apply the delay to the first intermediate signal, okay, that basically when you look at figure, the figures, you say, well, the delay is going to occur afterwards basically. And you're saying basically in your papers there's no written description support, okay, for the interpretation of the claim being, you know, you're applying the delay to the first intermediate signal. So, in any event, what are we supposed to do with the written description issue? We have no jurisdiction over a dispute related to written description, right? So, what would you suggest we do with that?

MS. WANG: Yes, thank you, Your Honor. So, you're obviously correct. There's -- written description is not at issue in this proceeding. The only way that I can see -- that we have to resolve the issue though is to look at how the patent describes where is this delay that is applied in the Dependent Claim 17. And the only support for that, the only description in any of the embodiments is that the intermediate signal, because it's the signal that is summed, it's the signal after the delay. And that is how we would interpret Dependent Claim 17 is that it requires not that the first intermediate signal is generated necessarily before you apply the delay, but that a delay has been applied to the first intermediate signal. Because that's the only thing that has written description is support or that's the only thing that's

discussed -- that's described in the patent.

JUDGE MCSHANE: Okay. So, that's your position. That's your position on this on this issue. Period. Full stop. Yes?

MS. WANG: Yes, Your Honor. But I would like to show you how the prior art meets these limitations because there's different ways.

JUDGE MCSHANE: Yeah. No, no, that's fine. I'm just trying to get your -- what you're saying on them on the issue of what this dependent claim says. And we'll leave it at that. Okay. Thank you.

MS. WANG: Yes. Thank you. Thank you. So, let's look at what the combination Avendano and Visser looks like so for this mapping to Dependent Claim 17. So, in the combination, this is slide 49, Avendano is applying the gain block. It's also applying these delay filters, and it's also applying -- the combination is also applying Visser's cross filters. The delay in Claim 17 can refer to Avendano's delays when the filter is Avendano's gain block. It can -- the delay can also refer to Visser's cross filters when the filter in the claim refers to either Avendano's gain block or Avendano's own delays. This is if you decide in our favor on the claim construction issue. So, there's different ways that the petition and our replies and map for Dependent Claim 17 for applying a delay even if it requires the intermediate signal to be generated before because it is -- yes.

JUDGE RAEVSKY: I'm going to jump in for just a second. First of all, I know you have about three minutes in your initial time and of course you're free to go into your planned rebuttal. I don't recall reading in your briefing the argument you just articulated that if you rely on the gain block as the claimed filter then the delay comes thereafter. If you could point out where that is maybe I could unpack that a bit.

MS. WANG: Thank you, Your Honor. So, the gain block, well, actually I don't want to -- let me get back to you on that on rebuttal if that's okay, and then -- so, that's Dependent Claim 17.

I'd like to turn to Dependent Claim 19 of '213. This is Dependent Claim 9 of '611. This is slide 53. So, this requires that the same filter is applied to both signals. There is no component filter in the embodiments of Figures 3 and 4 that are applied to both signals to calculate the two virtual microphones. And so, the only -- our interpretation, the only interpretation that's reasonable in view of this teaching is that the filter that's recited in Claim 19 and Claim 14 must refer to a system filter that includes any of these three components. And this is consistent, this is slide 54, this is consistent with the petition's mapping to both cross filters in Visser and optionally together with the Avendano's delay filters to meet this limitation, that it's the combination of these filters that are applied to the two signals.

JUDGE RAEVSKY: And just to clarify that, I believe you're saying that it's only the combination that teaches Claim 19 and not Avendano alone. Is that correct?

MS. WANG: That is correct. Yes, for claim, Depending Claim 19, we are only relying on the combination.

JUDGE RAEVSKY: Thank you.

MS. WANG: There's an alternative read for the combination. This is slide 55, where we can rely on Visser's cross filter W12 alone as meeting the claimed filter because in the combination the signals from the microphones are combined before being input to W12. Okay.

So, I'd like to turn to Dependent Claim 27. This is on slide 57. This claim requires forming the filter comprises applying a calibration,

applying the delay, and then forming the filter as a ratio of two quantities. So, in the petition, this is slide 58, we rely on Hou for this limitation. The specific limitation is mapped in the 1084 petition at 62, the 1128 petition at 65. Hou provides specific information on how to calculate the Avendano gain G. So, if we go to slide 59, we're showing side-by-side Claim 27 with the Hou system. So, what I wanted to point out is that Claim 27 refers to applying a calibration. This claim depends from Dependent Claim 15 of the '213. It's also Dependent Claim 5 of the '611, which requires also applying a calibration.

For that dependent claim, the petition maps to Avendano's gain and multiplication block, and we are relying in this claim, Dependent Claim 27, we are relying on Hou as a blow up of that gain block and how it's calculated. So, our interpretation, and this is in the petition, of the calibration that is applied in 27 is that it is the same calibration that is applied in Claim 15. And under that interpretation, all we need to find is that there is a first quantity that is generated as part of Avendano's gain block. And that is exactly what we mapped to here in Hou for Claim 27.

I think I'm very close to running out of time, so I'll wrap it up here. Overall takeaways for today, Your Honors, are that if you decide that there is motivation to combine Avendano and Visser, then you actually don't need to resolve the claim constriction dispute. Alternatively, two, if you decide to resolve the claim construction dispute by rejecting Patent Owner's construction, then there's no dispute that Avendano alone meets the independent claims. And three, even if you decide to resolve the claim construction dispute by agreeing with Patent Owner's construction, there's still no dispute that Avendano alone meets the independent claims with its

gain block. And fourth, for the dependent claims, Patent Owner is taking an overly narrow interpretation. They ignore the express requirements in the claims, they ignore the embodiment in the patents. And for these reasons and the reasons discussed in our papers, we ask Your Honors to find these claims unpatentable. Thank you.

JUDGE RAEVSKY: Thank you, counsel. Does the panel have any more questions for Ms. Wang?

JUDGE MCSHANE: You know what, could you just go back to the slide that we were talking about with regard to the delay claim that shows the actual claim language?

MS. WANG: Yes, that was Claim 17.

JUDGE MCSHANE: Right.

MS. WANG: This is slide 47.

JUDGE MCSHANE: Right. Okay. So, this claim says, comprising -- applying a delay to the first intermediate signal. Okay. And this language, do you discern any ambiguity in this language?

MS. WANG: Only in view of the teachings of the patent, Your Honor, just because there's no -- the embodiment that Patent Owner agrees is an embodiment of the claims, Figure 3, that there's, that it really -- the intermediate signal can only be the output of the delay filter.

JUDGE MCSHANE: Okay. Thank you, counsel.

MS. WANG: Thank you.

JUDGE RAEVSKY: Thank you, Ms. Wang. You have 16 minutes remaining for your rebuttal.

MS. WANG: Thank you.

JUDGE RAEVSKY: Mr. Lambrianakos, you may proceed when

ready.

MR. LAMBRIANAKOS: Thank you, Your Honor. Peter Lambrianakos on behalf of the Patent Owner. I guess I'll begin with the Avendano-Visser combination. I think that the Board has seen that Petitioner is unable to point to any evidence in its petition that the VAD of Visser is part of the combination. There was discussion of a VAD in the background portions, the portions which discuss whether Visser is analogous art to Avendano, but Petitioner's expert confirmed that he did not rely on and did not include the VAD as part of the combination. It's not part of the combination. Petitioner admitted at the beginning of its presentation that the cross filters from Visser which are incorporated into the Avendano-Visser combination would not work properly. And as we said in our papers, if the combination results in errors and is not properly functional, then there's no motivation to combine.

I believe looking at slide 14 of our presentation where we discussed not just the language that was discussed earlier here, but also testimony where the expert was asked other than the cross filters and the description of what would be within the cross filters and how the cross filters may be connected, do you rely on any other components of Visser for your opinion? And he said, I don't think there's any explicit references to other elements of the entire system of Visser in support of my opinions. And so, the Avendano-Visser combination is not properly discussed in the petition. It does not include all the components that are necessary to make a combination which provides a benefit, and therefore would not be obvious to make the combination and therefore the patents, the patent claims are valid over that particular combination.

JUDGE RAEVSKY: Counsel, you went to some of the more favorable testimony. How do you deal with the less favorable testimony, for example, on page 62 of the deposition where Mr. Kenny said that he read the entirety of Visser and think about everything that's taught there in order to combine features and obtain the benefits of both systems?

MR. LAMBRIANAKOS: I'm not sure that the fact that the expert read a reference and thought about the reference and its disclosures is relevant. What's relevant is the combination in the petition, right. The burden is on the Petitioner to set forth all the details of the combination that it states renders the claims obvious. The fact that he thought about it and should have recognized that the VAD was a necessary component and didn't include it only makes it more dumbfounding and less excusable. He should have known. We have the language which, you know, is from Visser, which on slide 15, which is essentially admitted now by the Petitioner, that the VAD is needed to do training because training can only happen during periods when there is voicing, when there is speaking. And so, if he recognized and reviewed the reference, and he saw that the VAD was necessary, then the combination should have incorporated the VAD.

Now, there was some new argument made that Avendano has a VAD, and so it's disclosed. Well, Avendano makes a VAD, right? That's the result of the Avendano device, but there's no evidence that the output of the Avendano device is used to train the cross filters of Visser. There's no disclosure of it anywhere.

JUDGE RAEVSKY: There's no, in your view, there's no feedback from Avendano's VAD to its DMA process?

MR. LAMBRIANAKOS: Absolutely not. No, Your Honor.

JUDGE RAEVSKY: What about the Petitioner's point that the ICA process itself mentioned on page, at least page 17 of the petition, must be read to include Visser's VAD?

MR. LAMBRIANAKOS: Well, it sounds like Petitioner believes that's the case because the VAD is necessary. And so, if it's necessary then we ought to just make sure that even without explicitly disclosing it or mapping it to the claims as is required in a petition, that we should just assume that it's there because it's so important. I don't know of any law that allows a Petitioner after the fact to attempt to supplement its petition with all of the unstated details in the name of a system that's mentioned, not as part of the combination itself, but is part of the discussion of the background of the art and why the art is analogous. I don't see how you bridge the gap there, Your Honor.

JUDGE RAEVSKY: What about the fact that they cite to column 9, quite a few lines of column 9 on page 17, and I believe in that column that's where they're referring to on reply and perhaps you as well that the VAD is necessary to make the ICA process work? And I'm referring to the second full paragraph, third line of page 17 of the petition where they cite 9, 20 through 62.

MR. LAMBRIANAKOS: So, is the Court asking whether because a VAD is mentioned within a site for a different proposition that that imports the VAD into the petition?

JUDGE RAEVSKY: Yes.

MR. LAMBRIANAKOS: No, it doesn't. There's no basis for that. We're not here to read all the citations and then supplement and fix all the issues with the combination simply because something has been cited. That

certainly doesn't put us on notice of an argument. I mean, the petition is supposed to have enough information so that the Patent Owner, whose property the Petitioner is trying to have canceled, has the opportunity to respond to an argument and obtain a little bit of due process along the way. The idea that because they cite to this ICA process, column 9, lines 20 through 62, and since it mentions a VAD in there that we're to assume that the deficiency in their combination is actually no longer deficient because, you know, someone who's, you know, reviewing all this information would recognize a deficiency, I don't think that there's any authority to import a VAD based on a citation of law.

Now, as far as the Avendano alone arguments, the claim construction issue is obviously at the forefront. There seems to be some misunderstanding with respect to our proposed construction and what it is attempting to do. The proposed construction is attempting to exclude from the scope of the claims using a filter alone as the filter of the claims -- scopes, using a delay alone as the filter of the claims. We're not attempting to, A, have the filter be the beta filter of the specification, or B, say that delay cannot at all be considered in such a filter. What we are saying is that it may not be a mere delay filter.

JUDGE RAEVSKY: Is there any way to modify or let me restate that. Are you modifying your proposed construction then because your proposed construction says a filter that alters the signal based on the non-temporal components of relative responses, et cetera.

MR. LAMBRIANAKOS: Right. Because I would say --

JUDGE RAEVSKY: As I asked Petitioner, that equation 3 at the top of column 6 includes a delay. So, do we need to modify this to be more

accurate to what you're trying to address?

MR. LAMBRIANAKOS: No. We believe that where we say based on non-temporal components we are not saying it is based only on non-temporal components. It must consider at least non-temporal components. Temporal components can also be considered. And I believe that if you follow our arguments in our papers, we always say that the filter cannot be a mere delay, solely a delay filter. The filter must include other functionality and must consider other information other than just timing information, which is what a delay is.

JUDGE MCSHANE: I'm sorry, go ahead.

JUDGE RAEVSKY: Oh, I'll be really quick. So, you're saying that the construction can include a delay, but it must include more? I cannot be (CROSSTALK) --

MR. LAMBRIANAKOS: Yes, correct.

JUDGE RAEVSKY: Okay, thank you.

JUDGE MCSHANE: Counsel, I'm honestly having a little trouble getting that, okay? I'm looking at your slide 2, okay?

MR. LAMBRIANAKOS: Yes.

JUDGE MCSHANE: And it says a filter that alters a signal based on the non-temporal components of relative responses. But now you're saying, okay, that could include a filter that includes temporal components. Is that what you're saying?

MR. LAMBRIANAKOS: Yes, it's not excluding using temporal components.

JUDGE MCSHANE: Yeah, but I'm reading it. Yeah, I'm reading literally what it says and what you're saying, I think, conflicts with that.

MR. LAMBRIANAKOS: Well, there are two issues, right? Issue one is do the words of the construction as we proposed it artfully get across the point that we've made throughout our papers? And the second is, you know, does it matter? Because ultimately the Board doesn't have to adopt the construction. The Board just needs to apply the claims with the appropriate construction in mind, which we have indicated from the language in the claims, the language in the specification, is that this filter cannot be simply a delay filter. It cannot be just a delay. If it does delay, but it does other things too, then it is okay. And this requires that the filter does non-temporal, you know, alters a signal based on non-temporal components. It doesn't say that it may not alter a signal based on temporal components. So, we are trying to include the functionality which is required of the filter. That is something more than delay.

JUDGE MCSHANE: Yeah. Well, I mean, let me say this, counsel. I mean, what it sounds like to me, and I don't mean to be argumentative, and I apologize if I sound that way, but it sounds to me that like you're sort of trying to jettison your claim construction and just rely on your argument in your papers, essentially. And if you can answer you --

MR. LAMBRIANAKOS: Well, I'm not changing our position. Our position is 100 percent. One hundred percent that a mere delay is not within the claims because of the statement which was made that we do something with frequency components and that is better than the prior art which just does delay. So, what we're saying is that that statement confirms that prior art that just does delay is outside the scope of the claims and that's what this construction was intended to convey. Because using just a delay is the prior art. That's what everyone had been doing before. You know, the

difference between this invention and the prior art is instead of just lining up the signals for time and assuming that whatever has been accentuated by the comp -- by summing those together is speech, this filters better because this filter looks at the frequencies in this -- in the signal to find the components which are speech, and that's better. Of course, delay has to be included because you always have to sync up the signals, right? You always have to make sure that the signals are at the same time. But if you do only that which is what the prior art does, then you're outside the scope because our inventor said we're better than that, that's not what we do. And so, we wanted to make sure that the filter alters the signal based on non-temporal components. As long as it does that, we're not saying that it can't do temporal also.

JUDGE MCSHANE: Okay. I understand what you're saying. Thank you.

MR. LAMBRIANAKOS: Okay. Thank you, Your Honor. Now, there's discussion before and also in the papers that what we're trying to do is say that the claims are limited to the embodiment, and that is that the particular beta filter must be the filter which is claimed. That is not our position. We're not taking the position that our claims are going to be precisely the embodiment that's in the specification. Our argument is that that beta filter is not a mere delay filter.

Now, looking back at the Petitioner's slides, I would like to point to slide 9 here as -- and discuss what appears to be the argument that is being made. Now, I do not discern this argument from their papers, but it seems to say that in order for Figure 3 to be the support for or be claimed by Claim 14, then all three of the filters in the embodiment have to be the filter of the

claim. Now, I'm not sure I understand that or that it makes any sense, but I want to make clear that Claim 14, when it's referring to a filter, the filter that describes the relationship for speech is based on the specification, the adaptive filter beta z in this embodiment. The delay filter and the calibration filter are not claimed in Claim 14. They are claimed in dependent claims explicitly.

JUDGE RAEVSKY: And so, since you mentioned in this embodiment, I want to clarify your position. I believe I understood sort of in the POR that you would agree that the claimed filter also includes the fixed filter beta in the specification. Did I understand your position correctly?

MR. LAMBRIANAKOS: That is correct. It is preferable to use an adaptive filter, and there are dependent claims to an adaptive filter for the filter, but the filter of Claim 14 is not limited to the adaptive filter.

JUDGE RAEVSKY: Okay. Thank you.

MR. LAMBRIANAKOS: And turning to slide 14 of the Petitioner's presentation, there's a discussion of some of the dependent claims including applying a calibration and applying a delay from Claims 15 and 17 respectively. We view those as having claimed additional elements and not additional components of the filter of Claim 14. The importance of this comes in the next slide, slide 15, where Claim 23 says that the filter is an adaptive filter. So that, of course, is referring back to the adaptive filter in their own notation of Figure 3, which is the beta z filter.

And then in Figure 27 we understand that the device of Claim 23 where informing of the filter comprises, and then we see a description of how the adaptive filter works. And the adaptive filter is basically created using that feedback loop which is coming from after the summation portion

and before it says V2. That feedback comes back. And so, the first quantity that's being generated in this claim is the calibration to the second signal O_2, and then you have the next step which is generating a second quantity by applying a delay to the first signal. And then the filter is formed as a ratio of the first quantity to the second. And so, that feedback loop ups back to the adaptive filter to provide that information. So, that information does include the result of calibration and delay.

And so, the claim the adaptive filter assumes that it will consider information that result -- that has resulted from the application of a delay filter, but it's not a mere delay. Essentially, this -- if one were to just ignore the adaptive filter beta z, because all that's necessary under the Petitioner's read is a delay filter. Then what you have here is simply a calibration filter and a delay filter, in which case you have the prior art. You have exactly what existed before, in which does not include the advance that was discussed in the specification.

Now, it's important to make sure that the claims don't include in their scope the prior art which the inventor insists that he has improved upon. And slide 3 has the now well-worn quote that we've been relying on here to just -- to note the fact that the NAVSAD and the PSAD systems, when discussing speech detection, use the difference in frequency content between two microphones to calculate a relationship between the signals of the two microphones. So, that is a description of the use of this beta z filter. And this is in contrast to conventional arrays that attempt to use the timed phase difference of each microphone to remove the noise outside of an area of sensitivity.

JUDGE RAEVSKY: I think it'd be helpful to understand better

why you believe that this passage refers to the beta filter.

MR. LAMBRIANAKOS: Well, if we take a look at the specification at column 5, line 30, it says that $\beta(z)$ is a filter that describes the relationship between O_1 and calibrated O_2 for speech. So, it uses the same language to describe that filter as it does later in the portion that we quoted from column 11.

JUDGE RAEVSKY: Does column 11 also, the quoted passage, is it also referring to the fixed filter or merely to the adaptive filter?

MR. LAMBRIANAKOS: It's unclear to me whether it refers to both, but I don't think it's relevant because I think that whether it refers to one or the other, the key thing is what it is distinguishing itself from. The fact that it's distinguishing the filter that's being used from the timed phase difference filters, which are delay filters, that's the key point for construction.

JUDGE RAEVSKY: I'm going to push back on that a little bit. So, if this passage refers only to the adaptive filter, but not the fixed filter, then arguably at most this passage only limits the adaptive filter embodiment. And isn't that critical because the claim, as you admit, also covers the fixed filter embodiment? Therefore, the claim would not be limited by this passage.

MR. LAMBRIANAKOS: Well, I think in context when we look at the description of the PSAD algorithms beginning in column 4, and the fact that the $\beta(z)$ of the PSAD includes both the fixed and the adaptive filter, that the best reading of this, considering it is talking about the PSAD system, would be that the filter refers to either the fixed or the adaptive filter.

JUDGE RAEVSKY: But why does it refer to either one here?

What's the key language that we could find for you on, that we could find a hook on to find for you?

MR. LAMBRIANAKOS: It's referring to the NAVSAD and PSAD systems. That's what's being described earlier in the specification when it discusses these filters. It's referring to --

JUDGE RAEVSKY: Doesn't that bring up another problem that I brought up with Petitioner, though, which is in column 4, when it first discusses the PSAD VAD methods? It's something that is described as taking place after the formation of the virtual microphones. And if that is true, then how can we say that column 11 applies to what's being used to create the virtual microphones, i.e., the fixed or adaptive filter?

MR. LAMBRIANAKOS: The fixed or adaptive filter --

JUDGE RAEVSKY: I'm referring to lines -- just to give you reference, I'm referring to lines 26 through 31 or so of column 4.

MR. LAMBRIANAKOS: I'm not sure that I understand your premise regarding the order in which these components or these values are calculated. The virtual microphones are the first things which are calculated using the adaptive filter and other filters. And then once those two virtual microphones are created, then the VAD is done. The voice activity detection is done by comparing the magnitude of those signals against one another. And if they meet a certain threshold, then it is determined that there is voicing present.

JUDGE RAEVSKY: That's the crux of my question, is you noted that the VAD is done after the forming of the microphones. But column 4 refers to the VAD as PSAD. So, PSAD is done after the forming of the virtual microphones in column 4. So, how can we then read PSAD in

column 11 as applying to the virtual microphones?

MR. LAMBRIANAKOS: The PSAD in column 11 is referring to -- it says it uses array algorithm for speech detection that uses the difference in frequency content to calculate the relationship between the signals of the two microphones. So, in the speech detection that it performs it uses that difference in order to determine whether or not there is speech, because I don't see how there is an inconsistency here.

JUDGE RAEVSKY: Well, is it possible that this is simply referring to a separate embodiment than what's discussed in column 4, because it's talking about PSAD as including a whole system, whereas column 4 is referring to PSAD as occurring after formation of those virtual microphones?

MR. LAMBRIANAKOS: I don't see anything in column 4 which indicates that PSAD refers only to something which occurs after the formation of the virtual microphones because the virtual microphones are themselves part of the VAD method.

JUDGE RAEVSKY: So, in your view I'm reading it too restrictively, column 4 that is, where it says that PSAD VAD methods can "then" be used to determine when speech is taking place. In other words, "then" being after V1 and V2 are created.

MR. LAMBRIANAKOS: All right. V1 and V2 -- the PSAD VAD methods -- well, I would not read VAD methods as some separate functionality. Obviously, once the virtual microphones are formed, then methods are executed on the two virtual microphones to determine whether or not there's speech. And there are columns of the specification that I've discussed the testing of all that and how all that works. But the PSAD

system includes within it not just the VAD method, let's say, the method that's applied to the virtual microphones after they're formed, but also the formation of the virtual microphones.

JUDGE RAEVSKY: Okay. I think I understand.

MR. LAMBRIANAKOS: Petitioner has a new theory about how, under Avendano, the gain of Avendano could be used as a filter, even under our construction. The issue, of course, is that the plain term requires that the filter describe a relationship for speech, and a gain does not describe a relationship for speech. A gain just increases the amplitude of a signal to match another signal. That's how it's used in Avendano and that cannot be a filter that describes a relationship for speech.

So, putting aside the fact that it's a new argument and there are no mappings anywhere in the petition that point to the gain as a filter, and certainly not any other mappings thereafter which carry through that mapping through the rest of the claim elements, it just doesn't -- a gain cannot simply be a filter that describes a relationship for speech under its own definition.

JUDGE RAEVSKY: So, two questions. One, would you address whether Petitioner properly responded to the claim construction with this argument under Axonics, the Axonics decision? And two, it would be interesting to hear your take on Petitioner's point that the fixed beta filter is also a mere gain, and therefore the gain in Avendano is the same kind of filter.

MR. LAMBRIANAKOS: Okay. Well, the argument that the beta filter is a mere gain, sorry, is a mere delay, really misrepresents the equations that are being used in the discussion from our expert in the case.

I'm just looking for the slide that deals with that particular issue. So, looking at their slide 17, this is where they raised the argument that beta is just a delay, right? So, the first thing they look at is paragraph 35 of Dr. Sayeed's declaration in which she discusses --

JUDGE RAEVSKY: Counsel, I apologize. I'm going to jump in because I think I led you off course. I might have misspoken. I was talking about the fixed filter. So, page 15 of the reply, footnote 5, says that Avendano's gain is the same as the fixed beta, because that's just D1 over D2, and therefore it's a fixed gain as well. So, I'm trying to figure out, are they really different?

MR. LAMBRIANAKOS: I'm going to have to return to that question, Your Honor. I don't have the answer at my fingertips.

JUDGE RAEVSKY: No problem. What about the first part of my question? Does the Axonics decision allow Petitioner to make this argument? And I guess to give you a little context, in case you're not as familiar with Axonics, I believe in that case we were instructed by our reviewing court that when there's a construction set forth from the Patent Owner response that we must then give the Petitioner an opportunity to respond to the new construction. And what I'm really interested in finding out is, is it okay for a Petitioner to change its mapping from the claimed filter is equal to a delay to now it's equal to a gain.

MR. LAMBRIANAKOS: Well, I can only answer to what is in the reply itself. The reply only includes in a footnote a statement that the gain could be the filter. There's no expert testimony to support it, even though there was the opportunity to do that. And there is no revision of the remainder of the grounds on each of the claim elements that would include

the gain. And in fact, none of the discussions here today regarding Avendano by itself or Avendano with Visser take into account the gain as being the filter. And so, you know, even if it were appropriate to completely change one's mappings to account for a different claim construction, that really hasn't been done here.

JUDGE RAEVSKY: So, even if it were appropriate, your point is it's simply attorney argument?

MR. LAMBRIANAKOS: In a footnote that's incomplete with respect to all the grounds that were set forth in the petition.

JUDGE RAEVSKY: Understood.

MR. LAMBRIANAKOS: Which is, by the way, the same thing we have in the footnote that Your Honor referred to initially, right? They say that it's a gain because it's just like a fixed b, a fixed beta. But that's just their attorney speaking and there isn't any expert testimony on either side of this issue in order to resolve it. Which, in our view, makes it impossible for them to meet their burden of proof on that particular ground anyway.

With respect to the claim construction, there are arguments made by Petitioner that the disavowal that we refer to is not clear and unambiguous because the specific words such as filter was not used, you know, in the language that we pointed to, which described the inventive concept behind the beta filter. But the petition does not --

JUDGE MCSHANE: I'm very sorry, counsel, for interrupting. Ah, there he is. Our lead Judge is back here on this panel.

JUDGE RAEVSKY: I was able to hear everything, but I momentarily lost video. No need to repeat your argument.

MR. LAMBRIANAKOS: Okay. So, the argument that was made

was that this discussion on page -- on slide 3 that we've been pointing to is ambiguous. It doesn't mention a filter. It doesn't use the word delay. And so, without those sort of magic words, that it's not clear enough what it is that this passage means. But if this passage is so ambiguous, if it's ambiguous, it means that it has multiple meanings, that it's subject to meeting different things. And the Petitioner has not proposed what it is that it believes that this language means, which is different than what it is that we have proposed. When we point to the timed phase difference and say that refers to a delay, they say it doesn't say delay, but they don't say that it means something else in the art, which we don't understand and which makes that particular sentence, you know, ambiguous.

And so, without there being any evidence other than just pointing out that certain words aren't in the particular language, they haven't shown that this isn't a clear enough statement under the law to exclude from that adaptive filter, the beta filter, a mere delay.

Now, turning to our slide 16 to deal with the Dependent Claim 17, Avendano does not apply a delay to the first intermediate signal because the delay is being applied to the first microphone signal. Their own annotation shows that the delay that they're referring to has already been applied to the first signal to create the first intermediate signal. There is no additional delay being applied to the first intermediate signal. The mapping just doesn't work.

The same is true in slide 17 for the Avendano-Visser combination. They point to the first intermediate signal as coming after Visser's cross filter W21, but there's no delay that is applied to the first intermediate signal. And with respect to Claim 19, as shown in our slide 18, they pointed to filter

W21 as the filter in the independent claim. And now, for Claim 19, they're relying on the filter W12 as the filter in Claim 19, even though it's the same filter. Under any reasonable reading of the claims, the filter is simply the filter that was defined in the independent claim.

JUDGE RAEVSKY: Counsel, we also heard argument from Petitioner today on Dependent Claim 27 in the '213 patent. And I didn't recall seeing an argument from you in the briefing on this claim. Am I right in that or am I misremembering?

MR. LAMBRIANAKOS: So, with respect to Claim 27, I believe that we simply relied on the claims from which is that claim depends, and did not have additional argument.

JUDGE RAEVSKY: Okay, thank you.

MR. LAMBRIANAKOS: May I ask how much time I have remaining?

JUDGE RAEVSKY: Yes, you have just under 12 minutes of your original time remaining.

MR. LAMBRIANAKOS: Unless there are any other questions, I will end here for my initial presentation.

JUDGE RAEVSKY: Thank you, counsel. Looks like you have about 31 minutes remaining for your sur-rebuttal. And, Petitioner, you have 16 minutes. You may begin when you're ready.

MS. WANG: Thank you, Your Honor. So, where is Visser's VAD discussed? So, it is in Exhibit 1003 to both Petitions. Paragraph 109, this is where Dr. Kenny discussed the VAD in Visser. In that same paragraph, he incorporated the entirety of his overview of Visser, which also discusses the VAD in Visser.

We also discussed Visser's VAD explicitly in the motivation to combine section of the 1084 petition at 16 to 17, where, as Your Honor pointed out a few minutes ago, that we refer to the ICA process. The ICA process in Visser is what is incorporated into Avendano's system. And on that same page of the petition, we point to Visser, column 9, lines 20 to 43, and that portion of Visser discusses using the ICA. It states the ICA, quote, is not able to perform its main separation function, end quote, basically without Visser. You can turn on the ICA on and off according to the Visser -- according to the VAD. This is starting at line 26. The ICA is, quote, controlled by the voice activity detection module 185, end quote. So, really it all goes together. The ICA in Visser does not work without the VAD. So, when the petition incorporates the ICA, we're incorporating the VAD as well. Avendano's VAD was also --

JUDGE RAEVSKY: Counsel, I'll be honest, it sounds like a lot to read into the acronym ICA. Patent Owner I think made the point that just citing to a column does not articulate a rationale to combine. It needs to be something more than a conclusory statement. What's your response?

MS. WANG: We would respectfully disagree. I think just based on this cite, we do cite to this specific portion in Visser where that discusses the ICA as using the VAD in Visser. So, the incorporation of the ICA necessarily has to include the VAD. I mean Visser already states itself that the ICA doesn't work without the VAD. So, our reading of it is that they have to go hand in hand. It doesn't make sense to incorporate the ICA without the VAD.

Avendano's VAD was also raised in the petition. This is specifically in the motivation to combine section in Ground 1 of the 1084

petition at 15. Avendano's VAD is necessarily part of the combination, and as we discussed earlier with the teaching of Visser's ICA process of needing a VAD which is discussed in the combination, we could rely on either of that.

Your Honor raised the Axonics case. We agree that Axonics allows Petitioner to respond to a new claim construction that's raised by Patent Owner, and this is --

JUDGE RAEVSKY: Sorry, sorry Ms. Wang, it seems like you're moving beyond the VAD issue. I just want to button up one issue. Patent owner is arguing today that there is no feedback in Avendano's -- from Avendano's VAD to its DMA. Do you agree?

MS. WANG: No, I don't agree with that. But even if that were the case there is feedback in the combination explicitly because the ICA process needs a VAD. So, even --

JUDGE RAEVSKY: That sounds like you -- we have to rely on the VAD in Visser. You can't rely on the VAD in Avendano alone.

MS. WANG: Respectfully, I disagree Your Honor. A VAD is a VAD. It's just it -- the VAD is the same in both Visser and Avendano. You're outputting a zero if there's no voice activity detected, outputting a one if there is voice activity detected. It's -- they're both VADs. We can rely on either of that.

JUDGE RAEVSKY: So, let me let me see if I follow. The feedback, as you stated, is only in Visser's VAD. But if Visser's VAD is not in the combination, and you say that we can rely solely on Avendano's VAD. But it doesn't have feedback. Therefore, we must rely on Visser's VAD. Why is that not logical?

MS. WANG: Let me just clarify. Because the combination is using Visser's cross filters that need a VAD, so in that combination where we rely on Visser's cross filters, we can rely on either Visser's VAD or Avendano's VAD as providing that feedback based on the explicit teachings in Visser, and sort of the implicit teachings in Avendano that we discussed during my opening when we talked about how Avendano's gain and delay blocks could be adjusted based on when speech is occurring.

So, if there's no other questions on that, I'll move onto Patent Owner's argument that there was no expert testimony that we provided for the Avendano's gain. This was in the footnote on page 15 of our replies. Our position is that this is really straightforward. We're just pointing to Avendano's gain as the filter under Patent Owner's new interpretation that it could be the fixed beta. They acknowledge that the fixed beta can be the claimed filter. So, under that interpretation, there's nothing we need an expert to say, beta is a fixed gain, Avendano gain is a fixed gain. It doesn't vary cross frequencies. It's the same as Avendano's gain. There's no need for expert testimony to respond to that new position.

Regarding where in the record do we rely on Avendano's delay versus the gain versus the cross filters. So, the gain, as I mentioned is in the replies at page 15 in that footnote. The Avendano delay is relied on in the 1084 petition at 25 to 26, and in the same site for the 1128 petition. When we get to Dependent Claims 17 of the '213 and Claim 7 of the '611, we refer to that same Avendano delay block as performing the delay. This is in the 1084 petition at 36, the 1128 petition at 37. And then we refer to round out the rest of Dependent Claim 17, we refer to Visser's cross filters as also performing the delay. This is in the 1084 petition at 37 and the 1128 petition

at 38 to 29.

Regarding what Patent Owner just said about whether the filter can be beta, I think I --

JUDGE RAEVSKY: Ms. Wang?

MS. WANG: Yes.

JUDGE RAEVSKY: One thing there. What I didn't hear you respond to is my question during your main argument, which is where is the support in your reply for the argument which sounded new today that if you rely on Avendano's gain for the filter, claim filter, that it is outputting an intermediate signal to the delay filter in Avendano.

MS. WANG: It's just in that footnote in the replies in combination with the cites to the petition that I just referred to for the delay filter, for Avendano's delay. It's the combination of petitions and the replies, but in the replies it's just that footnote.

JUDGE RAEVSKY: So, we need to combine the footnote argument that says a gain with the filter -- delay filter argument from the petition to come up for support with this new argument that you raised?

MS. WANG: Specifically, for if we are talking about Dependent Claim 17, then that's an argument that has been presented in the papers, yes. It's -- we would --- it's not a new argument, but it's an argument that is based on a combination of the petition and the replies.

JUDGE RAEVSKY: I think you would find most panels are going to say that if you're combining a footnote from a reply with an argument in the petition, that's a new argument. But I understand your position.

MS. WANG: Thank you. I think I heard Patent Owner say earlier that the filter doesn't have to be beta, but that really flies in the face of a lot

of what they said in their briefing, in their PORs and in their sur-replies. They state repeatedly, for example, in the sur-replies at 2 to 3 and 5, they state repeatedly that the filter is the beta filter. So, for them to now say that it doesn't have to be the beta filter, that's just directly contradictory to what they said before.

Regarding the quote, the column 11 paragraph talking about NAVSAD and PSAD doesn't refer to beta. Our point is that that paragraph is ambiguous. Is it referring to beta? Is it referring to alpha? Adaptive filters only, or can it be fixed filters? Patent Owner is trying to rely on that ambiguity and trying to actually flip the burden to Petitioner, but they're the ones who want to show lexicography. They're the ones who are relying on that paragraph as clear and unmistakable disclaimer. And there's nothing in that paragraph that meets that standard. And I also didn't hear Patent Owner address the cases that are cited in our replies at 7 to 9 that I mentioned during my opening.

Regarding what the patents say about beta, this is the '213 patent at column 5, line 29 to 33, where it says beta describes a relationship between 01 and the calibrated 02 for speech. That is for speech. This is different from the column 11 quote, which describes a relationship between the two microphone signals. So, if beta is supposed to be for speech, the column 11 paragraph is describing a relationship between microphones, it's not at all clear that this is referring to beta. If it can be a fixed or adaptive filter that is even discussed in that paragraph, then that could refer to alpha filter, the beta filter, either of which can be fixed or adaptive.

Patent Owner alluded to Petitioner's slide 17. This is where we did very simple math in our replies at pages 4 to 6 that shows what happens

when you consider those two equations together. And we demonstrated in our replies that even if you were to accept Patent Owner's position that the filter has to be beta, that beta simplifies to a mere delay. So, that's exactly contradictory to what they've been saying.

JUDGE RAEVSKY: Ms. Wang, I realized I forgot to ask a question, and I apologize for hammering on the gain, but to be fair to the Patent Owner, I asked the same question to them. Under Axonics how is it that a Petitioner is permitted to map a new block, like the gain block, to a claimed element like the filter when the mapping in the petition was for the delay?

MS. WANG: We're not adding new prior art. We're not introducing new evidence. My understanding of the Axonics case is that Patent Owner is allowed to respond to a new claim construction offered by Patent Owner in the POR by changing its mapping, and that's what we are doing with that footnote on page 15 of our replies.

JUDGE RAEVSKY: Yeah, that's the big question for me. Is Axonics saying that you can change your mapping or that you can clarify your mapping?

MS. WANG: We can do both in response to a new construction.

JUDGE RAEVSKY: Okay. I understand.

MS. WANG: Okay. While we're on Avendano's gain, Patent Owner mentioned, argued that Avendano's gain is not used for speech. That is false. The gain in Avendano does the same thing that the calibration filter does in the patent. And what we talked about was that, you know, you have a closer microphone and you have a further microphone. So, the closer microphone has a higher amplitude when speech is occurring compared to

the further microphone. And by compensating for that difference in amplitude, the gaining block in Avendano does describe a relationship for speech between the two microphone signals because it's equalizing the two for speech. So, in other words, the gain block in Avendano, it's describing the amplitude relationship for speech, just like how Avendano's delay block is describing the temporal relationship for speech. And that is why either of these blocks can refer to the filter that describes the relationship for speech in the claims.

What Patent Owner seems to be getting at is that they want the relationship to be a relationship that varies over frequency to avoid the fixed gain. But that is contradictory to the other thing that Patent Owner just stated, which is that the filter can include the fixed gain filter. And even if they were saying that the relationship needs to be one that varies over frequency, that is nowhere required in the claim. That is a very narrow, very specific view of what the relationship for speech needs to be in the claim.

Last point. Patent Owner talked about how we were relying on W21 in the independent claims and then W12 in the Dependent Claim 9. Again, we're referring to both filters as, this is the filters in Visser, as the system composite filter. And that system composite filter is applied to both microphone channels.

JUDGE RAEVSKY: We're at time, counsel. So, if you want to make a concluding sentence.

MS. WANG: No, I thank you all for your time. And that's it for me. Thank you.

JUDGE RAEVSKY: Thank you. Mr. Lambrianakos, you have 31 minutes.

MR. LAMBRIANAKOS: Thank you, Your Honor. The idea that Visser has a composite filter, and that despite the explicit mapping in the petition that we can just sort of put both of the filters, W12 and W21 together, rename them composite, and that way avoid the issue of identifying a different filter into independent claims from the dependent claim is just unsupportable in the law.

With respect to the Avendano gain, the Avendano gain is not for speech response. The Avendano gain is simply a calibration. It calibrates the amplitude of all of the sound, including noise, and so, it does not provide a response to speech and characterize the relative responses to speech that the beta filter does in the specification of the of the patents. And so, and specifically, you know, the beta filter, the fixed filter at the bottom of column 5 particularly takes into account the distance from the user's mouth in determining what that filter needs to be. Whereas, the Avendano gain simply equalizes amplitudes of speech and noise associated with the two microphones. And so, --

JUDGE RAEVSKY: That it is more like the calibration filter.

MR. LAMBRIANAKOS: Exactly. The gain is the calibration filter. That's exactly right, Your Honor.

I don't have any further argument, unless there are any questions then I'll conclude.

JUDGE RAEVSKY: Any other questions? Okay. Thank you, counsel. Seeing no questions, this hearing is now adjourned.

We thank you for your participation. The Judges will now leave the call, but we ask counsel to stay on the line in case the court reporter has any questions. So, with that, I wish you all a good day.

(Whereupon the above-entitled matter went off the record at 4:07 p.m.)

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