

This unedited transcript of a continued webinar is provided in order to facilitate communication accessibility for the viewer and may not be a totally verbatim record of the proceedings. This transcript may contain errors. Copying or distributing this transcript without the express written consent of continued is strictly prohibited. For any questions, please contact customerservice@continued.com

Introducing ReSound Vivia and ReSound Savi - Our Most Intelligent Portfolio Yet!

Presenter: Tammy Stender, AuD

All right, I have the top of the hour now, and I want to thank you so much for joining me. My name is Tamara Stender, and today I am thrilled to be talking about two new additions to the Resound family, the Resound Vivia and the Resound Savi. We are super excited about this because we are launching in the premium levels and in the essential levels all at the same time, which gives you a fuller portfolio of new products with some really great intelligent additions to them to make things better for your patients. So, as always, the risks and benefits of this presentation are outlined in your handout. If you have any questions, please let us know.

The learning outcomes are that we are going to identify the features and highlights of the Resound Vivia and Savi. We're going to be able to list the benefits of these features, and especially with our newest feature, Intelligent Focus. And finally, we're going to be talking about Bluetooth Low Energy Audio and, and auracast. And while these are not new to Resound, we have added a component to this which actually makes it so much easier to access AuraCast streams now right through our app stream to our hearing aids, and that's the AuraCast assistant. So we'll be going over that as well.

But let's start at the beginning. What was the impetus for this product launch? When we thought about the way that the industry is moving, the way technology is moving, and what our goals are for people who use hearing instruments, we don't want to make decisions for them. We don't want to control what they hear and how they hear it. What we would love to do is empower our users, giving them the power to decide and choose, just as we have always had that emphasis.

But applying another level of technology on top of it to really evolve how people are able to use hearing technology in their everyday lives. So by this, we have embraced a human approach to AI. And we're not thinking of it as AI is artificial intelligence. We are thinking about it as intelligence augmented. So if you switch the I and the A around, that's our approach to integrating this kind of technology into our product line.

We want the technology to empower the human and not the other way around.

So our products are titled Vivia. That's the premium level and Savvy. That's the essential level. When you look at the portfolio, you see that we already have a premium product, the Resound Nexia, available in customs, BTEs and receiver in the ear devices. And the great thing about all of these is that they all offer Bluetooth Low Energy Audio in our cast.

Our older premium product is the Omnia. And then if you get older than that, we go back to Lynx Quattro. The Resound key was our previous offering in the Essential category. Now we have entered into a new phase for essentials, and that is the Resound Savvy. And just like Nexia, it offers Bluetooth Low energy audio and AuraCast in all of its form factors.

But additionally, we're taking things one step further with our premium offering of Resound Vivia. And we not only offer Bluetooth Low energy audio on AuraCast, but that is the one that offers Intelligence Augmented, and we're calling that feature Intelligent Focus. And it is available in the tech level nine. So the two new products that we have launching at the same time have these capabilities with LE Audio and arcas. They also offer our updated streamers, the TV Streamer plus and the Multi Mic plus, which work with Bluetooth Low Energy Audio and Autocast.

But as you can see, the Vivia is the only product line that offers Intelligent focus tech level 9 only. But the Vivia and the Savi Both work with SureFit 3 receivers. The MRU receiver is only available for Vivia, but what this is good for is that it reduces your complexity in the in the clinic so that you know that both of these product lines, whether they're premium or essential, work with the same SureFit 3 standard receivers. Also, both of these product lines offer exchangeable mic filters that can be replaced in the field. Even the patient could replace it with the directions on how to replace it.

And while we hope that you don't have to deal with this, it is nice to know that it is something that you can do in the clinic if, if you have a patient that gets a mic filter clogged. They are both programmed via Resound Smart Fit 2.1.

So replaceable mic filters. I'm not going to talk a lot about this because it's pretty explanatory what they do, but we're aligning it so that these basics work for the Premium and the Essential categories. And here is a picture of our new mic filter that is field replaceable.

As with the previous products, we have all day battery with Resound Vivia and Resound Savi offering up to 30 hours of use on one charge and 20 hours even when you're streaming for half of the time, which is a lot of time, that's like eight, 10 hours of streaming and you still get 20 hours. So you can look at battery life so many different ways and you can measure it in so different ways and so so many manufacturers measure it in specific ways. But at the end of the day, what do you want? You want it to be all day? Even if that person is going to stay up for the better part of that 24 hours, you want that hearing aid to be working, even though we know that's not a typical use case.

So we have these kinds of battery lives to make things easier on the users. The premium charger stores up to three charges, extending that battery life even farther. The standard charger is a plug in charger and the desktop charger, of course, is another charger, but a little bit lower price point than the standard charger. And we have all three of these available for the Resound Vivian. For the round sound savvy, we take out the middle one and just have the premium charger with the portable three charges embedded with an embedded lithium ion rechargeable battery and the desktop charger.

Before we go into more of that intelligence Augmented, I want to highlight some of the features of Resound Savi, the essential product that we're launching. And what we wanted with this product was to provide clear sound and connectivity for everyone, which is why it contains the same Bluetooth, Low energy audio and Auracast that Nexia did, even in the premium. So there are two different tech levels

that are being launched for Savi. Tech Level 3 and Tech Level 2. Tech Level 3 offers the Mini Rie model and Tech Levels 3 and 2 offer the standard RIE models.

So the rechargeable model is available in the Tech level three, but if you want a battery model, you can get that in tech level 3 or 2. There are five different colors based on what the model that you choose and the features that we want to have. We want to hit three different things. First of all, we want to be best in class in hearing all around. That's kind of where Resound wants to be known.

That's where we develop all of our products to really focus on when we have to decide where are we going to spend our research and development dollars. It's about hearing in noise, best in class all around. So we've extended that to the essential category with Savi and we have the upgraded signal processing on our latest chip. It includes impulse noise reduction, which wasn't available in our predecessor Essential product. It has the upgraded DFS Ultra 3 and it offers frequency lowering, which was previously not available in the Resound key.

Secondly, we want to make sure that it's comfortable for people to wear comfort in terms of physical Comfort in terms of not having to worry about it. So it's designed for all day wear with the rechargeable battery lifetime of all day at least 20 to 30 hours. It has that rechargeable Mini Rie style in the price point to read it's all weatherproof, meaning that while you shouldn't go scuba diving with it, you shouldn't necessarily jump in the pool with it. It's going to survive these kinds of accidental water exposures which happen in everyday life. It has replaceable mic filters and AAVE battery.

And finally, the third thing we want to focus on for the new Resound Savi is best in class connectivity with the clearest Bluetooth experience ever with the newest Bluetooth available, which is Bluetooth Low energy audio and Arcast, the new Arcast assistant, which is just being launched now in the premium, but also has been extended to sound. Savi clears all day stream sound and greater benefits from the accessories that work through this kind of technology as well. Our new TV Streaming plus and Multimic

plus.

So when you look at it all on one slide, which this is a busy slide, but you see that Savi actually provides a lot of benefits that aren't typically seen in the essential price point. You have hearing all around, hearing comfort and the best in class Bluetooth connectivity. Even in an essential device, you have all day battery. You aligned the basics so that when your patients come in and they want an essential at 10am and then 11am, once the top of the line premium, you don't have to fiddle around with which receivers work with which anymore. It's very streamlined.

The mic filters are streamlined, the accessories are streamlined. It's made to make your life easier to see a wider range of patients without having to change things up just because of the price point. So that's Savi. Now I'd like to turn my attention to Resound Vivia, our new premium offering. And this is where Intelligence Augmented comes into play.

The human approach to AI. Vivia is offered in four tech levels now. 9, 7, 5 and 4. The tech level 9 is the one that offers intelligence augmented. There are two features in that that we talk about with Intelligence Augmented and those are intelligent focus and Intelligent noise tracker.

As you can see, the same Micro rie. Not many, but micro. The same size of the Nexia Microri is being used for Vivia as well. It's the same case, which means that this is the industry's smallest Micro RIE hearing instrument. And now we have Intelligence Augmented into it.

Deep neural network technology into that same Case that we had with Nexia, that was the smallest hearing aid and still is. So we offer that with the Vivia. We also offer standard ries with the 312 or 13 battery intellicoil for the patients that would like that as well.

Okay. So just as with Nexia, we are still offering a cross in the Microri stage style. And the Vivia Microri cross transmitter you see here offers 16 hours battery life when transmitting audio to the opposite ear. Compatible with Resound Vivia Rie and uses the same SureFit three receivers and domes as the rest of the product family. And Savi, we do have a couple new colors here.

As you can see, we've got some of the standards, but we've added some such as navy blue and red. And these are all weatherproof IP68 in and out, including the receivers. So these are really robust hearing aids. And that is great when you're a hearing care professional like me who doesn't want to have to deal with things like, oh no, they dropped it in a puddle. As the spring season comes along here, it's going to be okay, which is great and even more pretty than it was before.

So let's talk a little bit more. What is this intelligence augmented human approach to AI? Well, there are four different things to remember when it comes to this, and that is, number one, we are integrating a deep neural network for hearing and noise that empowers the user. It doesn't make the user hear what we think they need to hear, but empowers the user by giving them the control of what they want to hear. But when they engage the deep neural network, they're going to be able to spotlight speech in a way that they've never been able to before, which will eliminate distractions.

And yet they are not going to be cut off from the rest of the world. We also wanted to get this, in this technology into the world's smallest AI hearing aid. We know that people really want it to be as invisible as possible while having all the features into there. So that was something that was a must win in our eyes with this hearing aid. And so that is why we worked to put it into a Micro Rie style, the same size as the Nexia Micro rie.

It has all day battery with no trade offs. You can have streaming for many, many, many hours and you still get ridiculous amounts of battery use. And it integrates Bluetooth, low energy audio and AuraCast. And now with the first AuraCast assistant in a hearing aid, let's touch on the first one. First best for

hearing a noise, because after all, that's why our patients come to see us.

It's so that they can hear better in the situations in which they struggle. If you've been resound before, you will recognize this first program, the all around program from the Nexia. This is the 360 all around program and that remains the same. So if you've known it and loved it before with Nexia, you will know it and love it now with Vivia, that is your program that changes the directionality pattern based on where the sound, the speech, the noise is and puts you into the right kind of settings, regardless of what kind of environment you're in. So if you're in a quiet environment, you're going to get omnidirectionality on both sides.

You're going to be able to augment those speech, those spatial hearing cues, and really feel like you're listening naturally. If you're in a more complex environment, you're going to get directionality. And when you're in a really complex and difficult environment with the speech in front of you, noise behind, you're still going to get beam forming directionality. And that's all in that automatic all around program. But now we've taken the hearing noise program, which is usually program two, and we have really amped it up with Intelligent Noise Tracker and Clear Focus.

Clear Focus is the directionality that we have chosen to optimize the impacts of Intelligent Noise Tracker. This is where intelligence augmented takes place in that hearing noise program Resound. Intelligent Focus is a combination of these two things. Clear focus, directionality and Intelligent Noise Tracker, which is the dedicated DNN noise reduction.

So the highest form of intelligence is what we want to do. And in order to do that, we had to think about what was going to be future proof and be able to meet the needs of the rapidly expanding and developing field of deep neural networks. So we kept the 360 chip, the chip that we've had before, but instead of trying to squeeze more onto it or making it a different chip with more things into it, we decided that we were going to expand and be able to be here for the future. And all of the changes that

are rapidly happening in dnn, and that is the DNN chip. So we have two chips in this teeny tiny little micro RIE that are working together along with the human brain, which we want to believe is the core processor, because we know it is.

Nothing matters in the technology of the hearing aid unless it makes sense to the human brain and unless the User can utilize it in the way that they want to. That is where we're really focusing. We want the chips to augment the human and not the other way around. So the 360 chip will have all of the regular features that we had before, such as the signal processing, the compressor, the classification, the beam forming of directionality. But noise reduction in the 9 level will occur on the DNN chip.

And that's where the intelligent focus comes into play.

So when thinking about what was the goal of this kind of technology and how it was supposed to help the user, there's a couple of things that helped me kind of figure out, what is it that we're trying to do, and how are we applying it to hearing aids, but taking a step backwards. What is a neural network? You hear about it in the news, you hear about it in different places, but what is it exactly and how does it apply to us? A neural network is a machine learning algorithm. It's a learning process that's on a chip that's designed to mimic the process of human thought by looking at the way that people make connections and neural connections to arrive at decisions about what is the same, what is different, what is categorized as one thing or the other.

The human brain is amazing at doing this. Machines have not always been amazing at doing this. And that is where we are working with a neural network based on the way that the human brain works to bring that kind of capability to a machine, but not to replace the human, but to just help the human. So, for example, here's the analogy. If you take an image, many of you might recognize this is an image of the Chicago skyline.

You see the Willis Tower here standing prominently in the black with the two antennae. And then you see up here, that's Navy Pier. You see Lake Michigan. You see some boats. Clearly, this was taken in a summer month.

But many people around the world would recognize this as a city skyline. And most of us, probably in the US would recognize it as the Chicago city skyline. We know that by looking at it. A computer, however, is going to look at it piece by piece and give it pixels and then assign numbers representing the color, intensity, the shapes, the sizes, et cetera. What about this photo?

I look at this and I still see the Chicago skyline. It's just a little blurry, maybe a little bit artistically manipulated, but I can still see the characteristics of it that make me know, aha, that is the Chicago skyline without a whole lot of thought or deep analysis going on. What about this one? Yeah, this is kind of like a pencil sketch of one same image overlaid with changes. But at the end of the day, I still know that that's the Chicago skyline, even though there are significant differences from the third picture to the fourth first.

A computer might have a problem with this, though, because if it is assigning pixels representing the color intensity, there's going to be a lot different number assignments for the third picture than there is the first, because that one's not even in color on the third picture. So in order to reduce mistakes that a computer would make when trying to classify or categorize what it is looking at, a neural network is designed to mimic human thoughts, to make it easier for the computer to come up with the right conclusion. A small change to the picture can give a really new set of values for a computer. So when a deep neural network is developed, it is trained with many different samples, such as these three. It would be trained to think, okay, these are similar enough that it is still the Chicago skyline, even though there are differences in characteristics about it that are a little different from each picture.

So the sweet spot you want to be in with a deep neural network is you want to train it with as many samples as you can to accurately classify the image. We don't want it to look like the skyline of any other city. We want it to decide, this is Chicago skyline. But you don't want to over or under generalize the outcome. Overgeneralizing would say, oh, that's a city.

That could be New York City. That could be Ia. That could be Singapore. We know that's not true. We don't want to overgeneralize that this is any cities out skyline.

But we also don't want to undergeneralize it either. We don't want to say, well, since the picture changed a little bit, it can't possibly be the Chicago skyline. So the sweet spot is it knows what is an important difference in the scene versus what is not an important difference that would change the classification outcome. So how does a deep neural network take that information? Well, you have your target.

This is what is going in to the deep neural network or the chip. You've got some hidden layers, and that's where statistical calculations and analyses are taking place and where the input is investigated by the computer. And it does that through nodes. And that comes straight out of neuroscience. We have nodes that are the points that are decision points in the neural network that the brain uses.

But in this case, it would be, what are the building characteristics. I see a building that's tall, black, with two white antennae. That looks a lot like the Willis Tower. But let's take it to the next level. Is there a body of water?

Yes, there is. Are there boats on there? Yeah, in the summer, there's always boats in the Lake Michigan harbor. Is there a pier here that's prominent? Yeah, absolutely.

That would distinguish it from other cities. And then the outcome would be that based on this training, the computer would come up with that is the Chicago skyline. Because it is making these kinds of determinations in a way that the human brain would. Then the weights are optimized until the prediction is correct. So if you took this kind of target, it would still go through these hidden layers and be able to say, yeah, the building characteristics are the same.

Essentially, I see something that looks like a darker area that could be a body of water. So even though it changes from the more clear image, it still identifies itself as a Chicago skyline. So in these inputs, go through all these different hidden layers and come out with an output layer. And then it is retrained prior to being burned onto a chip so that it can be as precise as it can be, while also allowing for some differences, like the fact that the third picture was in black and white versus in color. Taking the analogy back to the hearing world, it would be, okay, that's the sound of an ambulance siren in Chicago.

The ambulance siren in a different city might be a slightly different frequency, but you could still say, yeah, it's a siren. It's a little different than the one I was trained on in Chicago, but that's still an ambulance siren in Des Moines. So we still want the outcome to be correct even when real life comes in and makes differences. This is where the beauty of deep neural networks lies. It's able to more intelligently come to the right decisions faster with better outputs for the user.

So in the world of hearing aids, we talk about noises and sounds. So some noise examples are traffic noise, airplane noise, multi talker babble, cafeteria noise, cutlery place. That input is trained into the deep neural network and looked at for several different modes like frequency, amplitude, waveform, shape, time variation, all the good stuff from psychoacoustics that we learned to come out with an output. And the output was looked at and compared to the input. And then when it was deemed to be correct, it was maintained.

When it was incorrect, it was adjusted to be correct. That's what we talk about. It resets the weights and iterates again. And that's how a deep neural network is trained. We used real life speech in noise sentences to do the training where the noise was classifiable as noise.

So we wanted to get it right.

We trained our dual chip, that's the DNN chip, on 13.5 million speech sentences. We worked across 3.9 million tuned sound parameters. And so the dual chip can do, and this is a silly number that probably you don't need for your clinical work, but we'll just throw it in there. 4.9 trillion operations per day. We wanted to get to that sweet spot, the sweet spot, remember, of not over generalizing, but not under generalizing because either way you make mistakes.

We wanted to get the sweet spot and this number of training sentences was what achieved the sweet spot, where we were confident we were getting the right answer without overanalyzing and consuming more power or under analyzing and getting it wrong. We wanted this to be right because we wanted this DNN to fit into the smallest hearing aid on the market. And that's what it resulted in being. So the Vivia with dual chip is 17 times more efficient than other hearing solutions with deep neural networks because we trained it specifically on the sentences that gained the greatest impact for the best outcome without overusing the power to be able to achieve that same outcome. So some of the numbers that you see in the industry might be 17 times more training sentences than what was used by Resound.

But if the outcome which we compared to these systems is exactly the same and you can do it faster and with less power consumption, that allows you to put it into a smaller hearing aid. And that was definitely one of our goals. So having intelligence augmented with the world's smallest hearing aid were absolute must haves in this product. And that is why we trained it the way we did and ensured that the accuracy was still there to be comparable and faster and more power efficient than the other solutions

that we could have implemented. So the DNN is applied together with a directional beam former.

This also helps us get to the right result first easier because you're using the power of not only the noise reduction, but the directionality that is paired with it in the hearing noise program to get to the right solution for the user. It's trained with a number of real life conversations and noise, not computer generated ones, but real life ones. And then the DNN architecture was optimized for efficiency and longer battery life. These were the goals we wanted to achieve. One other facet of the Resound DNN that's pretty unique and pretty cool is the looking at different time periods of the sound.

So you think of sound, it's like Live coming in speech is just always moving forward in the present into the future. But our technology can also be retrospective and look into the past. Why this is important is because it helps you know more information about the sound than you would have if you just looked at it as a snapshot. So, for example, if you look at this picture here of a ball and I told you that it was moving, by just looking at it right now as a snapshot, would you be able to tell if it was moving to the right or to the left? No, you couldn't.

You could maybe make some guesses based on the shading, but then you could probably talk yourself out of it. It could be moving to the right, to the left. It could even be moving to the front or the back. I'm not sure because I only saw a snapshot. But if you looked at it over time and saw that it started from the left and then had an intermediate stage where it was moving to the right and final ended where it is in the snapshot, you can see that it is moving from left to right.

And that gives you information about the sound, where it's coming from, where this ball is coming from. And that is the retrospective aspect of our technology and the dnn. And it is known in DNN technology forms as a recurrent neural network, which means it uses information from the past to make more accurate and faster predictions in the here and now. So what this means is that instead of just looking at one snapshot image of the sound arriving at the hearing aid, we're looking at that, and then we're

looking retrospectively for that sound in the past. And that helps us know, is it moving?

Is it getting louder? Is it getting softer? Where is it coming from? Et cetera. This helps us arrive at the right answer quicker, with less power consumption than running more sentences.

So this is how it all works. A sound's coming in. It's going into the 360 chip. It's deciding if you're in program two, hearing noise. That DNN chip will engage, and it will separate out and remove the noise from the signal through the deep neural network.

So you see that, that green is the speech. The red and the blues are different kinds of noises. They are being separated out and reduced by the dnn, which is a pretty cool way of helping the user, because we're not doing it against their will. They have to go into the hearing noise program to engage this. But when they do engage the system, it will be powerful and effective and really get them to listen to the and Understand the speech that they're hearing.

And that's what Intelligence Augmented is all about. We want to help, not replace the human. We're still giving the human the ability to choose when to engage this technology that is quite powerful without going into problems of I didn't want it to engage and now I missed out on something which is always a risk if you have it implemented as an automatic program. So we call our approach Intelligence Augmented, which is a really small but important distinction from the term AI which is generally known as artificial intelligence. Augment suggests that the machine is designed to assist the human in solving the problem.

But artificial means that there is a more machine centered solution that the human is presented with to help them. We augment the hearing aid users decisions by being careful to not take out all the noise, but to use our system to decrease no noise and really make that speaker in front of them audible. We know that this is still really hard for people, not only people with hearing aids, but even people with

normal hearing. But now with people who wear hearing aids, they are getting an extra boost, a really powerful boost to be able to hear that speaker in front of them even in the most difficult listening situations. And they're the ones who are deciding that they want to spotlight that speech, not the hearing aid.

And then the combination of the 4 mic beamformer that we use in the 360 all around when it's very noisy and in the hearing noise program which uses the intelligent noise reduction is the next generation of AI for hearing in noisy environments. We've paired the two together because together you get the greatest effects to help people have better listening comfort. That's where the noise reduction comes in. And better signal to noise ratio benefit, that's where the directionality comes in. And together the sum is greater than the parts.

And finally that user is empowered. They get to decide when they want to engage this powerful system. They get to empower this by delivering an acoustic scene that's easier to act on so they know what they're hearing all around them. But when they want to really hear that speaker in front front, they just choose this as their program and leaves them completely in control of what they want to hear. And when they decide, you know what I want, it's not as hard to hear right now.

I want to hear all the way around the table. You go back to the 360 all around program, that first automatic program which changes with the environment and they still have those abilities to do what they did in Nexia while maintaining all of the good things like spatial hearing and good sound quality for the user's voice. All those things that we've built into the first program are still there as well. So program one is 360 all around. If you fit it with Nexia and with Omnia, you will recognize that it has amazing benefits to make sounds natural in all of the different listening situations that you encounter.

But when you are really needing to focus on a speaker in front, intelligent focus is what you're getting in program two, the hearing noise program that really empowers the user to hear better than they ever

were before in noise. So 360 all around industry best hearing in noise without cutting you off from sounds around you. It also offers that narrow beam former to spotlight speech in front when necessary. But the intelligent focus really hones in on that speaker through the power of deep neural networks. 89% of users in our studies preferred intelligent focus when hearing in noise compared to not having it.

And 64% experience better hearing in noise compared to other AI hearing solutions that are comparable. So this is something that really will revolutionize the situations for your users who still struggle in background noise. And I'm sure that all of us still struggle sometimes, but this is making it even better for those users now with intelligence focus.

So with that, I'd like to move on to the feature of universal connectivity, and that is Bluetooth low energy audio, including AuraCast. So Bluetooth Low energy audio, you can think of that as an umbrella technology, and we talked about that a lot before with the launch of Resound Nexia. It is the next generation of streaming connectivity based on Bluetooth. It is Bluetooth, but it has a different codec, which means it's programmed to use energy more efficiently for longer battery life in the devices in which it's programmed and to increase the sound quality to improve the sound quality from what was available in the past. So it is a wonderful corpus of Bluetooth technology.

And within it there are certain programs that run and Auracast is one of those programs, programs that you can elect to put into your technology. Resound elected to put Aracast into its technology with Resound Nexia. But it is not available in every Bluetooth low energy audio product. It has to be specifically put into that product. Aracast is broadcast technology, which we'll talk about in a minute.

But before I get into AuraCast, I want to point out that we haven't reduced accessibility for this to any price point. It is now available in all of the price points of Resound Vivia and all of the price Points of Resound Savi, the essential product because we truly believe that everyone should be connected to the same sources, regardless of the price point at which they decide to buy their instruments.

Bluetooth connectivity we want the best and the latest. And the reason why is because we want to make sure that five years from now when your patient comes in, they will still be able to connect to the world around them based on the Bluetooth package that is in their hearing aids. So a clear Bluetooth experience that's future proof is what we really want to provide. Bluetooth Low Energy audio offers the ability to have hands free calls not only for iPhone, but also for Asha. I'm sorry, also for Android devices.

Correction, Android devices that have this Bluetooth connectivity as well, of which more and more phones are being introduced that use Bluetooth Low Energy audio as well as PCs. And finally, we want the Bluetooth connectivity not to be limited just to the phone and the TV itself, but also to provide streamers and accessories that help people hear better even in the most difficult listening situations. So we've included Bluetooth Low energy audio technology in the TV streamer, calling it the TV Streamer plus and the Multimic plus. And these were both previously launched, but they carry through and are compatible with Resound Vivia and Resound Savi. So to talk about RCAST broadcast audio, we need to talk about how it's different from what we had or what was available to users in the past through technology.

And everybody really understands classic Bluetooth. It is ubiquitous, it is everywhere. It allows for you to take your phone and stream to your headset when you're on the airplane to listen to your movie in peace and quiet. And you don't have to have wires connected. It allows for one to one communication between devices, but it doesn't necessarily allow you to share that stream with your child sitting right next to you, who also wants to watch that movie on your phone.

That's where AuraCast broadcast audio comes into play. AuraCast allows electronic devices to broadcast audio simultaneously to an unlimited number of nearby audio devices with Bluetooth Low Energy audio. So the AuraCast audio can stream to cochlear implants with that technology, hearing

aids with that technology, consumer devices such as headsets, you know what you name it, Earbuds. When they have AuraCast capabilities, they can receive that same stream all at the same time. It also broadens your connectivity in very difficult situations, which I think the first one that comes to everyone's mind is trying to understand what they said over that airport PA system about when your flight is moving to a different gate or when it might be delayed.

So imagine if you could connect to your airport when the airport has Aura Cast streaming and you could go into your app and say, I want to listen only to the United Airlines announcements. And that's what you could do. There are going to be streams from the airports that allow you to choose which gate you listen to, prioritized over all of the gates that are being broadcast. And you would see it as this on your Resound Smart 3D app. So the Resound 3 Smart 3D is now fitted with an AuraCast assistant, because since AuraCast is being used in more places around the world, we are going to quickly encounter situations where there's more than one Aracast stream that you can choose from.

Very akin to if you go to a gym and they have broadcasting from different TVs that you can listen to this TV or that TV, but you have to choose which one to listen to on what used to be like a radio frequency. Well, this is now for Aura Cast streams in public venues like airports, like theaters, there may be more than one based on how many different streams are available. And that's why an airport is a perfect example of why you would need to be able to choose this. But it's not limited only to airports. It could also be you're sitting in this coffee shop and want to hear the music versus that coffee shop that's only 10ft away that's playing a different kind of music.

So these are the options that you have through the Resound Smart 3D app to choose what broadcast you want to listen to. Much like you would choose a WI fi stream if you're going to different a different person's house. So we wanted to bring Arcast for all in all the price points. And with that, we introduced the world's first AuraCast assistant for hearing aids, connecting to any AuraCast stream in range via our

app without the concern for compatibility. So you don't have to have an external third party AuraCast assistant.

It's already built into our absolutely free Resound 3D Smart 3D app. And this is where people will be able to listen to the sound that they want to listen to in their stream. So this is how it works. You've got either a laptop or a computer or a PA system, what have you. You could even have a TV streamer plus and the AuraCast assistant on the smartwatch or the smartphone would be available through the Resound Smart 3D app.

You would choose what you wanted to listen to and Then it streams directly to the Aura cast receiver. And that could be your hearing aids. Or if you're having people over to watch TV or an award show, March Madness perhaps on the tv. And they have a cochlear implant, they have a headset that has rcast. You could stream that from your TV or from your TV streamer plus through the RCAST assistant.

And anyone with the RCAST receiver would be able to pick that signal up. It's pretty amazing.

So what you do is you find a broadcast right on the app in the home screen and then you select, when you click on that triangle, find a broadcast. You see all of the streams that are available to you, much like Bluetooth streams, but you can connect to all of those or each one of those at a certain time. And that is the broadcast that you would have streaming not just to you, but to others as well who have AuraCast technology devices.

One thing I want to point out before we wrap up today is that even though this isn't available everywhere, and that has been one of the things that people have always said, well, that's cool, but it's not in my town. It's cool, but it's not at my theater, trust me that it is coming. And we have demonstrated that this technology is really game changing and has huge implications for the way that people will be able to have better accessibility in really difficult venues such as here. What you're looking at here is

the Lincoln Center, Alice Tully hall in New York City. It has a capacity of almost 1100 seats and it is almost 10,000 square feet in size.

We wanted to test the TV Streamer plus and see if it was robust enough with the AuraCast audio technology to stream to people sitting anywhere in this massive and world renowned auditorium. So we have hosted an event and as you can see, the orchestra is playing and There was a 187 person orchestra ensemble. And we hung a microphone, as you can see, above that orchestra and we wanted to broadcast it via our cast, different people sitting in these seats. And we put the TV streamer plus someplace that was inconspicuous. It is very small, as you are aware.

It's just a little TV streamer. And we put it somewhere very hard to find. This is actually where we located the TV streamer plus and then we let her rip. And it did what it was designed to do. It broadcasts the sound.

And as you can see, the composer was wearing it. He was able to hear his own music over our cast. He was happy with sound quality. And you know, musicians are Notoriously very good at determining what is sound quality, good sound quality and what is not. But this kind of technology made it easier for people who had previously had difficulties hearing in a large venue like this with Echo Reverberation.

Lots of people around shuffling their feet to be able to hear the music stream to their hearing aids through this technology in a way that had never been before. So we were very excited to showcase this. And it's just one of many venues that is putting this technology into place as we speak. It is going to change the game for so many people not only with hearing loss, but also with normal hearing who just want to be able to have a more pure sound experience. So this technology, while designed for people with hearing loss, is really helping advance accessibility for everyone.

The Multimic plus is the resound first remote mic featuring AuraCast. And it's great because you can use it, the speaker, the teacher, what have you. It's like an FM system but it works through Bluetooth Low Energy AuraCast. And that means that you can stream to a kid that's wearing an earbud with AuraCast, a kid that's wearing the resound hearing aids with AuraCast. Any of these things like in a high school setting that you would be able to stream to more than one person at the same time when that person wanted to have a better signal to noise ratio.

It's good for office meetings, it's good for having conversations in crowded restaurants. It really is amazing. As I'm sure you are well aware that remote microphones are basically impossible to replicate with hearing aid technology alone because of the signal to noise ratio boost that they give to the listener. TV Streamer plus as you see here, this is the one that has the Bluetooth low energy audio which enables the AuraCast broadcast. Audio streaming allows an unlimited number of AuraCast enabled devices to listen to a TV audio Stream.

Stream. The Multimic I just want to mention one thing, just won an award at the Consumer Electronics show this year in Las Vegas for accessibility in HTech. So this technology is being recognized not only in our field, but outside of our field as being something that furthers all of us in our understanding of how to use technology in the ways to really help people who need help in difficult listening situations. It's really exciting time. I really feel like being an audiologist, being a hearing care professional right now offers so many more opportunities to make people's lives better in a more seamless way than ever before.

And yet while I say that these are great ways of doing things, we're not abandoning the old ways either. We still have smart compatibility with the Multi Mic Plus. It's actually one of the little switches on the side. If you've got an FM system that you want to stream to your Resound Vivia hearing aids that don't have an FM boot on them, you use the Multi Mic plus as the intermediate. It picks up the FM stream

when paired and then goes directly to the hearing aids.

Likewise for telecoils, Bluetooth, Low Energy Audio and Auracast are phenomenal. But let's not ignore the fact that telecoils are implemented in many more places today. Even if you don't have a hearing aid that has a built in telecoil, the Multimic plus has a telecoil compatibility component to it. And so instead of choosing the FM switch, you would choose the telecoil switch and next thing you know you're able to pick up that telecoil stream in your place of worship, in your meeting hall, at your work, etc. Even in the cabs in New York City that are looped for telecoil, this will help you have accessibility.

So the Multi Mic plus really does open up a world of accessibility to Bluetooth, Low Energy Audio, AuraCast, to just listening to the speaker who's wearing it on their shirt like you see in the image here, to picking up telecoil streams even if your hearing aid doesn't have a telecoil built in, and to picking up fm. Not to mention you could also do line in if you are so inclined. That is another option as well. It really is a versatile device.

One thing that has been added to it is that we are now able to do auto streaming and this is configurable in the Resound Smart 3D app and the fitting software. So if you don't want to have the patient configured in the app, the you can do it in the fitting software as well where the default will be set to Multi Mic plus. If you've got a Multi Mic plus and a TV Streamer plus in that fitting, sometimes it was hard to figure out which one's going out to which and having to change around. Now auto streaming will make it easier for the user because default it would go to the Multi Mic plus first and then to the TV Streamer plus if they decide to not go to the Multi Mic plus first. So this makes it easier for you as the fitter as well as the patient to have more than one accessory because these two accessories have such nice capabilities in and of themselves.

I mean, the TV Streamer plus streaming in stereo to everybody you have over to watch the game on your big screen TV is really kind of cool. You can't really get that with the Multi Mic plus and the same

sound quality as the TV Streamer plus. So I would argue it'd be nice to have both. But it's easier than ever now with auto streaming because it will prioritize the Multi Mic plus and then go to TV Streamer plus if that's turned off in the app. But if you want to switch it around and make it configure the other way around, you can also do that.

And that can be programmed for the user who's like, you know what, I don't really use my Multi Mic plus all the time, but I definitely use my TV Streamer plus all the time. You can make that one be the prioritized one. So it's a little easier for everybody.

So I've covered a ton of things today, and I apologize if it's information overload. But I wanted to give you the highlights of what's going on with the Resound portfolio. We have the world's smallest intelligence augmented hearing aid that uses deep neural networks that are seen in other AI applications, but in a way that preserves the small device size and maximizes the battery usage while providing the same benefits that a larger DNN would, that would require a larger device or a smaller battery life. So you're getting the best of all worlds here. You're getting the intelligence of the DNN in the smallest package possible on the market today.

And with the longest battery life, it has a dual chip. And this is interesting and important, maybe not in terms of what your patients will say, gosh, I'm really happy I have two chips. I don't think your patient will come in and say that. Not everyone anyways. But what this is important to you and to the patient down the line is that it maximizes our capabilities to build on this technology in the future and doesn't rob or steal away from the capabilities we've always had in the past, because we now have two chips in there and one of them is purely dedicated to dnn.

We still have a CROs device that's very, very small and has a very good battery life for streaming across the side of the head for almost all day long. In those cases, we have three RIE different styles, some of them rechargeable, some of them not, and exchangeable mic filters and auto streaming. So

this is really an awesome package in A very small size offering everything that you would want. So I just want to summarize here because I know this was a lot of information. I like to think of things as top three reasons.

So here are the top three reasons to recommend resoundvivia and Resound Savvy Intelligence augmented, which is a human approach, connectivity with Bluetooth, low energy audio and auracast and basically giving the patient everything they want in terms of the top six important factors patients look for. So this intelligence augmented philosophy in a nutshell, our philosophy is we want to have help from the machine to empower the human. So the analogy would be an E bike, something that it's still a bike. The user does pedal and steer the handlebars, but it doesn't tell the user where to go. The user's still in charge of steering.

It just gives a boost when you get up to one of those really tough hills and you'd like to have a little bit of help getting up that hill. That is the philosophy. The machine empowers the human. It is not the machine being empowered to help the human. We're not empowering the machine.

We're not making the machine say, I believe you must listen to this speech because it is speech. And there is the sound of coins jangling on the side. No, if you want to hear those coins, you can hear those coins. You stay in the first program. We want the machine to help the human, not the other way around.

We don't want the machine to dictate to the human. So no, we are not empowering the machine, we are empowering the human. We're setting the standard with AuraCast for all price points, regardless of what the price point that your patient chooses. And when you look at the top six important factors for users which are hearing and noise, state of the art connectivity, ease of use, comfort all day battery and cosmetics. We don't know if your 10 o'clock patient's going to prioritize cosmetics or if your 11 o'clock patient is going to prioritize comfort.

But regardless of what they prioritize, we are maximizing the benefits in all six of these different areas. State of the art connectivity, easy use with auto streaming, comfort all day battery, cosmetics, smallest device, and most importantly for I think most of us is the ability to get the hearing and noise benefit that brought them into your office to begin with. So that is what I would want for my patients to know that this offers it all in that same portfolio family. So with that I want to stop talking so much and see if there Are any comments in the chat or Q and A?

And Tammy, it does look like we have some questions in the Q and A. Perfect. Okay, so the first one. Thank you all for putting these, these questions in. During a discussion about dnn, I explained that after training, the information was burned into the chip.

Does this imply that the chip cannot be further trained or updated in the future? Excellent question.

Okay, what I want to say is correct. The DNN was trained and then it was put into the chip. And that training is what the user receives throughout.

The only time it changes so is when you have perhaps a firmware update or a new device. And this is by design, because artificial intelligence and anything associated with it, such as DNN has the risk, if it's set to learn without any kind of constraints, that it can start learning wrong things. And we do not want it to learn to always turn down a certain frequency voice or to always get rid of a certain sound source because of incorrect learning. So because of that, and because we would like to make sure that what we deliver to the patient has been tested, verified, validated, and is beneficial, we burn the learning to the DNN chip. But that doesn't mean that it will never change in the future.

In the future, if we have better training or more training or we learn more or DNN starts to evolve, which of course, technology always evolves, we can change that on that chip through either a firmware update or a reprogramming from the office. But the good news to people who are worried that AI will learn incorrect conclusions or will somehow go off the rails is that that cannot happen for a lot of

reasons, but mostly because we want to make sure that our products are validated and regulatory reasons that protect the consumer against unconstrained machine learning and AI. Next question. Is there a reason why intelligent focus was not included in the all around program? Yes.

Excellent question. And there was a good reason. And the reason why is because we know that DNN is powerful and that if you've ever heard DNN engage in our products or other products that have DNN noise reduction, what you feel is an immediate removal of most of that noise, which can be wonderful if that's what you want, but if that's not what you want, that can be catastrophic. The example I like to think of is if I'm in my all around program and I'm going to meet a friend at a restaurant and my wallet slips out of my purse, even though I'm focused on, I want to hear my friend because we're greeting each other can't wait to see each other. I don't want DNN working at that point because that sound of my wallet bumping onto the ground is probably going to be categorized as noise.

And I want to know when my wallet fell on the ground. And so we don't want the user to lose out on the all around experience unless they choose that they want to just listen to the person in front of them. And that's everything that we mean by empowering the human. When we mean empowering the human, we mean employing DNN in the most realistic and natural way, but also allowing the user to choose when to engage the dnn. And if we put it in an automatic program, they wouldn't always have that power to choose.

So that is why it's in the hearing noise program. Thirdly, what acts as the antenna to identify the available AuraCast signals when the user is not using an LE audible LE Audio compatible phone? How would the app alone be able to identify the available signals? And is it the hearing aids that identify the signals which then send the information back to the app? Good questions.

Okay, let's take them in turn. If the user is not using an LE Audio compatible phone, then they're not going to be able to use the AuraCast. The app alone is able to identify the available signals because

that has been written into the app's abilities. So what you're seeing here is that the LE Audio compatible phones have the AuraCast assistant to be able to identify where those AuraCast streams are coming from. And then it's not the hearing aids that identify the signals, it's the app and the phone.

We're harnessing the power of the phone to send the information to the hearing aids and not the other way around. So it's the phone antenna to shorten all of that. The phone is the one making the decisions, not the hearing aids. And this app allows your users to connect to auracast streams. And this is something that's in your phone already without any influence of your hearing aids.

How many hearing aid pairings can the Multimic plus support? That's an excellent question. And we don't have a firm number for that. We just know that it is a lot. It can vary based on the environment, but it's all about the pairing and getting them paired up.

But it can definitely be a large number, like over 30. For sure, we've had more than that paired up. But it will depend on your environment too, because if you are in a place like an open field, there's not very many reflections, and that could limit the total number of streams, but that's just the way it's always been. Can you reiterate if the DNN chip is only in the Vivia and 9,754 levels or all Resound eights? It is only in the Vivia products.

But the DNN chip is only active in the Vivian 9. So intelligent focus is only going to be active at this time in the top price point, which is the nine.

And will this work with Android phones? Yes, it will work with Android phones.

Okay, any other questions at this time? If there are no further questions, you are welcome to go ahead and log out. Otherwise, we'll stay on for another moment or so in case there's anything further. Thank you so much. Great questions, everybody.

