

## Interview with Donald Schum, Ph.D., Vice President, Audiology & Professional Relations, Oticon USA

Topic: RISE Platform and Release of Epoq

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**Dr. Paul Dybala:** Hello everyone. This is Dr. Paul Dybala with Audiology Online, and today I'm talking with Dr. Donald Schum, or Don, as he likes to go by. He currently serves as the Vice President of Audiology and Professional Relations for Oticon U.S. First of all, Don, I just want to say thanks for taking the time to meet with me today.

**Dr. Donald Schum:** My pleasure, Paul.

**Dybala:** Well Don, first before we get talking technology, and it's actually wireless technology that Oticon has developed for hearing aids, could you give us a brief, professional overview relating to what you do for Oticon?

**Schum:** I'm the Vice President of Audiology and Professional Relations, as you said, which means that I have a general responsibility to look after the audiological integrity of things we do in the marketplace.

So any educational, support, marketing or sales activities we do must go through me in a sense. It's my responsibility to make sure that the audiological content of what our people talk about is of a high quality, is accurate, and is helpful and useful to audiologists out there.

**Dybala:** Speaking of moving the field forward, Oticon recently released their RISE wireless platform. Could you give us an overview of what that is?



*RISE wireless platform*

**Schum:** Yes. Most of the advanced-technology hearing aid companies develop their own digital platforms, and they produce a new digital platform every several years. Then the companies produce a series of products on that platform.

Our latest platform that we released this Spring is called RISE. It will be the basis for our digital hearing aid products in the marketplace for the next several years. We decided to give this platform a name this time around, because we feel that there is some significant news value.

RISE is the first hearing aid platform that has been developed from the ground up with wireless as the key component. When our engineers sat down several years ago to create the platform for our next generation of hearing aids, the key component that they were instructed to incorporate was wireless connectivity. That wireless connectivity needed to be able to be used for aid-to-aid transfer of information and also to get signals to the hearing aid from external devices. And so wireless was a general requirement, and that put great burden on our development teams. What they've created with this wireless technology in RISE is essentially the world's smallest radio.

Inside every hearing aid at the chip level, from an ITC all the way up to BTEs and RITEs, is a two-way radio incorporated into the chip. This radio can connect at broadband speeds to the other hearing aid that the patient is wearing, as well as outside devices that would bring information into the hearing aid.

So, we believe it is a significant step forward in the marketplace to have wireless capabilities built in at the chip level. It's not an add-on; it's not an accessory that is somehow connected to the hearing

aid. It is integrated in the digital signal processing of the hearing aid.

**Dybala:** How does this change the landscape of how audiologists will be fitting hearing aids?

**Schum:** We believe that wireless is the new horizon in hearing aid technology. We believe that it is the new technical challenge, and it is the new technology that will bring significant benefits to patients. So although we are releasing a series of products on the RISE platform now, we expect all the other high-end companies to also be in the wireless game even at a higher level of activity that they currently are.

As you know, this is not the first time that wireless transmission to a hearing aid has been presented to the marketplace. But there are some unique advantages to the way we've done things, which makes us very excited. In general, we see this as the new paradigm in hearing aid technology. We consider it as important a shift in hearing aid technology as when we moved from analog to digital, because we are now opening up a brand new range of activities in what hearing aids can possibly do.

What makes our way of doing wireless unique is that RISE allows for high bandwidth (or broadband) data transfer and audio transfer from hearing aid to hearing aid and from external devices to the hearing aids. What we're using as a technology is a variant of what's referred to as near-field magnetic induction. We refer to our particular application as "earStream". It is a digital magnetic wireless technology that is increasingly used in the area of two-way radios. Military and law enforcement personnel have been using this technology for several years now in different applications in order to have a more effective, more secure, and lower battery drain technology to perform short-range wireless communication.

It is a technology that is small. As I said earlier, it is small enough to fit inside an ITC hearing aid. Fortunately it is also a very low-power technology. It requires very little battery drain. We expect, and we are seeing, battery drain increases on the order of 10-15% in hearing aids that are incorporating the RISE technology.

So if we consider the extra capabilities of this advanced platform, the 10-15% increase in battery drain is a very, very small price to pay. It is a technology that, by design, makes very good sense for hearing aid use because of the small size and the low battery drain.

**Dybala:** The first product that you released on this platform is called Epoq, can you talk a bit about how you are using the RISE platform in that device?

**Schum:** Within Epoq, we are using the wireless technology in two different ways. The first way is to use high-bandwidth data transfer between two hearing aids in a binaural pair. That allows us to do certain true-binaural processing in the hearing aids where the moment-to-moment decisions are based on not just the signal processing happening in one hearing aid, but also on shared information between the two hearing aids.



*Oticon Epoq Open-Ear BTE*

The most important application we are using that for is, on a moment-to-moment basis, to update the gain and compression settings in the hearing aid. This is the best way to maintain important inter-aural level differences that occur as a natural cue for localization. We believe that localization is fundamental to a person's ability to understand speech in noisy environments, and by using high-speed data transfer between the hearing aids to maintain naturally incurring intensity differences on either side of the head, we believe that we are taking a very important step to try to maintain whatever localization abilities that patients with hearing loss would have.

The second major wireless application is to connect the hearing aids to a gateway device that we call Streamer. Streamer is the body-worn device that will take in audio signals either via Bluetooth transmission or from direct-audio input and then transfer that information up to the hearing aids via near-field magnetic induction. The major application is for a person with a Bluetooth-enabled cell phone. It also is a solution for any other audio device that transmits via Bluetooth, such as a car navigation system or a PDA. You can even buy a little transmitter to plug into your iPod that will turn the iPod signal into a Bluetooth signal. So instead of using headphones with your iPod you can have it transferred to the hearing aids via Bluetooth.



*Oticon Streamer*

**Dybala:** I actually had a chance to use the Streamer device with the Epoq (programmed with minimum gain). I paired it with my Bluetooth-enabled mobile phone, and I was able to use that very effectively. It worked quite well.

**Schum:** Yes. The key is really the hearing aid that the signal is going to. Epoq is a broadband, multichannel, wide-dynamic-range-compression hearing aid. It is definitely a top-of-the line hearing aid in the marketplace. And so as an audio device that has state-of-the-art signal processing and a 10 kHz. bandwidth, it is the perfect device to be feeding important audio signals.

Compared to the bandwidth of typical Bluetooth earphones that people can buy at their cell phone store or at other consumer electronic stores, you are feeding the audio signal into one of the world's best hearing aids with a broad bandwidth, and because of that, the audio quality is going to be maintained effectively. Clearly the major application that we see first-round with the new product as far as connectivity goes is for cell phone transmission.

**Dybala:** I would be remiss if I did not ask you to comment more on Bluetooth and its relationship to the RISE platform.

**Schum:** It is a good question and I am glad you asked, as we all know you are one of the field's resident experts in the application of Bluetooth.

**Dybala:** [laughter] Thanks.

**Schum:** As you know, Paul, the nice thing about Bluetooth is that it is widespread. It is showing up in many consumer devices at a relatively low cost. The downside of Bluetooth is that it is not a good technology to build into a hearing aid. It was never designed to be used with hearing aids. Physically, it is a relatively large technology. It uses significantly more power than would be

tolerated in a hearing aid, and so it is not a technology that can be effectively integrated into the aids themselves.

The approach that some manufacturers have taken is to build accessory devices that can directly couple into a hearing aid to accept the Bluetooth signal. That certainly is one approach to it. We have decided to go in a different direction. Instead of trying to force Bluetooth into the hearing aid or connect it to the hearing aid, we have Bluetooth going to this body worn Streamer device that can very effectively handle the technology because size is not a major limitation there.

The Streamer is rechargeable, so the battery power is not a big deal. The audio information is transferred into a technology base that makes more sense in hearing aids.

**Dybala:** Those are great points. There has been one question popping up in my head as you've been talking about the use of mobile phones and Bluetooth and compatibility with hearing aids. Are you thinking that because Bluetooth compatibility with mobile phones is a big use of this technology that you are looking to focus on younger individuals with hearing loss to try to get them using hearing aids?

**Schum:** Thanks for asking that question, Paul. The reality of the hearing aid marketplace is that the typical hearing aid user is well into their 60s and 70s. There is a kind of stereotype floating around that older people don't use cell phones a lot, and so the need for having a good cell phone application is somewhat limited. We believe that the truth is very far from that perception.

We believe that cell phone use amongst the older population is increasing at a very fast rate, and we also believe that part of the reason why they may be somewhat limited in their use of cell phones is the frustration of using cell phones with hearing aids. We believe that the Streamer is an elegant and effective solution for any hearing aid user, especially an older hearing aid user. We don't believe that there is an age limit on the need to be connected.

We have spent a significant amount of time in the last several years looking at the effect of hearing loss on aging, the way individuals face aging, and what's on their mind and the way they deal with it. One of the things that we know that comes out of the psychology and sociology literature is that aging, especially when compounded by hearing loss, threatens connections. Aging threatens the ability to stay connected with loved ones, whether it is a spouse or social contacts or grandchildren or grown children. Anything that we can do in the hearing aid field, whether it is making better hearing aids or improving the hearing aid penetration rate or in this case, improving connectivity via the use of hearing aids, we believe is a step in the right direction. The goal is to minimize the social and psychological effects of aging as much as possible.

The idea of being able to help individuals who are getting older maintain high-quality life connections, we believe, is a very significant step forward. We believe that everybody in the field can play a part of that. We are doing our part by trying to offer a good technical solution that is approachable for the elderly.

**Dybala:** Sure, and I am agreeing with you now that I am thinking this over in my head. I look at Internet use in the elderly, and those numbers have been growing in the past two years. I believe that in the next two years they are really going to expand. This is happening with all kinds of technologies. As an example, I just got back from a fishing trip with my uncles who are almost all now 60+. They were using GPS to track fishing locations and the internet and spreadsheets to track the tides.

**Schum:** I think approaching technology amongst the elderly is not an issue of whether or not they are technophobic. It is an issue about whether the applications make sense for them. An iPod that is advertised by playing a genre of music targeted for the teenagers and the twenty year-olds, of course, is not going to be an application that the older generation is looking for. But books on tape, podcasts of favorite commentators, or things like that are applications that make sense and are now becoming more available. The elderly are making use of the technology that is becoming more and more relevant to their culture.

We believe our wireless solutions are a great fit for them also. And of course as you get into younger age groups, the baby boomers and all the way down to teenagers, we believe there are good solutions within this wireless technology for all those age groups.

**Dybala:** We are becoming more and more of a wireless world. I applaud Oticon for getting to the forefront in thinking about how to implement this across all wireless platforms.

I think we are getting to the end of our interview, Don. I do want to thank you for taking time to be with me today. Is there anything else you want to touch on before we close out today?

**Schum:** Nothing other than to reiterate the point that we definitely see this as the new horizon. Audiologists are going to need to pay attention to this area. It is an opportunity to bring benefits to patients that we have not been able to bring before. Like I said, our initial applications are twofold: binaural processing in hearing aids and connectivity to the outside world.

Other manufacturers will be out there with similar wireless approaches, maybe providing other types of benefits and other types of applications. This is not something which is easy to ignore as a movement in this marketplace. It is a new horizon in the field of audiology, and it is something that we all are going to have to be very comfortable with in the very near future.

**Dybala:** Thanks a lot, Don. I appreciate your time.

**Schum:** My pleasure.

### **About Oticon**

Oticon is one of the most innovative hearing aid manufacturers on the market. With more than 100 years of experience, Oticon has spearheaded a number of technological breakthroughs which have made a significant difference for people with hearing loss. Oticon is the only hearing aid manufacturer with its own research center, ensuring that the needs of hearing aid users are always put first when developing new solutions. For more information about the new Epoq, visit [www.oticonusa.com](http://www.oticonusa.com) or the Oticon Web Channel on Audiology Online at [www.audiologyonline.com/channels/oticon.asp](http://www.audiologyonline.com/channels/oticon.asp)