



Signia AX: Exploring the Benefits of Split Processing

Presented by

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Disclosure: I have the following relevant financial relationship in the products or services described, reviewed, evaluated or compared in this presentation.

I am a Clinical Education Specialist with the Education and Training team for Signia, for which I receive a salary. I have no relevant nonfinancial relationship(s) to disclose.

After today's presentation:

1. Participants will be able to describe key benefits of Signia's Augmented Experience Platform
2. Participants will learn about e2e 4.0 and be able to describe the benefits of binaural processing.
3. Participants will become familiar with the AX product line and device features.

Signia Delivers

Innovative
Solutions

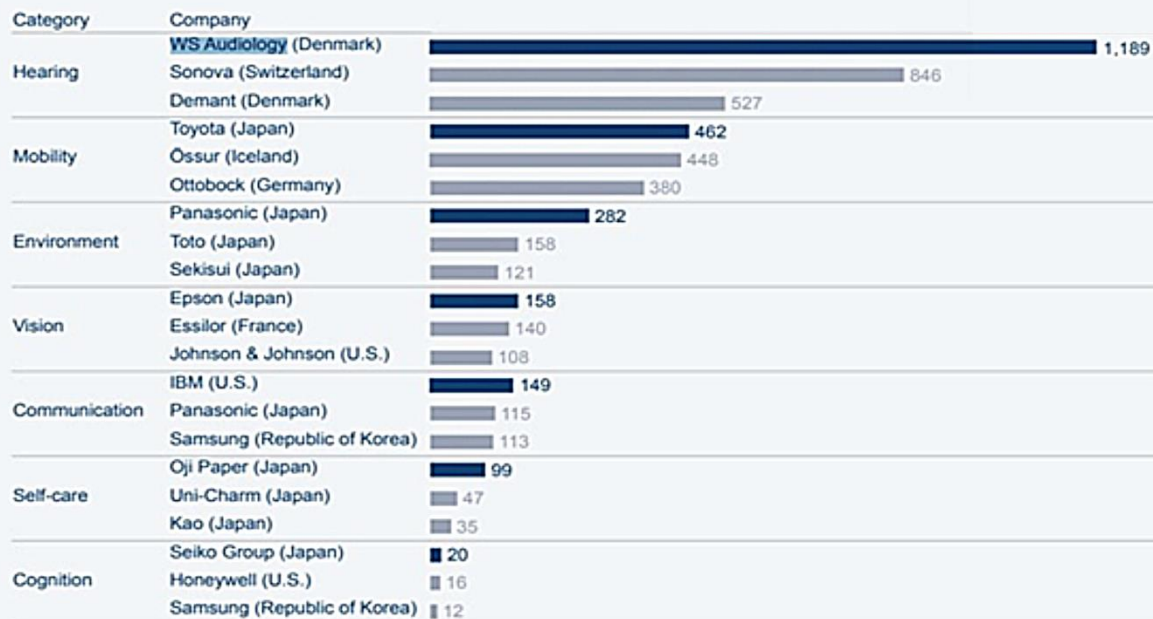
Most
Comprehensive
Rechargeable
Portfolio

World Class
Audiology Meets
Technology

Audiology First – 2021 World Intellectual Property Organization

Figure 3.10. Top three patent applicants by functional category for (top) conventional and (bottom) emerging assistive technology

Consumer electronic goods and car industry companies are among the top filers and some of the same companies lead in both conventional and emerging assistive technology



1 in 3 hearing aids
manufactured
worldwide come from
our organization!



Traditional Hearing Aid Technology Processes Sound as a Single Stream



Augmented Xperience



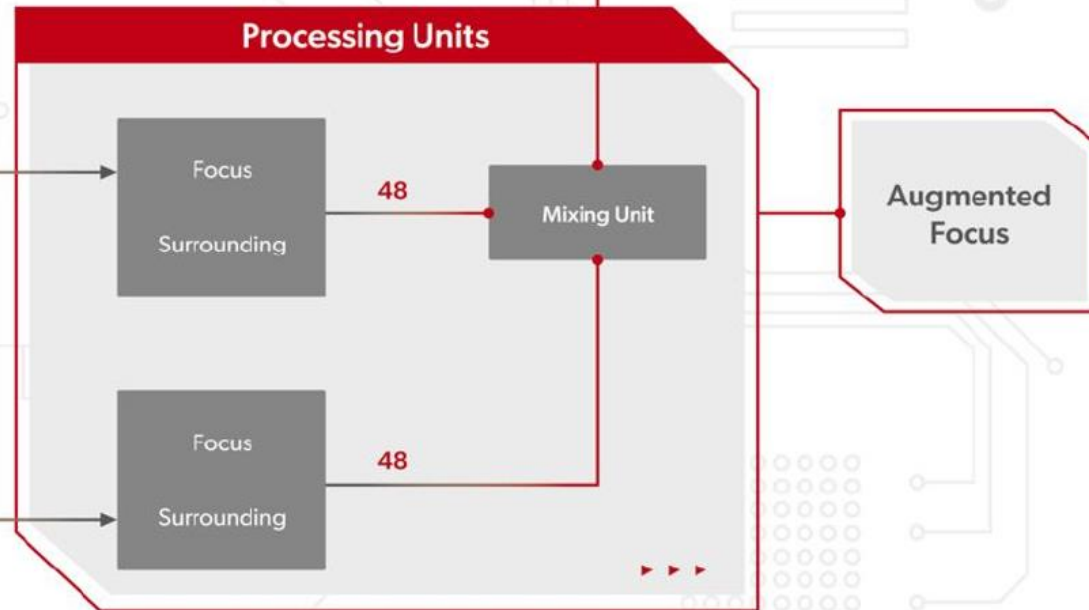
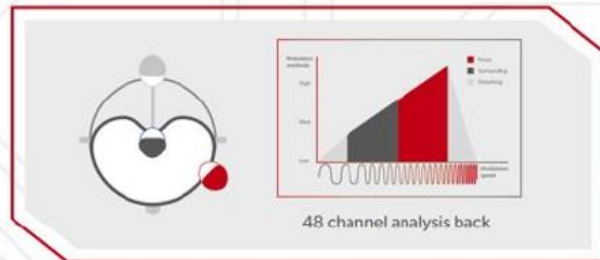
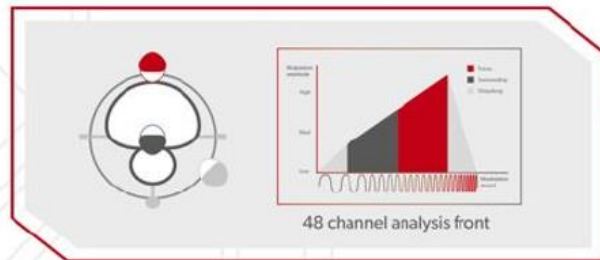
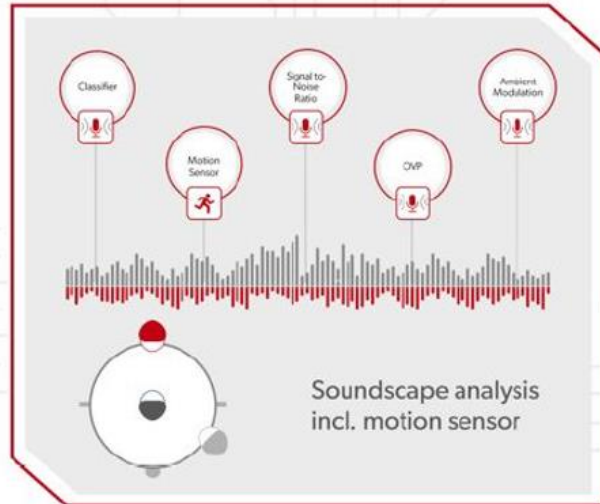
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Augmented Focus™

Split Processing



The art of Augmented Focus™



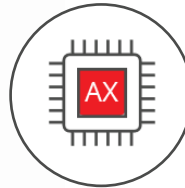
Signia Augmented Xperience Platform Under the Hood



AX

Augmented Focus™

Ground-breaking Augmented Focus™ technology processes speech and environment separately to deliver crystal-clear speech in an immersive environment



Augmented Xperience Chip

- 2x96 channel output
- e2e 4.0
- TruEar 360™
- Enhanced feedback cancellation
- Extended dynamic range input
- MFi for iPhone streaming
- ASHA for Android streaming



Unique Personalization

Real-time AI Signia Assistant enables personal adjustment for ultimate personalization whenever the sound is not meeting expectations



Boosting real-world listening performance with Signia AX: A first glimpse at data from an international survey

White Paper

Niels Søgaard Jensen, Leanne Powers, Erik Harry Høydal
May 2021



Performance of Signia AX in at-home listening situations

White Paper

Niels Søgaard Jensen, Claudia Pischel, Brian Taylor, Michael Schulte
May 2021



Improving speech understanding with Signia AX and Augmented Focus™

White Paper

Niels Søgaard Jensen, Erik Harry Høydal, Eric Branda, Jennifer Weber
May 2021



Augmented Focus™ Split Processing

more than
25%
better speech

Wearers experience greater than 25% better speech understanding in noise compared to their own hearing aids.*

94%
of participants

94% of wearers report excellent speech intelligibility when wearing Signia AX technology.*

*Visit signia-pro.com/en-us/claims-data for more details



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The Signia Augmented Xperience Family is Growing with Exciting New Additions



Pure C&G AX



Pure C&G T AX



Insio C&G AX



Pure 312 AX



Styletto AX



CROS Pure C&G AX



CROS Pure 312 AX



CROS Styletto AX

Signia Styletto AX



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Styletto AX



Styletto AX



Styletto Portable
Charger



Styletto
Dry&Clean Charger

Styletto AX

Fully Featured



7AX

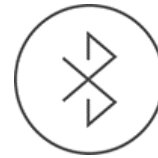
5AX

3AX

sDemo



Full AX feature set including Augmented Focus™, e2e Wireless 4.0, OVP 2.0, & Auto EchoShield



Direct streaming to Android™ (ASHA) and iPhone. HandsFree with CallConnect for iOS devices



Signia App with Signia Assistant, Face Mask Mode & My WellBeing



Compatible with CROS Styletto AX



Signia Styletto AX Runtime



20h runtime without streaming
17h runtime incl. 5h streaming



30-minute fast charge provides
additional wear time (5.5h)

The Styletto AX Dry&Clean Charger All-in-one Solution



Charge



Dehumidify



Clean via UV

Styletto AX Color Portfolio



Note 3 skin tone versions not pictured: Black/Black, Beige/Beige, Deep Brown/Deep Brown

Signia CROS Styletto AX



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CROS Meets Styletto AX



Increased reliability



Better audio quality

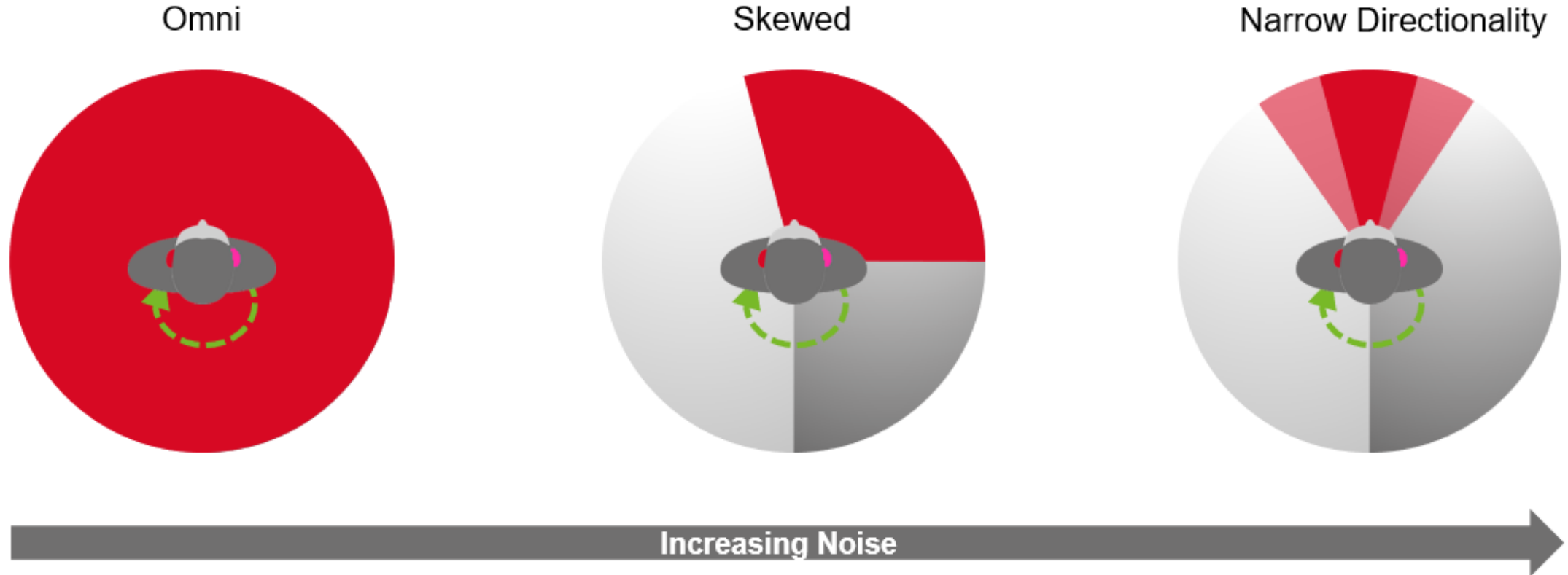


60% lower latency



23h wear time

AX CROS: Skewed directionality review



Signia Insio Charge&Go AX



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Insio Charge&Go AX is Another Leap in Rechargeability from Signia



Insio Charge&Go AX



Insio Charger

Insio Charge&Go AX Design



Sleek design



No charging contacts



Tangible push button



No battery door



Optional removal string

Insio Charge&Go AX



7AX

5AX

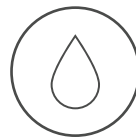
3AX



Full AX feature set incl.
Augmented Focus™



e2e wireless 4.0

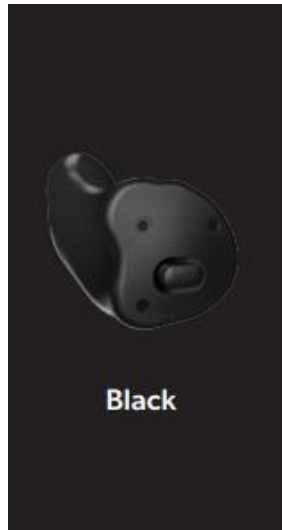


IP 68 for full operations in
difficult environments



Insio Charger

Insio Charge&Go AX



Black



Dark Brown



Brown



Mocha



Tan



Beige

Insio Charge&Go AX with No Compromise on Runtime



~ 4 h full charge



28 h runtime without streaming
24 h runtime with 5 h streaming

Insio AX Charger

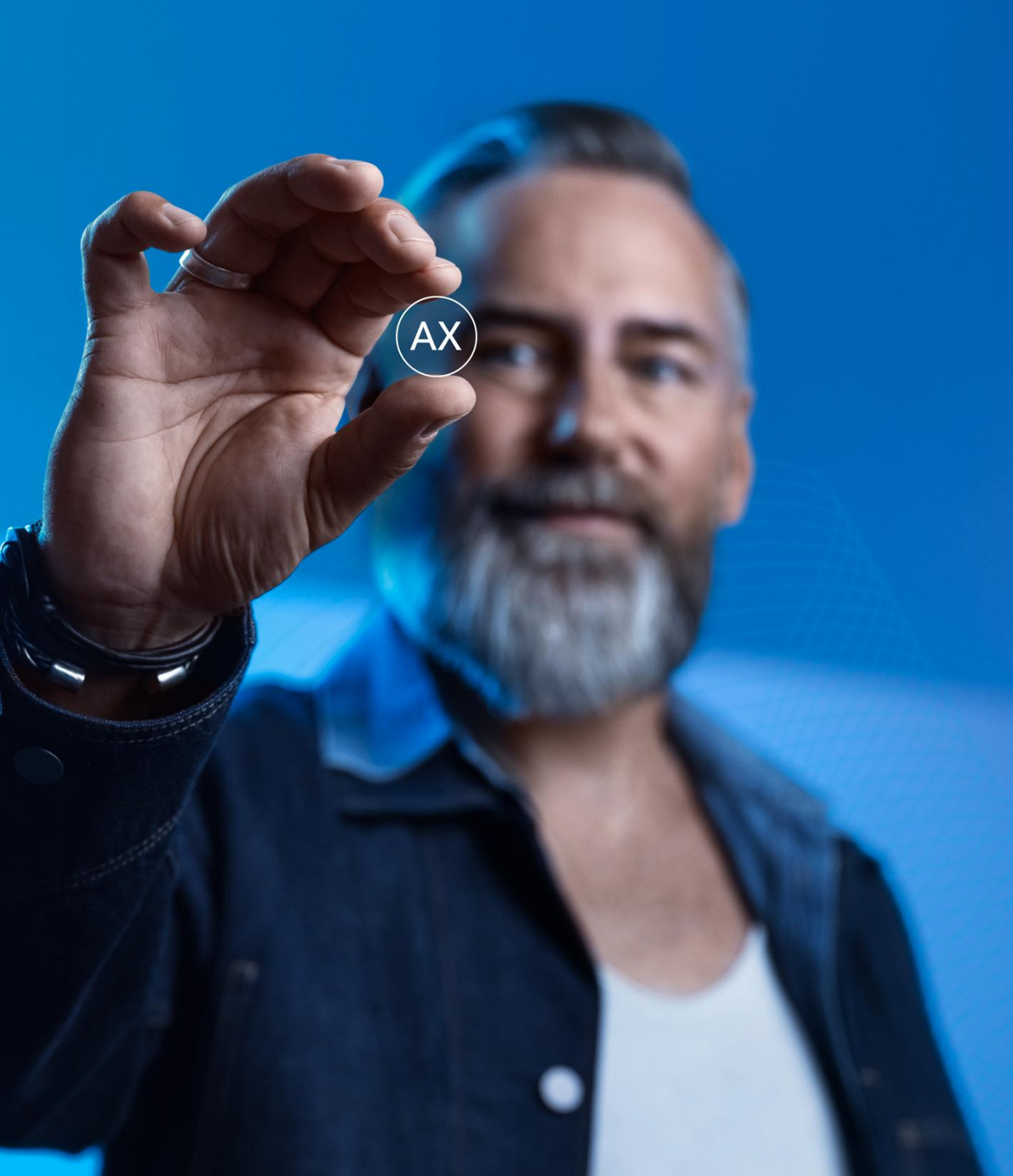


Contactless charging

Intuitively place Insio in the cavity

One cavity size fits all

USB-C powered



Enhancing Human Performance

AX Feature Updates

Auto EchoShield

Automatically improves clarity and comfort in environments with reverberation or echo
Level 7 AX

Own Voice Processing 2.0*

Natural sounding own voice, eliminating the compromise between audibility and own voice comfort

HandsFree (iOS)

Hands-free calls with their iPhone in different environments – even in noisy ones

*Not available in custom solutions.



Auto EchoShield



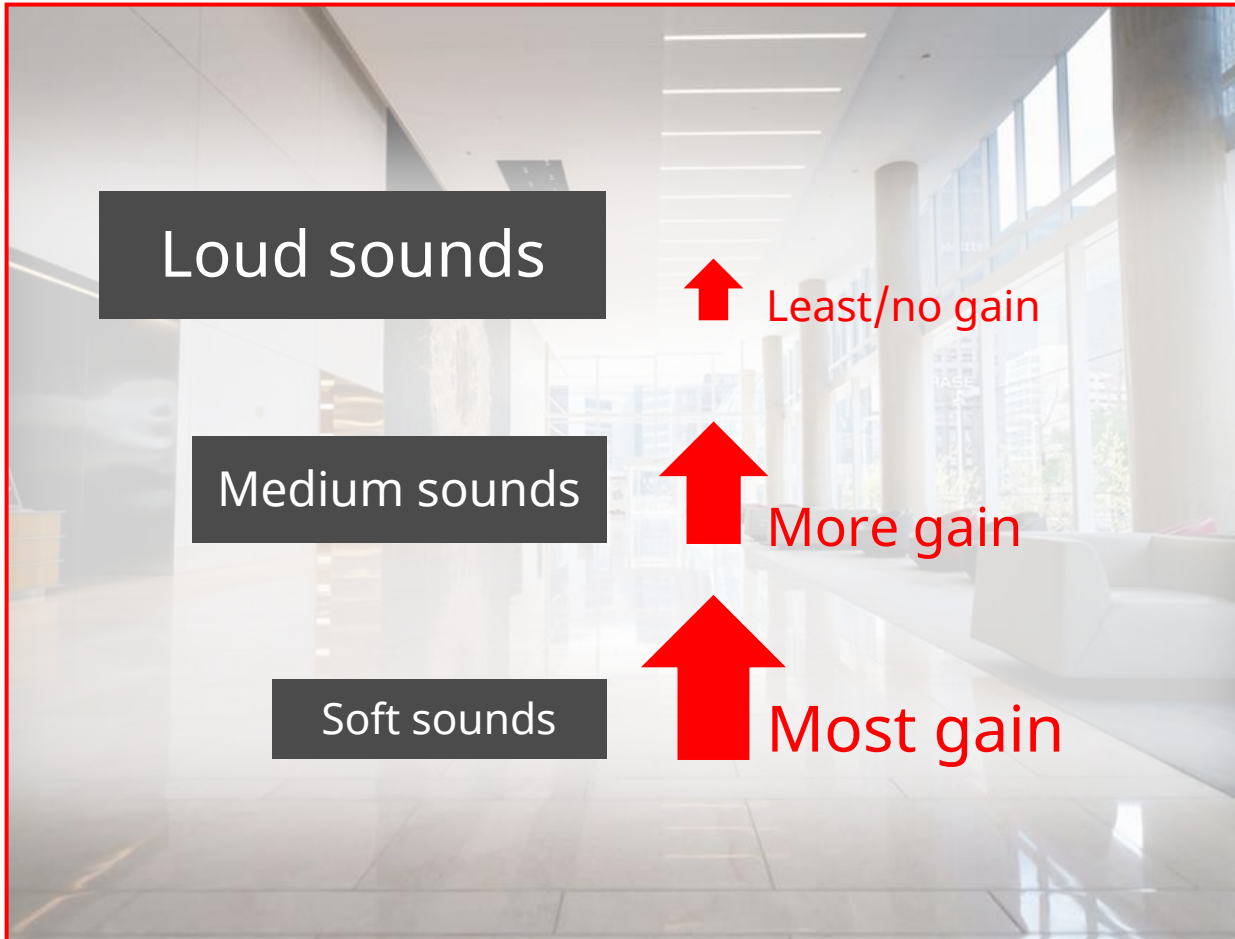
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Which of These Rooms Do You Think Would Cause a Hearing Aid Wearer Problems Due to Reverberation?



Reverberation & Amplification



Traditional compression strategies create an undesirable side effect

Lower-level reverberations receive more gain relative to louder direct sounds

Over-amplified reverberations can dominate the sound signal

Result is echoey, **unclear sound**

Reverberation

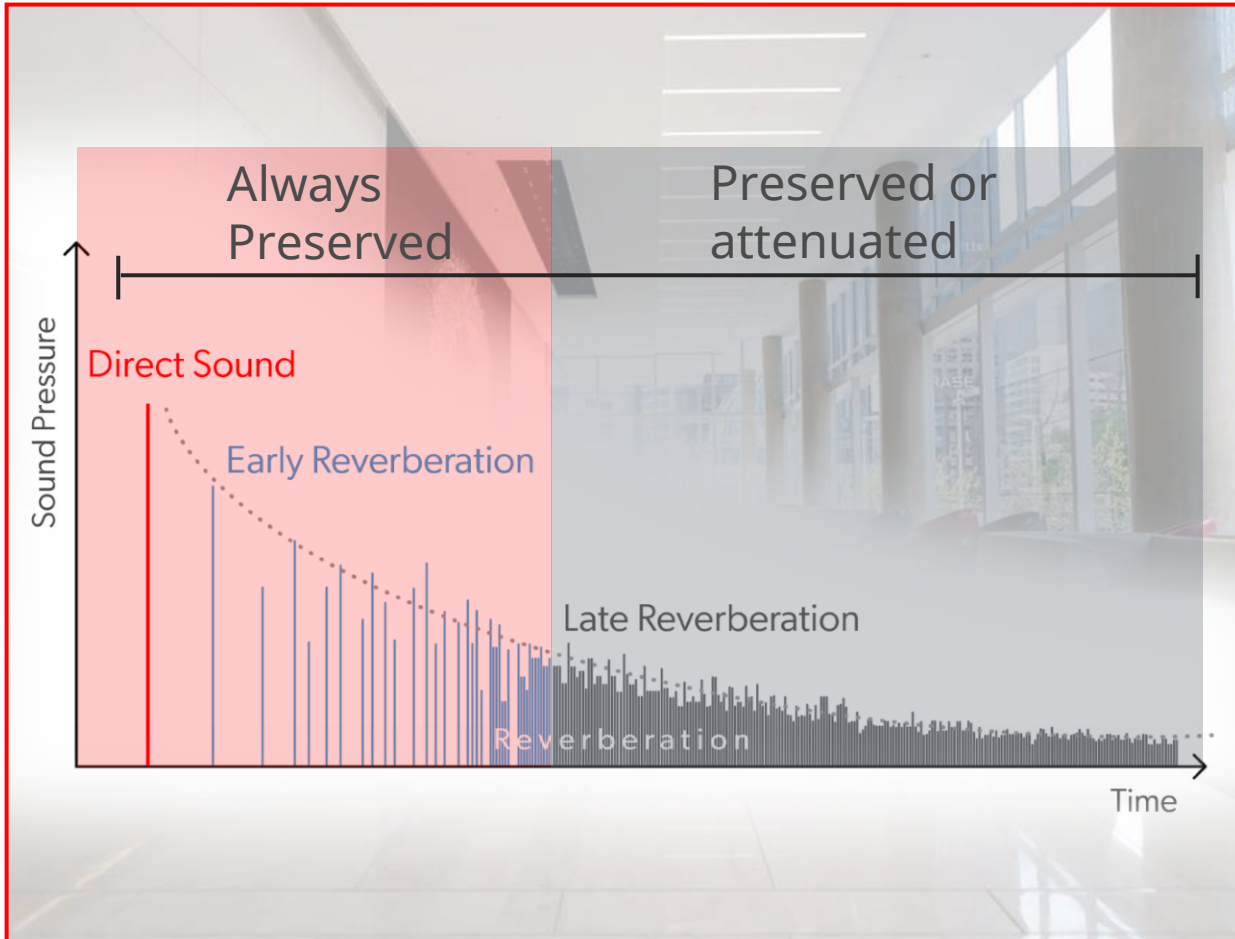


In reflective environments, a sound will arrive at the ear via **multiple paths**

1. Directly
2. As later-arriving reverberation

Interference from reverberations distorts the sound signal and decreases speech clarity

Auto EchoShield Accurately Analyzes Reverberation

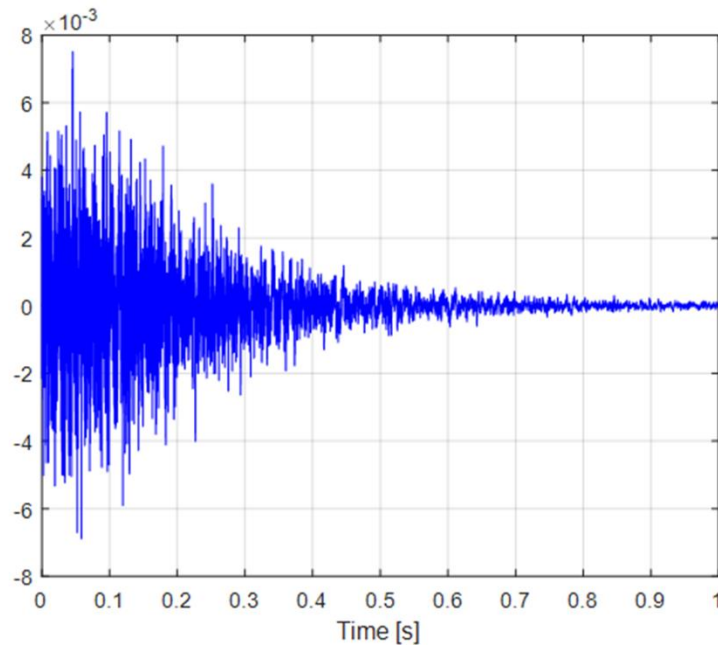


Adjusts timing of the automatic gain control to avoid over-amplifying reverberation

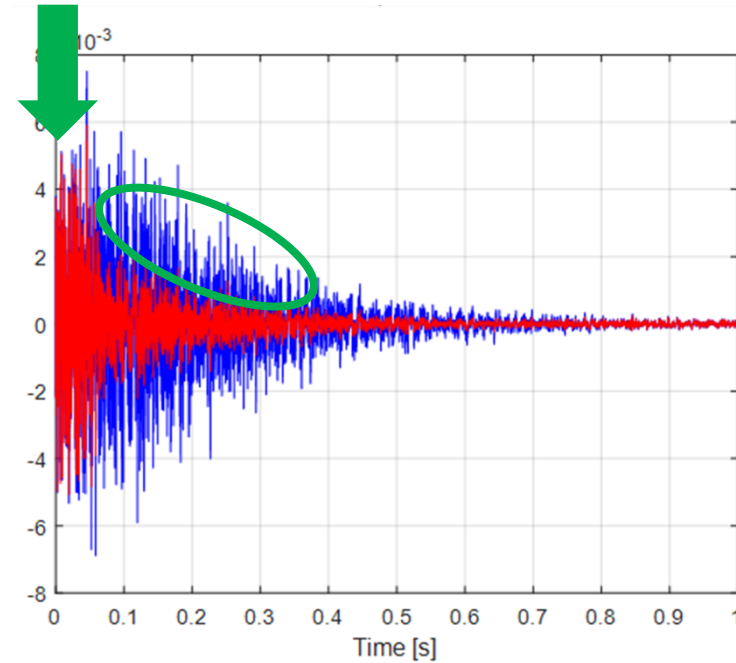
Attenuates high level reverberation

Auto EchoShield

Impulse signal recorded with AX hearing aids on KEMAR in a simulated highly reverberant environment



Blue: Real time output
no Auto EchoShield



Red: Real time output
with Auto EchoShield



Own Voice Processing 2.0



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Fitting Compromises



"You just have to get used to it"

Compromises
audibility for comfort

Many wearers **don't**



Own Voice Processing 2.0

OVP



OVP 2.0

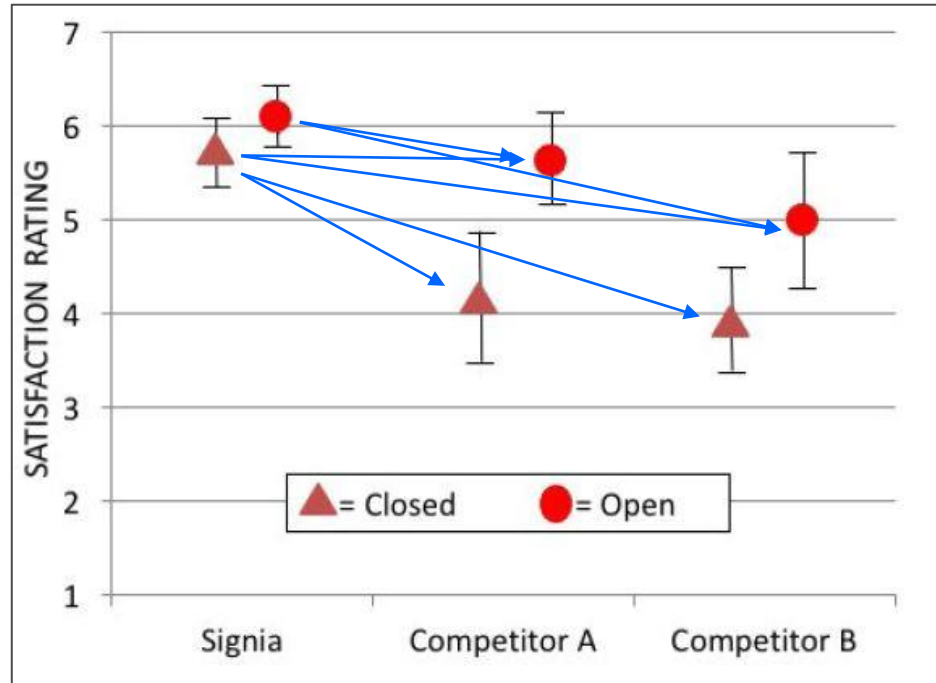


OVP 2.0 **harnesses the split processing** capability of the AX platform

Own voice **processed separately** from simultaneous ambient sounds

Ambient sounds maintain more **consistent sound quality**

OVP Clinical Study



Closed data are from NAL-NL2 verified fittings; open data are from each manufacturer's proprietary algorithm

Does fitting approach, open versus closed, alter the benefit of OVP?

- Using NAL-NL2, satisfaction ratings are higher for the Signia Nx closed condition compared to both Competitors A and B
- Using proprietary fitting formulas, satisfaction ratings are higher for the Signia open condition compared to both Competitors A and B
- **Clinical importance** - Signia Nx closed is equal to the open fitting of Competitor A, and superior to the open fitting of Competitor B in terms of satisfaction



Introducing My WellBeing

To encourage **consistent hearing aid use** & **increase awareness** that hearing aids are important to overall well-being



My WellBeing insights



My Steps

View accurate step count



My Activity

View overall activity level



My WearTime

Track daily hearing aid use



My Conversations

Gain insight into social interaction



Available to new and existing AX wearers



All insights data are stored and visible only in the wearer's Signia app



Introducing CallControl

Accept and end calls
using a hearing aid



Use the phone – without the phone



Pure 312 AX



Pure Charge&Go AX / T AX



Insio Charge&Go AX



Styletto AX

Button
or
Rocker
Switch

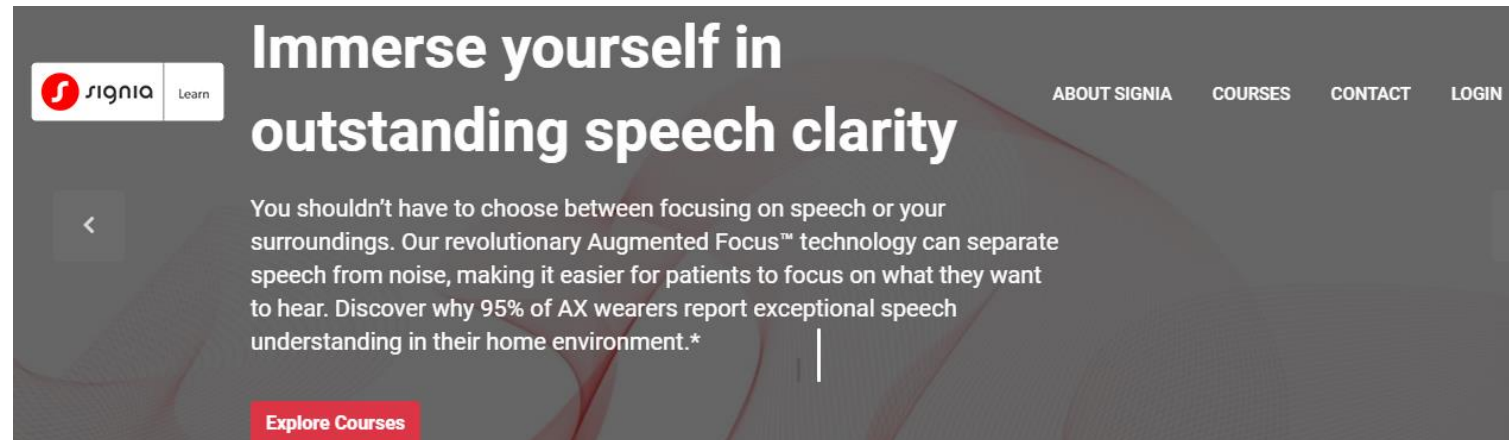
Taps



Signia Learn

<https://learn.mysigniausa.com/>

- Signia Learn is a learning management system that gives you one-stop access to all of our courses.
- You have access to recorded on-demand options as well as upcoming live events.
- You will be able to keep track of continuing education credits and even print certificates from Signia Learn.



Thank You!

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