

Disclosure: ASHA CEU Requirements

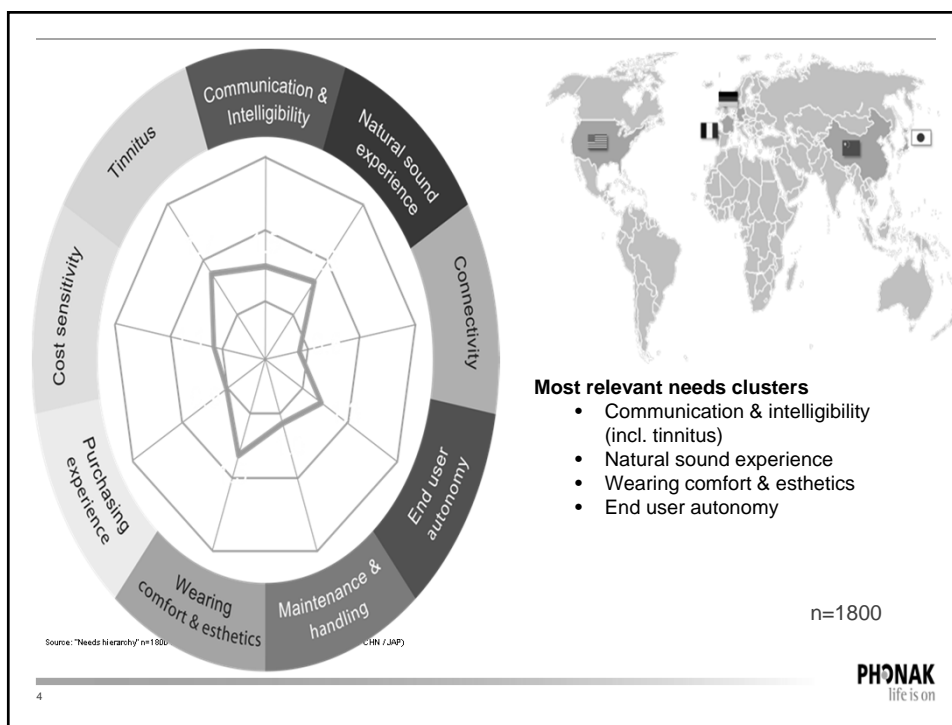
Stephanie Watson, AuD

- Stephanie Watson is an Audiologist and Clinical Customer Trainer with Phonak. She earned her Doctor of Audiology degree from A.T. Still University in 2009. Prior to having Stephanie join the Phonak team, her previous work experience includes diagnostic audiometric evaluation, hearing instrument dispensing to both pediatric and adult populations, vestibular testing and rehabilitation and supervising audiologists for newborn hearing screening program in northern Arizona.
- Financial-Phonak employee who receives a salary for employment for teaching/speaking
- Nonfinancial-No relevant nonfinancial relationships exists

Learner Objectives

- Participants will be able to identify detection and analysis of features.
- Participants will be able to list benefits of AutoSense OS.
- Participants will be able to identify the 7 base programs that allow AutoSense OS to offer seamless transitions for patients.

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A hearing solution must ...

... offer seamless listening experiences through easy operation.³

... appeal to the wearer's individuality and expectations.²

... provide easy cell phone use.^{1,3}

... be discreet and require as little interaction as possible.³

... perform with accuracy and precision in a multitude of listening environments.¹

Answer the needs of the wearer

1. Kochkin S., The Hearing Journal, November 2007, Increasing hearing aid adoption through Multiple Environmental Listening Utility.
 2. Hickson L, Clutterbuck S, Kahn A; International Journal of Audiology; 2010, Factors associated with hearing aid fitting outcomes on the IOI-HA.
 3. Consumer needs survey, n =1800, March 2014 Phonak, March 2014.

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A hearing solution must provide ...

Performance

- Clarity of tone and sound
- Detect and recognize sounds in daily life
- Can be adapted to changing needs
- No whistling/feedback

Ease of use

- Easy to handle and adjust
- Longer battery life

Aesthetics

- Appealing design (shape and color)
- Wear without others recognizing

Value

Non hearing aid users n=970 Hearing aid users n=830

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The Hardware: Venture chip

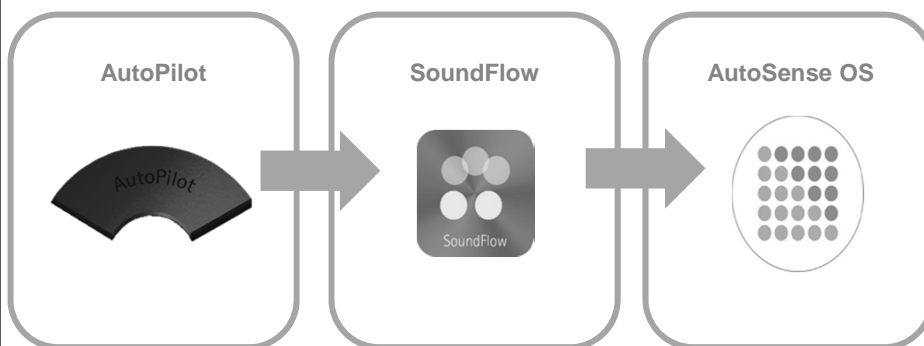
- Reduction in power consumption when streaming (up to 30%)
- New analog to digital processor
- More non volatile memory

	Palio	Core	Spice+/Quest	Venture
	Savia/Art	Exelia	Ambra/Bolero	Audeo V
Transistors	7.5 million	8 million	16 million	45 million
Million operations per second	100	120	200	552
Structure	130nm	90nm	65nm	65nm

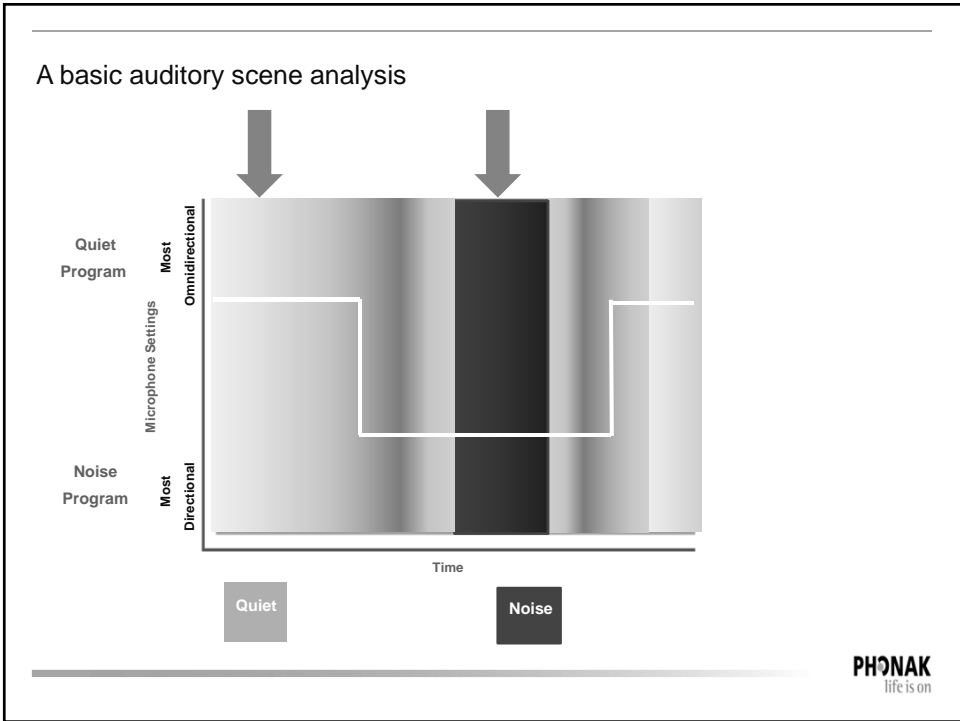
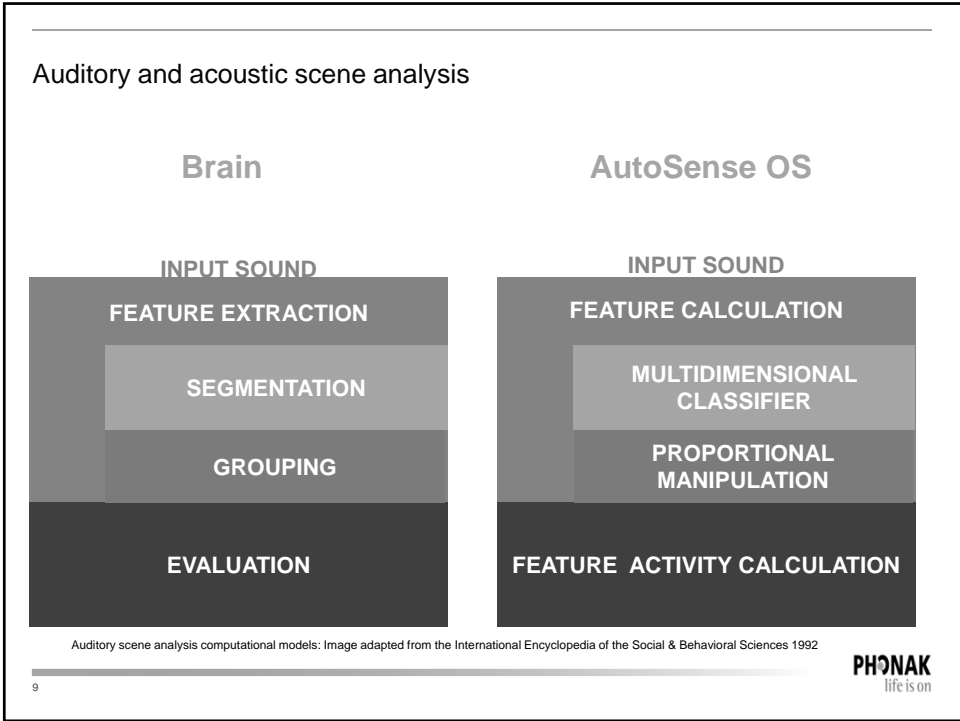


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The evolution of automation technology



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Accuracy and precision are both important

Accuracy:

- How many sound environments can the hearing aid correctly identify

Example:

“Am I in noise” or “Am I in quiet”?	→ EASY
“Am I in a noisy car” or “Am I in a noisy café”?	→ HARDER

Why is accuracy important?

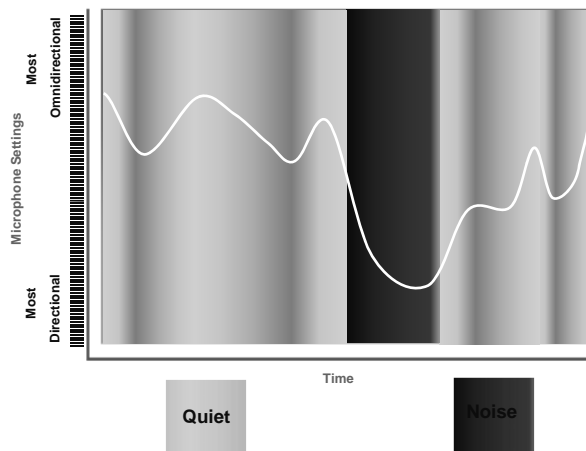
- The hearing aids will accurately recognize the sound environment

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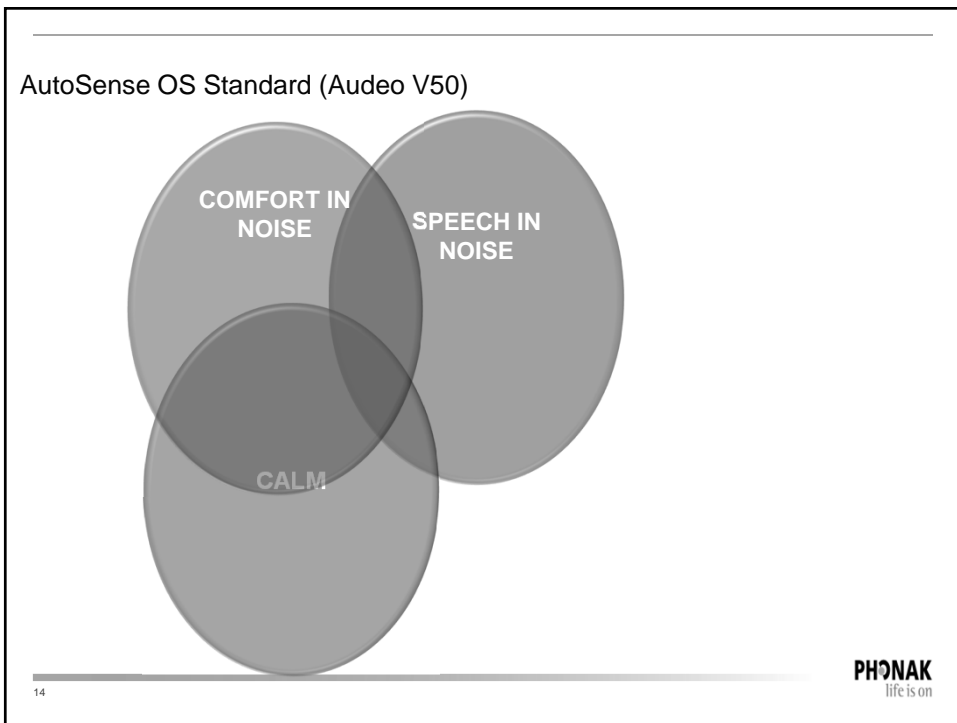
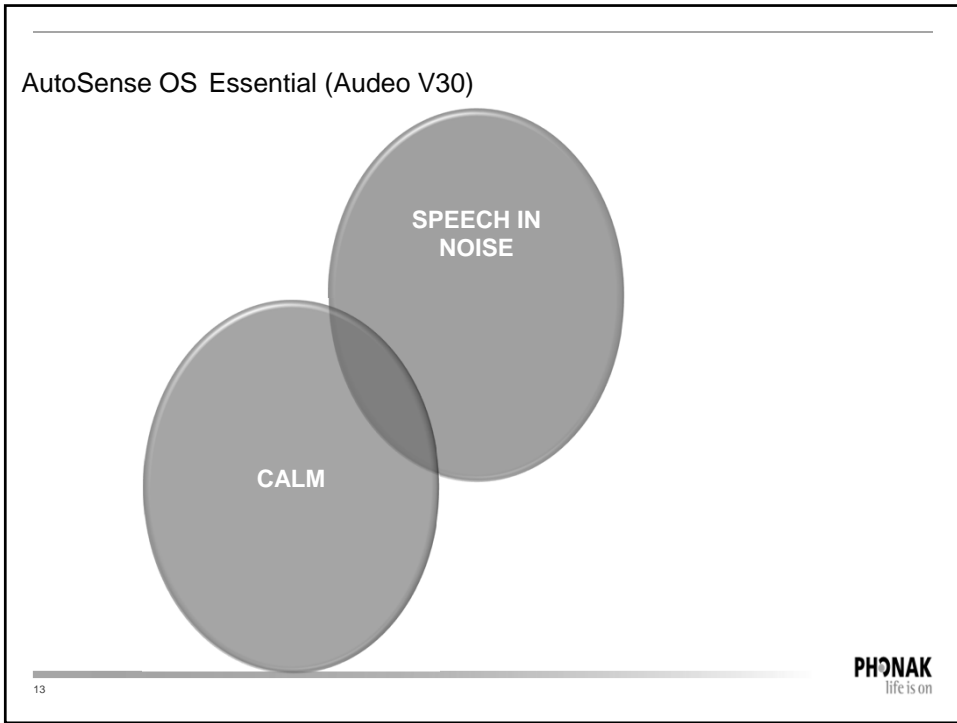
AutoSense OS: accuracy and precision at its most powerful

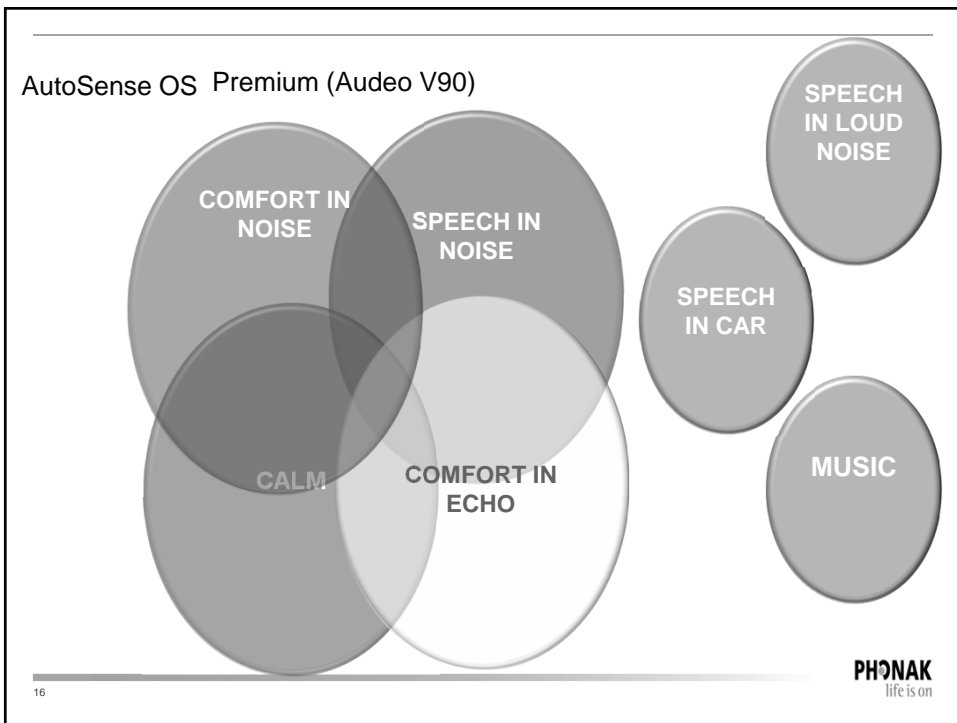
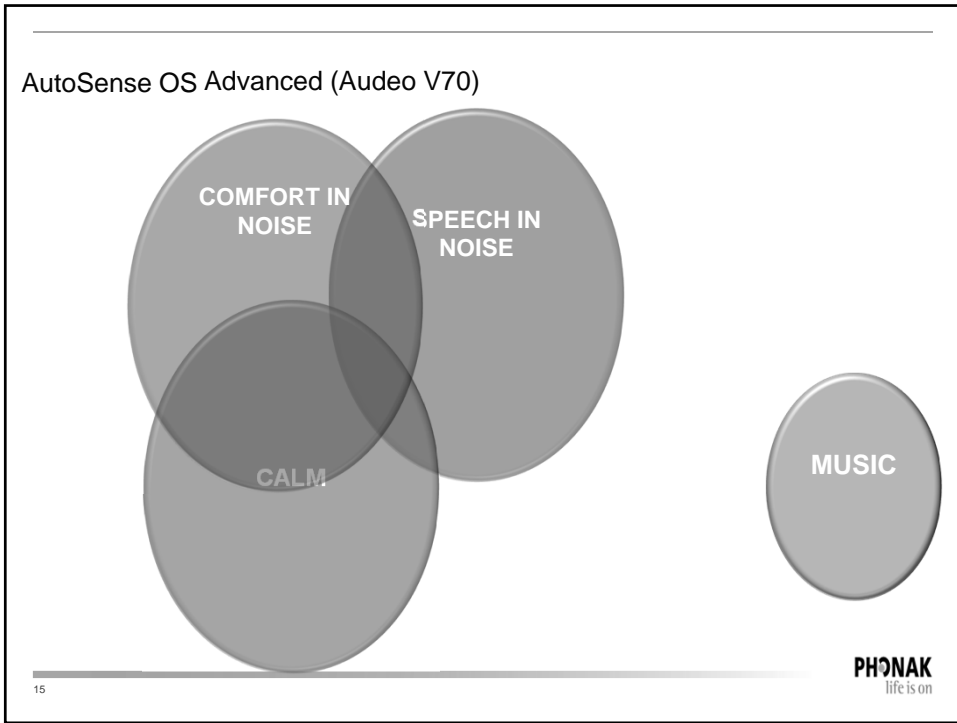
Precision unlocks the potential provided by accuracy

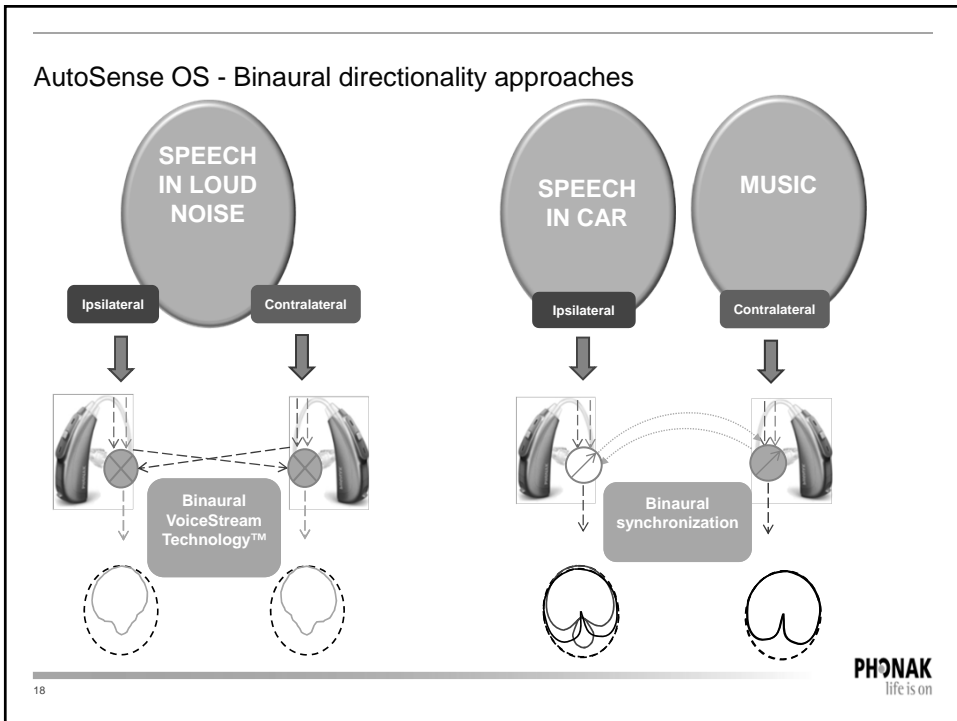
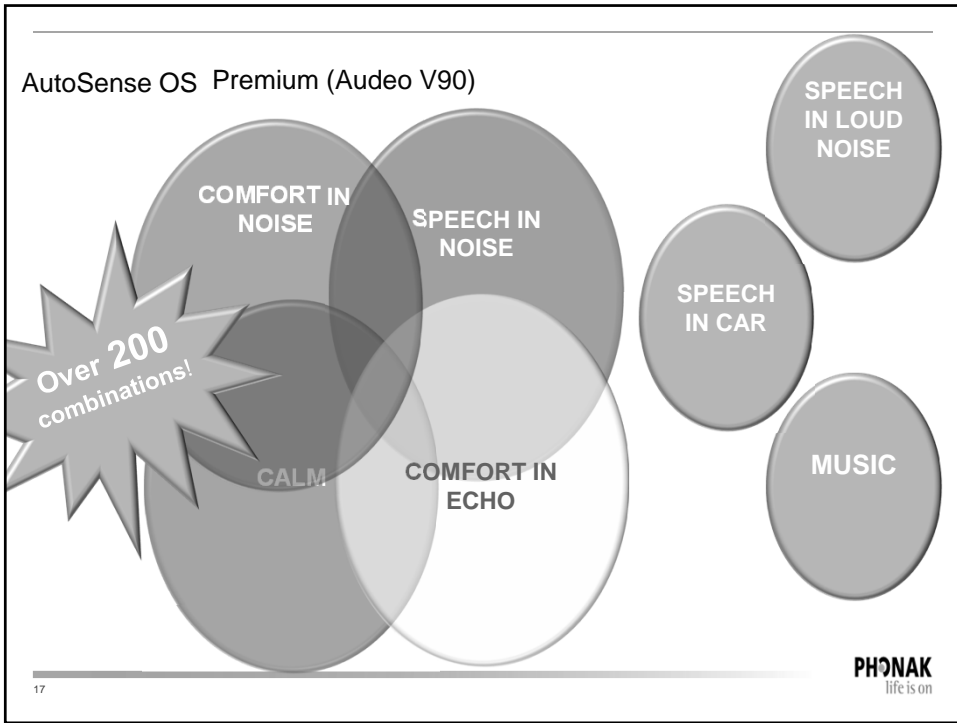


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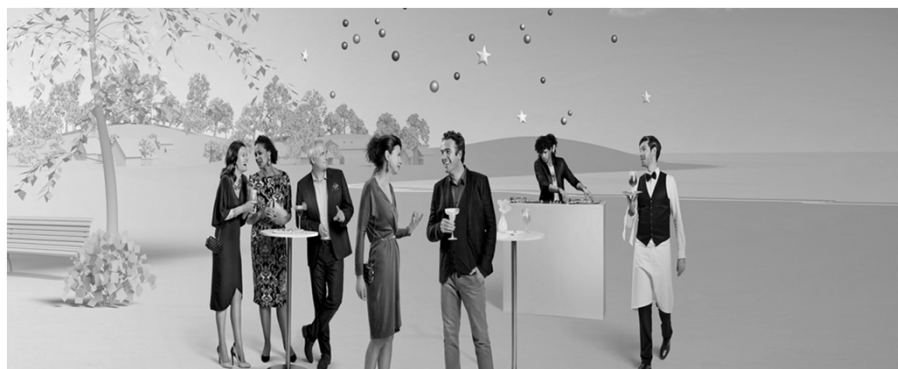


A program structure to match listening environments and people's needs

AutoSense OS Programs	Description
Calm	Optimal gain setting for speech understanding and listening comfort
Speech in Noise	Adapts and reduces noise from behind in real time
Speech in Loud Noise	Zooms in on single voice in diffuse noise environment
Speech in Car	Reduces broadband noise in car to create stable listening environment
Comfort in Noise	Actively reduces noise in environment for increased comfort in absence of speech
Comfort in Echo	Recognizes reverberation and applies gain reduction
Music	Expanded dynamic range and slow compression for fuller and richer experience

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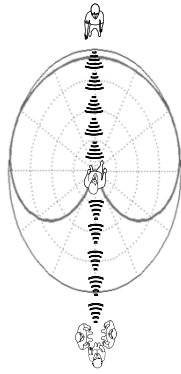


AutoSense OS
Speech in Loud Noise

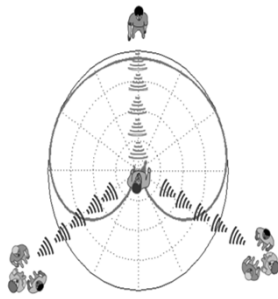
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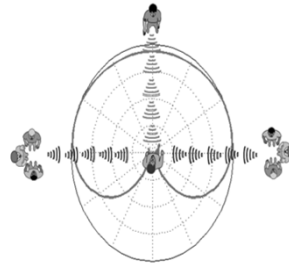
Fixed Directional Beamformer



Attenuation of noise due to the null position will lead to large improvement in signal-to-noise ratio



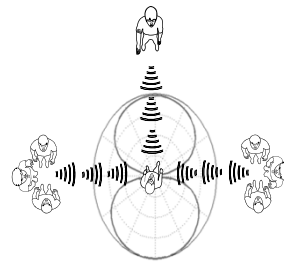
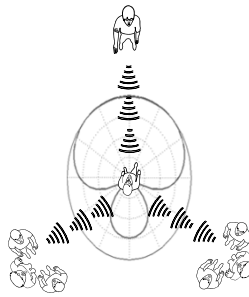
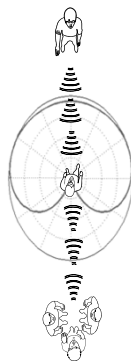
Less improvement in signal-to-noise ratio



No improvement in signal-to-noise ratio

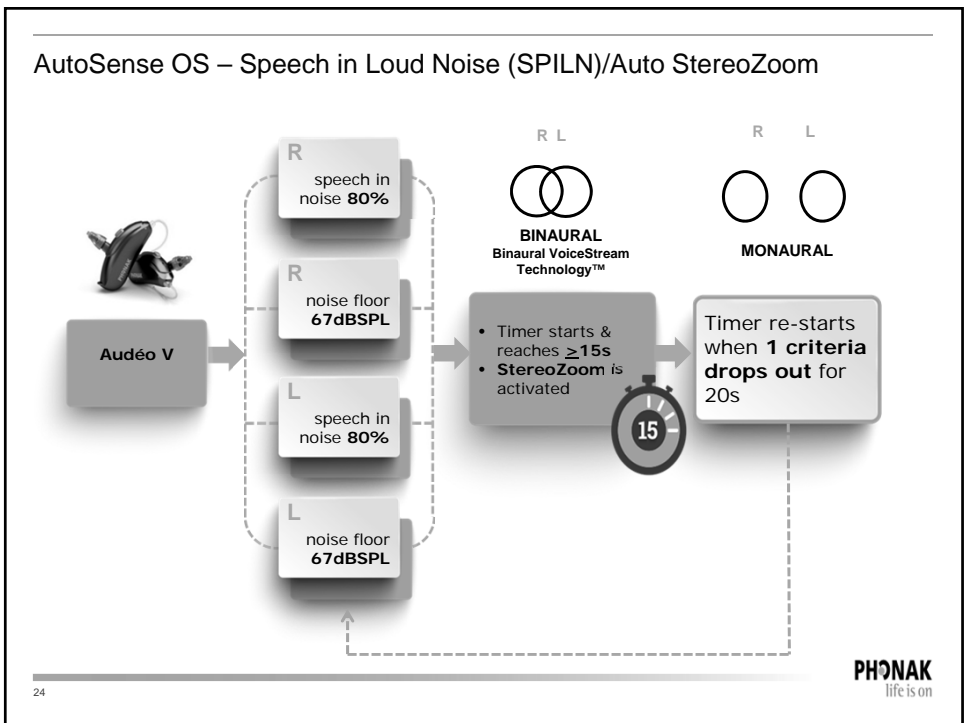
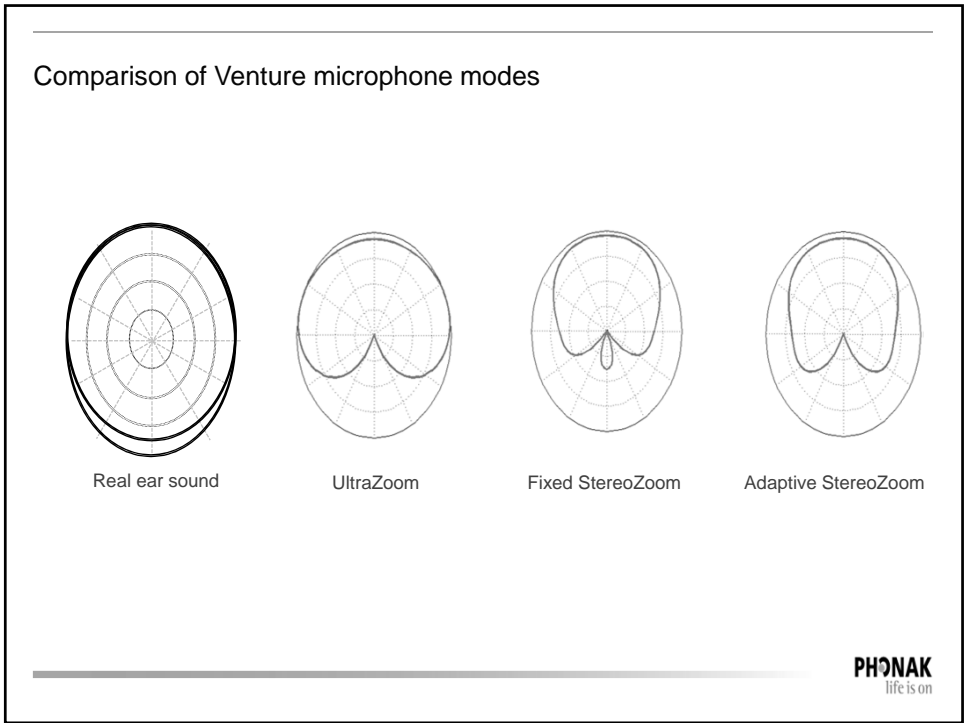
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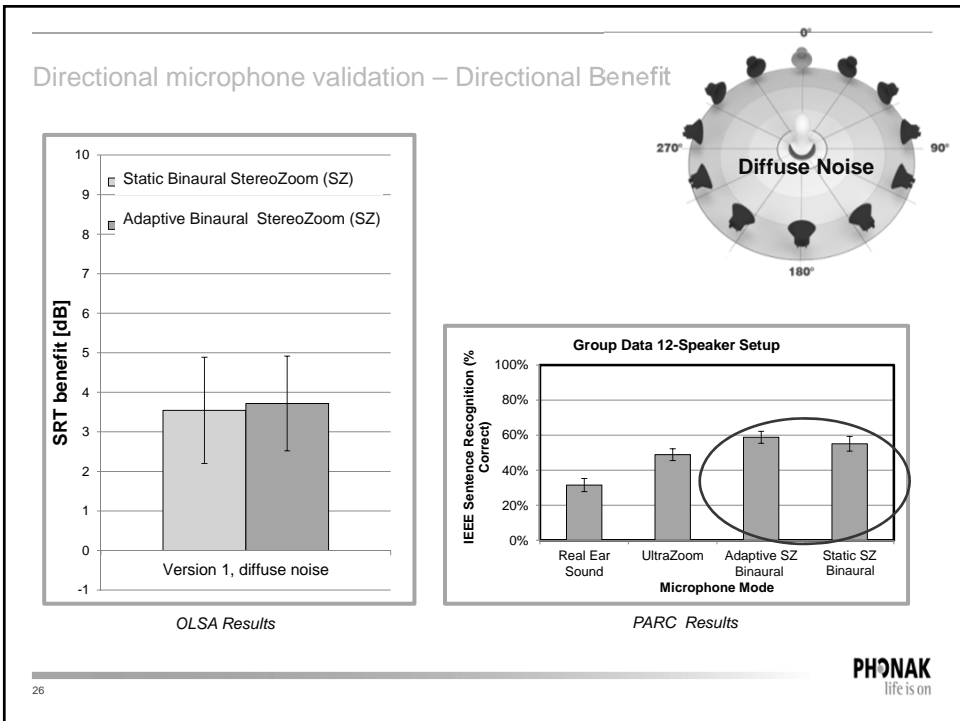
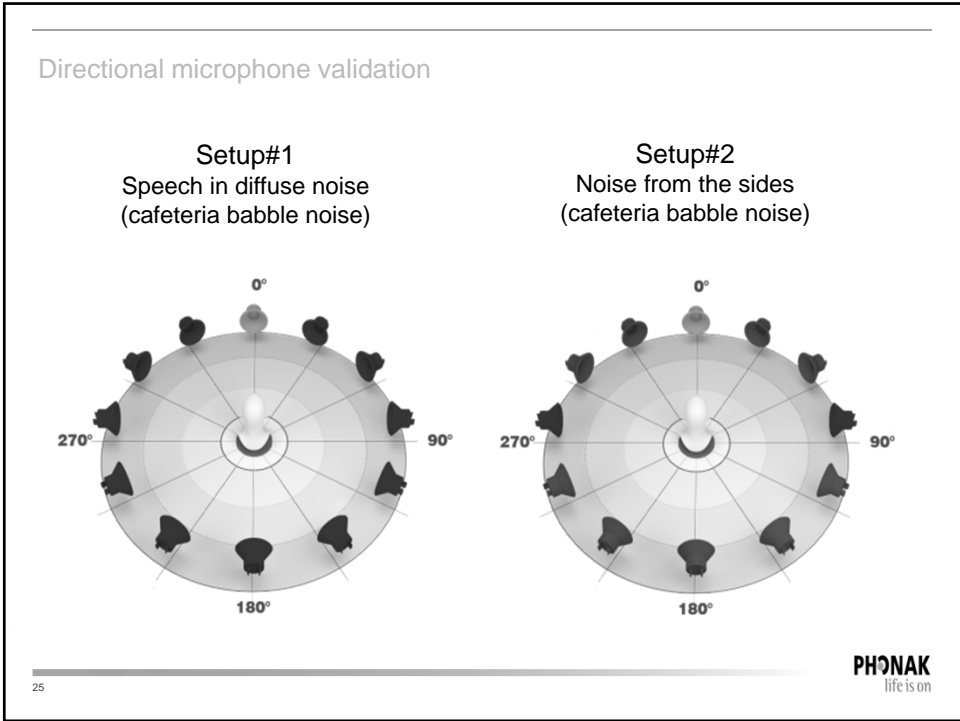
Adaptive Directional Beamformer

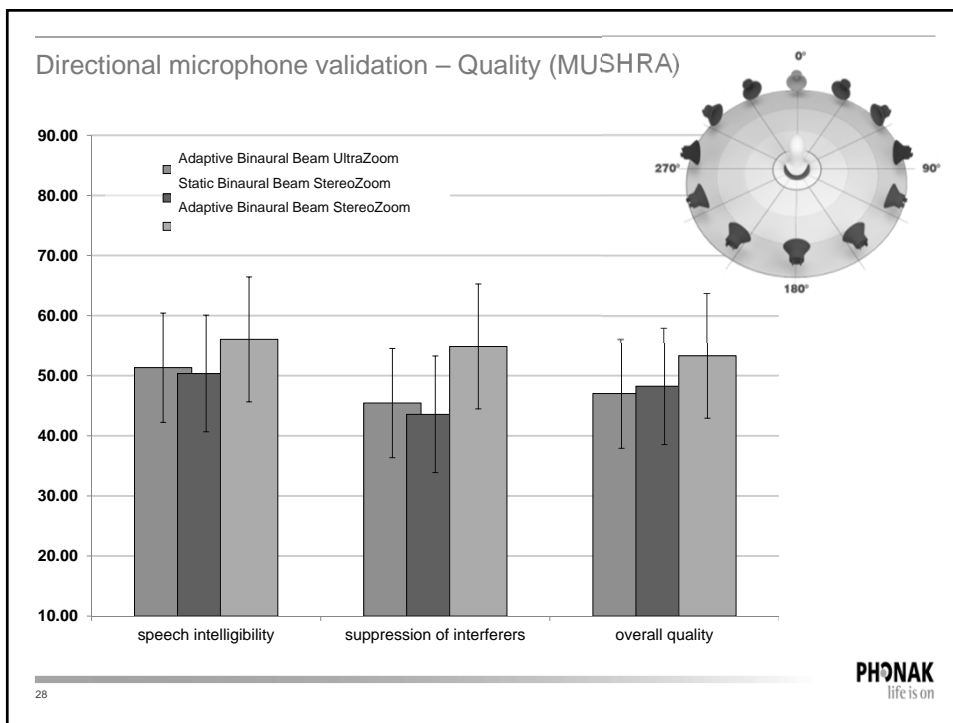
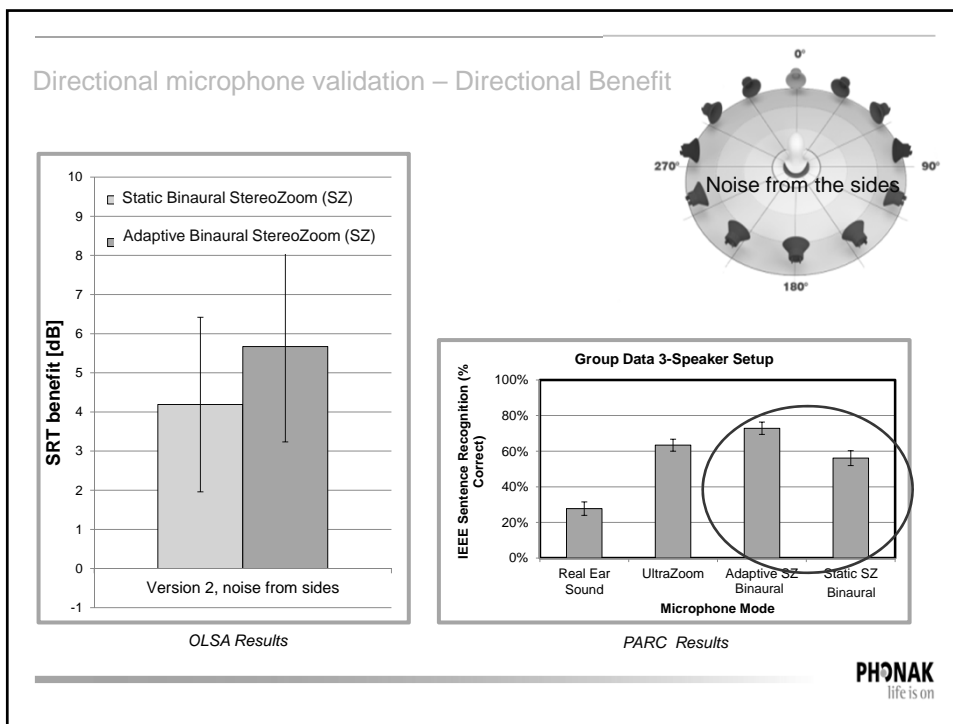


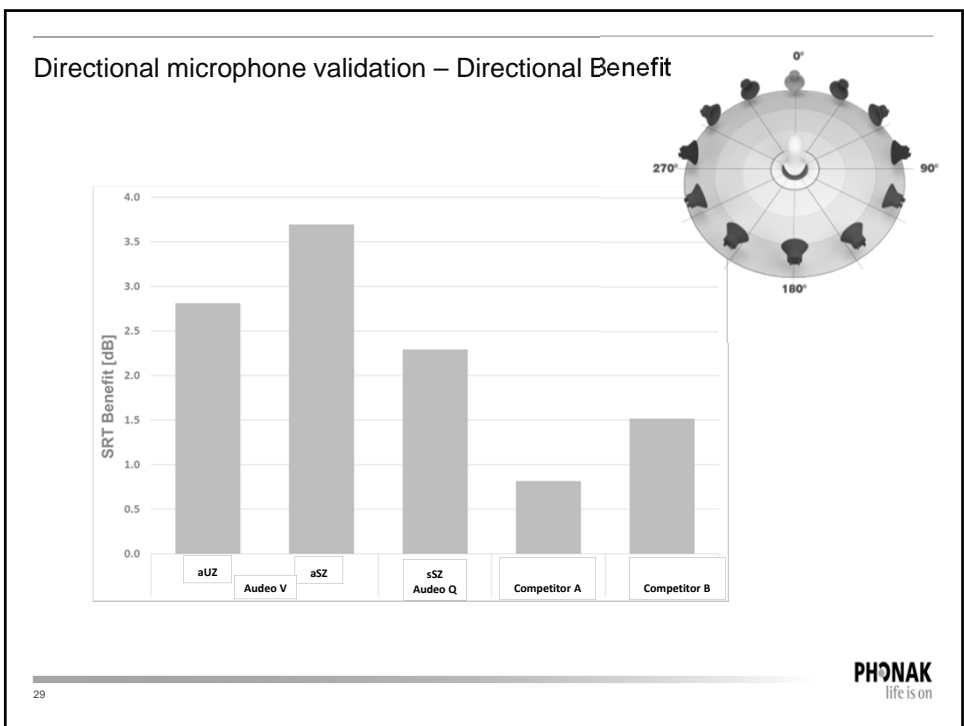
Beamformer maintains maximal gain reduction from directions of greatest noise sources

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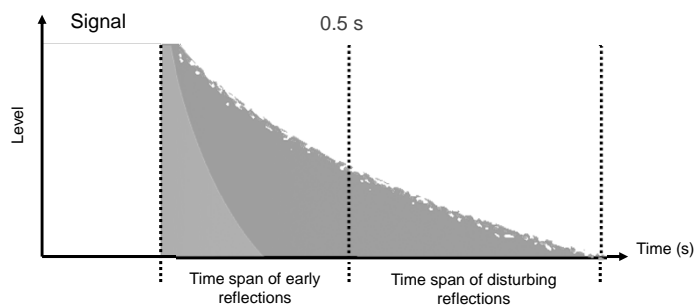
How the echo is reduced

Why is it important?

Negative effects of reverberation on amplification

What is it?

Looks for "tails" and cleans up "pauses"



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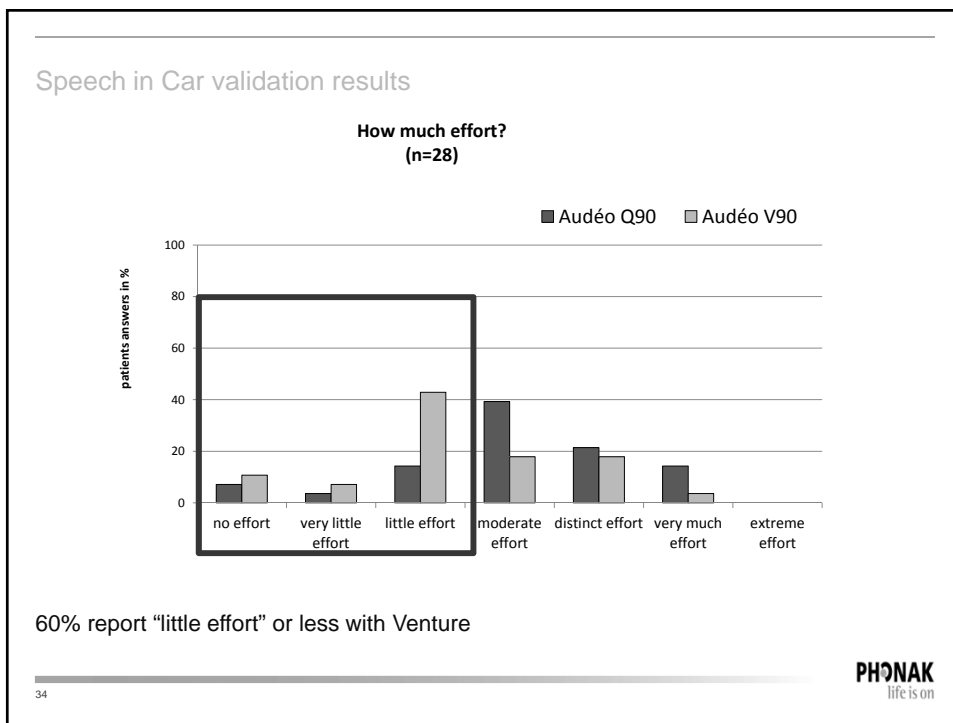
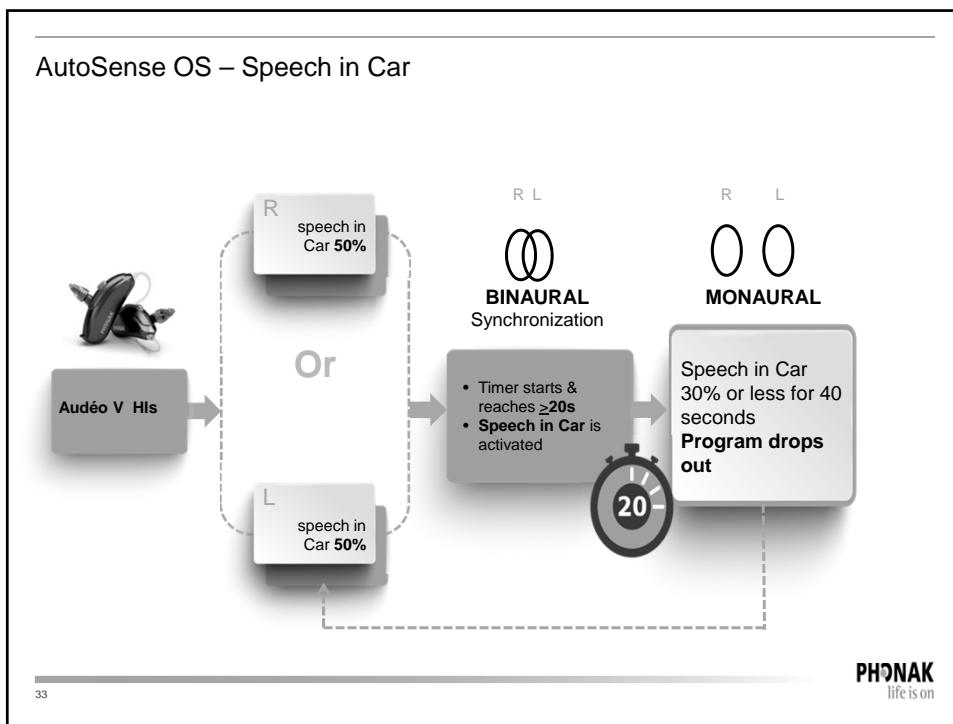
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AutoSense OS
Speech in Car

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AutoSense OS
Music

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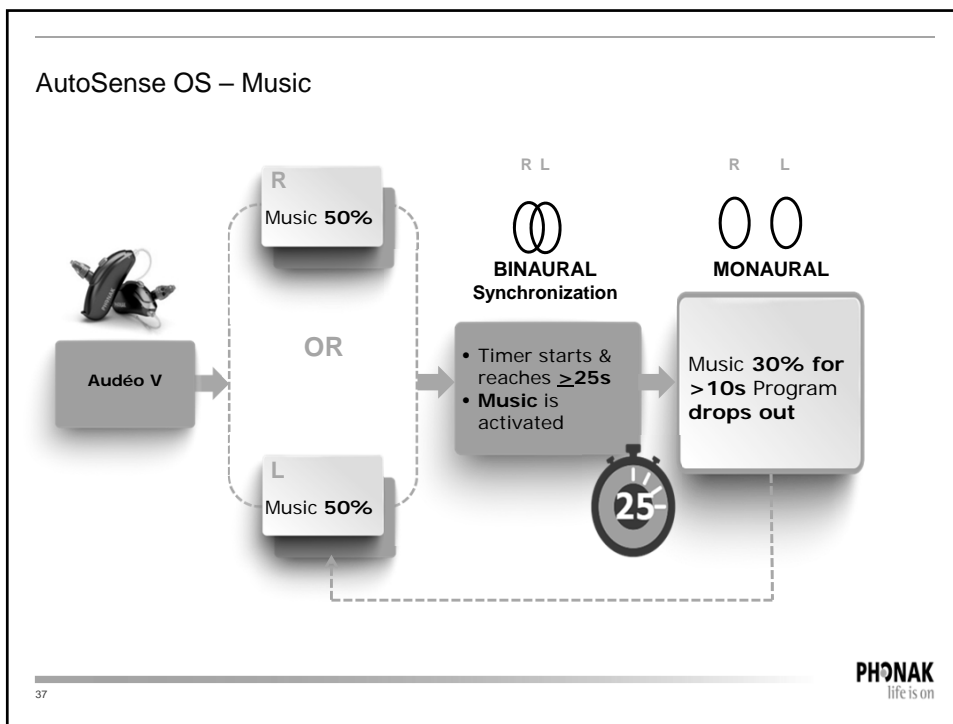
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Music program information

	Venture Music Program
High Input Limit	118 dB SPL
Input dynamic range	101 dB SPL
Compression	Variable release times
Directionality	Omni; RealEar Sound; Fixed Beamformer
WhistleBlock	Independent adjustment in AutoSense OS

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Music & Audéo V: External benchmark study

Study setup:

- 5 competitor hearing aids set at default music program; 1 Audéo V with 4 settings (SR on/off, Bass boost on/off) and 2 Phonak Q devices in default music program
- Classical 1, classical 2, opera, jazz, pop, rock, rock live
- 15 participants, trained “expert ears”
- Moderate hearing loss, open dome fitting

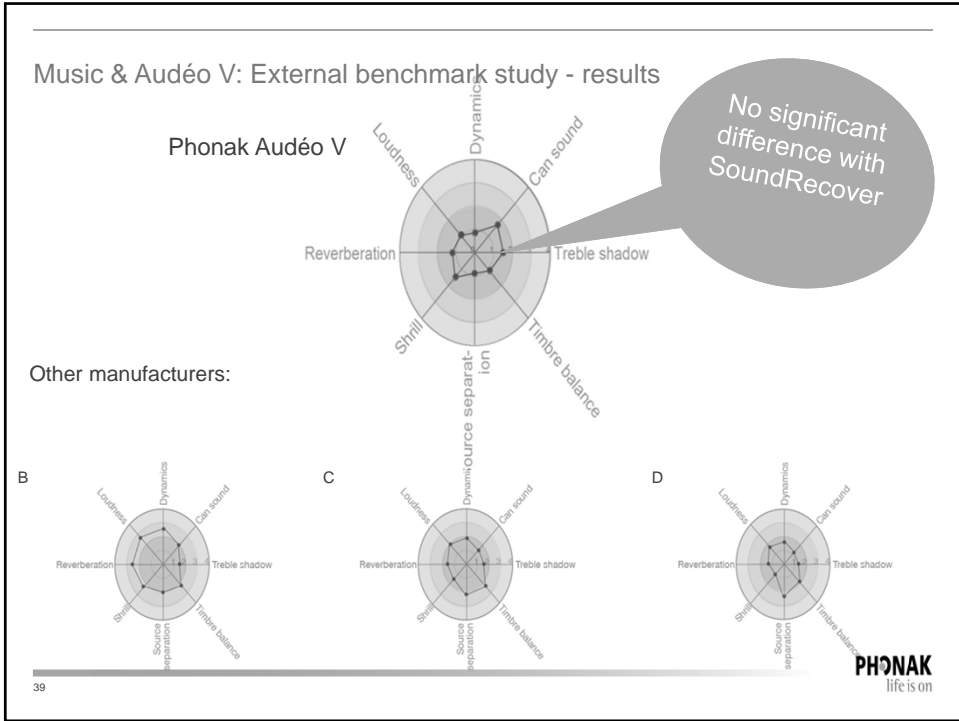
Hearing aid recordings:

- Bruel & Kjaer HATs 4128c and stereo loudspeaker set up at calibrated level
- Recordings were prepared and compensated for ear canal and headphone frequency response.

Attribute
Timbre balance
Can sound
Shrill
Reverberation
Loudness
Dynamics
Source separation
Treble shadow

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90 – Premium

- **Speech in Car**
- **Speech in Loud Noise ***
- **Comfort in Echo**
- **Music**
- **Comfort in Noise**
- **Speech in Noise**
- **Calm Situation**
- Speech in Wind *
- Speech in 360° *
- EchoBlock
- WindBlock
- SoundRelax
- SNR-Boost
- FlexControl
- Flex Volume
- DuoPhone *
- Real Ear Sound
- WhistleBlock
- NoiseBlock
- QuickSync
- SoundRecover
- Tinnitus Balance
- auto Acclimatization
- UltraZoom Premium
- User Preference Tuning
- 20 channels
- WCP compatible

70 – Advanced

- **Music**
- **Comfort in Noise**
- **Speech in Noise**
- **Calm Situation**
- Speech in 360° *
- Speech in Loud Noise *
- WindBlock
- SoundRelax
- SNR-Boost
- FlexControl
- Flex Volume
- DuoPhone *
- Real Ear Sound
- WhistleBlock
- NoiseBlock
- QuickSync
- SoundRecover
- Tinnitus Balance
- auto Acclimatization
- UltraZoom Advanced
- User Preference Tuning
- 16 channels
- WCP compatible

50 – Standard

- **Comfort in Noise**
- **Speech in Noise**
- **Calm Situation**
- SNR-Boost
- FlexControl
- Flex Volume
- DuoPhone *
- Real Ear Sound
- WhistleBlock
- NoiseBlock
- QuickSync
- SoundRecover
- Tinnitus Balance
- auto Acclimatization
- UltraZoom Standard
- User Preference Tuning
- 12 channels
- WCP compatible

30 – Essential

- **Speech in Noise**
- **Calm Situation**
- WhistleBlock
- NoiseBlock
- QuickSync
- SoundRecover
- Tinnitus Balance
- auto Acclimatization
- UltraZoom Essential
- User Preference Tuning
- 8 channels
- WCP compatible

* Binaural VoiceStream Technology™
Available with bilateral fittings

AutoSense OS

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Phonak Audéo V
Unmatched accuracy, precise performance



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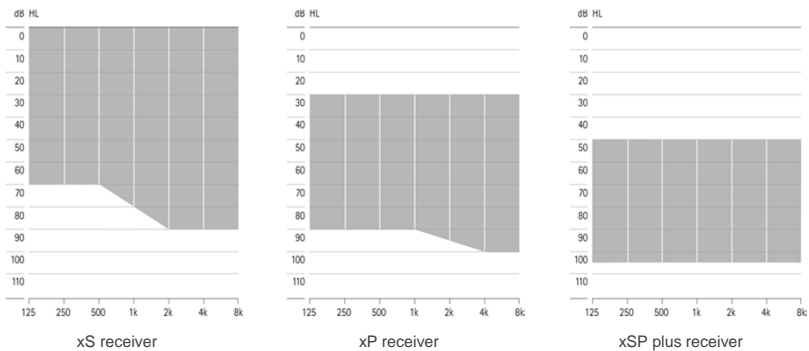
Phonak Audéo V: Highlights

- 4 new models, all with program button
- Audéo V-10 wireless with Binaural VoiceStream Technology™
- New high-tech composite material
- Audéo V-13 with separate volume control and push button
- Tinnitus Balance in all Audéo V models



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Fitting ranges for all Audeo V



- Existing receivers, domes, SlimTips and cShells



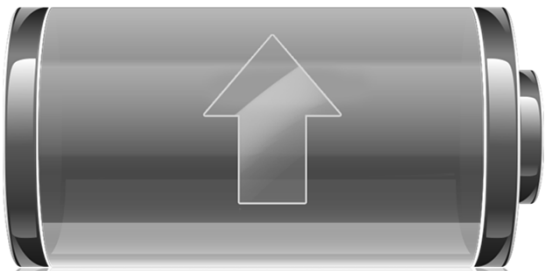
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Tinnitus Balance noise generator



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Phonak Audéo V battery life



UP TO 30% IMPROVEMENT!

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Venture Chip – Power Consumption

Power savings in a loud listening situation (vs. Quest)

Party Scene (75-80 dB SPL)	Hearing loss/ Receiver	Audéo Q 312T (Naída Q-RIC)	Audéo V 312	Difference
AutoSense OS (no BVST)	Moderate – xS	1.9 mA	1.5 mA	-21%
	Mod/Severe – xP	1.9 mA	1.7 mA	-11%
	Severe – xSP plus	2.8 mA	1.9 mA	-32%
Speech in Loud Noise	Moderate – xS	4.5 mA	3.2 mA	-29%
	Mod/Severe – xP	4.5 mA	3.4 mA	-24%
	Severe – xSP plus	5.4 mA	3.6 mA	-33%





Current consumption in "Mute"

- Almost all functionality switched off: approx. 0.5mA

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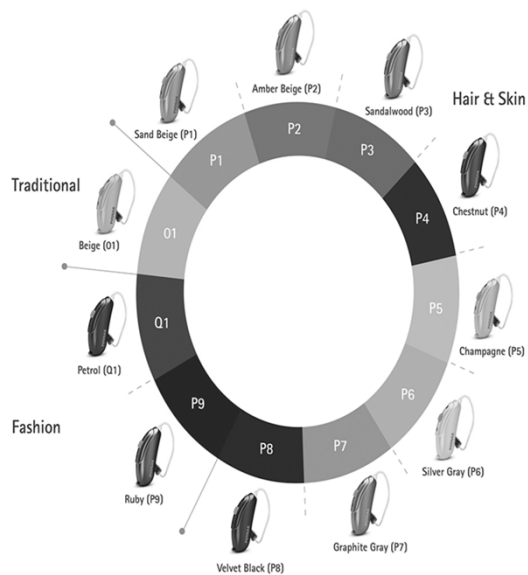
Audéo V

	Phonak Audéo V-10	Phonak Audéo V-312	Phonak Audéo V-312T	Phonak Audéo V-13
All new designs				
New High Tech Composite Housing				
Binaural VoiceStream Technology™	★	★	★	★
Wireless programing	★	★	★	★
Wired programing		★	★	★
T-Coil			★	★
Push Button	★	★	★	★
Volume Control				★
Direct Audio Input				★
AS18				★
Roger 18				★
xS Receiver	★	★	★	★
xP Receiver	★	★	★	★
xSP plus Receiver		★	★	★

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Colors



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The new user guide and hard case



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D-Dry

- UV-C light chamber for drying and cleaning hearing instruments
- 5 minute cleaning process
- Auto shut-off when drying process is complete



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AutoSense OS provides the audiologist value

Performance

- Most flexible automatic program
- Highest SNR beamformer
- Superior processing for music

Ease of use

Superior initial-fit acceptance leads to fewer follow up fine-tuning visits

Aesthetics

Cosmetic solutions without sacrificing wireless capabilities

Value

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Evidence and reference List

- Jerram CK, Purdy SC 2001 Technology, Expectations, and Adjustment to Hearing Loss: Predictors of Hearing Aid Outcome, *Journal American Academy of Audiology*, vol. 12 pp. 64-79
- Cox RM, Alexander GC, 2000, Expectations About Hearing Aids and Their Relationship to Fitting Outcome, *Journal American Academy of Audiology* vol.11, pp. 368-382
- Picou E, Aspall E, Ricketts T, 2014, Potential Benefits and Limitations of Three Types of Directional Processing in Hearing Aids, *Ear and Hearing* vol. 35, pp. 339-352
- Strandbygaard Joergensen H, Baekgaard L, Bendtsen B, 2013, Battery Consumption in Wireless Hearing Aid Products- Datasheet vs. Real-World Performance *AudiologyOnline*
- Kochkin S, 2007, Increasing hearing aid adoption through Multiple Environmental Listening Utility *Hearing Journal*, vol.60, no 11, pp.28-31
- Hickson L, Clutterbuck S, and Kahn A, 2010, Factors associated with hearing aid fitting outcomes on the IOI-HA *International Journal of Audiology*; vol.49: pp. 586-595

www.phonakpro.com/evidence

- January 2011, auto ZoomControl Objective and subjective benefits with auto ZoomControl. *Phonak Field Study News*
- September 2010, auto ZoomControl, Automatic change of focus to speech signals of interest. *Phonak Field Study News*
- September 2010, StereoZoom Improvements with directional microphones. *Phonak Field Study News*
- April 2011, StereoZoom Improved speech understanding even with open fittings. *Phonak Field Study News*
- Nyffeler M. 2009: Software seeks to provide seamless adaption to changing soundscapes. *The Hearing Journal* vol.62 no.10, pp 42-45



Join our Venture!

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