



## Modernized Fitting Clinic with Digital Ear Scanning and Integrated Verification

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## Our Presenters

**Jeanette Fitzke, AuD, CCC-A**

**Field Clinical Audiologist**

21 years of experience in ENT, Hospital, Multi-Specialty Clinic, and Medical Device Manufacturer settings with a variety of clinical experiences



**Don D. Kim, AuD**

**National Key Account Mgr**

13 years in a variety of settings including the VA, ENT, Private Practice, Hospital, Medical Device, and several start-ups in the hearing healthcare industry.



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## Disclosures

We have the following financially relevant relationships in the service and/or product communicated, compared, evaluated and/or reviewed in this presentation.

We, Don Kim and Jeanette Fitzke, are employees of Natus Medical Incorporated.

Jeanette Fitzke is a Field Clinical Audiologist supporting the Otometrics product line and Don Kim is the National Key Account Manager for Otoscan.

Today's presentation will reference Otoscan, Otometric's 3D digital ear scanner and Aurical, Otometric's complete modular hearing aid fitting system.



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## Learner Outcomes








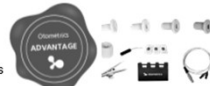
- After this course learners will be able to discuss how differentiation in healthcare can benefit the provider, the practice and the patient.
- After this course learners will be able to describe how custom hearing devices and use of integrated verification could help provides differentiate and segment their offerings from over-the-counter options.
- After this course learners will be able to discuss how the components of the Otoscan are utilized to obtain a complete and accurate scan of the patient's ear canal with an improved patient experience.



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## Product Portfolio

<b>Fitting</b>  AURICAL FreeFit AURICAL Aud	<b>Hearing Ass.</b>  MADSEN Astera MADSEN Zodiac	<b>Screening</b>  MADSEN AccuScreen MADSEN Alpha OAE	<b>Balance</b>  ICS Impulse	<b>Sound rooms</b>  Customised project-based solutions
<b>Otoscan</b> <ul style="list-style-type: none"> <li>Digital Ear Scanning</li> <li>Optimized HA Ordering</li> <li>Enhanced Workflow</li> <li>Increased Pt. Satisfaction</li> </ul> 	<b>Software</b> <ul style="list-style-type: none"> <li>Audiology software</li> <li>Vestibular software</li> <li>EMR connectivity</li> </ul> 	<b>Service and Other</b> <ul style="list-style-type: none"> <li>Service offering</li> <li>Spare parts</li> <li>Accessories &amp; disposables</li> </ul> 		

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## Agenda

- Challenges and changes in audiology
- Operational efficiency with digital ear scanning
- Benefits of real ear measures and integrated verification for improved efficiency
- Implementation of best practices



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# Why should we re-evaluate the products and services we offer?



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## Differentiation

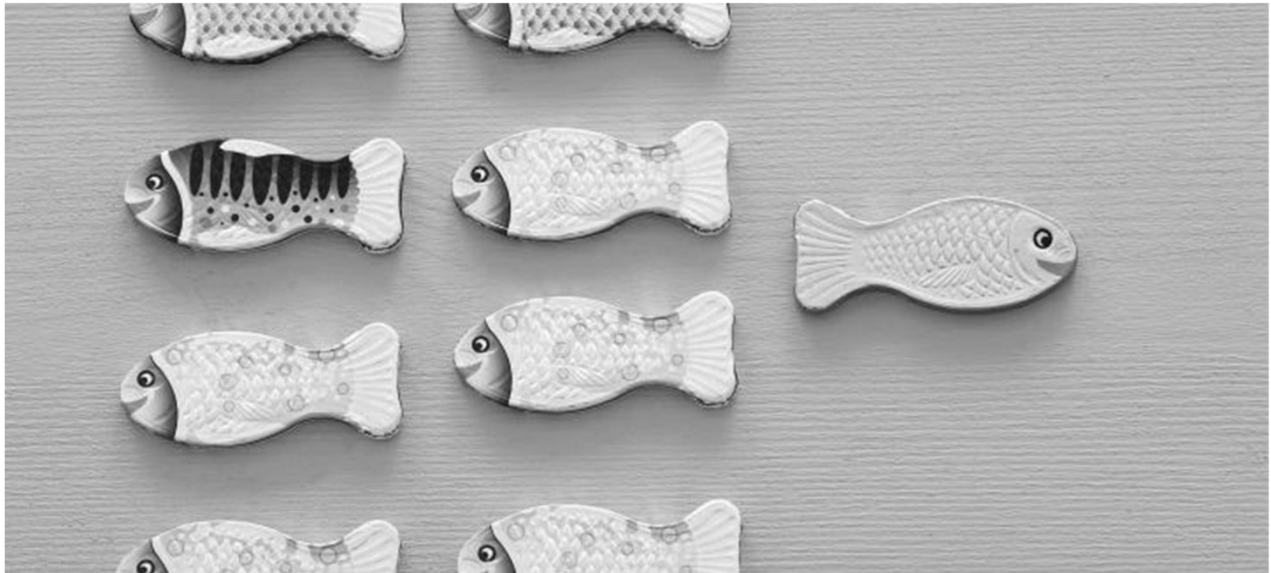
- In economics and marketing, **differentiation** is the process of **distinguishing a product or service** from others, to make it more attractive to a particular target market.
- This involves differentiating it from competitors' products as well *as an organizations own products.*

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Edward Chamberlin *The Theory of Monopolistic Competition* 1933

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## Differentiation | The Consumption Chain

- We believe that if companies open up their creative thinking to their customers' entire experience with a product or service—what we call the consumption chain—they can uncover opportunities to position their offerings in ways that they, and their competitors, would never have thought possible.

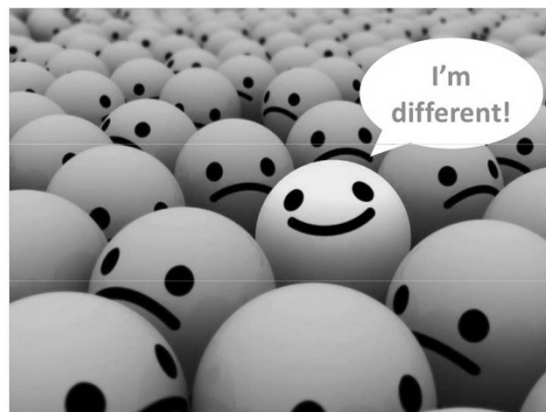
**natus.**<https://hbr.org/1997/07/discovering-new-points-of-differentiation>

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## Differentiation | The Consumption Chain

- **Most profitable strategies are built on differentiation:** offering customers something they value that competitors don't have.
- Most companies, in seeking to differentiate themselves, focus their energy only on their products or services.
- In fact, a company has the opportunity to differentiate itself at every point where it comes in contact with its customers—from the moment customers realize that they need a product or service to the time when they no longer want it and decide to dispose of it.



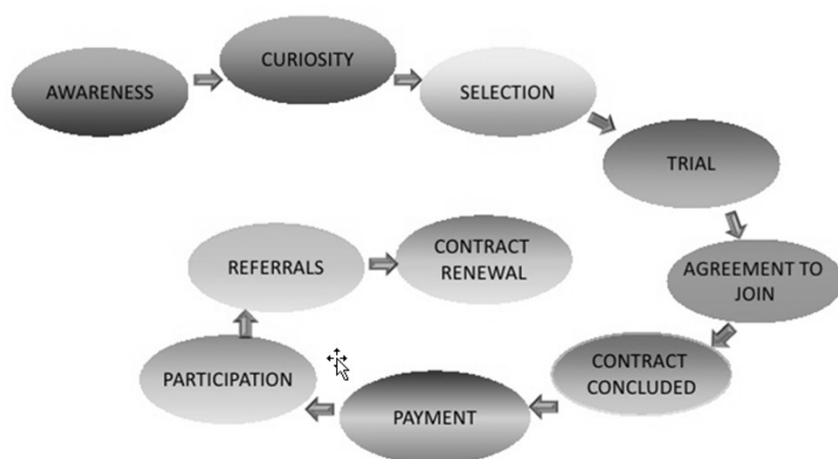
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<https://hbr.org/1997/07/discovering-new-points-of-differentiation>

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## Consumption Chain for Service Business



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The Entrepreneurial Mindset – McGrath and MacMillan, REAP Consulting 2009

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## Differentiation | Business Case Examples



### IKEA

- ✓ Modern Design
- ✓ Showroom Floor
- ✓ Swedish Meatballs

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## Differentiation | Business Case Examples



### Apple Inc.

- ✓ Integration
- ✓ High Quality
- ✓ Clean
- ✓ Relevant
- ✓ Demo Showroom
- ✓ Genius Bar
- ✓ Very Helpful and Knowledgeable

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## Differentiation | Business Case Examples

- Brands

- IKEA

- Modern design, showroom floor, swedish meatballs



- Apple Inc.

- Genius bar, limited sales channels, demo floor



- Whole Foods Market

- Organic, convenient, high-quality, Amazon delivery



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<https://blog.hubspot.com/insiders/branding-differentiation>  
<http://fabrikbrands.com/how-to-create-a-differentiation-strategy/>  
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## Differentiation in Healthcare



### Dental

- ✓ Intra oral scanner versus silicone
- ✓ What is the benefit for the provider, patient and business?

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## Differentiation in Healthcare



What is this test?

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## Differentiation in Healthcare



Optometry

- ✓ Eye tonometry, digital test
- ✓ What is the benefit for the provider, patient and business?

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## What is Personalization?

- Personalization is tailoring a service or a product to accommodate specific individuals, sometimes tied to groups or segments of individuals (wikipedia.org)

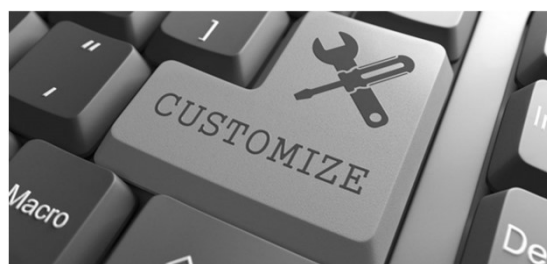


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## Why is Personalization Important?

- Reasons to Personalize Your Product Offering
  - Attract, Retain, Collect, Patient Satisfaction
- How Your Business Can Use Personalization
  - Physical attributes (customization), packaging, ancillary services (Custom Insert Earphones)
- Business personalization isn't a fad or trend--it's the way of the future



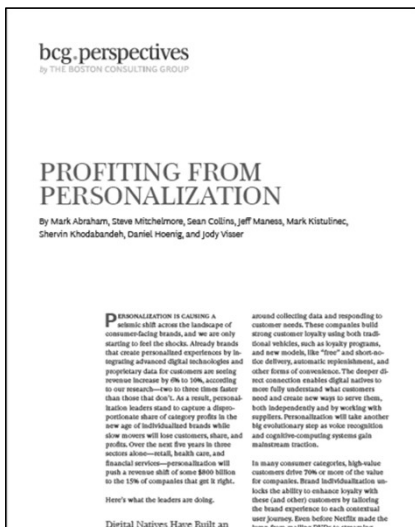
<https://www.inc.com/samuel-edwards/why-business-personalization-is-the-key-to-long-term-success.html>

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# Personalization



- Brands that create a personalized experience by integrating digital technologies and proprietary data for consumers are seeing up to a 10% revenue increase

- Examples:
  - Online hearing screenings
  - Personalized Hearing Aid
  - Custom Products?
  - Utilize Otoscan in Counseling?
  - Personalize components and tech in HA/Hearable?

*Personalize your offerings and  
Bring Back Custom Products*



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## What is a Personalized Customer Experience?

- Tailor-made experience for an individual customer
- Customer is going to feel as though the brand has taken the extra steps needed to form a solid and loyal connection

**CUSTOMER  
EXPERIENCE**

<https://www.monetate.com/blog/driving-your-business-forward-with-a-personalized-customer-experience>

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## Improve Key Business Metrics

- Conversion Rates
  - To drive conversions, brands can tailor discounts and deals to certain customers
- Average Order Value (AOV)
  - Suggesting products based on previous searches or products that other customers have previously purchased with a particular item
- Revenue
  - Implementing a data-driven personalized customer experience strategy provides users with consistent interactions, regardless of channel, and reinforces the idea that they are a valued customer

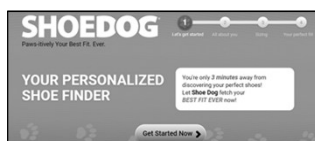
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<https://www.monetate.com/blog/driving-your-business-forward-with-a-personalized-customer-experience>  
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## Examples of Personalization in General Market

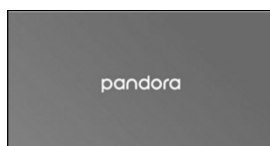
Road Runner Sports



Coca Cola




Pandora Music



### Your Shoe Dog Summary for your records!

Shoe Dog sniffed out that your perfect fitting shoe is in the **Neutral** category and you've picked a Cushion **Level 3**. Look for shoes that fall into these categories as you shop!

Level  
**3**

**Shoe Size:** 10.5  EDIT  
**Shoe Width:** Mens Wide  
**Weight:** Over 185 lbs  
**Aches & Pains:** Shin pain + Hip pain + Ankle or Achilles pain  
**Arch Type:** Low Arch  
**Goals:** Half Marathon  
**Shoe Activity:** Running  
**Surface Type:** Pavement or Treadmill  
**Mileage Level:** Racing or Fast Running  
**Leg Position:** Legs Angle Out

<https://www.inc.com/samuel-edwards/why-business-personalization-is-the-key-to-long-term-success.html>

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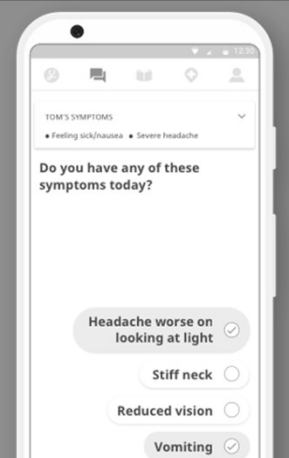
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## Examples of Personalization in Healthcare



### Your Personal Health Guide and Symptom Checker

Your.MD is a free service that uses Artificial Intelligence to help you find safe health information so you can make the best choices for your health.



<https://www.forbes.com/sites/blakemorgan/2018/10/22/10-examples-of-personalization-in-healthcare/#3a737acc24e0>  
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## Examples of Personalization in Healthcare

Cornerstones4Care<sup>®</sup>  
Your diabetes, your way.



### Meal Planning Tool

Easy-to-make recipes for tasty, diabetes-friendly dishes—plus shopping and tracking tools.



### Diabetes Health Coach

An online program that provides you with a personalized learning and action plan to help you build the skills to better manage your diabetes.



### Interactive Trackers

With A1C, weight, and blood sugar tracking tools, you can share progress with your diabetes care team.



### Newsletters

These newsletters provide you with tips and support every step of the way.



### Diabetes Library

Download free booklets to help you learn more about important diabetes topics. Titles include *Carb Counting and Meal Planning*, *Diabetes Medicines*, and *Your Guide to Better Office Visits*.

<https://www.forbes.com/sites/blakemorgan/2018/10/22/10-examples-of-personalization-in-healthcare/#3a737acc24e0>

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## What changes are we seeing in our industry that warrant changes in our clinic?



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## What's Occupying Today's HCP's?

### FOCUS AREAS

- Stay professional
- Best possible outcomes for patients
- Excellent patient experience
- Running an efficient business
- Stay competitive

### OTOSCAN & AURICAL

How can 3D scanning and integrated verification support the professional?

### TRENDS

- Consolidation and increased competition for consumer awareness
- Baby boomers expect high quality services and individualized health care
- Over-the-counter hearing care on the rise (on-line, pharmacy...)
- ASP shrinking, efficiency must increase
- Digitization of the patient journey rapidly progressing

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# Trends in Audiology

What's happening to all of the Audiologists?

- Significant growth of the older patient population = rapid increases in demands for Audiology Services
- To meet demand, the number of Audiologists will need to increase by 50% in the *next 30 years* while lowering attrition rate from 40% to 20%

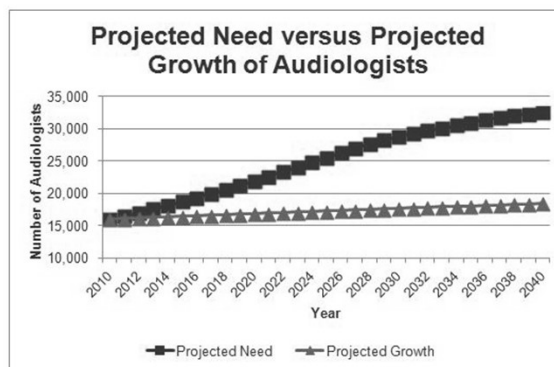


Figure 1. Projected number of audiologists needed to meet patient demand (red line) and actual projected number of audiologists (blue line) (From Windmill and Freeman, 2013).

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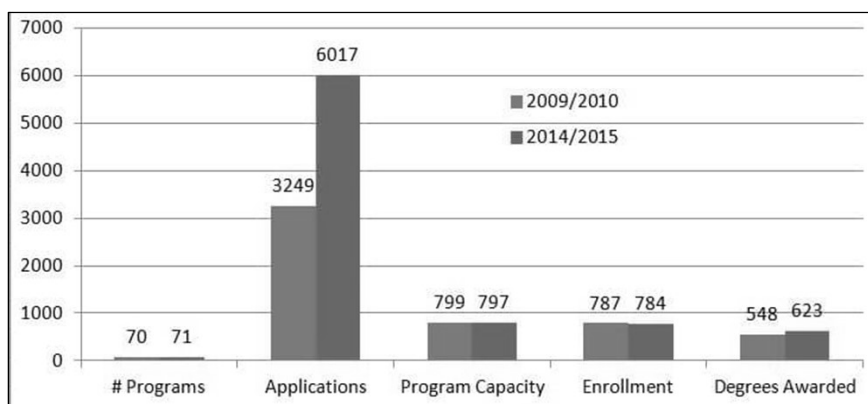
Windmill, I & Freeman, B. Demand for Audiology Services: 30-Yr Projections and Impact on Academic Programs.

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## Are Audiology Programs helping Demand?

- Application rates doubled from 2009 to 2014 but program capacity did not increase



Hosford-Dunn, H, 2017c. *Supply and demand in the audiology labor market, part 4*, Feb 21, Hearing Economics, HearingHealthMatters.org.

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## Over-the-Counter Assumptions

- OTC products are lower quality
  - Some OTC devices meet the needs of some patients
  - Some products may be lower quality, but higher quality products are available
- OTC market entry reduces patients seeking care through traditional dispensing practices
  - Patient market volume increases as population ages
  - Evolution of hearing products to include supplemental medical service (biometrics, fall prevention)
  - Optometry industry – increase in examinations since OTC introduction
- OTC market impacts our competitive strategy minimizing the value of the professional services related to hearing healthcare
  - Is audiologist value based on the device?

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## Hearing Aid Styles

INDUSTRY NEWS

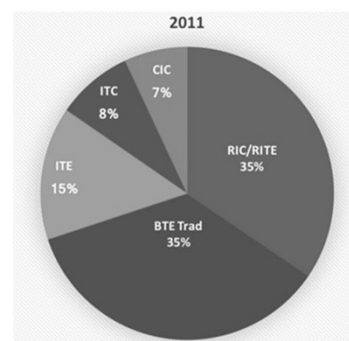
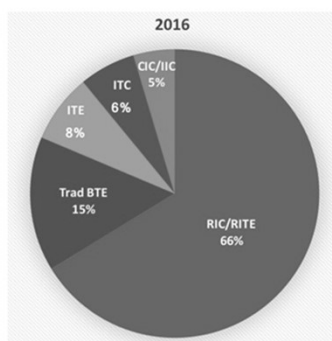
US Hearing Aid Unit Sales Increased  
by 8.7% in 2016

Published on January 16, 2017

Updated February 9, 2017

Hearing Review Article shows:

- Decreased Customs Mix, especially in ITEs
- Decreased Tradition BTE usage
- Significant increase in RIC/RITE
- No statistics on whether custom earmolds were used



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<http://www.hearingreview.com/2017/01/us-hearing-aid-unit-sales-increased-8-7-2016/> PN 028071 A

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## Discussion about Trends

### OTCS/PSAPs and EFFECT ON ASP

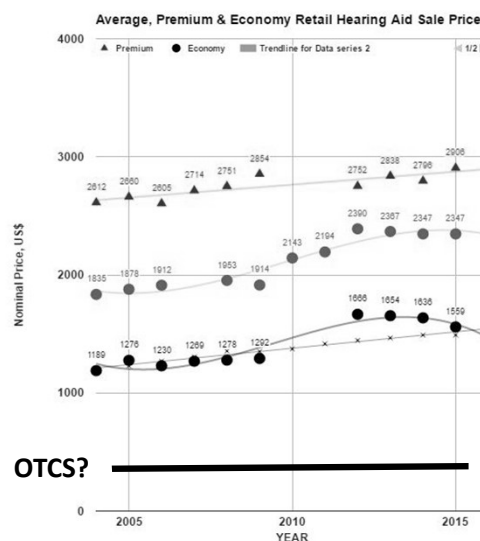
Over the years, ASP has risen.

We have fine tuned the message around the 3-4 existing categories of HAs.

Need a noticeable differentiator between outlier price point and higher price points.

↓ASP but      ↑ Units sold?

<http://hearinghealthmatters.org/hearingeconomics/2016/retail-hearing-aid-price-functions-part-2/>



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## Improved Fitting and Operational Efficiency with Digital Ear Scanning

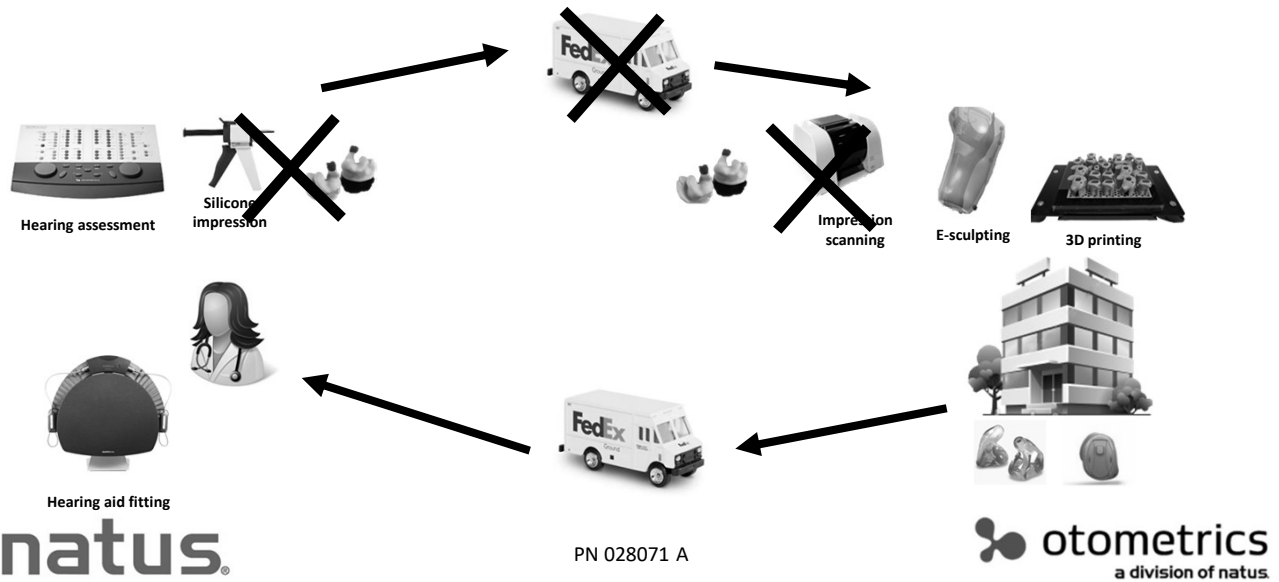


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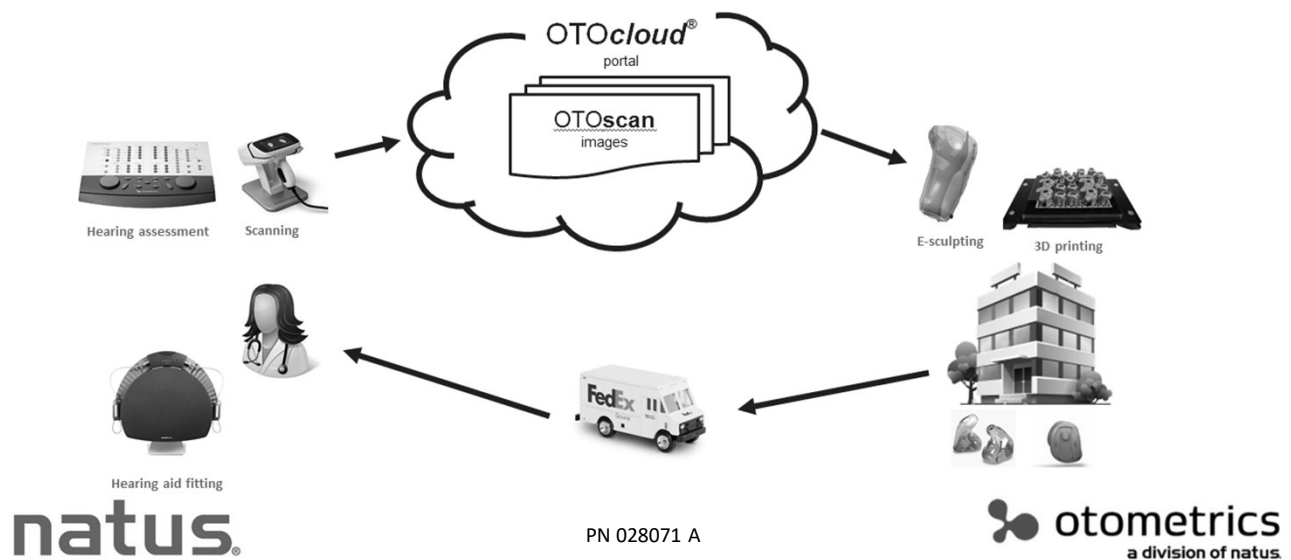
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## Traditional Order Processing



## Enhanced Custom Ordering





**Otoscan is the future of hearing care counseling and changes the way you provide hearing care**

**Otoscan gives you powerful new ways to attract and engage more clients while delivering personalized counseling and solutions in an efficient way**

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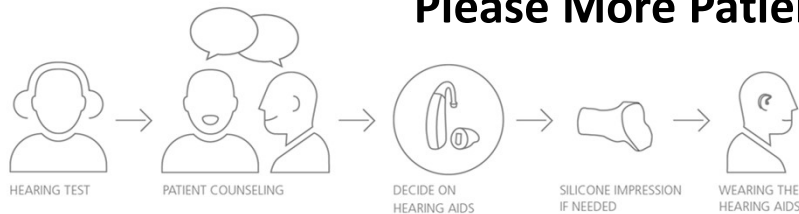
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## Revolutionize the Workflow

### OLD

A passive delivery mechanism

WORKFLOW:

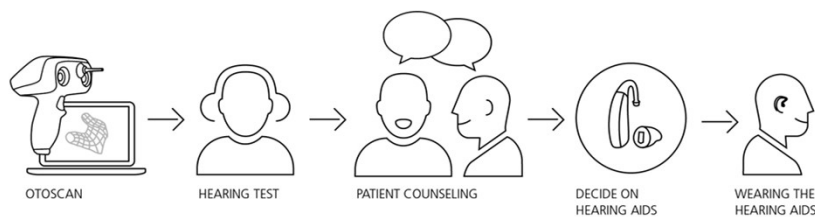


**Please More Patients**

### NEW

Engage with patients

WORKFLOW:

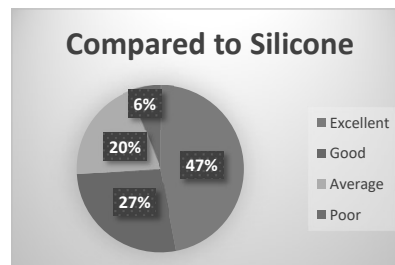
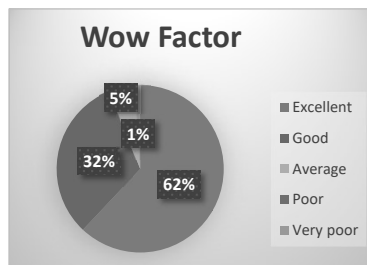
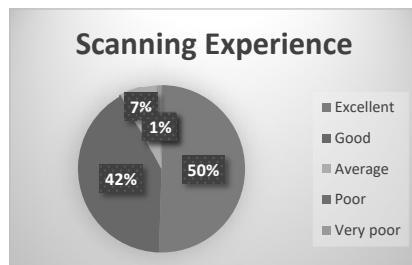


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## Patient Feedback



- 92% of patients reports excellent/good comfort
- 94% of patients reports scanning has a wow factor
- 74% of patients reports it better than silicone impression procedure
  - *New scan operators vs experienced silicone impression takers*

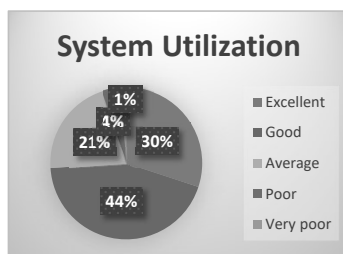
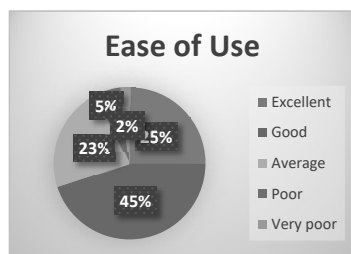
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Lindberg International  
Survey Dec 2017

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## Operator Feedback



- 70% success in reaching target depth and no gaps
  - *Only 7% with difficulties*
- 74% success in utilization of the scanning system

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## Optimized Value Chain- Fewer Remakes

- Otoscan has build in features that allows for the optimization of processes by enhancing the quality of the origin of the value chain for custom hearing aids – the patients ear.
- Insertion depth (consistently scanning 4-6 mm passed 2<sup>nd</sup> bend, with a newly trained operators).
- Video otoscopy view for safer navigation
- 3D rendering ear canal surface
- Supplemented by a thorough manufacturer validation studies
- Moving towards that Otoscan can be used as an encouragement for making a stronger effort at securing a good scan the first time.



**In a US trial (Q4 2017) the remake rate was ~8% (16 out of 196 orders, representing 425 scan images). Traditionally, remake rates range between 15-20% - significant improvement with Otoscan!**

- For dispensers doing custom: freeing up time to sell more!
- For dispensers not doing customs: reducing risk in pursuing custom solutions

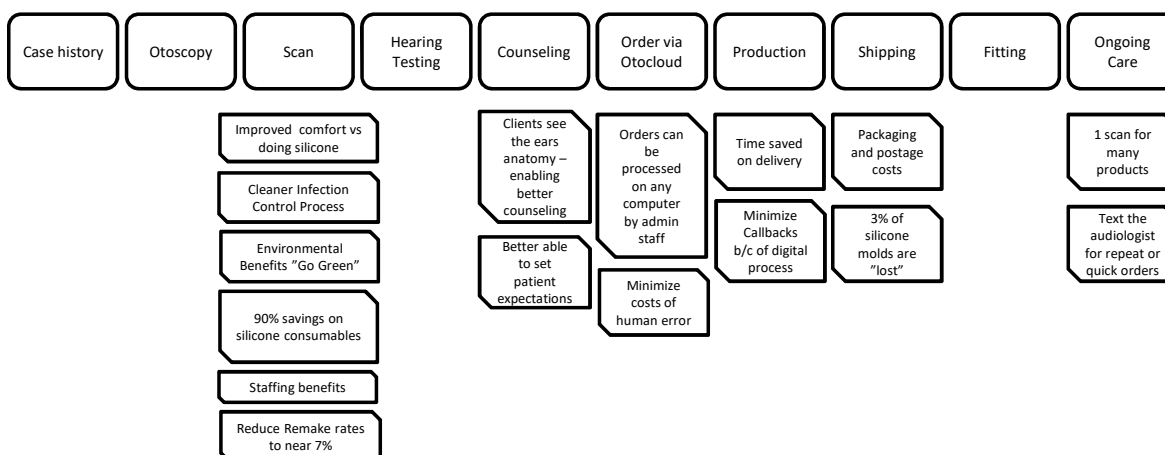
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## Clinic Workflow



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### Facebook Events

To promote the Open Days effectively we devised and implemented an integrated strategy which included creating Facebook Events, Facebook targeted/re-targeted campaigns and email marketing. This allowed us to target the right people with the right message on the most relevant platforms.

## Attract more patients

Otoscan® helps you create awareness, interest and excitement around your clinic with the latest technology within hearing care counseling. Otoscan is the first 3D ear scanning solution developed by hearing care professionals for clinicians just like you. Now you can bring the Wow Factor to your clinic and:

- Excite your patients with new digital ear scanning technology
- Reach more patients and grow your referral base through community health care events showcasing the latest innovation within hearing care
- Deliver customized hearing care and differentiate your practice

Wow, look what they can do!



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## Please more patients

Otoscan gives you more ways to engage with patients and establish stronger patient relationships. With the scanning process, you create a relevant context to begin a dialogue with your patient so you can:

- Establish a strong rapport and personalize the patient's experience in your clinic
- Increase patient loyalty by making their experience memorable
- Help patients answer the question: "Can I get the hearing aid I want?"
- Make a professional impression by being the clinic that provides customized hearing care



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## Streamline processes

Otoscan® helps you deliver customized hearing care in an efficient way. Otoscan streamlines the process of producing custom in-the-ear pieces such as earmolds and hearing aids. Novel technology transforms images of the ear into 3D digital files that are uploaded to Otocloud®, a cloud service for immediate use in the production of custom products. You can:

- Save time and money on handling earmolds and hearing aids
- Secure digital patient records for easy storage, retrieval and use
- Ensure a better fit and reduce remakes and returns
- Enjoy a cleaner, safer procedure

*"Our goal is to keep earmold turnaround time to a minimum. Otoscan helps us cut our shipping time and cost by fifty percent. That's a huge time and cost savings for us."*

Peter D. Sotiropoulos, Au.D., FAAA, Doctor of Audiology  
Hearing Rehabilitation Center, Kankakee, IL



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## The Complete Digital Solution

### Scanner System Components

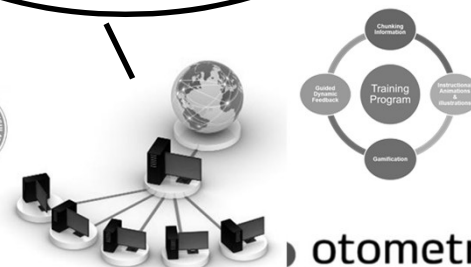
- Scanner with USB connection
- Single Application Locked-Down PC
- Session Manager
  - Patient database
  - Scanning
- Patient-worn tracking headset

### Otoscan Portal - Otocloud

- Web-based Portal software
  - User / clinic admin
  - Scan management
- Accessible from any desktop / pc through dedicated user name & login
- Includes manufacturer business system



Otoscan System



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## Improved Fitting Efficiency with Integrated Verification



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## Why is Verification Under-utilized?

- Complexity of measurements and manual adjustments needed for hearing instrument gain settings
- The mismatch between generic prescriptive targets and proprietary algorithms
- Proper probe tube placement concerns (both for confidence and accuracy)
- Additional time required for fitting process with patient
- Additional professional time required for learning, training, and practice

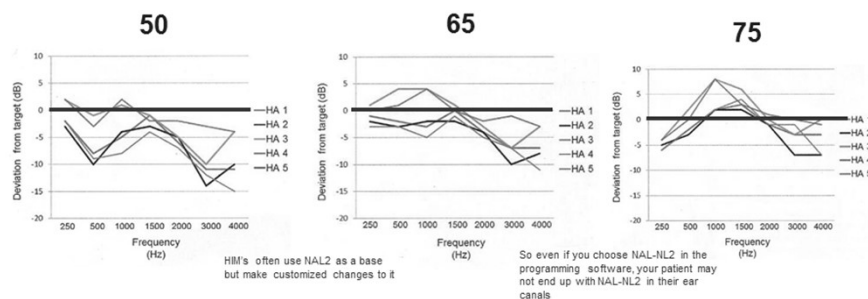
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## What to Expect from Out of the Box Fitting



Difference between NAL-NL2 (0 dB line) and First-Fit REAR for 5 premium hearing aids @ 55, 65, and 75 dB SPL

Sanders, J., Stoodly, T., Weber, J.E., & Mueller, H.G. (2015). Manufacturers' NAL-NL2 fittings fail real-ear verification. *Hearing Review*, 21(3), 24-32.

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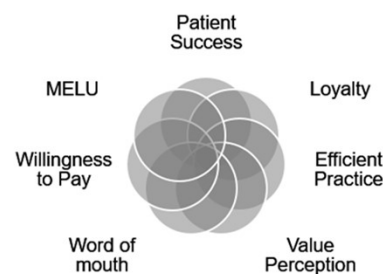
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## Patient Perception with and without REM

For new and experienced users, and 'in-the-drawer' non-users who were re-fit with REM applied, the effects were positive when measured for:

- **Emotional Value**, which correlates to the acceptance and adoption of hearing instruments
- **Quality Value**, related to the view of service excellence and the product view
- **Behavioral Intent**, related to repurchase decisions
- **Willingness to Pay**, for audiologic services related to the fitting of hearing instruments



Amlani AM, Pumford J, Gessling E. Improving Patient Perception of Clinical Services Through Real-ear Measurements. *Hearing Review*. 2016;23(12):12.

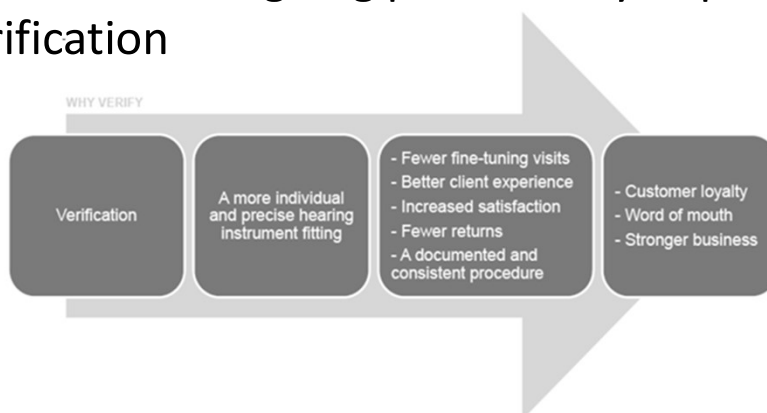
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## Aurical by Otometrics

- Aurical delivers on-going productivity improvements for verification



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## Automated Verification with Aurical

- New Industry Standard – IMC2 (inter module communication version 2)
  - New HIMSA standard for integration between hearing instrument fitting and measurement modules (Dec 2015)
    - Developed by the industry for everyone's benefit
    - Allows fitting and measurement modules that support IMC2 to communicate directly
    - Provides users with a simplified and integrated fitting workflow

[https://www.himsa.com/Products/NoahModules/IMCCompliantModules/WhatIsInterModuleCommunication\(IMC\)/tabid/4888/language/enUS/Default.aspx](https://www.himsa.com/Products/NoahModules/IMCCompliantModules/WhatIsInterModuleCommunication(IMC)/tabid/4888/language/enUS/Default.aspx)

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## Automated Verification with Aurical

- Automation = little extra effort!
  - Huge upside for a little extra effort
    - Automated fitting to target from within the hearing instrument fitting software
    - Easy way to introduce verification for all patients
      - Guided workflow
      - One user interface due to full integration between Aurical and the fitting software
      - Less training than manual verification – benefit for new fitters!
    - Consistent with each manufacturer's procedure
      - Audiogram pulled from NOAH
      - Fitting to any target supported by HI manufacturer

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## Aurical Integrations

- Resound AutoREM
- Phonak TargetMatch
- Oticon REM AutoFit
- Signia/Siemens



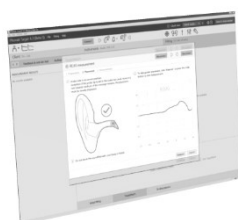
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# TargetMatch Workflow

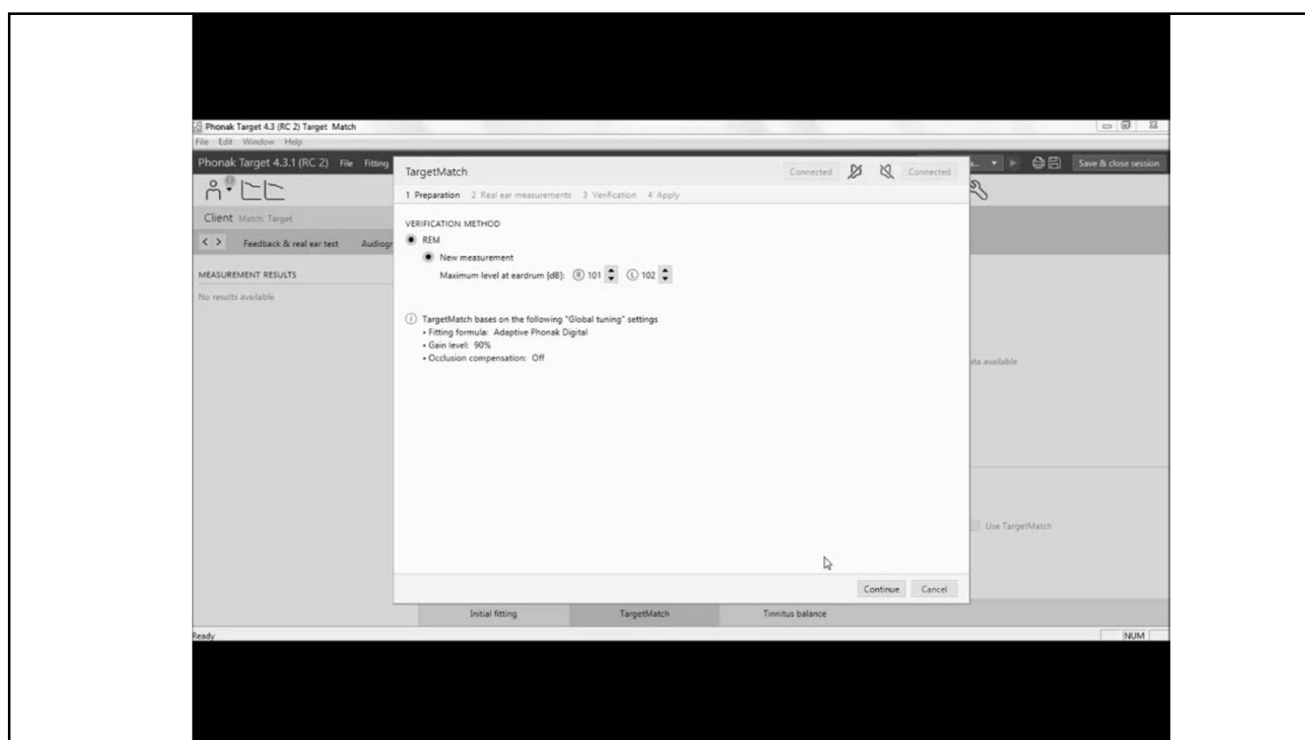
- Seamless step by step workflow, aligned with common REM/PMM verification protocols
- STEP ONE: Probe tube placement & REUG measurement
- STEP TWO: Acoustic transformation measurement
- STEP THREE: Target matching



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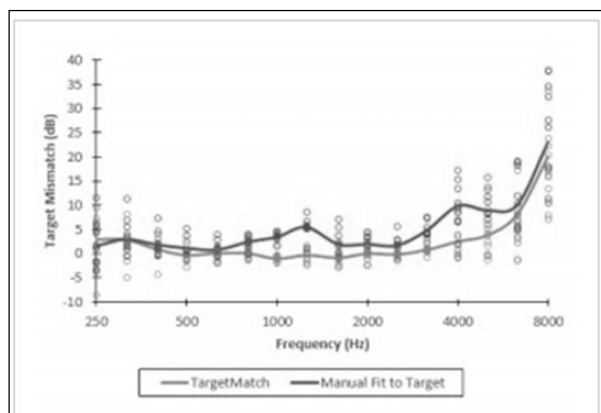
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# Accuracy of Phonak TargetMatch

- Study Objectives
  - Precision and repeatability for different acoustic couplings
  - Accuracy to match prescriptive targets with standard fitting formulas
- 2 groups – normal hearing and hearing impaired
- Reliability within 3dB from 400 – 4KHz
- Target Match better at 4KHz than manual method



Latzel M, Denys S, Anderson S, Francart T, Wouters J, AppletonHuber J. An integrated REM system with proven accuracy and reliability. Hearing Review. 2017;24(10):36-39. PN 028071 A

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## AutoREM with Resound Aventa

- Seamless step by step workflow, aligned with common REM/PMM verification protocols
  - Preparation
  - Probe tube calibration
  - Unaided Gain
  - Insertion Gain with verification to target

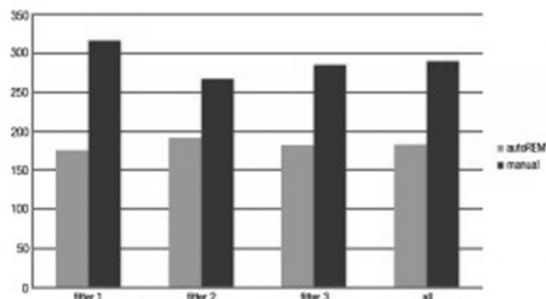


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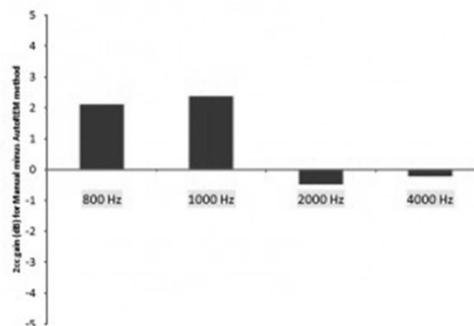
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## Improved Efficiency with Resound Integrated Verification



Average time spent to match prescriptive targets, per fitter, with each test method.

Koehler ED, Kulkarni S. Fast and easy fitting and verification with integrated real-ear measurement. Hearing Review. 2014;21(10)36-40.



Average differences in fine-tuned gains between the manual and AutoREM procedures. Positive values mean that gains were adjusted higher with the manual method than with AutoREM.

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## To Sum it Up...

- Otoscan and Aurical are the future of hearing care
- Otoscan and Aurical will transform the way you provide hearing care
- Otoscan and Aurical give you powerful new ways to attract and engage more patients while delivering personalized counseling and solutions efficiently
- Otoscan and Aurical are developed by hearing care professionals for hearing care professionals



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## Thank you

- Contact us
  - Natus Medical Denmark ApS
    - [www.natus.com](http://www.natus.com)
  - Jeanette Fitzke, AuD
    - [jeanette.fitzke@natus.com](mailto:jeanette.fitzke@natus.com)
  - Don D. Kim, AuD
    - [don.kim@natus.com](mailto:don.kim@natus.com)

Questions?



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