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Science made smarter

The Interacoustics magazine

made



# Interacoustics says

Interacoustics is a leading and global player in diagnostic audiology and balance. As an innovative powerhouse, we have always embraced change. Now is no different.

Our new vision 'science made smarter' is a fundamental promise to our customers, supported by our values of integrity, ambition and creating customer value. With ambition, we are able to stay in front as a leading player in the industries of hearing and balance. With integrity, our customers can count on us as a trustworthy partner. When we ask ourselves if what we do is of value to our customers, we are able to create reliable and user-friendly solutions that meet the demands of our customers.

Interacoustics' history is deep, and we pride ourselves on our authentic products, our uncompromising aesthetics, our unique knowledge and our 50 years of experience. A new

corporate visual identity will aid in communicating our new vision, where we look to the past to communicate our future. Therefore, we will revitalize our green colors of the past.

**'Science made smarter' is our launch pad for surpassing previous peaks.**

## **Organizational growth**

We're in times of organizational growth. Revenue is on the rise and Interacoustics has an ever-increasing number of customers to take into consideration. Recent years have shown huge potential in Asia, where our push into China and South Korea has been especially fruitful. These are all positive signs.

The same applies to all the new faces at our headquarters in Middelfart and around the globe at our many sales offices. The fact that we're growing allows us to attract skilled employees. Interacoustics is simply a magnet in this regard.

In times of change, it's important that we remember our company culture and maintain our integrity. It's when we communicate openly, when we help each other and when we listen to each other's ideas that Interacoustics is a fun place to work. Together we grow stronger.

A handwritten signature in black ink, appearing to read 'C. Kind'.

**Carsten Kind**  
President, Interacoustics

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'Science made smarter' is not just a vision. It's a brand promise that communicates bravery and leadership and sets us apart from others in the hearing healthcare industry.

# Science ma

Science represents the innovative and technological approach to our solutions; complex engineering, code, digital processing and algorithms that we use to develop new products and maintain existing.



Made communicates the interchangeable opposites that enhance how we transform the complex into something easier, simpler and smarter.

# de smarter

Smarter describes how we transform science into solutions of high quality and reliability, which are easy to use, fast and precise.

# Interacoustics is more than state-of-the-art solutions

Our mission is as clear as it is demanding. We want to lead the way in audiology and balance by translating complexity into clarity:

- Challenges made into clear solutions
- Knowledge made practical
- Invisible hearing and balance conditions made tangible and treatable

As the industry leader, we combine our global knowledge and experience to create strong

local setups that support specific market needs. We offer innovative and easy-to-use solutions that ease the lives of healthcare professionals.

We provide an attractive workplace for the industry's best and brightest, allowing us to set the standard for an entire industry. Not for the sake of science. But for the sake of enabling professionals to provide excellent treatment for their millions of patients across the globe.

It's simply science made smarter.

# 23

Sales companies  
around the globe



# 58<sup>\*</sup>



Revenue  
in million Euros

66 Million US Dollars  
432 Million Danish Kroner  
446 Million Chinese Yuan  
\* 2017 figures

# 500



Employees  
around the globe

130 Sales companies  
200 Poland  
170 Denmark



We develop our first audiometer, AD5, laying the grounds for a long-lasting legacy of great audiometers.

We develop and introduce our first tympanometer, AZ2.

We launch our first hearing aid fitting equipment, MS20.

We present our first version of Eclipse, which is still one of the world's best evoked potential systems.

We introduce the revolutionary wideband tympanometry for our Titan tympanometer.

We expand our growing balance portfolio with a new touch-capable VNG software, VisualEyes 515/525.



# Laying the cornerstones for successful products

Product innovation and development at Interacoustics is an intricate process that involves countless hours of research, development, and testing. Learn how Product Management works to lay the cornerstones that shape the future of diagnostic equipment.

- We base our product development on two fundamental principles: A desire to improve the lives of the people who are diagnosed by our products, and the pursuit to offer the best solutions on the market, says Peter Brøndum Jensen, Vice President, Product Management.

Peter Brøndum Jensen and his Product Management team are

responsible for the product line at Interacoustics and for ensuring that any new product meets customer demands.

This is ensured with a structured process, which commences long before the actual product development. This strategic approach of taking as many aspects of a future product into account smoothens the phases of engineering and development.

- We often start by asking ourselves what knowledge we possess in regards to the product development in question. Based on this, we look at the markets and the typical users of the product. Who are they and what are their wishes and demands for the



## Example of process

### Step 1

#### In-house Investigation

What knowledge do we already have?

### Step 2

#### Market Investigation

We involve selected focus markets and gather information.

### Step 3

#### Technical Concept

We scope a concept that suits the customers' needs.

### Step 4

#### Handover to R&D

R&D enters the core development stage.

product? Peter Brøndum Jensen says.

This is no easy task, and one that requires insights into market trends and customer needs.

- Each market is different. An audiologist in the UK does not perform the same tasks and does not have the same education as an audiologist in the US. That's also why we work so closely together with key opinion leaders, users and our distributors to get to know our users as much as possible.

After a thorough market investigation and completion of concept, Product Management hand over the project to the R&D department for development.

### Designing for the future

According to Peter Brøndum Jensen, Interacoustics is often the company that sets the bar for new technical features. This requires that Interacoustics move in the right direction - not only technologically, but also in terms of market trends and user-friendliness.

- Our products are often in the market for a long time, so it's important that they are future-proof. We secure this by developing flexible solutions that can be tailored to the needs of the specific user and adjusted as the clinical needs grow, he says.

### Keys to succesful innovation

Interacoustics works with two types of innovation: incremental

and radical innovation. Incremental innovation, such as small software updates, are important for the customers in terms of usability. However, according to Peter Brøndum Jensen, they aren't game-changers.

One of largest radical innovation projects that Peter Brøndum Jensen took part in was the introduction of wideband tympanometry, which improves middle ear analysis.

- It's radical when you have been measuring at 226 Hz your whole life and then you can suddenly measure a much wider spectrum in one measurement, he says.

# ASSR testing in less than 20 min.

In 2003, Interacoustics launched the Eclipse. A powerful combination of ASSR, ABR and OAE that is still considered state-of-the-art. One of the new technologies used in the Eclipse was the CE-Chirp®

In 2006, Claus Elberling, M.Sc.E.E., D.Sc.M., Honorary Senior Scientist at IRU and former Head of Eriksholm Research Centre, along with other leading scientists, developed the CE-Chirp®. He was drawn to find a solution to the well-known problem of small ABR response amplitudes, which can make it difficult to determine hearing thresholds.

We asked him about this revolutionary development and why it is still so important when doing ASSR recordings.

## **How did you discover the CE-Chirp®?**

I first became aware of the concept of the Chirp when I read an experimental paper back in the 1980s. About 15 years later the Chirp surfaced again in a couple of important papers by Torsten Dau (professor of Hearing Sciences at the Technical University of Denmark).

In 2004, we found a need to improve the ASSR-testing of

newborns and focused our attention on two areas: (1) improving the stimulus, and (2) improving the response detection. To improve the stimulus, we took a close look at the Chirp concept. We developed and applied the underlying mathematics on a large amount of electrophysiological data that described the conditions in the normal, human cochlea - and the CE Chirp® was born.

## **What does the CE-Chirp® do?**

The CE-Chirp® attempts to synchronize the electrophysiological responses from the different frequency bands in the normal cochlea and the corresponding brainstem centers.

The compound response, which is recorded by electrodes on the surface of the scalp, combines the responses from all frequency bands involved. Due to the synchronization, the compound response will increase significantly in magnitude.

## **What difference does the CE-Chirp® make?**

The electrophysiological responses that are recorded from surface electrodes are very minute electrical responses - in the order of 1/10 of one millionth volt. Any increase in response magnitude will therefore shorten the recording time and improve the quality of the response waveform.

Especially in newborns, a short recording time is of paramount importance and a higher response quality will improve the certainty of the diagnostic application.

## **What impact has the CE-Chirp® had on ASSR and Eclipse?**

Together with later developments, for instance the Narrow-Band CE-Chirp®, the Level Specific CE-Chirp® and the Advanced Response Detection Algorithm, the CE-Chirp® has turned ASSR-testing into an acknowledged clinical test routine and the Eclipse into the most attractive electrophysiological test equipment.

The CE-Chirp® is a unique stimulus used by Interacoustics in ASSR and ABR measurements. The CE-Chirp® compensates for the cochlear traveling time and generates response waveforms up to twice the size of traditional click or tone burst stimuli.

Did you know that studies have shown that you can record the auditory threshold of a child, in both ears, at four frequencies, in less than 20 min?



Claus Elberling,  
M.Sc.E.E., D.Sc.M., Honorary Senior Scientist at IRU  
and former Head of Eriksholm Research Centre





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We have had the TRV chair for the last 2 years and we have used it on a variety of patients with positional balance symptoms, including patients with long-standing problems. We have successfully treated three quarters of these patients. The last quarter have often had other comorbidities, which could have had an impact on their recovery.

We welcome further research on the TRV chair and its use on challenging patients. We could potentially test elderly patients and thereby lower the amount of falls, which cost the NHS dearly.

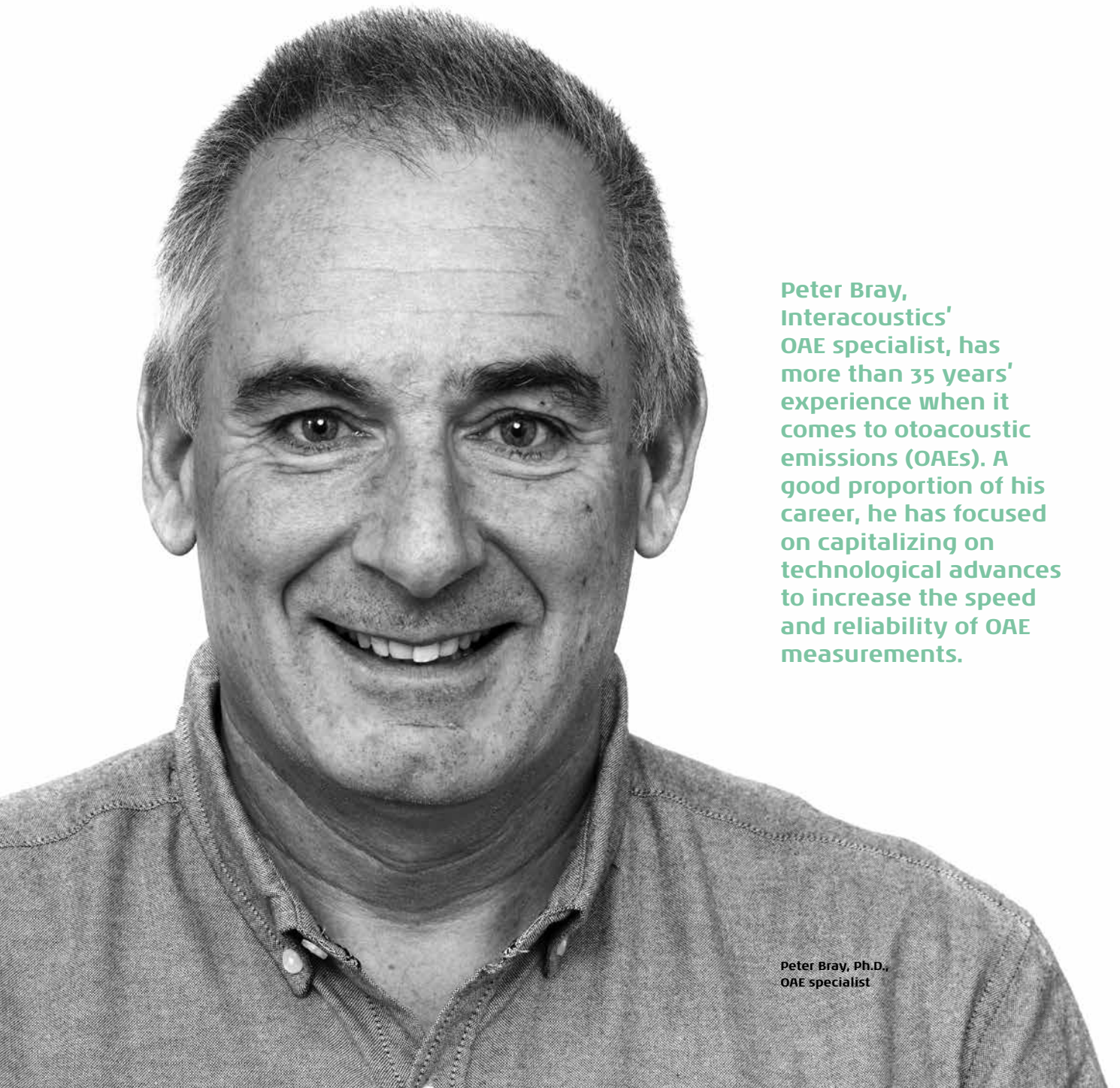
We have an early access Audiologist Led Clinic (ALC), which performs all our positional testing to identify and treat patients with positional semicircular canal debris. The ALC can potentially cure these patients and prevent lives of imbalance and anxiety.

I am pleased to be able to have a piece of equipment that can diagnose and treat in one visit and I am sure that our patients would agree.

*Dawn Clare, Head of Audiology,  
Royal National Throat, Nose and Ear Hospital, London, UK*



# OAE screening: a quick test with a lasting impact



Peter Bray, Interacoustics' OAE specialist, has more than 35 years' experience when it comes to otoacoustic emissions (OAEs). A good proportion of his career, he has focused on capitalizing on technological advances to increase the speed and reliability of OAE measurements.

Peter Bray, Ph.D.,  
OAE specialist

When Peter Bray started working with OAE in the 80s, there was no such thing as a neonatal hearing screening. At the time, the infant hearing test was conducted at eight months of age using a rattle in the behavioral distraction test. Despite the best endeavors of the health visitors performing the test, it was only able to detect around 50% of the children with a hearing impairment. As a result, the average age of detecting a hearing impairment in children was around two and a half years of age.

According to Peter Bray:

- The consequence of this was late fitting of amplification and language delay and often resulted in attendance at a special educational facility.

### The birth of screening

In the 80s, Peter Bray was a researcher with Professor David Kemp, the pioneer of OAEs. In a slightly more modest technological age, Peter Bray describes clinical OAE testing in 1984:

- We used a mini-computer the size of a large filing cabinet. Considered state-of-the-art at the time, patients had to breathe very quietly and avoid swallowing as we lacked processing power to employ noise rejection. Babies tend to be noisy breathers and make many other sucking and swallowing sounds.

Peter Bray was made aware that noise was the major obstacle in neonatal OAE testing. A publication by Claus Elberling would change matters, however.

- I then saw the publication by Claus Elberling and co-workers, which showed he had tested

20 neonates. This provided the impetus to rewrite some of the core code of the algorithm, so that we could reject patient noises, he explains.

Not long after, a young mum presented at the clinic with a newborn baby. Peter Bray remembers the day clearly:

- The infant refused to settle for the test until the mother decided to start feeding it. The noise rejection method was able to obtain tiny bursts of clean signal in between the sucking and swallowing noises. In less than a minute, we were able to report that her baby had normal cochlear function.

### One false pass or refer is one too many

Typically, one out of every 1000 babies is born with hearing loss. This presents two big challenges in hearing screening. Peter Bray elaborates:

- Firstly, we must never miss that one child, as it could have a profound and lasting impact on their life. Secondly, we must not be over cautious, as this would impose a high cost on the diagnostic department and a degree of anxiety on the parents as they wait to find that their child can hear perfectly normally.

The two challenges relate to the sensitive nature of screening equipment and ensuring that it makes the correct decision time after time.

- We can run hundreds of tests in the presence of recorded realistic noise environments to ensure that our algorithms are correct.

However, the OAE signal from the cochlea contains the same kind of frequency content as the noise from the patient and the room. Therefore, the algorithms are optimized to harvest as much of the cochlea signal and reject as much of the noise as possible, Peter Bray says.

### A deep passion for OAE

Despite his long career in OAE, Peter Bray shows no lack of enthusiasm:

- I am fortunate to be part of a team with a deep understanding of the human hearing pathway, probe and ear canal acoustics, middle ear behavior and so forth. I have no doubt that we will continue to roll out better and better OAE screening instruments in the years to come. I predict that the screening instruments will provide a more detailed picture of the neonate ear and will further reduce the diagnostic investigation workload.

### Peter Bray's tips for keeping the noise down when doing OAE measurements

Control the noise in the measurement as much as possible. This means get a good secure fit of the probe in the ear canal so that you don't have to hold the probe. If necessary, hold the cable a good distance from the probe and pay attention to clothing rubbing against the cable, which causes noise in the ear canal. Find a quiet side room away from the noise of the neonatal ward.





It's fantastic!  
The Interacoustics  
equipment has had a  
great impact on the  
audiological practice  
in Malawi.

Rie Luxhøi

Malawian children now have  
access to hearing healthcare  
Private photo





# Supporting the hearing healthcare community in Malawi

**Children now have access to hearing healthcare and local hearing healthcare professionals are being trained after Interacoustics donated audiological equipment to a Norwegian hearing program in Malawi.**

The Danish audiologists, Rie Luxhøi and Signe Sparre Hansen, have been in Malawi for a year. They have taken part in the Norwegian Association for the Hard of Hearing's exchange program in Malawi. As part of the program, Rie Luxhøi and Signe Sparre have been teaching their audiology colleagues at the Malawian Montfort Special Needs Education College, a school for hearing impaired children.

Here, the equipment donated by Interacoustics has been put to great use.

Rie Luxhøi says:

- It's fantastic! The Interacoustics equipment has had a great impact on the audiological practice and the education of our colleagues in Malawi.

The donated equipment arrived in Malawi six months ago. Rie Luxhøi and Signe Sparre have been using the equipment at the school, and the two specialist teachers have also been involved in audiological assessments and treatment of hearing-impaired people in the rural areas of Malawi.

Signe Sparre Hansen says:

- With the donated tympanometer, we have been able to map the function of the middle ear. We are very grateful as it meant a huge difference to our work with the children.

The equipment donated by Interacoustics includes an AD226 diagnostic audiometer, a MT10 handheld tympanometer, an OtoRead® handheld OAE device and Sanibel™ ear tips.



# 466,000,000 people worldwide suffer from hearing loss\*

According to the World Health Organization, hearing loss is expected to rise dramatically in the coming years. First of all due to a growing global population and an increasing number of elderly people.

The consequences of hearing loss for the affected persons are many. The consequences are often divided into three areas.

## **1 Changes in behaviour:**

- Social disengagement
- Difficulty participating in social activities
- Isolation

## **2 Physiological and mental consequences:**

- Stress
- Dementia
- Depression
- Vertigo

## **3 Physical consequences:**

- Reduced alertness and increased risk to personal safety
- Inability to concentrate and reduced memory
- Reduced job performance
- Accelerated cognitive decline



Untreated hearing loss can lead to depression, dementia and accelerated cognitive decline\*



It is estimated that by 2050, over 900 million people will have disabling hearing loss\*\*



2-7 per 1,000 newborns suffer from hearing loss at birth\*\*\*

\*Source: Livingston et al. 2017 "Dementia prevention, intervention, and care", The Lancet

\*\*Source: World Health Organization (WHO) Deafness and Hearing Loss Fact Sheet, March 2018

\*\*\*Source: Lamb, Archbold, O'Neil, 2016





# Driving audiology

The Interacoustics Research Unit (IRU) is a story of innovation and applied research focused on clinical impact

IRU consists of a handful of researchers with a passion for innovation and research, and for making a difference for the future of audiology. The goal for IRU is to carry out applied research and deliver solutions to the challenges faced by the clinical community.

James Harte, Director of IRU, explains:

- A great deal of the research carried out by many of the leading universities is driven to increase the understanding of fundamental principles in audiology and hearing science. IRU's goal is to translate these advances into solving real-world challenges faced by audiologists, ENTs and hearing healthcare professionals. We do not carry out research for the sake of research alone but to provide new diagnostic tests, improve accuracy and efficiency of existing ones, and demonstrate reliable evidence for the efficacy of Interacoustics technologies.

#### **Making an impact on future audiology**

What matters to James Harte is the influence and impact IRU has

on the field of audiology and in continuing to help Interacoustics make leading products.

- As a company, Interacoustics are creating products that have a huge impact on people's lives. They guide clinicians in decision making on diagnoses and rehabilitation options, which can have a lifelong impact. That of course gives us a tremendous obligation and responsibility to make good, reliable and accurate products. By working hand-to-hand with the academic and clinical communities, IRU can work to the highest research standards, James Harte says.

IRU also feels it is extremely important to openly publish their work in leading international journals in audiology and hearing science, rather than work in secret.

James Harte says:

- By doing this we build trust, gain feedback and partners for our projects, and obtain credibility with key opinion leaders around the world. It is simply the case that without sound clinical evidence and a solid scientific base, documented in published



articles, key opinion leaders will not adopt new technologies. This would spill over to the broader clinical community, who look up to key opinion leaders as first movers.

This need for a close connection to the research community was why Interacoustics took the decision to locate IRU at the Technical University of Denmark (DTU) in 2013. Being in a university environment ensures sparring with leading researchers and provides access to talented students to work on IRU projects.

James Harte adds:

- We are four permanent staff members at DTU, working with maybe 3-6 PhD and MSc student projects at any given time. We depend a lot on our collaborations with universities, hospitals, and PhD students around the world as well as in Denmark.

#### **In partnership with Product Management and R&D**

IRU and the R&D department at Interacoustics in Middelfart are tight-knit.

- IRU's goal is to mature research projects to a point where they can begin to be incorporated into the

product roadmap. However, the transfer of knowledge is not simply a hand-over at the end of a project but a process started early on where dialog and sparring continue to ensure that any research developed is ready for implementation.

Product Management on the other hand are a constant partner with IRU, providing key input to

choosing relevant projects to work on and are closely involved in the time management of projects to ensure alignment with the product development roadmap. IRU act as a sparring partner for Product Management and also provide technical support and know-how on key areas.

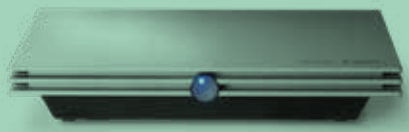
#### **Validation of hearing aid fitting using speech-like ASSR in infants**

As an example, one of the key projects at IRU is 'Validation of hearing aid fitting using speech-like ASSR in Infants'. This project has been in the making for a long time, and directly builds on the legacy of Claus Elberling's CE-Chirp® work. Validating hearing-aid fitting in infants is challenging, as behavioral measures, such as visual reinforcement audiometry, are impossible with very young infants. IRU has been working on new ways to overcome these challenges.

The approach taken by IRU is to make an aided ASSR measurement with a novel stimulus, built on the successful NB CE-Chirp® LS, but modified to be more 'speech-like'. By doing this, the child's hearing-aid settings can be exactly as they would be when they leave the clinic. Without the speech-like modifications, helping algorithms like noise reduction could interfere with the ASSR measurement. Keeping all these features on ensures a more valid clinical test as well as a more convincing counselling tool for the clinician to work with the child's care-givers.



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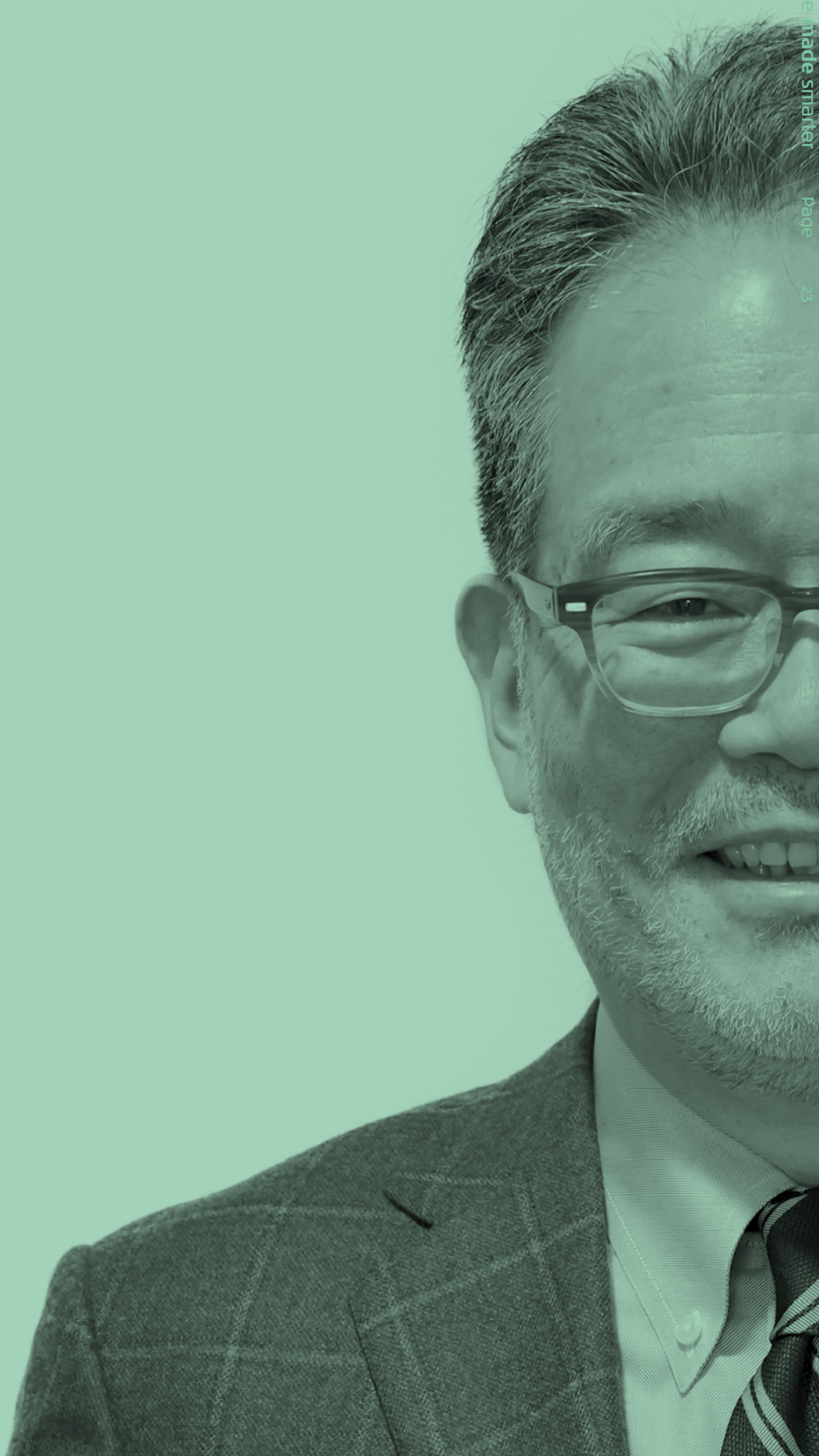


I mainly use Eclipse to diagnose hearing loss in infants. With the CE-Chirp® stimulus threshold waveforms are much clearer, compared with the click or tone burst stimuli.

Eclipse ASSR also excels in measuring responses that are close to the behavioral hearing level, and I believe that this is one of its great benefits, especially for professionals who are not yet familiar with evoked potentials.

Using Eclipse together with OAE and free field testing results ensures comprehensive assessments of hearing impairment.

*Dr. Shin Aso,  
Aso Clinic, Toyama, Japan*







Alejandro Lopez Valdes,  
Research Engineer  
at the Eriksholm Research Centre

**What does the future hold for audiology? Will clinical staff be needed for testing or will all testing be done online? Alejandro Lopez Valdes, Research Engineer at the Eriksholm Research Centre, gives his view on the future of audiology.**

- In 2030, you can easily imagine an inversion of the current flow of the audiology chain. No longer will the user seek audiology. In 2030, audiology will seek the user, Alejandro Lopez Valdes speculates.

Alejandro Lopez Valdes is committed to increase the benefits of future hearing care through his work. He is originally from Mexico, but has lived in several countries in connection with his studies and

working career. Now he works at the Eriksholm Research Centre as a Research Engineer of Cognitive Hearing Science.

According to Alejandro Lopez Valdes, hearing aid technology will benefit from data, allowing for a closer link between diagnostics and hearing aid fitting.

- Diagnostics and hearing aid fitting will become more integrated, as cloud services will enable diagnostic equipment to read collected data. This will be used for powerful hearing aid fitting. We'll also see that the handling and storage of data will play a role in the way our medical systems are set up. With cloud storage, people can travel without leaving their data behind, which is very

convenient for diagnostics and data extraction, Alejandro Lopez Valdes comments.

**Human-driven hearing care will survive**

Even though future hearing care will likely be data-driven, Alejandro Lopez Valdes still thinks that there will be a need for personal counseling and a holistic view at diagnostics.

- When it comes to hearing, we are still talking about life-changing situations for hearing aid users. While data-driven solutions can provide deeper insights into what the user's needs are, there remains a requirement for a human-driven component to link and interpret these insights, Alejandro Lopez Valdes explains.



Eriksholm Research Centre is part of Demant and collaborates with world leading academic research institutions to improve future hearing care.

# Audiology in the future – looking towards 2030

Interacoustics already offers remote audiology solutions, where personal counseling is set to be an activity that can be undertaken from afar.

- We'll probably see a lot more remote hearing care. People may be 100 kilometers away from a clinic but still have access to hearing care through telehealth and remote solutions, allowing for long-distance diagnosis and treatment, he says.

## Word of warning

The appraisal of data, however, does not come without a word of warning:

- We must not forget that data comes attached with a user. The user must have control over the data at all times. In addition to the

data privacy storyline, you have the actual data usage storyline.

According to Alejandro Lopez Valdes, algorithms and data will be much more intelligent in 2030:

- I think that in 2030, the algorithms will be sufficiently intelligent and we will have sufficient data to automatically define the best functioning parameters for audiological enhancement in any given situation. But does that mean that it should apply changes or modify settings without recognition of the user?

- The will of the user should always be respected. Technology should not disempower individuals in this regard, Alejandro Lopez Valdes concludes.

## Future challenges in audiology

- 1 The ethical management of data will be challenging. We cannot utilize the data until we have ensured its ethical treatment.
- 2 Usability requirements for emerging technologies must reflect the population that is in touch with the hearing healthcare system.
- 3 Age. We still need to study if technologically competent persons in their 20's remain to be as competent when they reach their 60s or 70s. Should we expect everyone to be able to adapt to new technologies or should we support a range of solutions for the various technological profiles?



Sharon L. Cushing, MD MSc FRCSC

# Insights from a balance expert

Dr Sharon Cushing is a pediatric otolaryngologist, who specializes in the diagnosis and treatment of disorders of the middle and inner ear. Part of her practice includes the evaluation of children who present with vertigo and disequilibrium.

We asked Dr Sharon Cushing on her work with vestibular disorders in children.



### What causes vertigo and disequilibrium in children?

When we think about the causes of vertigo and disequilibrium in children, it can be useful to separate this population into those with, and those without, hearing loss. For those children without hearing loss, the most common causes of vertigo include migraine and its pediatric variants, such as benign paroxysmal vertigo of childhood. In addition, vertigo or imbalance can commonly be the presenting symptoms in the setting of conversion disorders or as physical manifestations of a mental health disorder.

In contrast, children with hearing loss often present not with symptoms of vertigo but rather disequilibrium due to either congenital or acquired vestibular impairment related to the etiology of their deafness.

### How are hearing loss and vestibular disorders connected?

In fact, 70% of children with sensorineural hearing loss will have some form of vestibular end-organ

impairment on objective testing. These sensory deficits along with their hearing loss translate into motor delays and impairments that can be lifelong. Specifically, these children will walk late and have difficulty performing important developmental tasks of childhood.

We are also beginning to understand that vertigo and disequilibrium in children can also impact learning and memory and thus their performance in the classroom.

### What systems do you use for diagnosing children?

Accurate diagnosis of a peripheral vestibular disorder in a child can occur through the combination of a thorough history and physical examination supported by objective measures.

In our clinics we make frequent use of objective measures, including video head impulse testing (vHIT), virtual subjective visual vertical, videonystagmography with calorics and vestibular evoked myogenic potentials, which allow us to probe the entire complement of vestibular end-organs.

### How does pediatric testing differ from the adult domain?

While the same methods and equipment can be applied in both the adult and pediatric domain, some modifications are required in testing methods to be successful in children. For example, having two testers, a child friendly environment with appropriate visual targets,

### The most obvious signs of inner ear balance problems in children

- 1 Delayed head control, sitting and walking.
- 2 Inability to stand on one foot.
- 3 Inability to ride a bike without training wheels.
- 4 Brief attacks where children stop what they are doing and cling to a parent or object.
- 5 Jumpy eye movements, where the eyes twitch back and forth.

seating them on their parent's lap, having rewards available and so forth can increase the yield of testing.

Children often move their eyes and themselves a lot more than adults throughout testing, which may impact the reliability of the results. The same applies to their larger pupil size and smaller heads.

### What are the advantages of using objective measures?

While a thorough clinical exam should never be replaced with objective measures alone, there are many advantages to the addition of such measures, including the ability to focus on the collection of the data to review the results.

Objective measures such as vHIT also allow us the ability to detect covert signs of vestibular impairment that would otherwise be missed.

### 3 tips for vestibular testing in children

- 1 Start with what is most important.
- 2 Make it a game. Have numerous novel child friendly visual targets.
- 3 Engage the parent in testing.

# Expanding the knowledge of healthcare professionals

**The Interacoustics Academy is a knowledge hub for all things related to diagnostic audiology and balance.**

The Interacoustics Academy is comprised of a group of audiologists with extensive clinical backgrounds. Bue Kristensen, Vice President of External Affairs, holds the overall responsibility for the Academy. Bue explains that the Academy's focus spans across all the clinical disciplines of hearing and balance assessment as well as rehabilitation for all ages from newborns to elders.

- To ensure our Academy members are in touch with new developments in clinical needs, they are affiliated with leading educational and research institutes such as universities and various

steering groups of professional bodies.

## **Three-fold strategy**

The Interacoustics Academy is based on a three-fold strategy:

1. They provide a dedicated online learning environment, which is accessible to everyone at any time across the globe. The online learning environment includes webinars, e-learning courses, video tutorials, and related scientific materials to support the clinician in understanding the principles in clinical solutions. Within that platform are unique interactive elements such as a virtual clinic and an interactive FAQ called 'Ask an Expert'.

2. They provide local support by actively participating in and

presenting at international conferences and scientific meetings.

3. They provide education of other trainers and thus continuously develop the Interacoustics sales and distribution network across the globe, enabling the spread of expert knowledge. The goal here is for the Academy to act as a facilitator of knowledge and to ensure the availability of skill and knowhow locally.

## **Dedicated online learning environment**

One of the Academy's clinical trainers is Darren M. Whelan. When he is not traveling around the world to provide training, he is involved in creating the online environment available on the Interacoustics website.



- Our learning environment provides a 'what and how to' approach to diagnostic audiology and balance assessment. These resources can help clinicians gain new knowledge by encouraging the art of asking questions.

Furthermore, one can practice his or her knowledge in the virtual clinic, which provides realistic cases for professionals to 'test and diagnose', he says and continues:

- In a similar fashion, 'Ask an Expert' provides knowledge on subjects such as ABR, tympanometry, audiometry, fitting and balance. Here, one can find already asked questions or submit their own.

The Interacoustics Academy arranges live webinars, where it collaborates with key opinion leaders. The live webinars are also

recorded, and can be watched at any time.

For Bue Kristensen the need for training and development of new training concepts will continue:

- At Interacoustics, we have taken it upon ourselves to move the world of hearing and balance assessment forward by making the newest and most relevant science available in our clinical products. A central part for us is to ensure that these fine solutions get applied to provide maximum benefit out in the clinic. The Interacoustics Academy is doing exactly that by passionately walking this important extra mile of professional training!







“



Interacoustics' Titan is a super piece of equipment. It is modular and very powerful, and I am very impressed by how fast it performs DP measurements. Just a few seconds in each ear.

I'm very pleased with Interacoustics and its commitment to research and always searching for the new ways to improve their equipment.

*Marcelo Ribeiro de Toledo Piza, MD, MSS,  
Clínica Dr. Marcelo de Toledo Piza*



#### 1969: AD5

The first audiometer, AD5, was characterized by its brown wooden case, resemblant of Bang & Olufsen radios at the time. It measured 11 frequencies from 125-8000 Hz and included a manual and a pulsing mode. It was in fact a very well-equipped audiometer at the time.

# 50-year legacy



#### 1990: AD25

In the early 1990s, the metal case was still used for audiometers. Interacoustics introduced AD25 as a basic version of the AD27 with only pure tone audiometry and masking.



#### 1997: AD226

The audiometric blue line was introduced in the 1990s, featuring air and bone conduction threshold testing. It was also at this time that computer interfaces were made. Interacoustics went digital.



#### 2011: AD629

In the new millennium, Interacoustics introduced a fully PC-integrated audiometer, the AD629. This true hybrid features an extensive diagnostic test battery as well as a large adjustable color display. The AD629 is still on the market and its blackline design is still used in most products today.





#### 1976: AD17

In the 1970s, the brown wooden case was replaced by a green plastic case that was easy to manufacture. The AD17 diagnostic audiometer became a best-selling product due to its narrow band masking and Fowler and Stenger tests, combining new technology with old and reliable technology.



#### 1987: AD27

In the 1980s, a heavy metal case was added, making the audiometer more user-friendly. A liquid crystal display was added, so specialists were in a better position to interpret the results. The design of the AD27 paid attention to the front panel's layout, functions and programming.

#### 2019: AD528

Interacoustics launch an entirely new diagnostic audiometer with three standard tests and multiple specialized tests. It is made for traveling clinicians and start-ups who need a small and efficient audiometer with a short start-up time. The AD528 marks 'diagnostics made easy'.





# Made for great results

The modernistic and fully customized headquarters in Middelfart, Denmark, provides an impressive base from which Interacoustics continues to build on its strong foundations as a leading manufacturer.

I like to explore  
new technology  
and make it easily  
available to the users.

Lasse Kjærsgaard,  
Software Architect



**We are proud to have such fantastic facilities that enable us to host world-class seminars and events.**

Helle Nielsen,  
Event & Marketing  
Coordinator

**Being hearing impaired myself, it's very rewarding to work with new ABR and OAE solutions.**

Johannes Callø,  
Product Manager,  
ABR/OAE Team

**We can influence what an entire profession does worldwide. That's a big responsibility.**

Bue Kristensen,  
Vice President,  
External Affairs

# Science made smarter

## **Interacoustics is more than state-of-the-art solutions**

Our mission is as clear as it is demanding.  
We want to lead the way in audiology and  
balance by translating complexity into clarity:

- Challenges made into clear solutions
- Knowledge made practical
- Invisible hearing and balance conditions  
made tangible and treatable

As the industry leader, we combine our  
global knowledge and experience to create  
strong local setups that support specific  
market needs. We offer innovative and  
easy-to-use solutions that ease the lives of  
healthcare professionals.

We provide an attractive workplace for the  
industry's best and brightest, allowing us to  
set the standard for an entire industry. Not  
for the sake of science. But for the sake of  
enabling professionals to provide excellent  
treatment for their millions of patients across  
the globe.

It's simply science made smarter.

[Interacoustics.com](http://Interacoustics.com)

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