

EUHA 2021

An ear for the Future



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FOREWORD

From basic research to innovative products and services.

Dear Ladies and Gentlemen,
after a long year without face-to-face meetings, we are delighted to be able to share our experiences with you live again! We will be presenting exciting hands-on demos of our new products at our trade fair stand - including our very special highlight ACALES, a tool for determining hearing effort that provides excellent support for the counselling process. HörTech gGmbH will be presenting itself together with the Cluster of Excellence Hearing4all and Hörzentrum Oldenburg gGmbH as partners who are closely involved in the development process. Together, the Hörzentrum and HörTech are celebrating their 25th and 20th anniversaries respectively this year

anniversary, which you can also take part in online on 5 November.

While the first ideas and impulses are generated in the university's basic research, the translation and development of the products is carried out by HörTech gGmbH in cooperation with Hörzentrum Oldenburg gGmbH. Together they realise market-oriented implementations. We bundle our know-how as multidisciplinary and independent research institutions and develop products and services for the industry.

Feel free to contact us!

Sebastian Quirandt
CEO HörTech gGmbH & Hörzentrum Oldenburg gGmbH

HEARING FOR ALL

Hearing4all & HörTech gmbH: From basic research to medical products

The goal of the Cluster of Excellence „Hearing4all“ is literally „hearing for all“. By improving individualised hearing diagnostics and the corresponding provision of personal hearing aids, the scientists want to improve the quality of hearing. The aim is to decisively improve the communication situation of people who are affected.

The transfer from research to practice is of central importance in Hearing4all, because only in this way the vision of „Hearing for All“ can become reality. This important task is coordinated by the Translational Research Centre (TRC) based at HörTech gmbH. It supports scientists

in identifying results worthy of protection, mediates between the various stakeholders (scientists, committees and transfer offices of the universities) and supports them in drawing up contracts with industry.

The TRC develops structures that regulate the handling of IP and patents within the Cluster of Excellence. Furthermore, the TRC initiates industry-funded contract research projects that tie in with the results obtained in the Cluster of Excellence in order to further develop them in a product-specific manner.

This closely interlinked partnership led, among other things, to the development of the „Oldenburg Measurement Applications“, which we are pleased to present to you below.

OLDENBURG MEASUREMENT APPLICATIONS

Oldenburg measurement applications

The software „Oldenburg measurement applications“ was specially developed to carry out current and newly developed procedures in audiometry, such as sentence tests or loudness scaling, computer-controlled and precisely.

Years of use in research have resulted in a tool that enables both automated and reliable standard measurements in daily routine and, if required, offers extensive options for special diagnostics.

The Oldenburg measurement applications are available both as a medical product and for research in version 2.0. Currently, the following audiometers are supported by the medical product:

- » Acousticon ACAM5
- » Auritec AT900, AT1000, AT700
- » Auritec earbox/ear3.0
- » Gravenstein AC33/GA90
- » Interacoustics Affinity/Affinity Compact
- » Interacoustics Equinox
- » MAICO MA55
- » Otometrics MADSEN Astera
- » Otometrics AURICAL Aud
- » Siemens Unity2
- » Zeisberg CA450

Note: Older versions before 2.0 are no longer distributed. However, existing older licences can be extended.

OLDENBURG MEASUREMENT APPLICATIONS

The „Oldenburg measurement applications“ provide a home for a variety of test procedures (e.g. speech tests for adults and children or loudness scaling).















For speech tests, extensive configurations are available in the software, e.g. different noise levels, measurements with continuously presented noise or virtual acoustics for spatial measurements using headphones. The configuration of the measurement is user-friendly and any number of pre-configured measurements can be saved in individual measurement profiles for reuse. Many additional parameters can be configured in the advanced settings, such as the continuous noise with adjustable lead time.

Understanding speech is one of the most important tasks of the auditory system in everyday life. Therefore, it is important that the speech understanding during diagnostics, indication and hearing aid fitting will be addressed.

The goals of speech audiometry are manifold:

- Diagnostics in quiet and in noise
- Indication for supply of with hearing aids
- Evaluation of the success of the fitting
- Proof of the benefit of additional hearing aid features
- Demonstration of the benefit of a binaural fitting

In order to achieve these goals different procedures are needed. Which particular procedures these are depends on your desired application. The tests may be performed monaural and binaural via the headphones as well as via free field.

	Measurement of speech recognition threshold at fixed level (quiet and in noise)	Adaptive measurement of the speech recognition threshold in quiet	Adaptive Measurement of the speech recognition threshold in noise	Loudness scaling
	Diagnostics	Diagnostics	Diagnostics, hearing aid fitting	Diagnostics, hearing aid fitting
Children (also CI patients, profoundly deaf patients)	<div> OLDENBURGER KINDERREIMTEST Reference value for normal hearing: depending on performance level and age</div>	<div> OLDENBURGER KINDERSATZTEST Reference value for normal hearing: 13 dB to 22 dB (age-dependent)</div>	<div> OLDENBURGER KINDERSATZTEST Reference value for normal hearing: -6 dB to -7 dB (age-dependent)</div>	
Adults		<div>Reference value for normal hearing: 20 dB </div>	<div>Reference value for normal hearing: -6.2 dB S/N (GÖSA), -7.1 dB S/N (OLSA) </div>	<div>Reference value for normal hearing: Normal range </div>
CI patients and profoundly deaf patients		<div></div>	<div></div>	<div></div>

OLDENBURG MEASUREMENT APPLICATIONS

Oldenburg Children's Rhyme Test (OLKI) - Child-friendly speech audiometry with words and pictures.

The Oldenburg Children's Rhyme Test (OLKI) is an audiometric test to determine speech intelligibility in quiet and in noise at a fixed level. It is particularly suitable for children with normal and impaired hearing from the 1st to the 4th grade of primary school and is carried out as a closed rhyme test. For each presentation of a word, three pictures are shown from which the child has to choose the picture that matches the word heard. The presented signals differ only in one sound (e.g. German nouns: Beule – Eule – Keule). Due to the child-friendly colourful picture material, the OLKI has a high stimulating character. The OLKI can be used to determine the speech intelligibility in

percent for constant presentation levels or constant signal-to-noise ratios, which can be used to determine the discrimination function. The test is used, among other things, for the fitting of hearing aids and the adjustment of cochlea implants.

Advantages of the OLKI:

- Age-appropriate vocabulary
- Colourful picture material suitable for children
- Highly stimulating
- Measurement in quiet (recommended) and in noise possible

OLDENBURG MEASUREMENT APPLICATIONS

OLKISA

The OLKISA (Oldenburg Children's Sentence Test) is a simplified audiometric matrix test to determine the speech recognition threshold in quiet and in noise for children, persons with a cochlea implant and people with a low memory span. Simplified sentences of the Oldenburg Sentence Test are used as speech material. The sentences have the form: number word - adjective - noun with a random combination from an inventory of 21 words in total (e.g. „Three green shoes“). The design of the test prevents the sentences from being memorised, so OLKISA can be repeated as often as desired. For this reason, it is particularly well suited for recurring measurements when fitting hearing aids or adjusting cochlea implants.

Advantages of the OLKISA:

- Suitable for children, persons with a cochlea implant and people with a low memory span due to shortened, everyday sentences
- Can be repeated as often as desired
- High measurement accuracy
- Measurement in noise (recommended) and in quiet possible

Practical implementation

- 14 sentences

Measurement in noise

- Start level 0 dB S/N or higher
- (supra-threshold)
- Noise level 65 dB or higher (audible)

Measurement in quiet

- Start level 25 dB or higher
- (near-threshold)

Göttingen Sentence Test (GÖSA) - Speech audiometry with everyday sentences

The Göttingen Sentence Test (GÖSA) is an audiometric test for the determination of the speech recognition threshold in noise and in quiet. Everyday sentences are used as speech material, which are available in 10 equivalent test lists with 20 everyday sentences each. This test is particularly suitable for diagnostic purposes and hearing aid fitting, as the measurement can be started immediately without prior practice. It should be noted, however, that a test list that has already been used cannot be used again for a measurement with the same patient, since the everyday sentences presented are easy to remember and thus falsified results are possible.

With spatial presentations via loudspeakers, the GÖSA also provides spatial speech-noise situations from everyday life in order to prove the benefit of bilateral hearing aid fitting.

Advantages of the GÖSA:

- Use of everyday phrases
- Very high measurement accuracy
- Short measuring time
- No practice necessary
- Measurement possible in noise (recommended) and in quiet

Practical implementation:

- 20 or 30 sentences

Measurement in noise

- Start level 0 dB S/N or higher (supra-threshold)
- Noise level 65 dB or higher (audible)

Measurement in quiet

- Start level 25 dB or higher (near-threshold)

Oldenburg Sentence Test (OLSA) - Repeatable speech audiometry with complete sentences

The Oldenburg Sentence Test (OLSA) is an audiometric test to determine the speech recognition threshold in noise and in quiet. Sentences of the form name - verb - numeral - adjective - noun are used as speech material. The sequence of words is a random combination from an inventory of 50 words in total. The design of the test prevents the sentences from being memorised, so that the OLSA can be repeated as often as desired.

The OLSA is also suitable for people with severe hearing loss and cochlea implant users.

Before starting the OLSA measurements, a patient must first go through a short practice phase.

After that, any number of measurements can be carried out with the OLSA.

Advantages of OLSA:

- Use of whole sentences
- Very high measurement accuracy
- Can be repeated as often as required
- Suitable for people with severe hearing loss and cochlea implant users
- Measurement in noise (recommended) and in quiet possible

Practical implementation:

- 20 or 30 sentences

Measurement in noise

- Start level 0 dB S/N or higher (supra-threshold)
- Noise level 65 dB or higher (audible)

Measurement in quiet

- Start level 25 dB or higher (near-threshold)

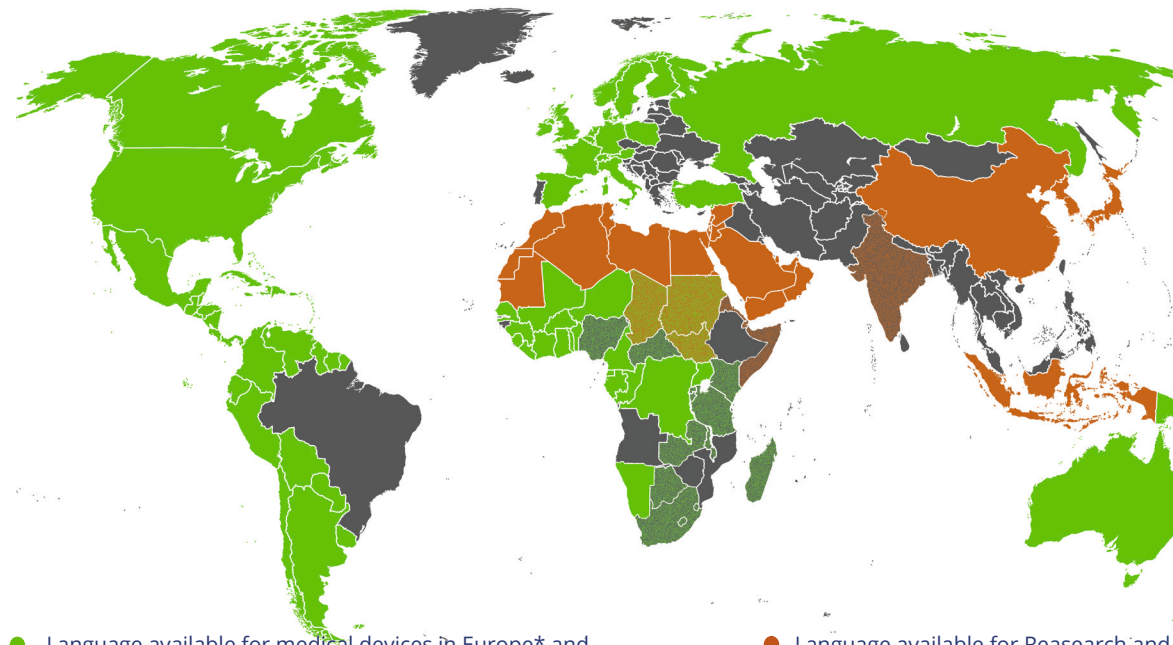
INTERNATIONAL MATRIX TESTS

Speech testing procedures for 60% of the world's population

The Oldenburg Sentence Test, a method from the family of the international matrix tests, has achieved wide recognition as a speech test method in noise for improved diagnostics and in the use of studies in the market of hearing technologies.

The advantages of the German matrix test, such as very high measurement accuracy of the speech recognition threshold, arbitrary repeatability, measurement in quiet and in noise (essential for situations relevant to everyday life) led us to esta-

blish this procedure on a broad international basis. Meanwhile, the matrix test is available in 20 different languages, covering 60% of the world's population. Further languages are in preparation. The matrix tests are designed in such a way that the test can be performed in the language of the patient or client even if the audiometrist does not speak this language. Thus, different language versions of the matrix tests can be used and are very useful when there are patients who speak different languages.



● Language available for medical devices in Europe* and for Research and Development

● Language available for Research and Development

*and additional in Switzerland, Arabian Peninsula, Turkey, currently no service partner in Spain and UK

An automated procedure enables an accurate result - across all language barriers. The use of procedures whose results are comparable with each other is also necessary in the context of international studies. For this reason, special care was taken in the development of the international matrix tests to ensure that the test procedures are highly comparable in the different languages.

Features:

- large language portfolio
- each test with its own noise
- comparable across languages
- good sensitivity and reliability
- repeatable as stimuli cannot be memorised
- matrix tests have a closed format: useful for automation
- test administrator does not necessarily need to speak the language in which patients are tested
- automatic, adaptive level control for measuring speech recognition thresholds
- measurement of speech recognition thresholds between 20% and 80% intelligibility possible
- high accuracy and comparability of measured values in different languages

- measurement with continuous noise possible
- measurement with response input by patient possible

Available for the following languages:

Medical device: English (US), English (UK), Finnish, French, German, Italian, Polish, Russian, Spanish, Turkish, Danish, Dutch, Swedish, Norwegian, Arabic, Hebrew

Research version: Chinese, Indonesian, Japanese, Korean

Simplified Matrix Test: German (OLKISA), Italian, Finnish and French

OLDENBURG MEASUREMENT APPLICATIONS SERVICES

Categorical loudness scaling (KLS) - psychoacoustic measurement method for recording the individual, subjective loudness perception.

Adaptive categorical loudness scaling (KLS or ACALOS) is used both in the diagnosis of hearing disorders and in the determination of fitting parameters for dynamic-compression hearing aids and cochlea implants. During loudness scaling, test signals of different levels are presented. The test person is asked to rate the subjectively perceived loudness of the signal on a predetermined categorical scale representing the units from not heard, very soft, soft, medium, loud, very loud to extremely loud.

The verbal scale is mapped to numerical

values between 0 not heard and 50 too loud and plotted as a function of the level of the test signal. Curves of equal loudness are then plotted against the level in an audiogram graphic, known as the auditory sensation field.

Advantages:

- subjective measurement experience for the diagnosis of hearing disorders
- Documentation of the recruitment phenomenon for differential diagnosis of sensorineural hearing loss
- Determination of fitting parameters for dynamic-compression hearing aids as well as for cochlea implants
- Checking the fitting success of hearing aids and cochlea implants

Consultation - Testing - Evidence

Hörzentrum Oldenburg gGmbH is your independent partner for a fast, user-centred assessment of the audiological and technical performance of your hearing systems. Our expertise includes hearing aids, cochlea implants, hearables, accessories, algorithms and fitting strategies. You can rely on absolute neutrality and confidentiality.

Consulting

We bring together science, patients, industry, clinics as well as hearing care professionals and audiologists. For 25 years, we have offered the highest audiological and technical expertise.

Testing

Standardised and innovative measurement methods are put together according to your needs. If necessary, we develop individual test procedures for a wide variety of care goals. The user target groups can be specifically selected from our test person database.

Evidence

We offer a rapid, user-centred assessment of the audiological and technical performance of your products. Our goal is to provide evidence-based results and scientifically proven statements (ISO 14155)..

MEASURING METHODS

Laboratory Efficacy



Intermediate virtual acoustics



Daily life Effectiveness



Reliability

Ecological validity

Ask for an offer!

Laboratory Effect

Standard laboratory methods

- Ear impressions, ear moulds
- Fitting software of all available manufacturers
- Coupler measurements
- Loudness scaling
- pure tone audiometry and
- Speech audiometry in quiet and background noise
- TEN Test

Advanced laboratory methods

- Listening effort scaling
- Preference assessment
- Localisation
- Speech audiometry via telephone/mobile phone

In-between virtual acoustics

Master Hearing Aid (MHA)

- Direct comparison (single-blind) of different hearing system algorithms without changing systems
- (Virtual) sound examples/everyday scenes
- (C-A-S= Ambisonics situations, TASCAR= higher order ambisonics)

Concurrent Matrix Test

- Measurement of effects of divided attention on speech perception in situations with multiple speakers (Heeren et al., DGA 2019)

Divided attention: Dual task speech intelligibility

- Competing primary and secondary task (Wagener et al., TIH 2018)



Daily life Effectiveness

Questionnaire procedures (e.g. SSQ, IOI-HA, QoL)

Everyday life tests

EMA (Ecological momentary assessment)

Short walk in real situation/ Guided walk

Remote tests / suitcase studies

Here you can see the video ▶



SUBJECT DATABASE

Targeted selection of Study participants



Our database of test persons comprises around 2200 test persons, 1500 subjects are in the age range above 65 years

Hearing ability

Normal hearing to hearing impaired

Care

Without hearing aid - hearing aid user - Cochlea implant users (ENT Clinic Oldenburg)

Detailed demographic information

Socio-economic status, affinity for technology, quality of life, multimedia use

Further test data

Demtect, vocabulary, OLSA, GÖSA

Select your study participants according to occasion.

Ask for your offer!

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ACALES

ACALES (Adaptive Categorical Listening Effort Scaling) is a measurement method for assessing subjective listening effort. In addition to a hearing system comparison, the measurement procedure enables a progress check of the hearing system fitting as well as a check of the acclimatisation to the hearing systems.

With ACALES, the hearing care professional can

- demonstrate the benefits of high-quality hearing systems.
- support the client in finding the optimal hearing system.

The ACALES measurement procedure makes it possible to measure the mental load or the listening effort that a person has to expend in order to understand speech in noise. This is an additional dimension to speech intelligibility. Measuring subjective listening effort is particularly useful when speech intelligibility measurements cannot

show differences between hearing instruments or when the maximum of 100% speech understanding has been reached.

Features

ACALES
mehr als Sprachverstehen

With the help of ACALES,

- the client evaluates listening situations relevant to everyday life, corresponding to a conversation in a near-quiet environment, as well as challenging listening situations, corresponding to a conversation in a noisy environment, in terms of perceived effort.

ACALES

- the subjective added value of comfort features, such as noise reduction algorithms or directional microphones, can be made tangible to the client.
- the acclimatisation to hearing instruments in terms of listening effort can be documented.
- the client can choose the hearing instrument that not only provides the best intelligibility, but also the least amount of hearing effort.
- the impact of hearing impairment on everyday life can be more easily explained also to family members.

ACALES makes possible

- a complement to clinical measurement procedures, such as speech recognition tests, allowing a holistic picture of the hearing performance to be considered.

- the evaluation of the hearing effort with a direct response of the patient via tablet or smartphone
- a flexible measurement set-up.

In order to start a new ACALES measurement, the measurement computer must have an online connection. However, measurements that have already been completed can be recalled on the computer without an online connection.

Further information at:

www.ACALES.de

Price:

- 90-day trial version free of charge

Annual rent per product key

Basic price

239.88 € / year

monthly payment possible

When ordering five licences:

Pay 4, get 1 free!

HSIM

Hearing loss simulator

With just a few clicks, relatives, classmates or work colleagues can understand the situation of hearing impaired people. By personally experiencing the consequences of hearing loss, the environment is involved in both the decision for hearing systems and their regular use and can have a supportive effect. Numerous studies prove the positive effect of an informed environment on successful hearing system fitting.

In the context of prevention work, the hearing loss simulator can also vividly demonstrate the consequences of hearing impairment, e.g. due to noise exposure in a professional context, and thus contribute to protective behaviour.

The hearing loss simulator is the tool to complete the counselling of hearing impaired educators, occupational physicians and hearing care professionals in their counselling environment.

The perfect tool for counselling and prevention

- Individual hearing losses can be quickly heard and visualised
- Success through the use of hearing systems can be experienced
- Many hearing situations can be selected
- More understanding in school or work environment
- Support from family members in the use of hearing instruments
- Promotion of preventive behaviour among young people and in the work environment

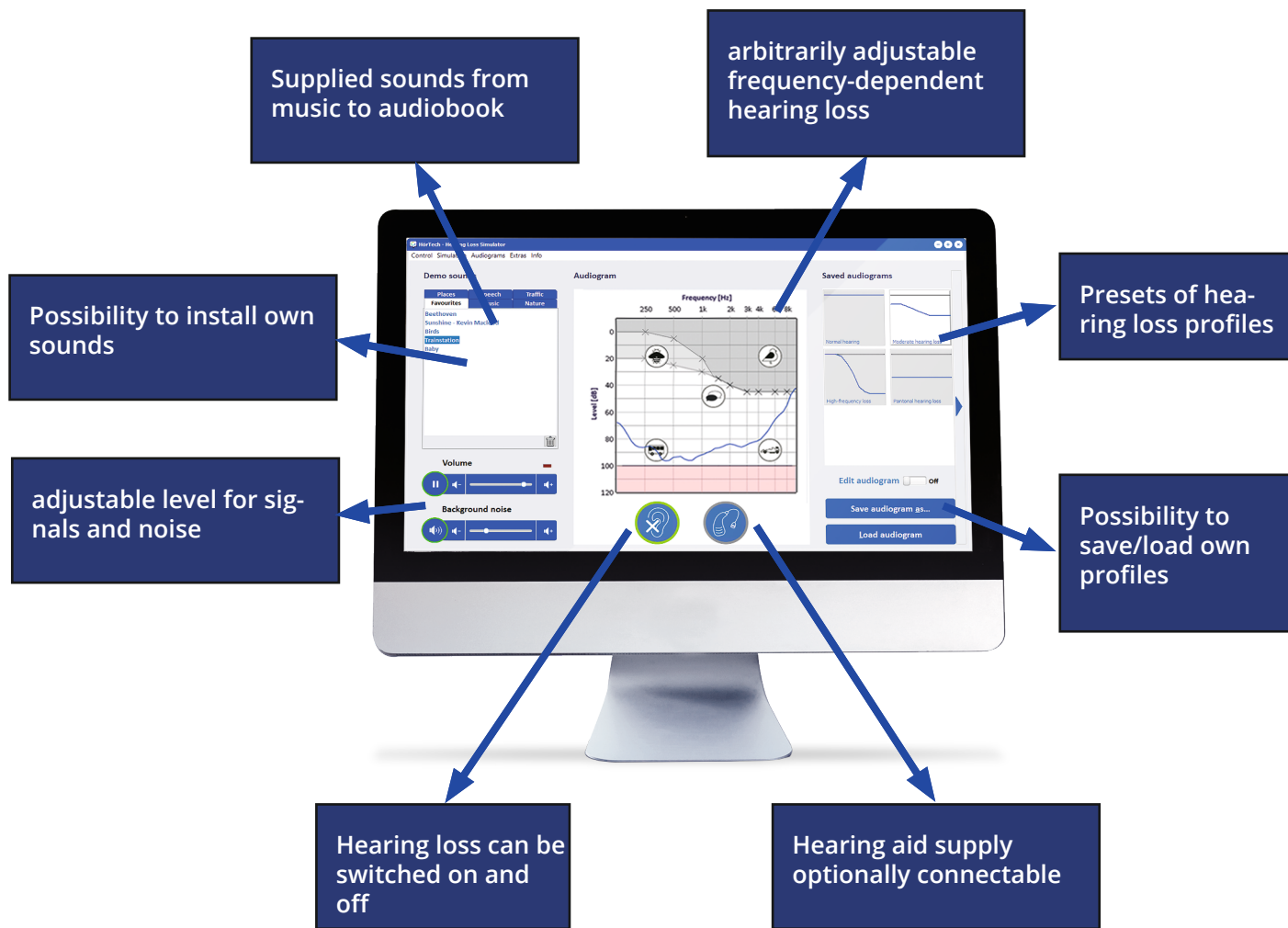
Hearing loss simulator

Basic price

149.00 €

Order and download at: www.hoertech.de

Test one month free of charge!



PRODUCT-CARDS

HEARING FOR ALL

The goal of the Cluster of Excellence „Hearing4all“ is literally „Hearing for All“. Learn more now and scan the QR code!

SERVICES

Consulting - Testing - Evidence
We have the right study design and expertise for your project.

OLDENBURG MEASUREMENT APPLICATIONS

The „Oldenburg Measurement Applications“ provide a home for a variety of test procedures.

INTERNATIONAL MATRIX TESTS

Sensitive - reliable - comparable.
The language test procedure for 60% of the world's population.

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FURTHER INFORMATION AT:



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