

## Welcome to the ear canal!

### Smart applications for industry and production right in your ear - presented by the Fraunhofer IDMT at Hannover Messe 2021 Digital Edition

**A small Hearable in the ear is intended to combine various technologies of the Fraunhofer Institute for Digital Media Technology IDMT in Oldenburg. In areas where hearing protection is worn anyway, it simultaneously offers an AI platform for intelligible communication, voice control and speech-based documentation, as well as acoustic monitoring for quality control. The institute will present its technologies at the digital Hannover Messe - in an expert talk on April 13 and in individual meetings.**

**Oldenburg, 30.03.2021.** The Hearable for the smart industrial workplace aims to improve collaboration between people and machines - a big task for a small in-ear device. On April 13, 2021, as part of the Fraunhofer-Gesellschaft's All-Day Stream at Hannover Messe Digital Edition, Dr. Jan Rennies-Hochmuth will take interested participants into his hearing lab. He is Head of Personalized Hearing Systems at the Fraunhofer IDMT, Division Hearing, Speech and Audio Technology in Oldenburg. The individual functionalities of the smart in-ear solution are presented with the help of application-related scenarios and

demonstrations. Visitors hear through the Hearable in the ear of an artificial head and can experience its added value for themselves.

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March 30, 2021 || Page 2 | 7

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### **Communication at the noise workplace**

A team meeting on the production floor, possibly directly at the machine, is not uncommon. In the Hearable for the smart industrial workplace, the institute's algorithms enable natural speech exchange in noisy environments. Microphones on and in the ear ensure optimal recording of audio and speech signals. »Subsequent optimization using machine learning methods also benefits people with hearing loss. In addition, the intelligent dampening of sounds and highlighting of speech protects hearing and voice and makes communication much easier«, Dr. Rennies-Hochmuth explains.

### **Voice control and documentation**

The AI-based developments mean that noisy environments are no longer an obstacle - not only for team communication but also with machines. Especially the internal microphones in the Hearable have great potential for voice control in industrial environments. The voice recordings in the ear canal in combination with the robust solutions for speech recognition developed in Oldenburg allow machines to be reliably controlled by voice commands even in noisy environments. This also applies to the voice-based documentation of process steps. It saves employees a lot of time, frees their hands for the essentials and can make the workplace safer.

### **Acoustic event detection**

Particularly important to the researchers in Oldenburg is the adaptability of the Hearable to individual customer requirements. In this way, functionalities could be combined with each other depending on the area of application. In the area

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of quality control, acoustic monitoring of machines and processes can also be integrated - for example, to document the clicking into place of mechanical connections. The fact that all functions can be used without a cloud connection means that they can be used even with the highest data protection and data security requirements. An integration into existing systems is also possible. At Hannover Messe, Dr. Rennies-Hochmuth will also provide insights into potential future applications, such as monitoring vital data at the hazard workplace.

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March 30, 2021 || Page 3 | 7

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**The Division Hearing, Speech and Audio Technology of the Fraunhofer IDMT looks forward to seeing you at #HM 2021 Digital Edition.**

Find out more in our practice-oriented stream event

»The Hearable for the smart industrial workplace«

on 13 April 2021, 18:30h

or arrange a meeting. Here you will find more information and the direct link to our exhibitor page:

[https://www.idmt.fraunhofer.de/en/events\\_and\\_exhibitions/HMI2021\\_AI\\_flatters\\_the\\_ear.html](https://www.idmt.fraunhofer.de/en/events_and_exhibitions/HMI2021_AI_flatters_the_ear.html)

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**Other topics of the Fraunhofer IDMT at the Hannover Messe 2021**  
**Digital Edition:**

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March 30, 2021 || Page 4 | 7

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*Acoustic quality assurance with AI*

Fraunhofer IDMT develops intelligent applications for acoustic monitoring, based on the latest AI technologies, for use in industrial quality assurance. In the exhibitor catalog of the virtual Hannover Messe, you will get insights into some conducted experiments in the field of acoustic event detection with AI. Based on feasibility studies with selected companies in industrial manufacturing, now the software IDMT-ISAAC is being developed, which provides quality assurance specialists with a tool that reliably supports them in testing procedures - even without own AI-knowledge.

Further information:

[https://www.idmt.fraunhofer.de/en/events\\_and\\_exhibitions/HMI2021\\_IDMT-ISAAC.html](https://www.idmt.fraunhofer.de/en/events_and_exhibitions/HMI2021_IDMT-ISAAC.html)

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**Hearing, Speech and Audio Technology HSA at Fraunhofer Institute for Digital Media Technology IDMT**

March 30, 2021 || Page 5 | 7

The objective of the Division Hearing, Speech and Audio Technology HSA of the Fraunhofer Institute for Digital Media Technology IDMT is to transfer scientific findings related to hearing perception and man-machine interaction into technological applications. Its applied research priorities are the enhancement of sound quality and speech intelligibility, personalized audio reproduction, acoustic speech recognition and event detection with the help of artificial intelligence. A further focus is the use of mobile neurotechnologies, which facilitate the recording of brain activity and utilization of the resulting data outside the laboratory too.

Application fields include consumer electronics, transport, the automotive sector, industrial production, security, telecommunications and healthcare. Through scientific partnerships, Fraunhofer IDMT-HSA has close links with the Carl von Ossietzky University of Oldenburg, Jade University and other institutions engaged in hearing research in Oldenburg as well as to the University of Applied Sciences Emden/Leer. Fraunhofer IDMT-HSA is a partner in the »Hearing4all« Cluster of Excellence.

The Division Hearing, Speech and Audio Technology HSA is funded in the program »Vorab« by the Lower Saxony Ministry of Science and Culture (MWK) and the Volkswagen Foundation for its further development.

**Further information is available at [www.idmt.fraunhofer.de/hsa](http://www.idmt.fraunhofer.de/hsa)**

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March 30, 2021 || Page 6 | 7

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**Captions:**

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March 30, 2021 || Page 7 | 7  
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Picture 1: Dr. Jan Rennies-Hochmuth, Head of Personalized Hearing Systems, welcomes you to the #HM 2021 Digital Edition stream from the hearing lab and demonstrates the functionalities of the Hearable for the smart industrial workplace.

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Picture 2: A Hearable as an AI platform for intelligible communication, voice control and voice documentation, and acoustic monitoring for quality control. For this purpose, the researchers at Fraunhofer IDMT work with the "Transparent Earpiece", which was developed in the »Hearing4all« Cluster of Excellence together with the company InEar.

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