

PRESS RELEASE

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See, feel, train – virtual surgical simulator to premiere at MEDICA

Erlangen/Düsseldorf, Germany: Researchers from the Fraunhofer Institute for Integrated Circuits IIS will be presenting the prototype of a virtual surgery trainer at MEDICA 2018 from November 12 to 15. “HandsOn.surgery” helps surgeons prepare for individual patient cases prior to surgery, and enables them to practice the surgery. Visitors can experience HandsOn.surgery live at the trade fair.

Both the surgical placement of implantable hearing aids and the surgical treatment of tumor diseases require milling the petrosal bone. Operations on the petrosal bone are both challenging and risky for any surgeon, as the facial nerve runs through the bone there, concealed, and the tight access offers a particularly limited surgical view.

Aspiring surgeons therefore need extensive training before they can routinely perform such difficult procedures. To date, training opportunities are limited to just a few specialized centers, making large-scale training impossible. The virtual surgery trainer supports physicians in their education and training and is expected to help minimize surgery time and the risk of injury.

3D monitors and VR headsets make virtual surgery an immersive experience

With HandsOn.surgery, surgeons can practice individual procedures in oral and maxillofacial surgery, orthopedics and other areas before the actual operation using the patient’s digital twin – at any time, as often as they want, and with no risk. The highly immersive HandsOn.surgery trainer enables doctors to see, feel and practice a virtual operation: because it uses real CT patient data, force feedback from the surgical instrument, intuitive touchscreen selection and a 3D monitor or VR headset, the trainer lets doctors experience the operation as if they were performing it live on the patient, including original operating room sounds.

Live tests at MEDICA in Hall 10, Booth G05

Visitors will have the opportunity to see and experience the technology for the first time at the MEDICA trade fair (Hall 10, Booth G05) in Düsseldorf from November 12 to 15, 2018.

Head of Corporate Communications

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FRAUNHOFER INSTITUTE FOR INTEGRATED CIRCUITS IIS

HandsOn.surgery was created in the “HaptiVisT” project, which is being funded by the German Federal Ministry of Education and Research (BMBF) (funding code 16SV7559) from June 1, 2016 to May 31, 2019. The aim of the project is to develop and evaluate a haptic-visual learning system for surgical procedures that can be used in both urban and rural hospitals to address the widespread shortage of medical specialists.

HaptiVisT is a joint project involving Fraunhofer IIS, szenaris GmbH (project coordinator), the Clinic and Polyclinic for Ear, Nose and Throat Medicine at the University of Leipzig Medical Center, the Clinic and Polyclinic for Trauma Surgery at University Hospital Regensburg, OTH Regensburg University (Ostbayerische Technische Hochschule Regensburg), SeeFront GmbH and Haption GmbH.

To learn more about the project, visit www.iis.fraunhofer.de/HandsOn.

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“HandsOn.surgery” trainer: virtual bones with risk structures and surgical bur (top right), haptic arm for virtual milling (bottom right).

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The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 69 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of 24,500, who work with an annual research budget totaling more than 2.3 billion euros.

The **Fraunhofer Institute for Integrated Circuits IIS** is one of the world's leading application-oriented research institutions for microelectronic and IT system solutions and services. It is the largest of all Fraunhofer Institutes. Research at Fraunhofer IIS revolves around two guiding topics: In the area of **"Audio and Media Technologies"**, the institute has been shaping the digitalization of media for more than 30 years now. Fraunhofer IIS was instrumental in the development of mp3 and AAC and played a significant role in the digitalization of the cinema. Current developments are opening up whole new sound worlds and are being used in virtual reality, automotive sound systems, mobile telephony, streaming and broadcasting.

In the context of **"cognitive sensor technologies"**, the institute researches technologies for sensor technology, data transmission technology, data analysis methods and the exploitation of data as part of data-driven services and their accompanying business models. This adds a cognitive component to the function of the conventional "smart" sensor.

970 employees conduct contract research for industry, the service sector and public authorities. Founded in 1985 in Erlangen, Fraunhofer IIS has now 14 locations in 11 cities: Erlangen (headquarters), Nuremberg, Fürth, Dresden, further in Bamberg, Waischenfeld, Coburg, Würzburg, Ilmenau, Deggendorf and Passau. The budget of 184 million euros is mainly financed by projects. 22 percent of the budget is subsidized by federal and state funds.

Detailed information on: www.iis.fraunhofer.de/en