

## HIGHLIGHT

### **FOUNDING CEREMONY OF THE FIRST SAXON CENTER FOR ROBOT-ASSISTED AND NAVIGATED SURGERY | September 29, 2021**

The founding ceremony of the Center for Robot-Assisted and Navigated Surgery, to which ICCAS is a founding member, took place on September 29 at the University of Leipzig Medical Center (UKL). The new center consolidates the expertise from twelve disciplines in the implementation of robotic, navigation and IT-supported systems in the operating room in order to meet the increasing demand for minimally invasive surgery. During the event, Andreas Melzer gave an introductory lecture and provided an overview of the beginning of the surgical robotic development in which he was involved.



Prof. Jens-Uwe Stolzenburg, Director of the UKL Clinic for Urology and leader of the new Center for Robot-Navigated Surgery, at a Da-Vinci surgical robot.

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## EVENTS

### **TRANSFORMATION OF THE CENTRAL GERMAN MINING REGION INTO A HIGH-TECH MEDICAL REGION | October 5, 2021**

As part of the work towards the establishment of a high-tech research center in the previous coal-mining area in Central Germany (Mitteldeutsches Revier), Thomas Neumuth held an invited lecture at the Representation Office of Saxony to the Federal Government in Berlin. In his talk, he highlighted the expected transformative social and economic impact on all areas of society in the region and beyond through the interplay of medicine and life sciences, mathematics, physics, chemistry, engineering and information technology fostered by the Center for Medicine Innovation (CMI). The concept of the CMI is the only finalist with a focus on medicine in the open-topic competition „Wissen schafft Perspektiven für die Region!“ organized by the Federal Ministry of Research and Education and the Free State of Saxony.

[Learn more about the CMI](#)

### **PREVENTION, REHABILITATION AND FOLLOW-UP CARE FOR STROKE PATIENTS | October 9, 2021**

The Stroke Alliance Saxony-Anhalt (SASA) held its 3rd Symposium in Halle/Saale to discuss current trends in prevention, rehabilitation and follow-up care for stroke patients. Galina Ivanova (Group Leader Biomedical Data Analysis) and Dominik Michalski (University of Leipzig Medical Center) held two presentations about the potential of digital health solutions with respect to stroke prevention and treatment. While pointing out both chances and challenges for patients and caretakers alike, the two speakers were also able to introduce their project PostStroke-Manager from both a medical and technological point of view.

[More about the project](#)

### **SIEMENS HEALTHINEERS MR-GUIDED INTERVENTIONS NETWORK | October 15, 2021**

Andreas Melzer was invited to join the Siemens Healthineers MR-Guided Interventions Network at the inauguration meeting in Erlangen (Germany). At the event, he presented his longstanding pioneering work in this field.

### **ANNUAL EMBC 2021: HSI TO DETECT COLORECTAL CANCER | November 1 – 5, 2021**

At the 43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '21), Marianne Maktabi revealed recent research results by our team working on Intraoperative Multimodal Imaging Techniques. She presented the potential of hyperspectral imaging (HSI) combined with deep machine-learning through artificial neural networks to detect colorectal cancer. In the process, machine-learning algorithms analyze physiological parameters obtained through HSI in a non-invasive way to detect and classify cancer tissue.

### **„FROM BENCH TO BEDSIDE“ AT THE ANNUAL MEDICA/COMPAMED 2021 November 15 – 18, 2021**

This year, MEDICA and COMPAMED took place in Düsseldorf while also being complemented by digital formats and on-demand streams. With a total of 610 speakers, the conference area of both events offered an extensive program. Thomas Neumuth gave a lecture titled "From Bench to Bedside - How to pave the way of future health technologies from research to patients", in which he explained how we can bridge the gap of future health technologies to reach the patient from the initial site of research.

## ULTRASOUND WORKSHOP AT THE WORLD CONGRESS OF ENDOSCOPIC SURGERY

November 24 – 27, 2021

The IFSES World Congress of Endoscopic Surgery in its 17th edition took place in Barcelona from November 24 to 27. The annual meeting this year was held also in conjunction with the 29th International Congress of the European Association for Endoscopic Surgery (EAES). Thus, the scientific program was shaped under the motto 'EAES goes global'. Andreas Melzer is founding member of the EAES Technology Committee and was involved in the congress as Director supervising the hands-on course on Ultrasound technology, which comprised tutorials on five different application settings.

## MRI-GUIDED FUS TO SENSITIZE PROSTATE CANCER CELLS FOR RADIOTHERAPY AT THE RSNA 2021 | November 28 – December 2, 2021

The annual meeting of the Radiological Society of North America (RSNA) was held November 28 to December 2 in Chicago as a hybrid event. More than 19,000 attendees registered for the conference, and another 4,000 participated virtually. The high-profile program included 2,000 scientific presentations, 1,500 educational exhibits and more than 300 educational courses. Cutting-edge radiology innovations from more than 500 exhibitors complemented the conference experience. As in previous years, ICCAS also presented its own research results in the field of radiology. Andreas Melzer reported on-site on the promising application of MRI-guided focused ultrasound to sensitize prostate cancer cells to radiotherapy.

## DIGITAL PATIENT TWINS AND MODEL-BASED MEDICINE AT THE ANNUAL CASUS WORKSHOP December 6-9, 2021

The Center for Advanced Systems Understanding (CASUS) – a newly established joint Polish–German research center situated in Görlitz, organized for the third time its Annual Workshop with this year's focus put on "Digital Twins of Complex Systems". In light of the rapid convergence between medicine, information management, and biomedical technology, the approach of model-based diagnostics and therapy based on digital patient twins is gaining increasing relevance. As part of the scientific program, Thomas Neumuth introduced the topic of model-based therapy to enable patient-specific personalized treatment and presented current smart and situation-adaptive medical technologies.

6-9 December 2021  
CASUS Annual Workshop  
online event  
streamed from  
Görlitz, Germany

Thomas Neumuth  
University of Leipzig

Digital patient twins and model-based medicine

CASUS  
CENTRE FOR ADVANCED SYSTEMS UNDERSTANDING

Partners: HZDR, TECHNISCHE UNIVERSITÄT DRESDEN, CBG, UFZ HELMHOLTZ Centre for Ultra-Peripheral Research, Universität Wroclaw, Leibniz Universität Hannover, and supported by the German State government and the German State Parliament.

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## RESEARCH & PROJECTS

### KICK-OFF TO A NEW RESEARCH PROJECT WITH FUNDING BY THE GERMAN CANCER AID

ICCAS is project partner within the PRO-RED study under the leadership of the Clinic and Polyclinic for Hematology, Cell Therapy and Hemostaseology and the Clinic and Polyclinic for Medical Psychology and Medical Sociology at the University of Leipzig Medical Center (UKL). The German Cancer Aid recently approved funding for the project for 463.421 €. Over the next three years, the focus of the research will be on individualized blood transfusion strategies for low-risk patients with myelodysplastic syndrome (MDS). The generated research data will be applied to the development of a quality-of-life-based transfusion model that will signal the need for a blood transfusion individually for each patient. At the end, the research team hopes to fill a long-standing gap towards establishing international standards for transfusion strategies in low-risk MDS patients.

[Press release \(German\)](#)



Kick-Off Meeting © UKL

## TEACHING

### TEACHING AT LEIPZIG UNIVERSITY AND HTWK LEIPZIG

The current winter semester we are offering courses for students of the University of Leipzig and the HTWK Leipzig, which provide an interdisciplinary view of the research area of computer-assisted medicine. Introductory courses on computer-assisted surgery (CAS) are targeting both medical students and students of computer sciences or related fields with strong practical seminars incorporated into the curriculum. For example, the training for computer scientists offers exercises in visualization, medical image processing, surgical workflows and surgical robotics. For medical professionals, the module holds application examples from different surgical disciplines. In addition, a course on project management is being offered at the HTWK.

## PUBLICATIONS

### CO-AUTORSHIP OF THE POSITION PAPER OF THE DGBMT IN VDE | October 2021

The Deutsche Gesellschaft der Biomedizinischen Technik im Verband der Elektrotechnik Elektronik und Informationstechnik e.V. (DGBMT in VDE) presented its current position paper on structural change in the biomedical sector through digitalization and artificial intelligence (AI). Andreas Melzer, as co-author, played a key role in shaping the

content of the new publication. His long-standing expertise fed into the paper primarily in relation to the ever-growing application fields of medical robotics and image-guided techniques.

[All publications](#)

## JOB OFFERS

Please find our vacancies at:

[Current vacancies](#)

## UPCOMING EVENTS

### **SAVE THE DATE – ICCAS STATUSSEMINAR** **March 10, 2022**

We cordially invite to our next public status seminar on March 10th 2022, when our group leaders will report on the achievements, activities and research results of their teams from the past 2021 in the respective fields: Computer-Assisted Image-Guided Interventions, Model-Based Medicine, Intraoperative Multimodal Imaging, and Biomedical Data Analysis.



### **SAVE THE DATE – "SHAPING THE FUTURE OF HEMATOLOGY" WILL TAKE PLACE AGAIN IN 2022 | November 11, 2022**

We are happy to announce that the event "Shaping the Future of Hematology" will have its second edition in November 2022. The event, whose first edition took place in October 2021, will be hosted by Uwe Platzbecker from the Clinic and Polyclinic for Hematology, Cell Therapy and Hemostaseology (University of Leipzig Medical Center) and Thomas Neumuth. The event focuses on the role of Artificial Intelligence (AI) on the way to precision medicine for hematology.

[Event page](#)



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## CERTIFICATION

### **ICCAS RECERTIFIED | Dezember 2021**

ICCAS was recertified under DIN EN ISO 13485:2016 in December 2021 for another three years within the scope of "research and development of medical device software". With the certificate renewal, we can reliably provide R&D services in accordance with MDR requirements to complement ongoing and new project cooperations with our partners.

Finally, we wish you a happy holiday season and a good and healthy start to 2022. We thank you all very much for your ongoing support! Stay safe and healthy!



## IMPRINT

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