EKFZ
Digital Health
24./25.9.2021 *INNODAYS*

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WLAN: VPN/WEB
Username: InnoDays2021@gast
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SCAN ME

WELCOME TO THE EKFZ | INNODAYS
24.|25. September 2021

„Digitalisation" has become a buzzword in recent years, and the same applies to healthcare. Whether is it robotic-assisted surgery or applications of artificial intelligence (AI) in cancer treatment, these examples show that the digital transformation of healthcare has gained new speed. Often highly innovative technical concepts are pushing their way into standard medical care. At the Else Kröner Fresenius Center (EKFZ) for Digital Health, a large number of these concepts have been promoted over the past two years. During the planning and research process, as well as through the acquisition of interdisciplinary third-party funding projects, a comprehensive network has emerged.

We would like to share this network with YOU! With the EKFZ | InnoDays taking place the next two days, we give you the opportunity to be part of that network and get in touch with our diverse contacts in the high-tech scene and innovators in the medical technology sector.

The event is planned as an interactive presentation event in which, in addition to keynote lectures by renowned speakers from science and industry, there will also be plenty of time for demonstrating innovative ideas and exchanging ideas. Therefore our Interdisciplinary Innovation Projects teams (see page 7) will pitch their research projects. During all breaks, they will present their ideas using their demonstrators and posters to illustrate their own work in an atmosphere similar to a trade fair and engage in conversations with stakeholders from science and industry.

We are looking forward to inspiring conversations and new ideas resulting from these two days.

Sabine Marschollek & Jochen Hampe

AGENDA

10:00h – 10:15h
OPENING
Michael Albrecht (CEO University Hospital Carl Gustav Carus Dresden)
Jochen Hampe (Scientific Speaker EKFZ)

10:15h – 11:00h
NEXT GENERATION OF MEDICAL AUTONOMOUS MICROROBOTS
Samuel Sánchez Ordóñez (ICREA Professor at the Institute for Bioengineering of Catalonia)

11:00h – 11:20h
EKFZ X TOOZ: CONTEXT-SENSITIVE DATA GLASSES
Kai Ströder (CEO, tooz technologies) | Nora Martens (EKFZ | MK1/UKD)

11:20h – 12:00h
EKFZ INNOVATION TEAMS
NGScopes | Endoscopic dissection tools based on smart materials
CRT | Proof-of-concept for quantitative measurement of capillary refilling time
CoBot | Colorectal robotic assistant for laparosopic surgery
HybridEcho | Integration of piezo and micromechanical ultrasound transducers with massively parallel MIMO signal analysis

12:00h – 13:00h
Lunch break & Get together

13:00h – 13:45h
HOW DIGITAL TECHNOLOGIES IN HEALTH CARE TRANSFORM THE NORMATIVE RELATION BETWEEN PHYSICIAN AND PATIENT
Luise Müller (Interim Professor for Practical Philosophy, University Hamburg)

13:45h – 14:00h
THINK OUTSIDE THE BOX: STREDIMED – DEVELOPMENT OF A STANDARDIZED TOOLBOX FOR THE ASSESSMENT OF THE STRESS-PHYSIOLOGICAL CONSEQUENCES OF DIGITALIZATION FOR MEDICAL PRACTITIONERS
Magdalena Wekenborg (EKFZ | TU Dresden, Faculty of Psychology)

14:00h – 14:40h
NETWORK PITCHES PART I – 240 SECONDS TO PITCH YOUR IDEA
AI in hematology | Jan Moritz Middeke (MK1/UKD)

Medical Design – Product Development and User Experience for Medical Devices | Sebastian Wolfram (WOLFRAM Designer und Ingenieure)

Ideas for joint research projects with VTG | Jürgen Weitz (VTG/UKD)

dresden|exists – what the startup service can do for you | Iris Steinebrunner (TUD)

Fraunhofer International High Performance Center: Additive Technologies in Medicine and Health | Robin Willner (Fraunhofer-IWS)

From Bench to Market: Hyperspeed with the TUDAG-Group | Jacques Rohayem (GWT)

Simul.ai – Simulated data for your medical AI. | Orell Garten (TUD)

Lensless Fiber Endoscopy for the Neurology - Brain Imaging and Flow Measurements | Jürgen Czarske (TUD)

PROMs and PREMs in the evaluation und implementation of digital health solutions – key to patient centredness!? | Madlen Scheibe (ZEGV/TUD)

14:40h – 15:15h
Coffee break | IIP Demo-Session

15:15h – 16:00h
REGULATION FOR MEDICAL SOFTWARE
Georg Heidenreich (Head of Healthcare IT Standards, Siemens Healthcare GmbH)

16:00h – 16:30h	**EKFZ INNOVATION TEAMS** ImPressing | Increasing the precision of patient positioning in radiotherapy using positioning aids MOVERAD | Radar Technology for a Static Diagnostic Tool and for Functional Assessment of Joint Motion Enhanced Catheters | Catheter with enhanced functionalities
16:30h – 17:00h	Coffee break | IIP Demo-Session
17:00h – 18:00h	**FOR EKFZ MEMBERS: MITGLIEDERVERSAMMLUNG (LECTURE HALL 1)** **FOR GUESTS: IIP DEMO SESSION IN THE LOBBY**
18:30h	EKFZ InnoNight

SATURDAY, 25TH SEPTEMBER 2021

10:00h – 10:50h	**ARTIFICIAL INTELLIGENCE IN PERSONALIZED ONCOLOGY** Jakob Nikolas Kather (Junior Professor, University Hospital RWTH Aachen)
10:50h – 11:30h	**EKFZ INNOVATION TEAMS** ProteoSens | Miniature proteometric sensor for label free cytokine identification and quantification VirChip | Point-of-Care/Need Isothermal RNA/DNA Detection Aneurysms | Patient-specific devices for endovascular treatment of intracranial aneurysms IntelliLung | Intelligent lung support system for acute respiratory failure
11:30h – 12:00h	**NETWORK PITCHES PART II – 240 SECONDS TO PITCH YOUR IDEA** Organic Electronics Saxony I Jonas Jung (OES) The wireless patient | Nora Martens (EKFZ MK1/UKD) Virtual Reality for Therapy | Matthew McGinity (TUD) tbd | Hagen Malberg (TUD) 3D self-assembly – a modern tool to manufacture bio- and microelectronics | Daniil Karnaushenko (Leibniz-IFW) Innovative polymer materials for medial applications | Andreas Leuteritz (Leibniz-IPF)
12:00h – 12:45h	Snack break | IIP Demo-Session
12:45h – 13:30h	**LINKING ELECTRONICS AND BIOLOGICAL SYSTEMS** Carsten Werner (Chair of Biofunctional Polymer Materials, Leibniz-Institut für Polymerforschung Dresden e.V., Max Bergmann Center of Biomaterials, Technische Universität Dresden, Center for Regenerative Therapies Dresden)
13:30h – 13:50h	**EKFZ X ZEISS: THE ZEISS INNOVATION HUB DRESDEN – A MODEL FOR ACADEMIA/ INDUSTRY EXPLORATION** Kai Wicker (Head of the ZEISS Innovation Hub Dresden)
13:50h – 14:30h	**EKFZ INNOVATION TEAMS** TransplaBit | Holistic digitalization of a minimal invasive and high precise autotransplantation therapy for the treatment of cleft and lip palate Oralsens | Adaption and further development of higly sensitive sensor technology for evaluation of biochemical and metabolic processes in the oral cavity PITROS | Pressure monitoring In the Tympanic cavity using Resorbable Organic Sensors Alert | Clinical application of an epileptic seizure warning system

KEYNOTE SPEAKERS

DR. GEORG HEIDENREICH

Dr. Georg Heidenreich works at Siemens Healthineers in Erlangen as Director Health IT Standards. In this function, he chairs the committees DKE 811.3 „Electrical safety of networked medical devices", DIN NAMed 7/2 Med. Informatics / „Interoperability", the ZVEI Focus Group Electromedicine /"Cybersecurity", the Joint Work Group 7 between IEC SC62A and ISO TC 215 „Health Informatics", and the project group IEC/ISO 81001-5-1 „Security - Activities in the product lifecycle". He received a diploma in computer science from the University of Erlangen-Nuremberg and a PhD in engineering.

PROF. DR. JAKOB KATHER

Prof. Dr. Jakob Kather is a physician/scientist and assistant professor at RWTH Aachen University (Germany) with additional affiliations at the NCT Heidelberg (Germany) and the University of Leeds (UK). His research is focused on applications of artificial intelligence (AI) in cancer, in particular on predictive biomarkers for targeted treatment and immunotherapy. His clinical duties include Gastrointestinal Oncology, Gastroenterology and Medical Intensive Care. In 2020, Kather recieved the renowned Theodor Frerichs Prize as well as the Heinz Maier-Leibnitz Award this year.
@jnkath

DR. LUISE MÜLLER

Luise Müller is interim professor at the University of Hamburg where she teaches practical philosophy and ethics. She is also a non-clinical principal investigator in the EKFZ-funded project DIGI-PPR, and worked as a research associate in political science at TU Dresden before joining Hamburg in 2021. She studied political science and theory in Berlin, London and New York, and received her doctorate in 2016 from Freie Universität Berlin. Her research focuses on moral and political philosophy, artificial intelligence and digital technologies, animal ethics, and global justice.
@luise_mlr

KEYNOTE SPEAKERS

PROF. DR. SAMUEL SANCHEZ ORDONEZ

Prof. Dr. Samuel Sanchez is ICREA Research Professor, Group Leader and Deputy Director at the Institute for Bioengineering of Catalonia. Before that, he worked at the Max Planck Institute for Intelligent Systems Stuttgart, at the Institute for Integrative Nanosciences at IFW Dresden, Germany, and at MANA-NIMS in Japan. He received several awards: MIT TR35 Top Innovator Under 35 Spain 2014, Guinness World Records in 2010 and 2017, the Princess of Girona Scientific Award 2015 and the National Research Award for Young Talent 2016 by the Catalan Research Foundation. He received the ERC-StG2013, two ERC-PoC2016 and 2017 and the ERC-CoG2019.
@SamuelNanobots

DR. KAI JENS STRÖDER

Dr. Kai Jens Ströder has held various management positions within the ZEISS Group since joining the company in 2009. Among other projects, he accompanied the founding of an internal startup in the area of Ophthalmic Devices and has been responsible for activities in the field of augmented reality and data glasses in the ZEISS Group since 2014. He transferred the „ZEISS Smart Optics" startup founded in 2015 to the joint venture „tooz technologies" initiated together with Deutsche Telekom. The Aalen-based team develops technologies and production processes for complete smart glasses solutions geared toward usage in the industrial (B2B) as well as the consumer sector. By the end of 2021, tooz aims to launch its first pair of smart glasses on the market. @tooztech

PROF. DR. CARSTEN WERNER

Prof. Dr. Carsten Werner is professor for biofunctional polymer materials at the TU Dresden Center for Regenerative Therapies, directs the biomaterials program at the Leibniz Institute of Polymer Research Dresden (within the Max Bergmann Center of Biomaterials), and holds an adjunct faculty position at the Institute of Biomaterials and Biomedical Engineering, University of Toronto, Canada. His research aims at recapitulating functionalities of living matter in engineered polymer materials and includes studies on electrosurface phenomena, hemocompatible interfaces, cell-instructive materials platforms for regenerative therapies and tissue models, and biomimicry approaches to surface engineering.
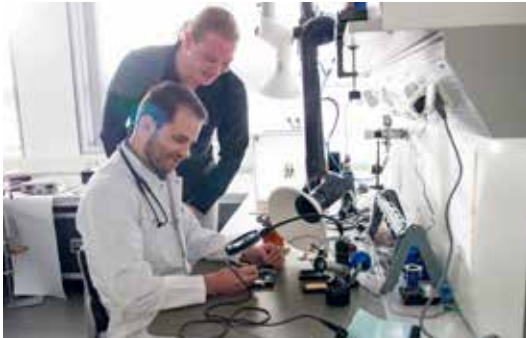
DEMO SESSION LOCATION MAP

LOBBY
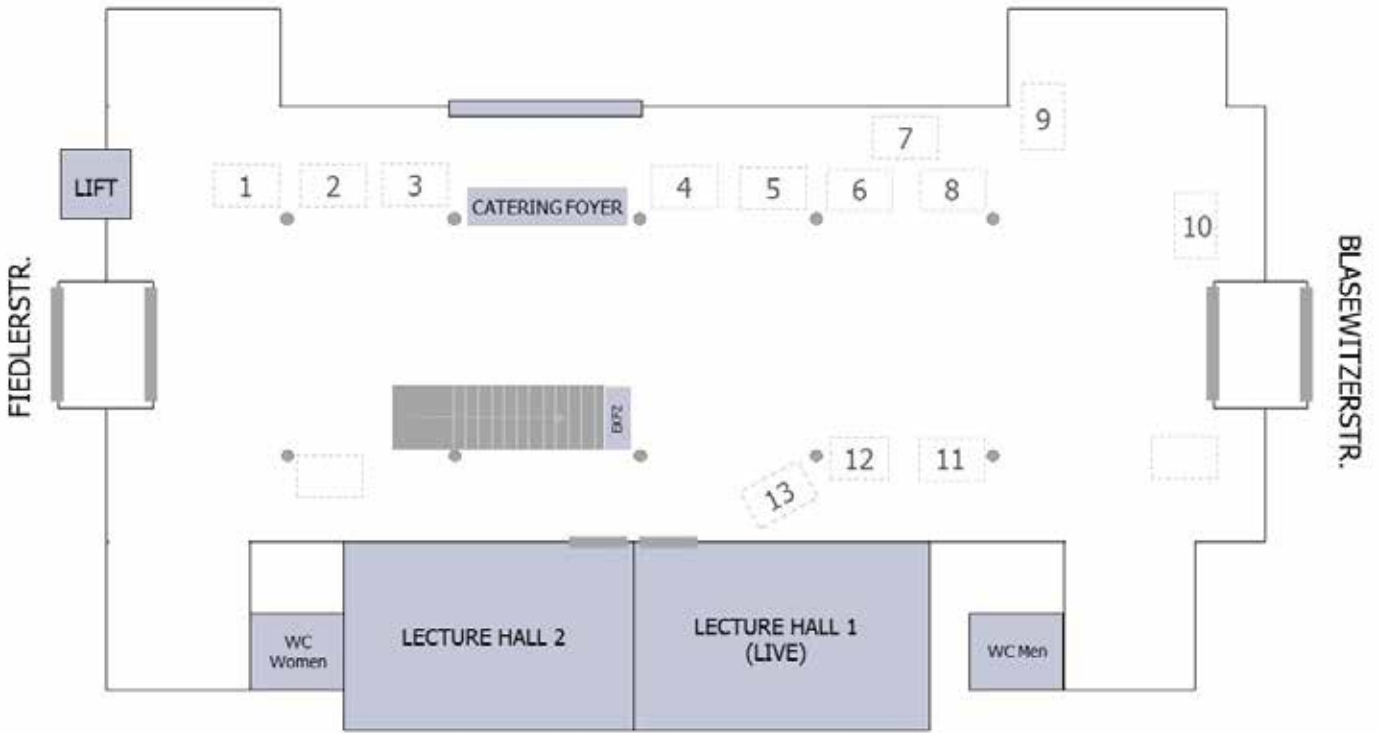
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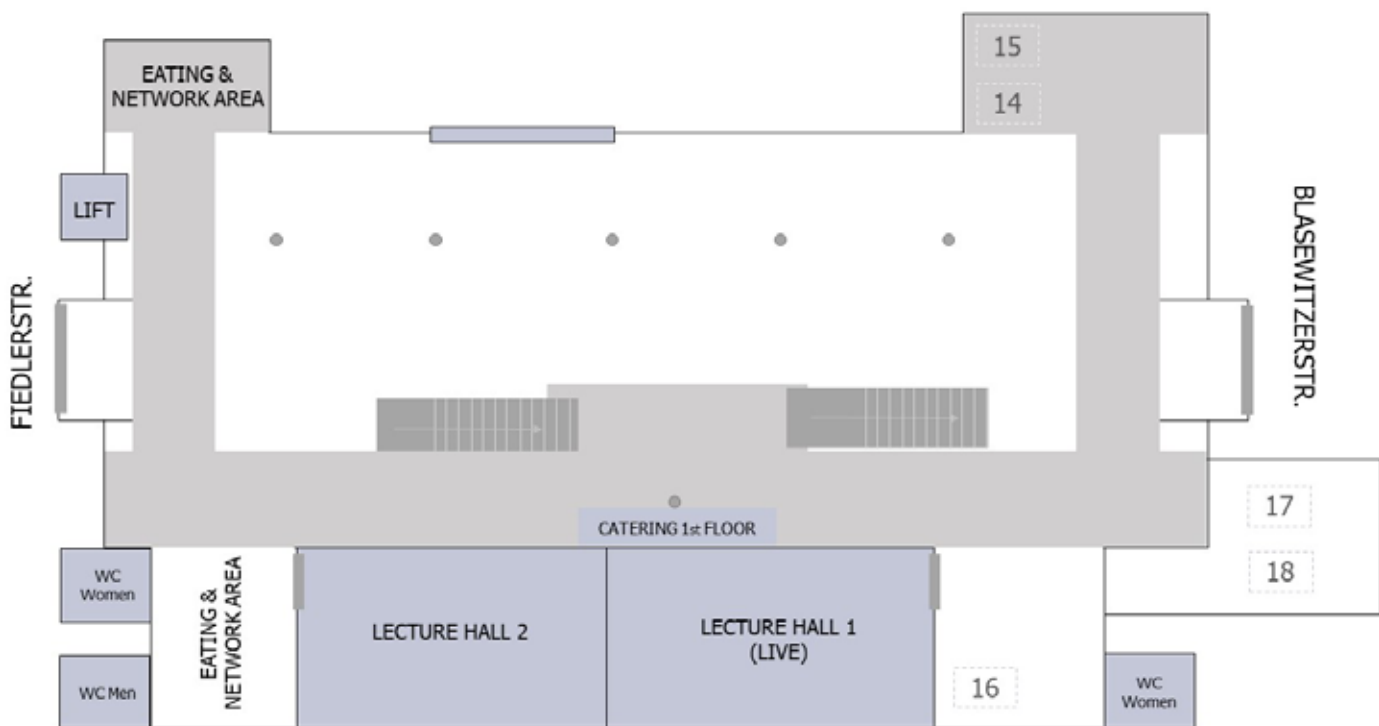
INNOVATION TEAMS

NGSCOPES

The aim of NGScopes is to go the pilot steps for next-generation, micro-robotic endoscopic tools based on smart materials. Such endoscopic tools will offer several advantages like integration in cyber-medical systems, a much wider movement range, component miniaturization for precise dissections and non-expensive disposable devices.

BOOTH 13

CRT

CRT constructs a clinically applicable prototype for the quantitative measurement of the capillary refilling time with minimization of the individual examiner-depending factors to make the results of the measurement more reliable and more comparable (intra- and inter-individually).

BOOTH 11

PITROS

The aim of PITROS is to develop a novel pressure sensor for the middle ear that enables continuous postoperative measurements without the need for further surgery after a successful recovery. This is achieved with ultra-thin, biocompatible organic electronic components on resorbable polymer substrates.

BOOTH 3

MOVERAD

MOVERAD develops and pre-clinical tests a microwave joint imaging system. The system will be capable of imaging and assessing motion and different joint configurations. The system will be validated in a standardized bio-mechanical test set-up.
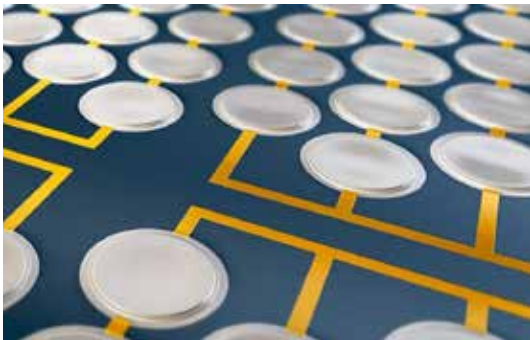
BOOTH 5

DEMONSTRATION TEAMS

COBOT

CoBot aims to establish a clinically applicable surgical guidance system for robot-assisted TME. Besides an intraoperative visualization of the correct surgical dissection plane and tissue types, envisioned assistance functions include an automated optimization of the laparoscopic view and intraoperative removal of debris such as blood and smoke.

BOOTH 17

HYBRID ECHO

HybridEcho develops a hybrid ultrasound imaging system containing piezo- and micromechanical ultrasound transducer for high resolution imaging with a massively MIMO for an improved analysis.

BOOTH 18

ENHANCED CATHETERS

The project Enhanced Catheters aims at developing smart sensors, placed on clinically used indwelling catheters to provide real-time in situ monitoring of essential laboratory parameters. This approach will enable individualized therapy guidance, improving quality of care, patient safety and outcome in critically ill patients.

BOOTH 1

ANEURYSMS

Aneurysms develops a complete process chain for designing and manufacturing patient-specific devices for the treatment of intracranial aneurysms.

BOOTH 7

DEMONSTRATION TEAMS

VIRCHIP

The aim of VirChip is to develop a lab-on-a-chip device for point-of-care applications based on state-of-the-art isothermal DNA amplification and detection technology. The device is fully integrated with commercially available "smart" portable electronics for detection and validation of viral and bacterial pathogens.

BOOTH 14

TRANSPLABIT

TranplaBit aims to improve the healing process and the outcome of bone grafting in cleft patients by supporting the surgeon with data driven decision taking methods. We want to demonstrate how to adjust the processes and tools – supplying the systems used with sensors and smart controls – to make them accessible for methods as they are used in modern cutting edge industrial technology (Industry 4.0).

BOOTH 12

INTELLILUNG

IntelliLung develops and implements a wireless and artificial intelligence-based system for mechanical ventilation of endotracheally intubated patients that is capable of guiding MV within safer therapy corridors for longer periods in an attempt to reduce ventilator induced lung injury.

BOOTH 9

ALERT

ALERT designs and implements implantable closed-loop devices that continuously monitor the brain activity by electroencephalography (EEG) and analyzes the recorded data in real-time, in order to identify an upcoming seizure.

BOOTH 10

DEMONSTRATION TEAMS

D2EAR

D2EAR aims at enabling novel digital diagnostics of the middle ear by combining non-invasive optical imaging technology with machine-learning-based image analysis for the immediate and direct examinations of the human organ of hearing, providing the 3D functional assessment of the eardrum and ossicles.

BOOTH 8

PROTEOSENS

In this project we intend to mature ultra-compact and sensitive microfluidic EIS sensors prepared at wafer-scale with shapeable materials and self-assembly technologies. The proposed sensor will be suitable for both, the functionalization and the label-free detection of small volume samples.

BOOTH 2

KTEXPAND

This project will address the issue of antibody mediated rejection by supporting the clinician with additional information about the donor specific immune response of the recipient. We are going to demonstrate that novel additional cell based in vitro tests can gain further information that will help to estimate and increase the survival of the transplant, virtually bedside.

BOOTH 15

IMPRESSING
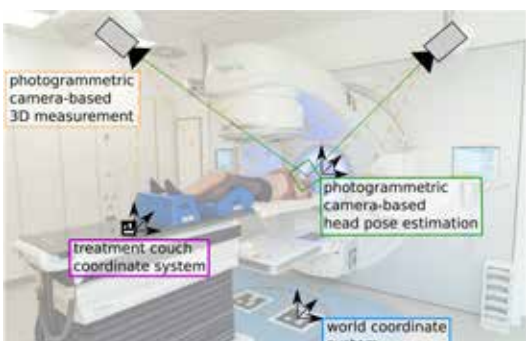
This project aims at introducing wireless positioning aids based on photogrammetric and ultra-wideband techniques in the field of radiotherapy in order to increase efficiency and precision of patient positioning and to monitor possible positioning changes during the course of a treatment session.

BOOTH 6

# DEMONSTRATION TEAMS

ORALSENS

The aim of the project is the implementation of highly sensitive miniaturized sensors in the oral cavity, to allow continuous monitoring of the organic and inorganic molecules in a kinetic manner. Parameters such as glucose, lactate, and pH will be considered as target for long-term measurements.

BOOTH 4

INDUSTRY COOPERATIONS

EKFZ X ZEISS INNOVATION HUB
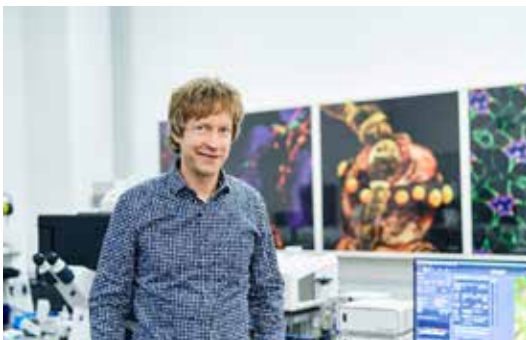
This project will develop and implement a wireless and artificial intelligence-based system for mechanical ventilation of endotracheally intubated patients that is capable of guiding mechanical ventilation within safe therapeutic corridors for extended periods of time to reduce ventilator-induced lung injury.

EKFZ X TOOZ TECHNOLOGIES

The project aims to develop the technological basis for a mobile information and communication system based on tooz smart glasses. The aim is to provide mobile and digital access to relevant information at the right time and in the right place, thus providing the best possible support for hospital staff in their daily clinical work. This can increase the quality of care and patient safety, as well as relieve the hospital staff.

BOOTH 16

BRAINSTORM SPACE

BRAINSTORM SPACE

Get in touch.

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