

# HealthCare Democratization through Biomedical Engineering Disruptions and Purpose Oriented Innovation Design

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## **Keynote Presentation – International Seminar on Research and Innovation in Engineering and Technology (ISRIET) – Dec. 14th**

This presentation will address the need for disruptions in lieu of the upcoming changes, challenges, and opportunities of global healthcare. The 4 P's (Predict, Prevent, Personalize, Participate) in combination with the quadruple aim of future health related innovations (better Outcomes, dramatically reduced cost, improved patient and clinician experience) will drive biomedical engineering developments.

The current way of delivering services and products will be disrupted with new offerings and new business models. Exponential technologies - and the characteristic 6D's effecting the future - will be presented and their impact on development, as well as on clinical as well as biomedical engineering education of the future. One of the D's is DEMOCRATIZATION, which ensures that access to novel technologies and services will be available to everyone on this planet.

Prof. Friebe will also talk about the need for an education change for engineers that focuses on PURPOSE ORIENTED INNOVATION DESIGN starting with a deep understanding of the problem space and proposes a future oriented curriculum.

Michael H. Friebe "Healthcare in need of innovation: exponential technology and biomedical entrepreneurship as solution providers (Keynote Paper)", Proc. SPIE 11315, Medical Imaging 2020: Image-Guided Procedures, Robotic Interventions, and Modeling; <https://doi.org/10.1117/12.2556776>

### **Prof. Michael Friebe, PhD**

Michael is a German citizen with expertise in diagnostic imaging + image guided therapies + exponential technologies in medicine, as founder/innovator/CEO/investor, and research scientist. After a BSc. in electrical engineering he spend 5 years in San Francisco as R&D Engineer at a MRI and Ultrasound device manufacturer. In that time he graduated with a MSc. in Technology Management from Golden Gate University, San Francisco and back in Germany obtained his PhD in Medical Physics from the University of Witten.

Dr. Friebe currently is a research fellow of TUM in Munich, an adjunct professor at the Queensland University of Technology in Brisbane, and a professor of HealthTec Innovation at the medical faculty of Otto-von-Guericke-University in Magdeburg, Germany.

He is a listed inventor of more than 100 patents, author of >300 scientific contributions, has started well over 30 medical technology start-ups, is a board member of four medical technology startup companies, and an investment partner of a MedTec investment-fund.

He is an IEEE Senior Member and was from 2016-2018 Distinguished Lecturer of the EMBS teaching innovation generation and future oriented MedTec translation/entrepreneurship from bench to bedside especially in combination with exponential technologies and by employing interdisciplinary approaches within an ethical and patient-benefit centered environment.

