

Challenges in Medical Device Research and Development – 20 Years of Work and Cooperation in BioTechLab

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Abstract

Medical device development has always been a complex and challenging field. It requires navigating the intricacies of patient/doctor-centered design, adhering to stringent regulatory environments, and delivering high-quality products that meet certification standards and market demands. Over the past 20 years, I have had the privilege of initiating and leading numerous medical device development projects at BioTech Lab (Obuda University), spanning a wide range of innovations from implants and sensor hardware to telemedicine and digital pathology software solutions. Some of these projects were closely aligned with our business goals, featuring highly confidential prototypes and complex objectives, while others were developed in collaboration with broad, open communities of developers and testers. In this talk, I will share some of our key success stories (including DrHealth, DAQit, PathoVR®, and Massventil®), highlighting both the technical and strategic aspects of their development. I will provide insights into the challenges we faced and the lessons we learned throughout the R&D process, from various perspectives such as computer science, material sciences, medical sciences, marketing, and business strategy. These achievements were the result of effective collaboration between highly skilled professionals, sharp minded students, and external innovative partner companies, all contributing their expertise to drive progress and deliver impactful solutions in the medical device sector.

Keywords

Medical device development, digital pathology, telemedicine, medical ventilator, medical software, medical hardware

Short Bio



Dr. habil. Miklos KOZLOVSZKY is a Professor at Obuda University (Hungary), head of the BioTech Research Center (BTRC), besides that he is working as Research Fellow at the Laboratory of Parallel and Distributed Systems in HUN-REN Institute for Computer Science and Control. He received his habilitation from Obuda University in 2017, his PhD from the Budapest University of Technology and Economics (Hungary) in 2009, and his MSc in Computer Science from the University of Szeged (Hungary) in 2001.

He is a part-time lecturer at Budapest University of Technology and Economics (Hungary) since 2005. He is Honorary Professor, at Semmelweis University (Hungary) since 2021 and invited lecturer at National University of the Litoral (Santa Fe, Argentina) since 2017. Before that, he was working: as researcher in the Bioinformatics Group at IMP /Research Institute of Molecular Pathology/ (Austria), at CERN /European Organization for Nuclear Research/ (Switzerland), and as team leader at Vodafone Hungary. During his last 25+ years he was involved in many national and international, EU FP6, FP7 (SHIWA, HP-SEE, SEE-GRID-SCI, EGEE, EGI, ...), H2020 (EurEyeCase, Piurtus) and Horizon EU projects at various positions (leader, deputy project leader, WP leader, engineer, etc.). He has 2 patents and he is author and co-author of 260+ research articles in peer-reviewed journals and books.