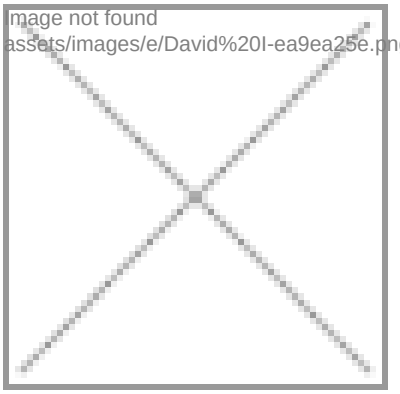
Ultrasound guided intervention based on hybrid image information

HOST INSTITUTION. Medical University of Vienna (MUW)

The Medical University of Vienna was founded in 2006. With 8,000 students it is today the largest medical training facility in the German-speaking area. The MUW is organized into 27 university departments, 3 clinical institutes, 12 medical-theoretical centres and numerous highly-specialized laboratories. As such, it is also one of the most prominent research institutions in the field of biomedicine in Europe. Affiliation of the ESR is with the Quantitative Imaging and Medical Physics (QIMP) group, which is part of the Center of Medical Physics and Biomedical Engineering (CMPBME) at the MUW. The CMPBME is a multi-disciplinary research centre with close collaborations with the medical and basic science faculties. The main objectives of the CMPBME include the development of applied physics methodology and biomedical engineering for clinical applications. The QIMP group brings together physicists, computer scientists and engineers in an effort to establish and validate clinical and research protocols using quantitative hybrid imaging technologies, such as PET/CT, PET/MRI and SPECT/CT.



DESCRIPTION OF THE PROJECT (ESR14 - David Iommi)

The ESR will develop a system that enables fully-automatic real-time image fusion between PET/MR images and trans-rectal ultrasound (US). For this purpose, additional abdominal 3D-US imaging shall be linked to pre-operative PET/MR and the real-time US imaging. The development of the image guidance system will include 3D-US calibration, US prostate segmentation and 3D-3D US-US registration. The system will be evaluated by means of a phantom to be designed as well as in a patient feasibility study at the medical university.