

Press release

## **Successful HSM2 project Safer operations thanks to 3D planning and surgical navigation**

**Zurich, 22 August 2019 – Balgrist University Hospital and Balgrist Campus complete their HSM2 project very successfully. In the project, clinical and campus have significantly advanced and further developed computer-assisted patient-specific 3D surgical planning. The methods enable novel surgical treatment options, provide greater patient safety, and improve outcome quality.**

The HSM2 project focused on the expansion of 3D surgical planning methods. The new shoulder model developed by the researchers as part of the project, can be considered as one of the most comprehensive computer models for simulating patient-specific motions or bone and soft tissues pathologies. It includes three joints and 23 muscle components, including muscle fibres. In addition, the researchers were able to develop new methods for 3D planning and surgical navigation of tumour surgeries.

Great advances were also made in the surgical navigation of bone pathologies. Computer models combined with 3D printing allow highly accurate surgical planning tailored to the patient. The navigation system used is based on 3D-printed instruments that enable the surgeon to perform cutting and drilling highly accurate within millimeter accuracy. The original technology was developed in very close cooperation between the CARD research team and the Balgrist CARD AG, a Balgrist startup (CARD = computer assisted research and development). Balgrist University Hospital has supported the development through HSM2 by greatly expanding and validating the clinical application of 3D planning and surgical navigation. Clinical studies have shown that patients can be operated on more precisely, faster, and safer using these methods.

### **Excellent cooperation**

PD Dr. sc. Philipp FÜRnstahl led the project together with Prof. Dr. med. Mazda Farshad and Prof. Dr. med. Christian Gerber. “The project is of high importance for the safety of our patients. Thanks to 3D planning and computer-assisted navigation, we can achieve significantly better surgical outcomes. The HSM2 project has enabled us to take giant strides in translating these methods in the clinics in the shortest possible time.” Several dedicated research teams have contributed to the success of the project as well as the excellent cooperation between the university hospitals, University of Zurich, the ETH Zurich, Balgrist Campus, and the industry.

The researchers have achieved all the aims of the project and published 33 scientific publications.

### **Methods permanently established**

Balgrist University Hospital and Balgrist Campus have laid the groundwork for the methods from which patients will gain sustained benefit. The CARD research team remains as an independent group within the University Hospital and will continue its research in the field with follow-up projects. A company that ensures sustained clinical application for the benefit of the patient has been founded and launched on the market, and a 3D planning centre has been created in the Balgrist Campus. And last but not least, Balgrist continues work to ensure that the health insurance companies will bear the additional costs of 3D planning in the future.

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**Highly specialised medicine (HSM) overall strategy**

The project "Improvement of patient safety and quality of the results with computer-guided patient-specific 3D planning, simulation, and performance of operations" is one of seven HSM2 projects. They are part of the Canton of Zurich's "Highly specialised medicine (HSM) overall strategy" and were approved by the cantonal government for the second implementation phase in 2015-2018. PD Dr. sc. Philipp Fürnstahl, Prof. Dr. med. Mazda Farshad and Prof. Dr. med. Christian Gerber were the project managers.