

Incisions and insights – “Digitalisation, fusion, and AI in surgery”

Will operations also be performed from home in the future?

(Stuttgart/Tübingen) – The “Incisions and insights” programme continued at the end of January 2023, with the focus on “Digitalisation, fusion, and AI in surgery”. The online event was streamed live from the operating theatre of the Institute of Clinical Anatomy and Cell Analysis in Tübingen. Surgical procedures on an anatomical specimen offered participating developers from medtech companies remarkable insights into the current situation in theatres and also into what surgeons would like to see introduced in the future.

Prof. Marcos Tatagiba, Medical Director of the Department of Neurosurgery at the University Hospital of Tübingen, used the complex example of a tumour located close to the optic nerve to illustrate how brain surgery is now performed with the help of robotic microscopes and 3D representations of the skull. Together with the event host, Prof. Bernhard Hirt, Medical Director of the Institute of Clinical Anatomy and Cell Analysis, and Prof. Oliver Burgert, Dean of the School of Informatics at Reutlingen University, the specialists discussed how artificial intelligence and digitalisation can help meet the day-to-day challenges encountered in operating theatres.

The participants – primarily developers from medtech companies – witnessed live on screen how the surgeon used head movements to control the robotic microscope. However, they also discovered which functions are still missing, such as temperature sensors to prevent heat from causing nerve damage during vascular sclerosing and a tracking function that makes it possible to control the microscope directly from the surgeon’s instrument.

In times of massive staff shortages, it is also worth considering which routine theatre tasks computers can take over – adjusting the lights or documenting procedures, for example. “Intelligent” operating theatres where sensors ascertain lighting requirements, for instance, are already being developed. The human-machine interface and data fusion represent a major challenge. Augmented reality glasses are already

simultaneously supplying surgeons with CT images of the patient and a realistic 3D representation of the surgical field. The most important function of all, however, is that it must also be possible to turn off the entire flow of information so doctors can focus exclusively on the patient in front of them. And it will probably be a while yet before patients can be operated on remotely using digital technology – with surgeons working from home, as it were.

The participants in January were already able to obtain an initial picture of what is possible right now and where development work is still required. The next event in the “Incisions and insights” series will revert from the online format to a workshop lasting several hours at the Institute of Clinical Anatomy and Cell Analysis in Tübingen on 28 June 2023. The topic of “Digitalisation, fusion, and AI in surgery” will be explored in greater depth, with operations drawn from various disciplines providing exciting insights.

The workshop series is organised by the Interuniversity Center for Medical Technologies Stuttgart-Tübingen (IZST) at the universities of Tübingen and Stuttgart, BioRegio STERN Management GmbH and the Verein zur Förderung der Biotechnologie und Medizintechnik e. V.

About BioRegio STERN Management GmbH:

BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen.

The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical engineering.

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