

**CAS-ONE –
GPS FOR LIVER SURGERY**



Problem – Challenge

Removing tumors from the liver while preserving a sufficient amount of healthy tissue poses still a major challenge in surgery. The virtual surgery planning based on pre-operative image data helps to evaluate the possible treatment strategies. The accurate transfer of a planned and optimized resection to the patient being operated remains very difficult for the surgeon. A GPS system guiding surgical tools on a virtual map of the patient would enable precise reproduction of surgical plans and ensure safer and gentler surgery. The challenge in realizing such a system comes from the deformable nature of the liver which requires constant updates of the map being used in the GPS system.

Solution

CAS-One is a navigation system for soft organs such as the liver. It provides interactive 3D visualization of tumors, vessels, and liver segments. The real-time guidance of surgical tools in the anatomical context allows for precise cutting or ablation. In order to be adopted in a cost-effective manner, CAS-One adds navigation functionality to existing instruments and requires minimal adaptations to operating room infrastructure and workflow. The system was developed by two researchers from the ARTORG Center for Biomedical Engineering Research of the University of Bern, Prof. Dr. Stefan Weber and Dr. Matthias Peterhans, in collaboration with Prof. Dr. Daniel Candinas at Inselspital. CAS-One has achieved CE Medical Device Labeling and is sold by the company CAScination AG, Bern.

