TOOL INTERFACE FOR HAPTIC SIMULATOR

The startup company, Simulatory, offers a platform for simulating endoscopic procedures in the lower lumbar region. Simulatory's core competency is its software, which visualizes the procedure in real time, calculates the precise position and orientation of the tools, and generates haptic feedback for the user. The interface to the surgeon simulates operation-specific tools that are integrated with the existing 3D Systems touch devices.

Iteratively from concept to prototype
The main tasks of the project were to expand the haptic interfaces, integrate the sensors for various tools, and communicate with the software to reflect the surgeon's activities in the simulation. konplan collaborated with surgeons to identify the requirements and develop concepts for implementing the various functionalities in an iterative design process using 3D-printed mockups. One challenge was the integration of the sensors to mimic the functionality of the endoscope which required combining both linear and rotary movements in a very limited space.

Simulator with many possible setups
Simulatory received a simulator with five tools that precisely replicate the user's movements. The tools can quickly be connected to the haptic interface using a special adapter. In just a few simple steps, the procedure configuration can be converted from single access (Uniportal) to dual access (Bi-portal) endoscopy. Adapting the simulator from right-handed to left-handed use is also quick and easy thanks to the modular system of anatomy, tool dock, and haptic interfaces.

Result
- URS, DIRs, and Risk Analysis
- Prototype

Methodology & Technologies
- Sensor Integration
- SolidWork, Rapid Prototyping
- Iterative Design

Scope of Services
- Project Management & Idea Generation
- Definition of URS, DIRs, and Risk Analysis
- Product Design

4 months

2 employees – konplan

Conception, development

Customer

Simulatory
Simulation Reimagined

ilkonplan

ilk developing together