



Project Management and Software Development

FMtrack - Optical Tracking System for Medical Procedural Simulator

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Medability



TUM
Technische Universität München



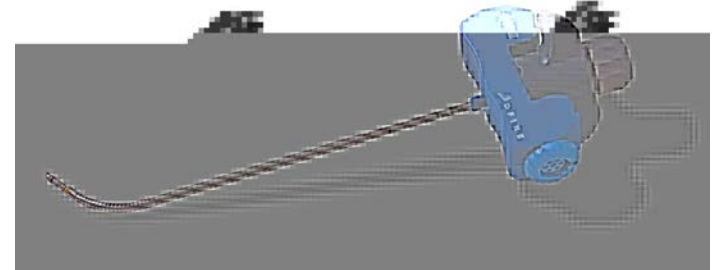
 **JOHNS HOPKINS**
WHITING SCHOOL
of ENGINEERING

Problem Statement

- Automatic identification and tracking of non-rigid medical instruments
- Simulation of medical images
- Goal: Creation of a training/assessment tool for minimally-invasive procedures



Simulation setup ^[1]



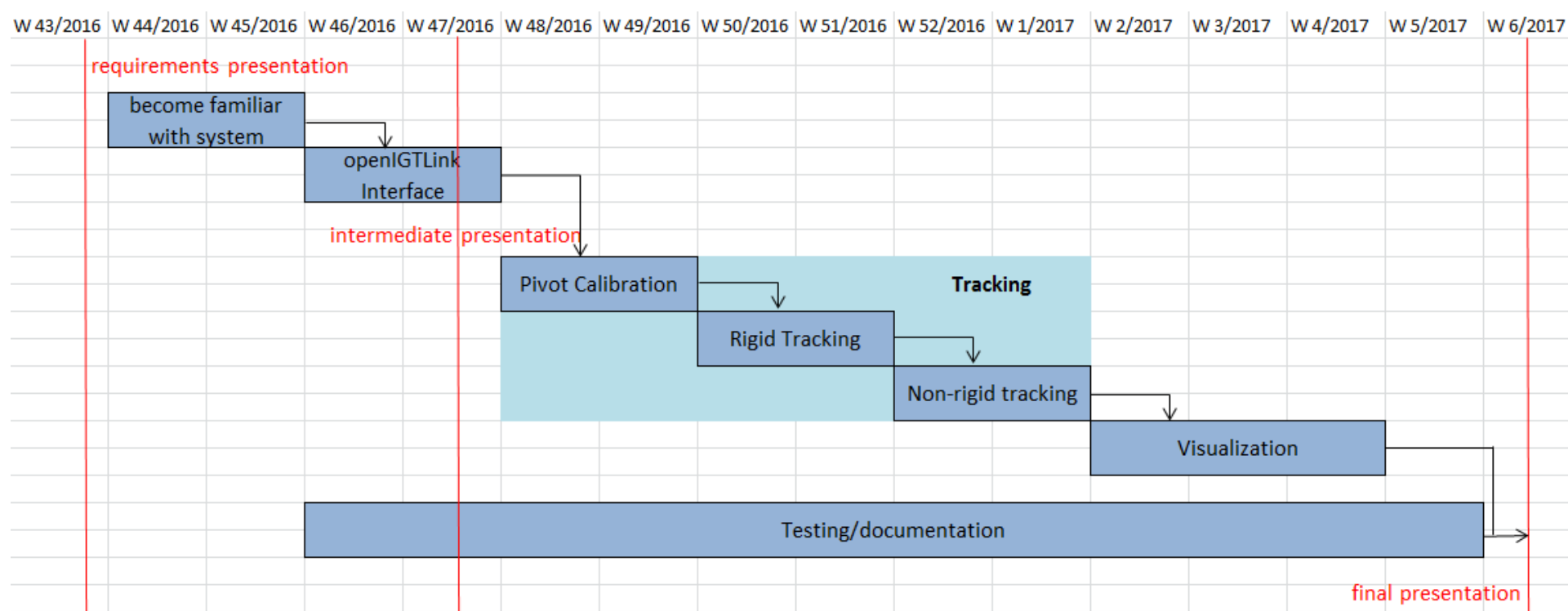
Non-rigid instrument^[2]



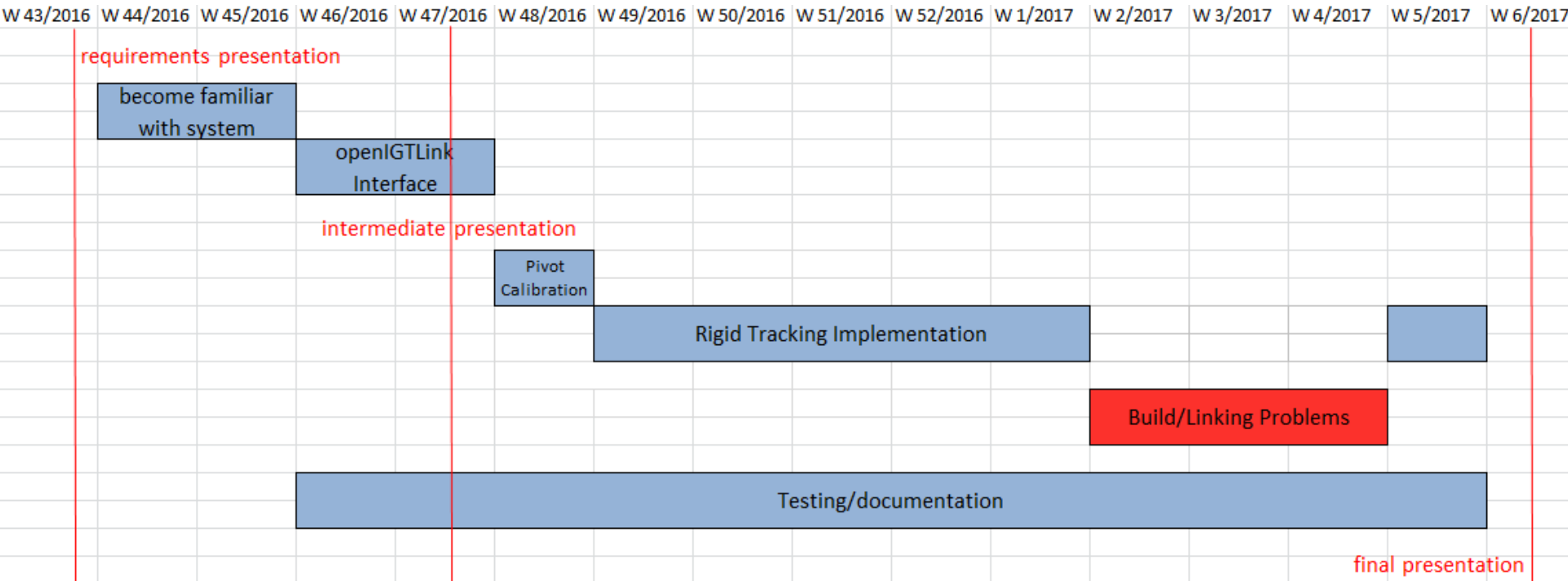
[1] <http://www.medability.de/for-instrument-manufacturers/> (26.10.2016)

[2] <https://www.merit.com/interventional-oncology-spine/spine-ablation/ablation/star-tumor-ablation-system/> (07.02.2017)

Original GANTT Project Plan



Actual GANTT Project Plan

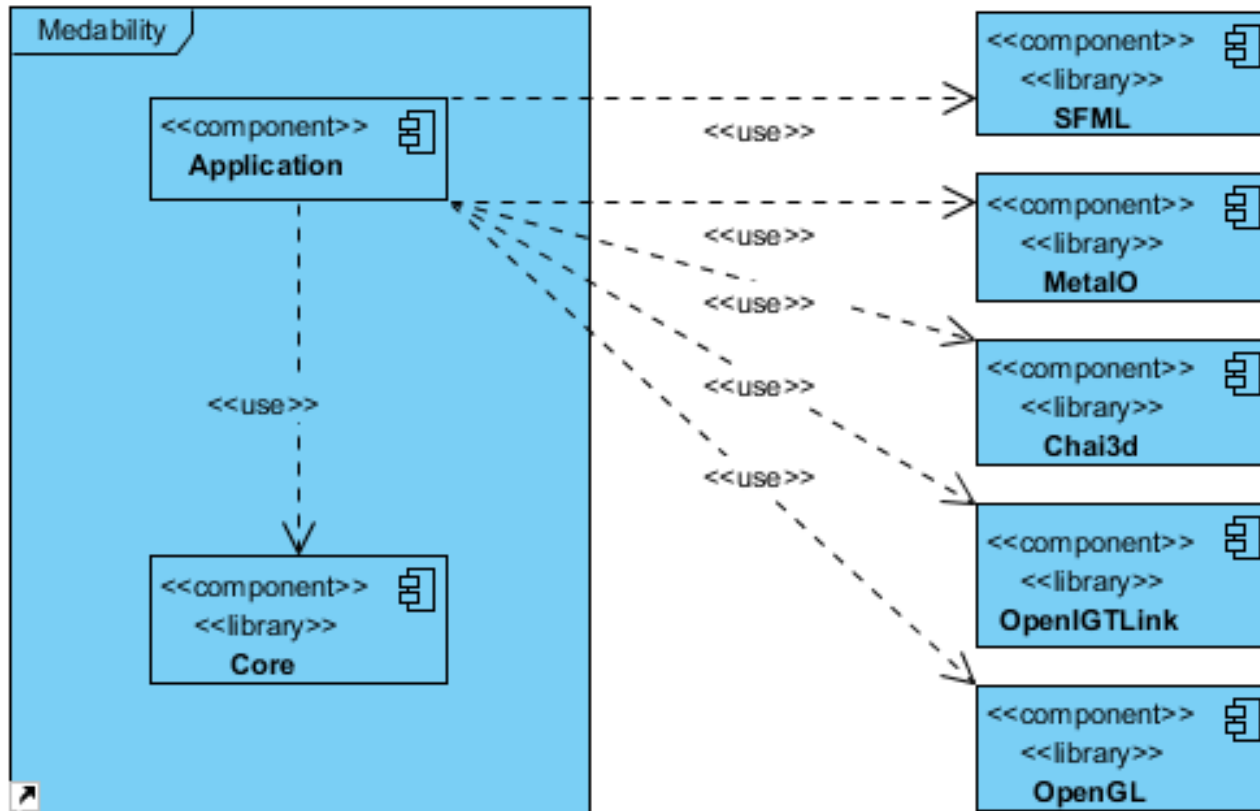


Requirements

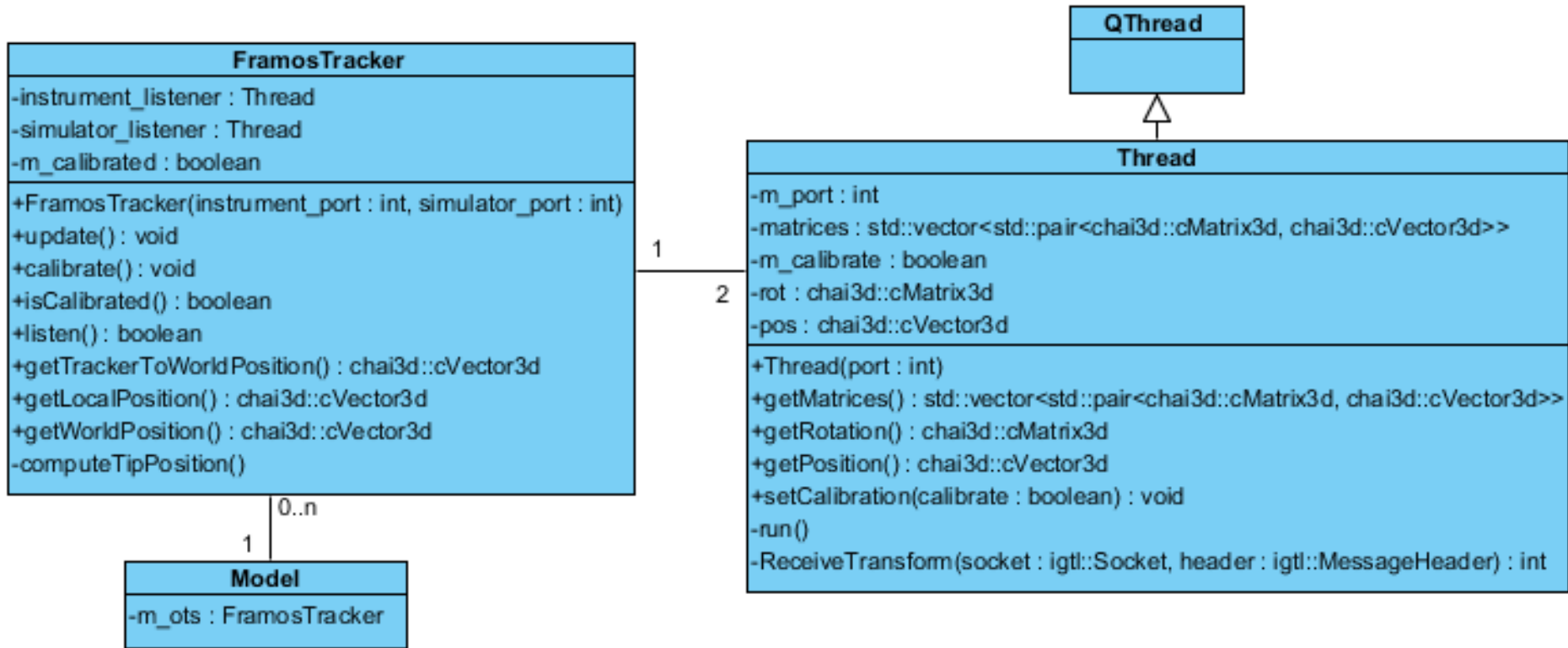
requirement	achieved
Real-time processing of data	yes
Tracking and identification of medical instruments (multiple, rigid, non-rigid)	Rigid: works Multiple: not tested yet Non-rigid: not working yet
Simulated images (current instruments, correct position/shape)	Instruments, position: works Shape: not working yet



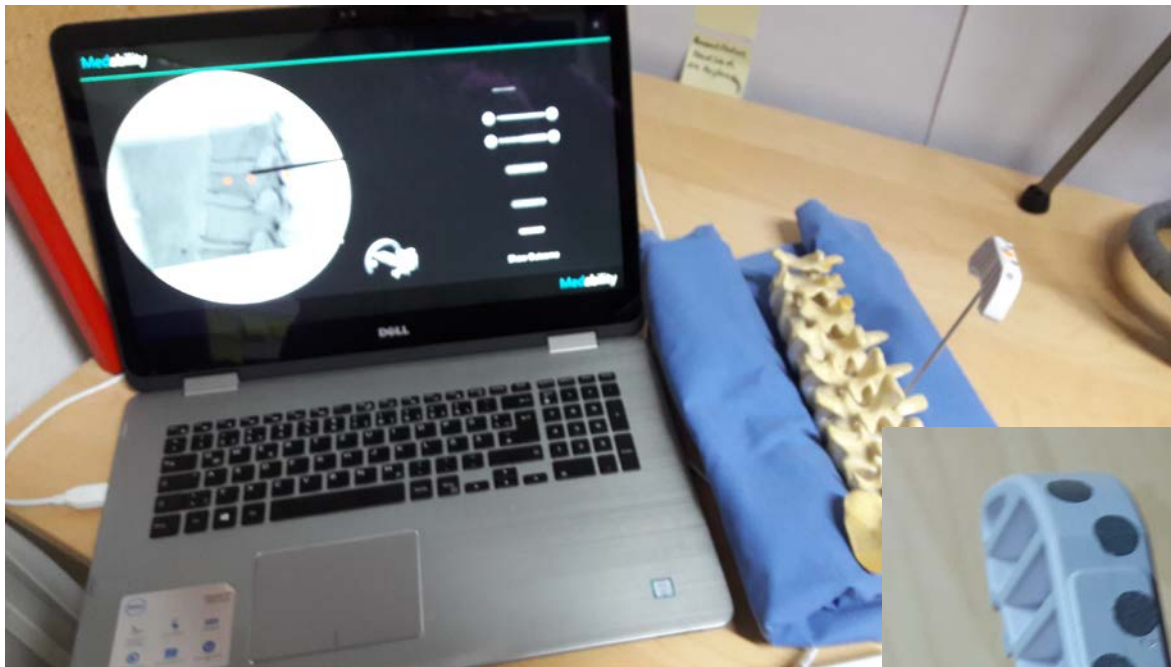
Components



Class Design



Setup



Application



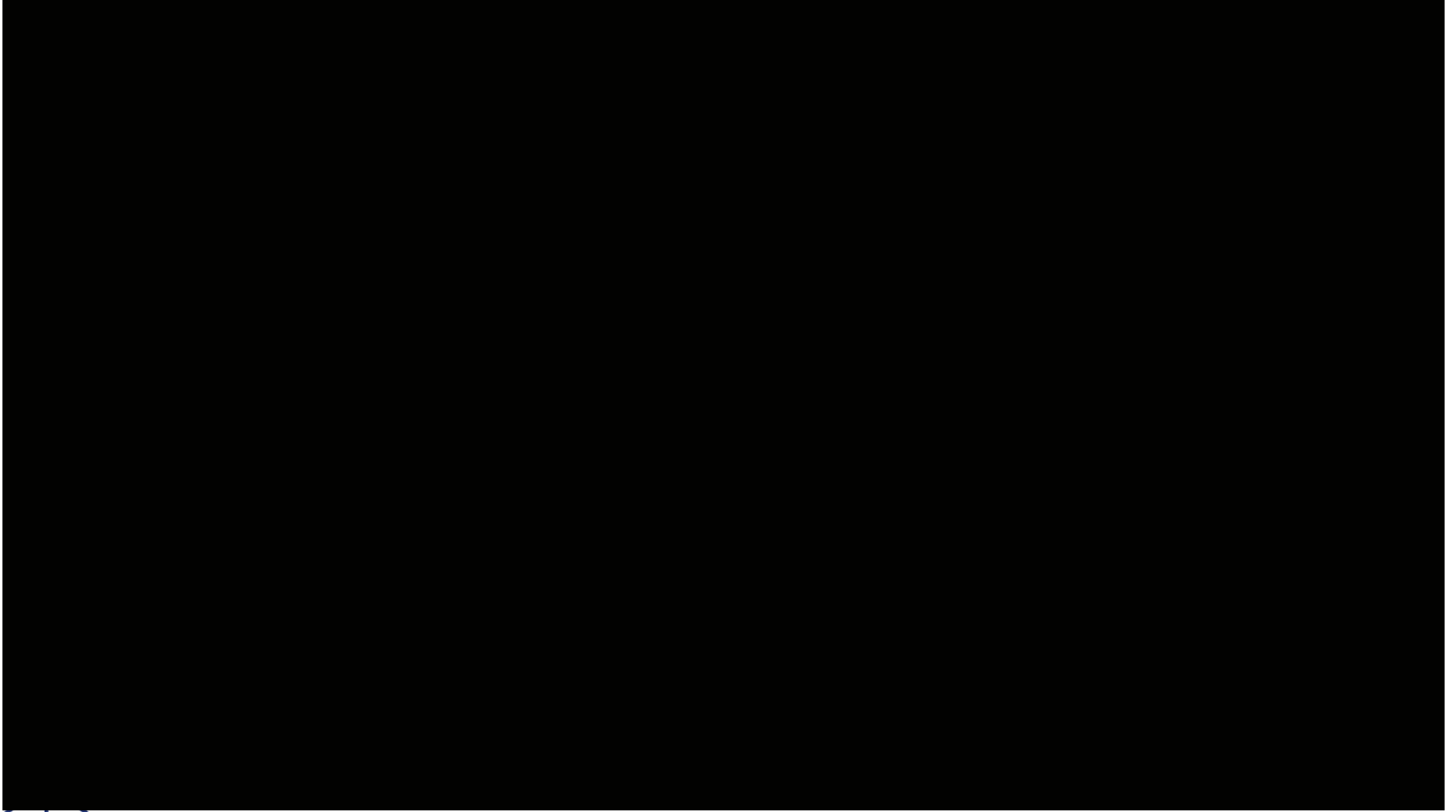
Tracking Cameras



Instrument with markers



Demo



Future Work

- More testing
- Tracking of multiple instruments
- Non-rigid tracking



Summary

- **Achieved:**
 - OpenIGTLink Interface / optical tracking integrated in Medability software
 - Rigid instruments can be tracked
 - Position can be shown

- **Problems:**
 - Time
 - Linking problems

- **Still to do:**
 - Tracking of multiple instruments
 - Non-rigid tracking

