Tech United Eindhoven

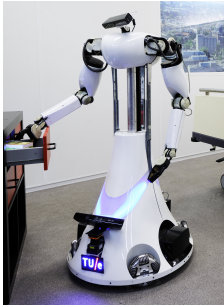RoboCup 2016, Leipzig, Germany

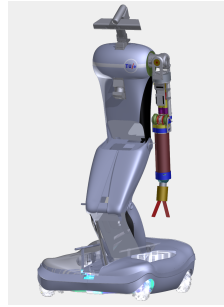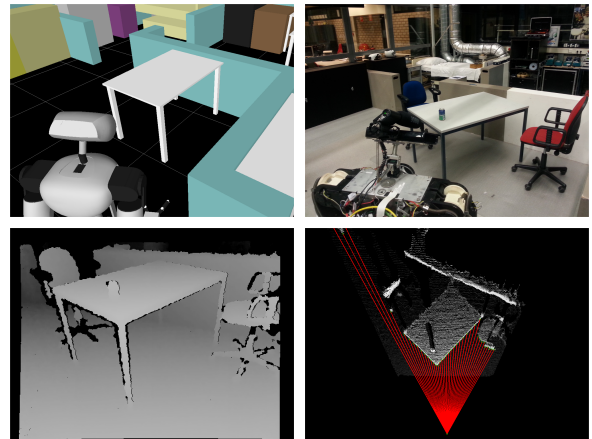## AMIGO & SERGIO

Figure 1: AMIGO

Figure 2: SERGIO

- AMIGO
  - Omni-wheels, 1 DoF torso
- SERGIO
  - Suspended mecanum wheels, 2 DoF torso
- 7-DoF manipulators
- Designs available at Robotic Open Platform
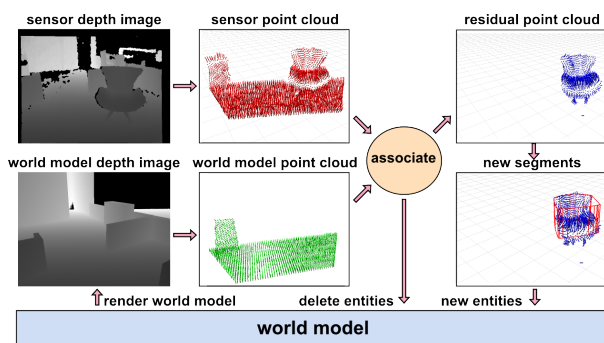
World modeling

Figure 3: Overview of ED: Environment Descriptor

- A central object-oriented, volumetric world model, used for:
  - Navigation
  - Object tracking
  - Localization
- Objects have 3D shape, pose, type
- Updating by comparing rendered world model with depth image

Furniture fitting

- Updating the pose of furniture objects in the world model
  - Navigation map and locations are updated
  - Object segmentation is robustified
- Efficient fitting by projecting the 3D point cloud to a 1D range array

WebGUI
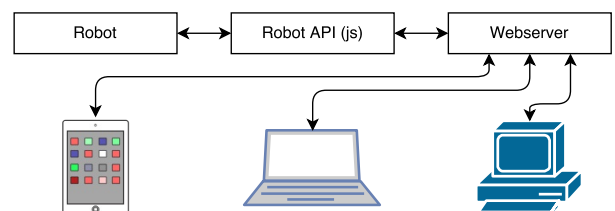
- Web-based Graphical User Interface
- Cross-platform
- Action server schedules the robot's tasks based on user input

Natural language interpretation

- Natural Language Interpretation using Feature Context Free Grammar
- Speech recognition grammars are deduced from the NLI grammars