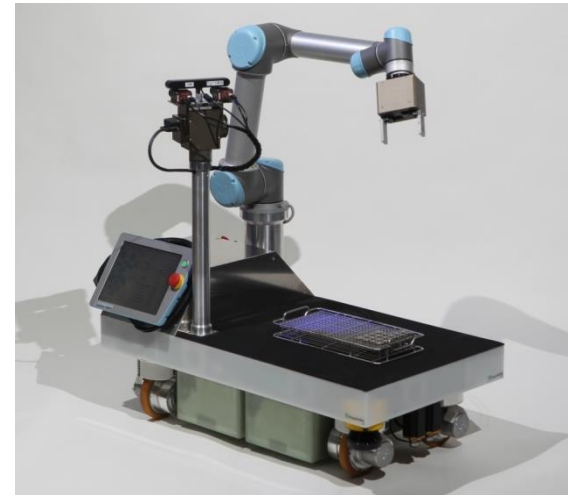

Motion planning with the Care-O-bot and rob@work



The logo for MoveIt!, featuring a blue stylized robot arm icon to the left of the text "MoveIt!". The "M" is grey and the "oveIt!" is blue.



Robotic Home Assistant Care-O-bot®

- Assistance for household chores
- Multimedia, social integration
- Fetch- and carry services
- Safety, Monitoring
- Home Management

1998 Care-O-bot I



2002 Care-O-bot 2



2008 Care-O-bot 3



Product
vision

Mobile
Manipulation

Robotic Home Assistant Care-O-bot®

- High-Tech Research Platform
- Project Demonstrator



Hardware – Care-O-bot 3

Sensor Head
(1 DoF, Stereo Camera + Kinect)

Torso
(3 or 4 DoF)

Tray
(1 or 3 DoF)

Touch Screen

Tray Sensors

Flexible Skin

LaserScanner
(2 Sick + 1 Hokuyo)

Manipulator
(KUKA/Schunk)

Gripper
(Schunk SDH)

Tactile Sensors

PCs

Speaker

Omnidirectional Platform
(4 x 2 DoF)

Battery Packs

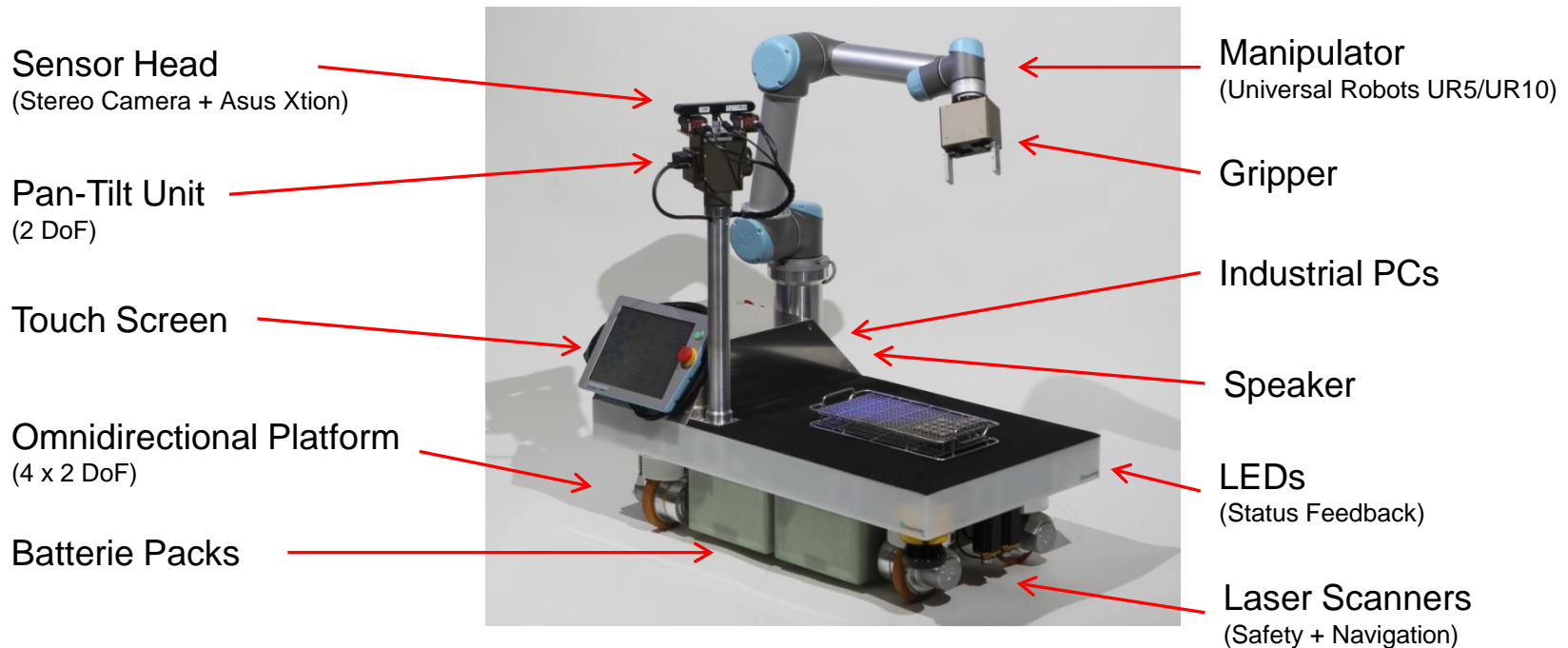


Mobile Manipulator rob@work 3

- Transfer experience and technological advances from Care-O-bot - Initiative into industrial environments
- Applications:
 - Intralogistics
 - Production Assistant
 - Industrial Research Platform



Hardware – rob@work 3



MotionPlanning at IPA

- So far:

- Extensive use of arm_navigation-stack for safe manipulation on both Care-O-bot 3 and rob@work 3
 - move_arm
 - planning_environment
 - trajectory_filter
 - ...
- Handling of collision objects (cob_object_handler)
- Wrapping of move_arm action client in Python class (cob_script_server) for easy use in scripts and (smach) states

MotionPlanning at IPA

■ Lately:

- Configuration and Integration of MoveIt! on rob@work 3 (ICRA-demo)
 - SetupAssistant
 - Rviz-Plugin
 - PlanningSceneInterface
 - MoveGroupInterface
- + Easy and fast configuration using MoveIt!-SetupAssistant
- + Easy integration of available sensors for environment monitoring
- + Easy interfacing with hardware controllers

MotionPlanning at IPA

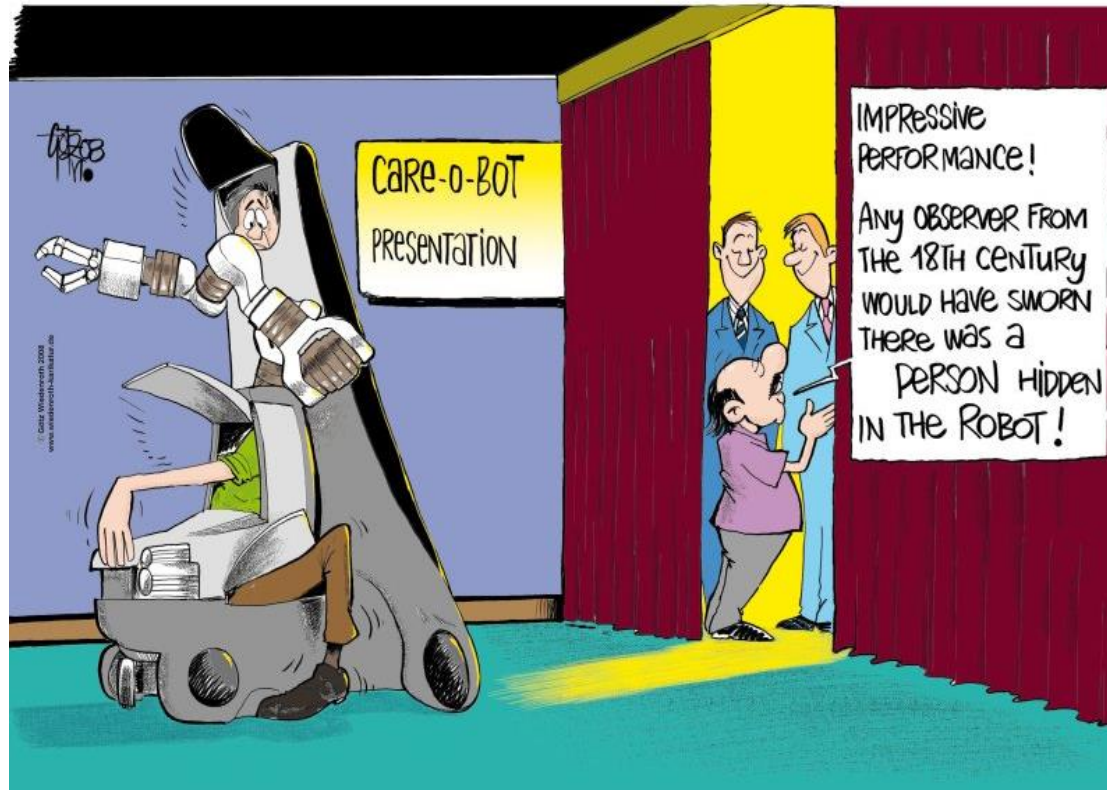
■ Outlook:

- Movelt! on Care-O-bot 3 soon to follow

- Make use of further awesome Movelt! features such as:
 - Planning with pose/orientation constraints
 - Planning with visibility constraints
 - Movelt! for various groups (manipulator, mobile platform, torso)

- And of course....contribute back to Movelt!

Thank you for your attention



www.care-o-bot-research.org
www.ros.org/wiki/care-o-bot

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