



servicerobotik

autonome mobile Serviceroboter

3. Ulmer Robotertag

4. März 2010

Andreas Steck and Christian Schlegel

ZAFH Servicerobotik
Institut für Informatik
Hochschule Ulm

<http://smart-robotics.sourceforge.net/>

<http://www.zafh-servicerobotik.de/ULM/index.php>

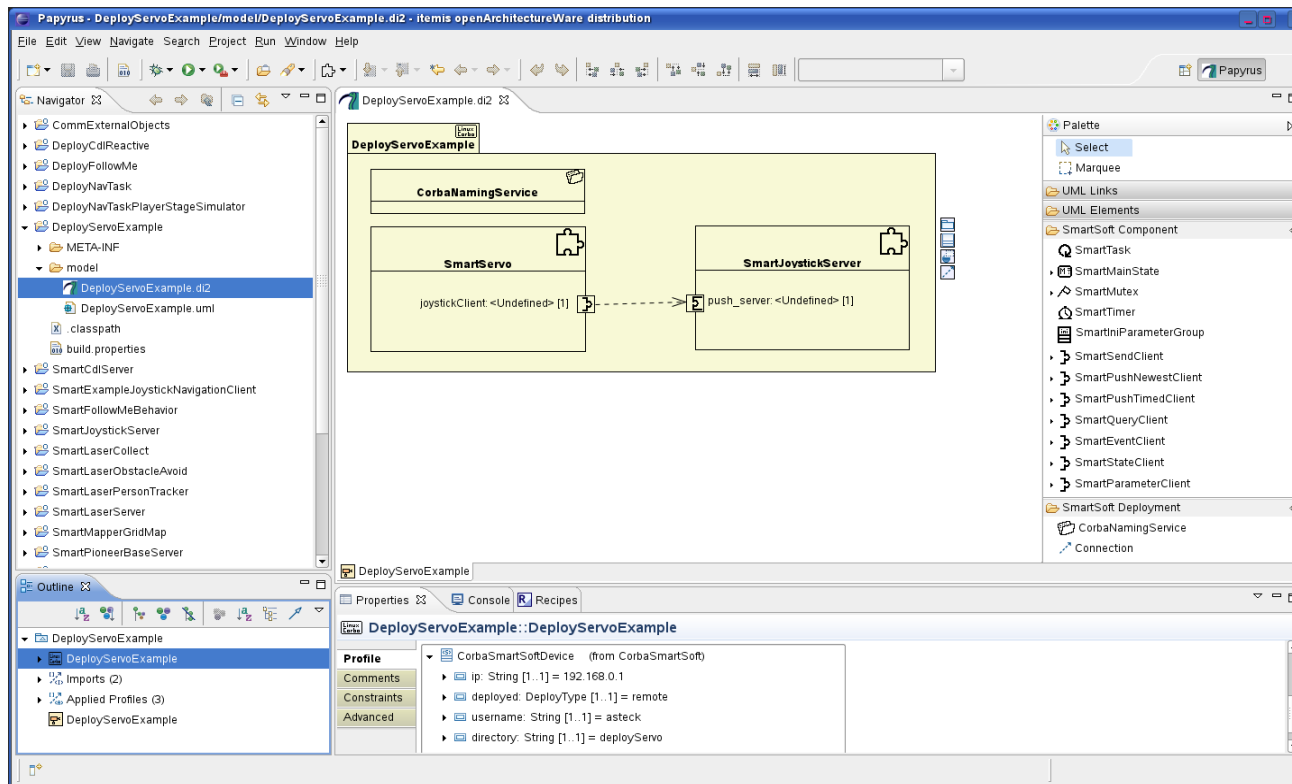




servicerobotik

autonome mobile Serviceroboter

SmartSoft MDSD Toolchain



- Eclipse



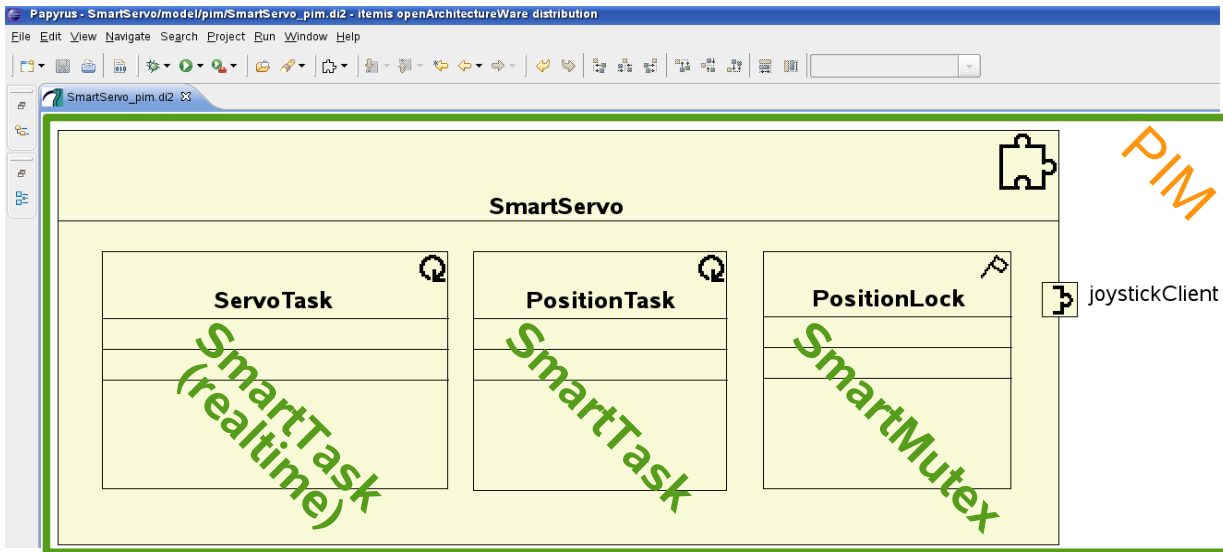
- openArchitectureWare



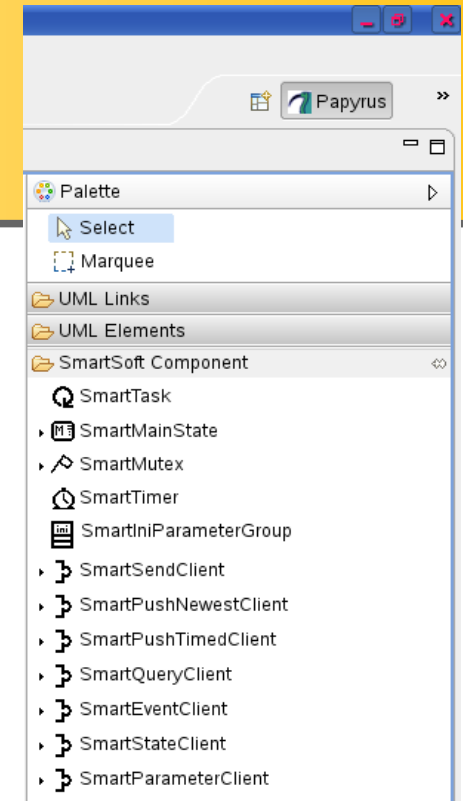
- PapyrusUML



3. Ulmer Robotertag - 2010 SmartSoft MDSD Toolchain

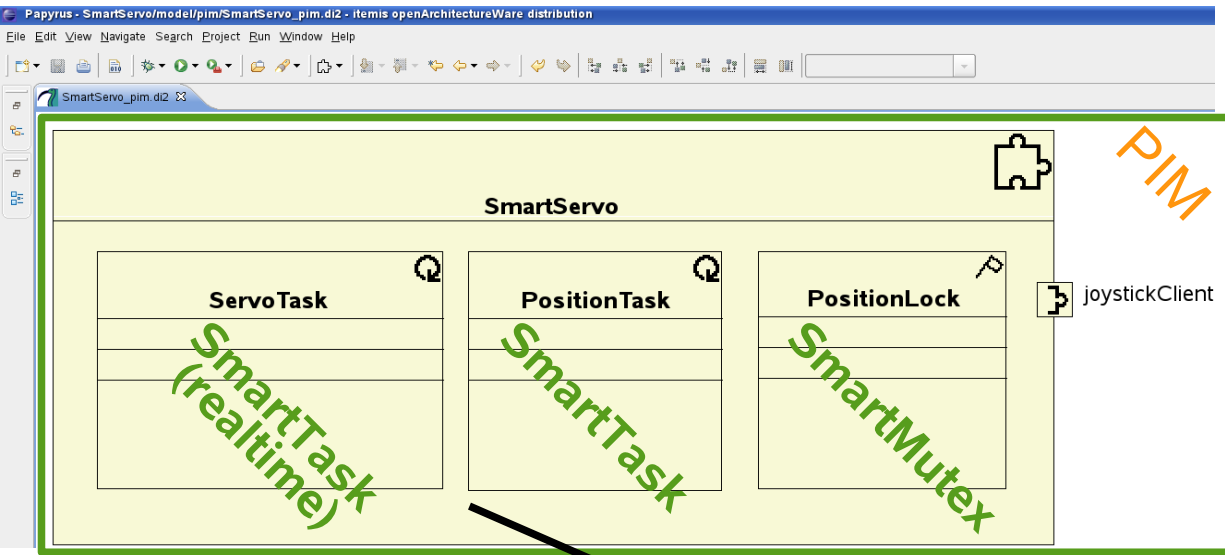


Komponente
modellieren

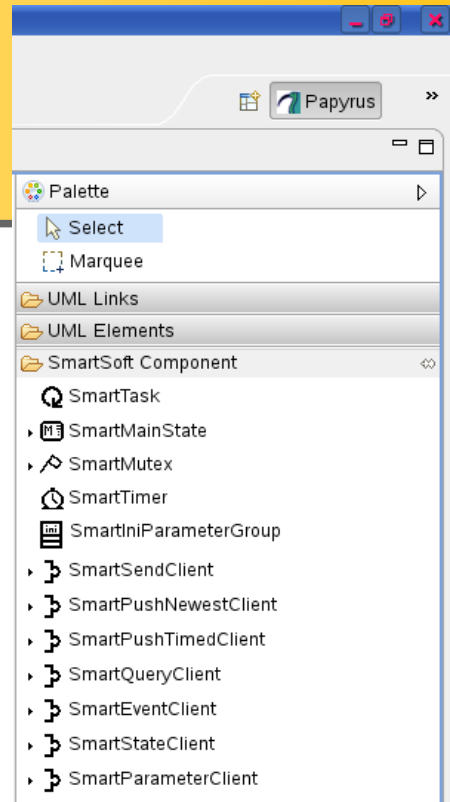




3. Ulmer Robotertag - 2010 SmartSoft MDSD Toolchain

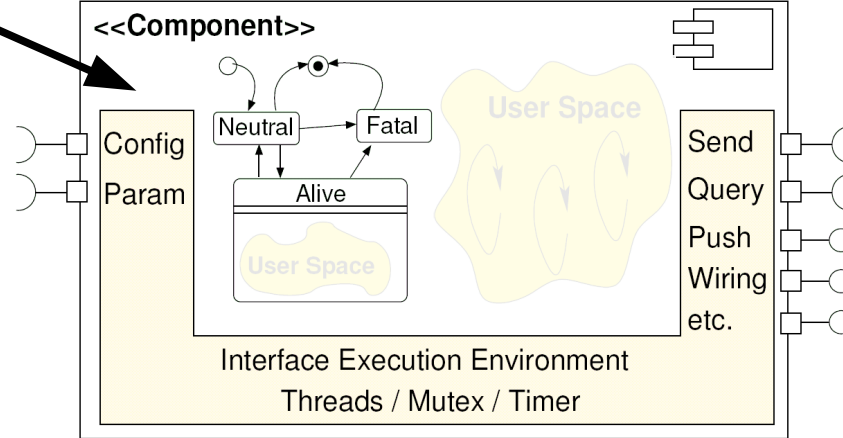


Komponente modellieren



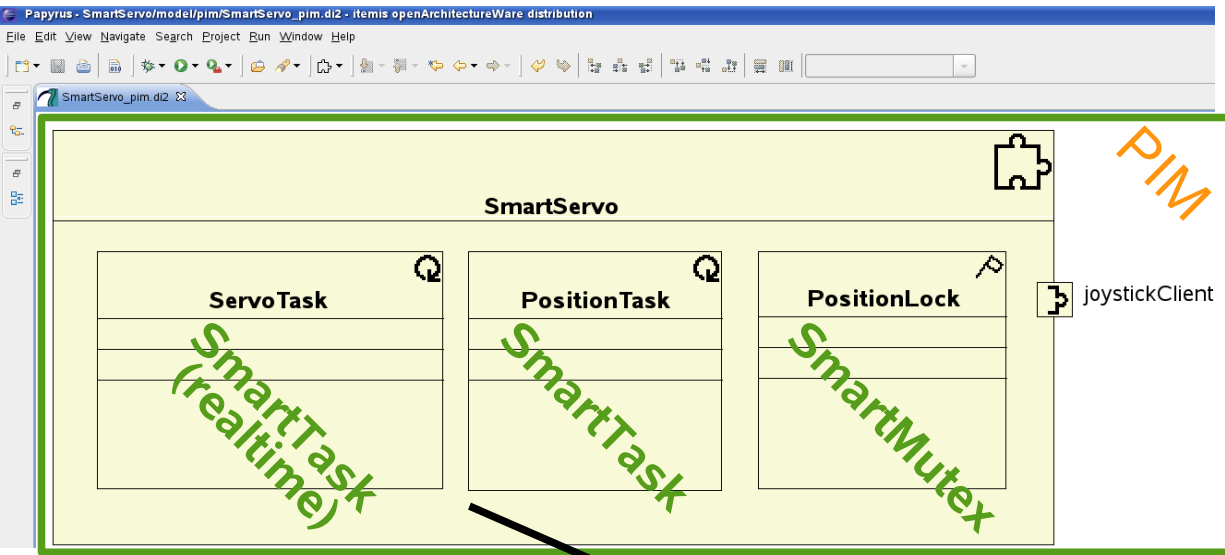
Verifikation (z.B. QoS)+
Transformation
(übernimmt Toolchain)

ausführbare Komponente

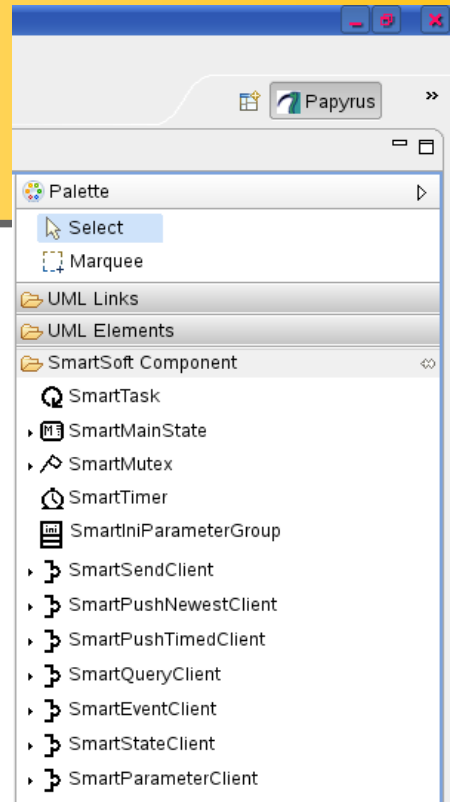




3. Ulmer Robotertag - 2010 SmartSoft MDSD Toolchain



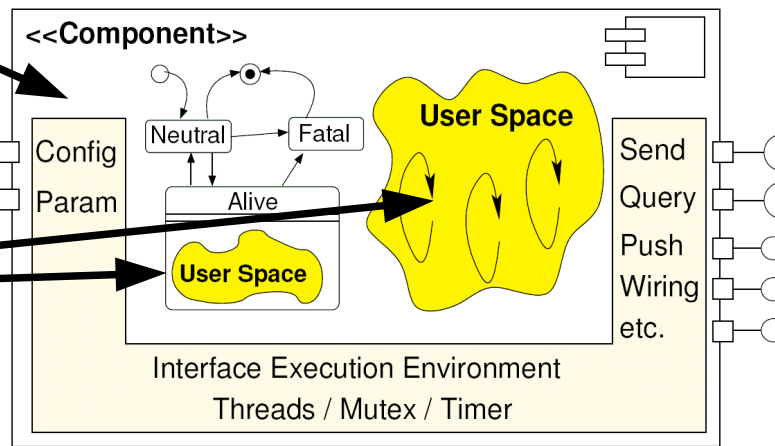
Komponente modellieren



Verifikation (z.B. QoS)+
Transformation
(übernimmt Toolchain)

ausführbare Komponente

User Code
MATLAB / Simulink
RTAI-Lab
OpenCV / Qt / Kavraki-Lab



3. Ulmer Robotertag - 2010

ZAFH Labor Ulm

overview



3. Ulmer Robotertag - 2010

Szenario 1: “Follow Me” - RoboCup@Home

overview

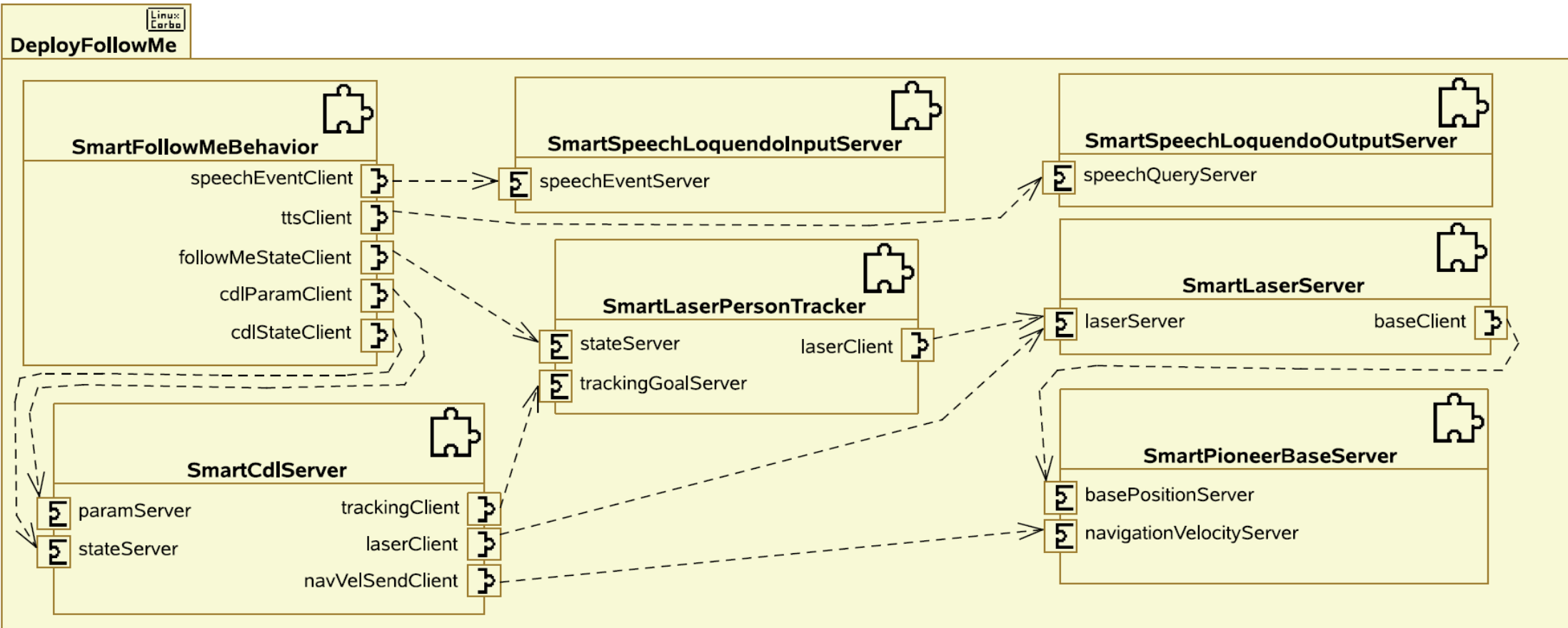


- zusammenstellen eines Szenarios aus Standard-Komponenten
- Wiederverwendung von Komponenten für RoboCup@Home
- Video auf Youtube:
<http://www.youtube.com/roboticsAtHsUlm>

3. Ulmer Robotertag - 2010

Szenario 1: "Follow Me" - RoboCup@Home

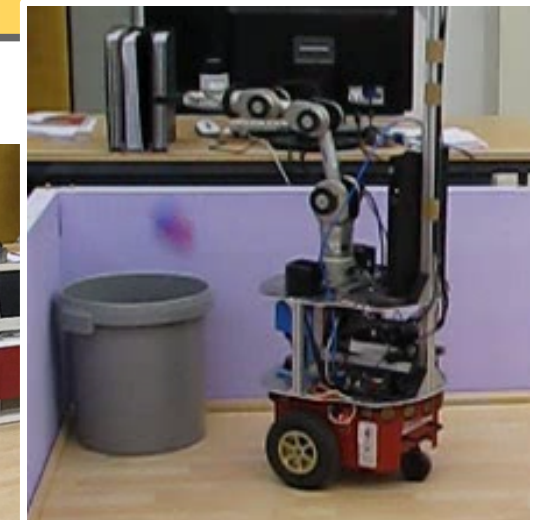
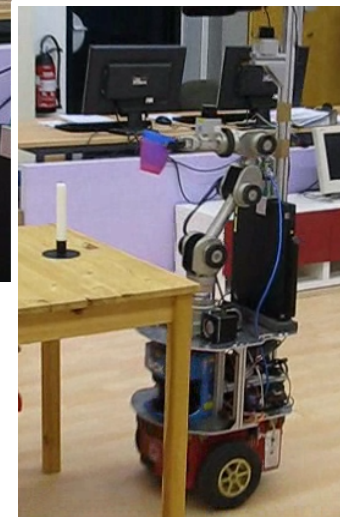
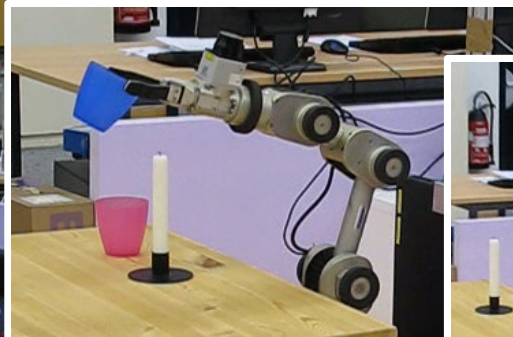
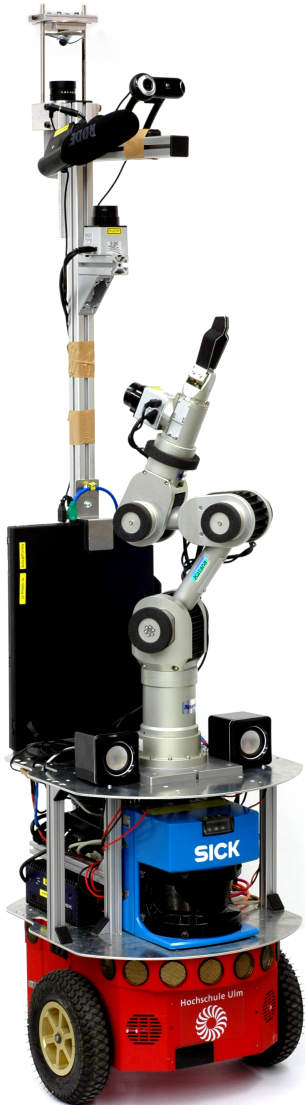
deployment



3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

overview



- zusammenstellen eines Szenarios aus Standard-Komponenten
- komplexes Alltagsszenario
- Roboter räumt Tisch ab
- Video auf Youtube:
<http://www.youtube.com/roboticsAtHsUlm>

Hochschule Ulm



3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

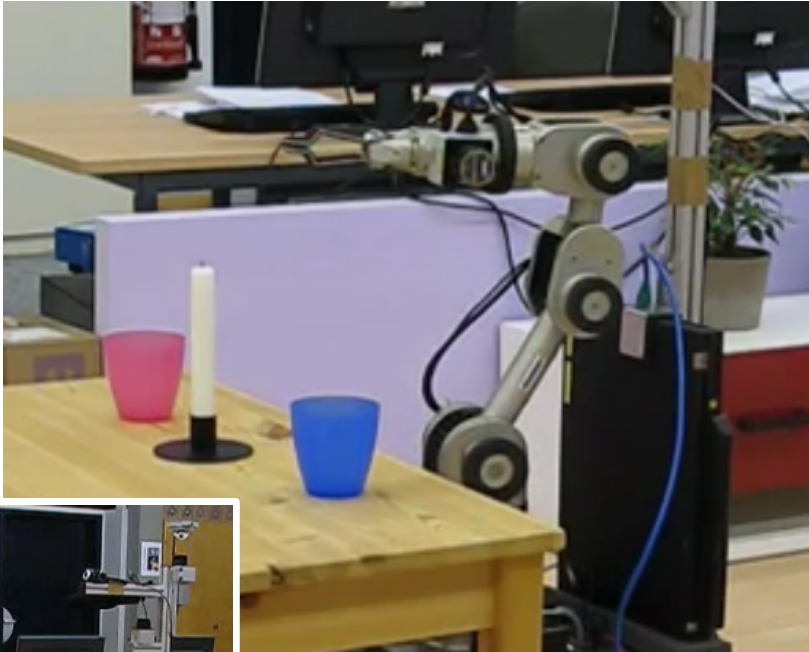
overview



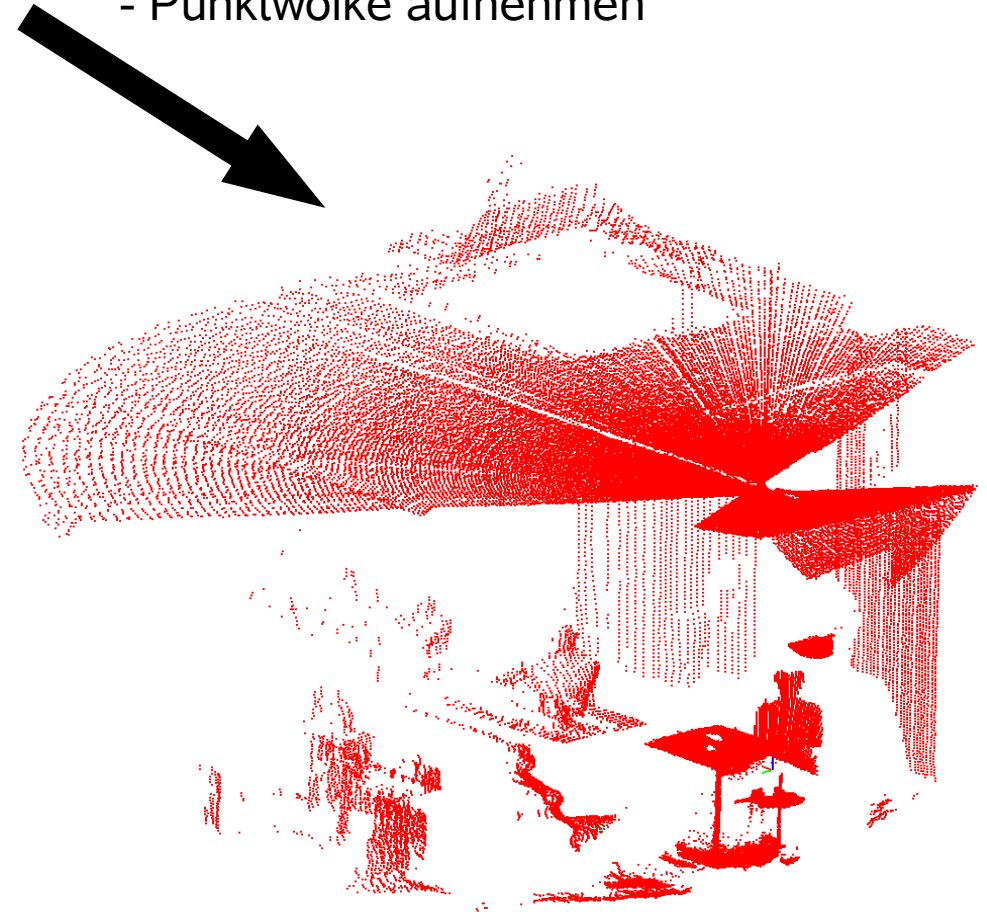
3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

overview



Umgebung erfassen
- Punktwolke aufnehmen

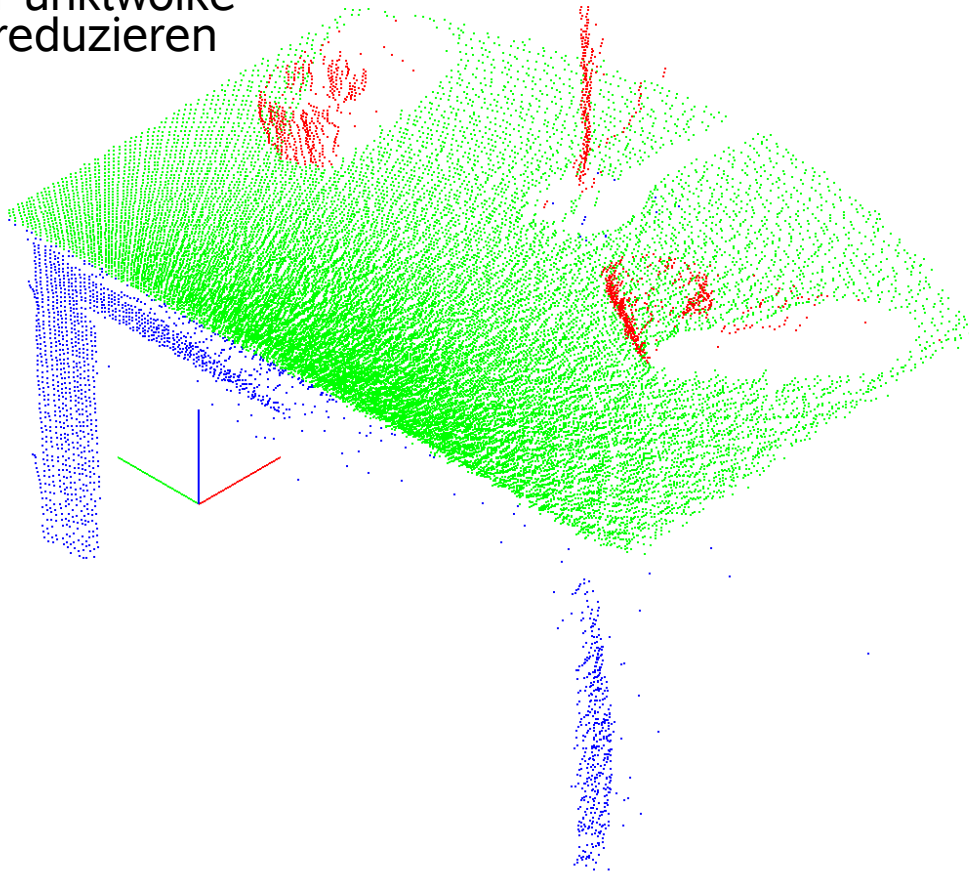


3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

overview

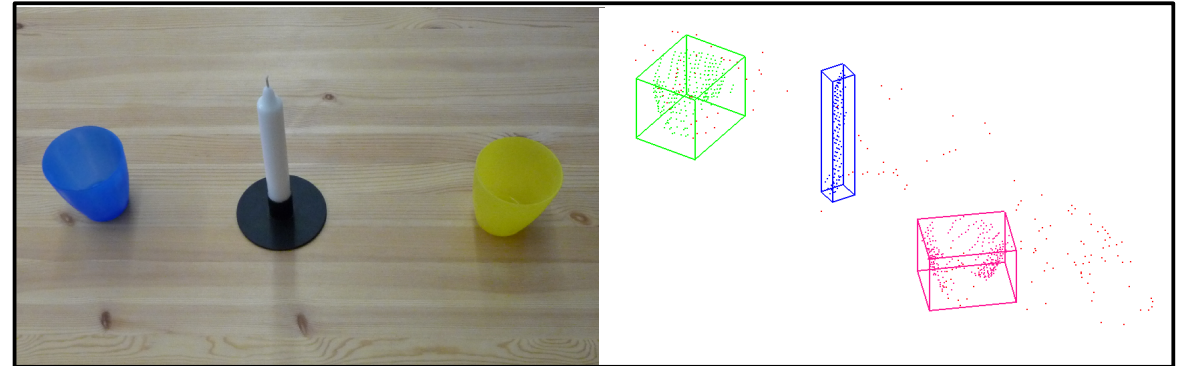
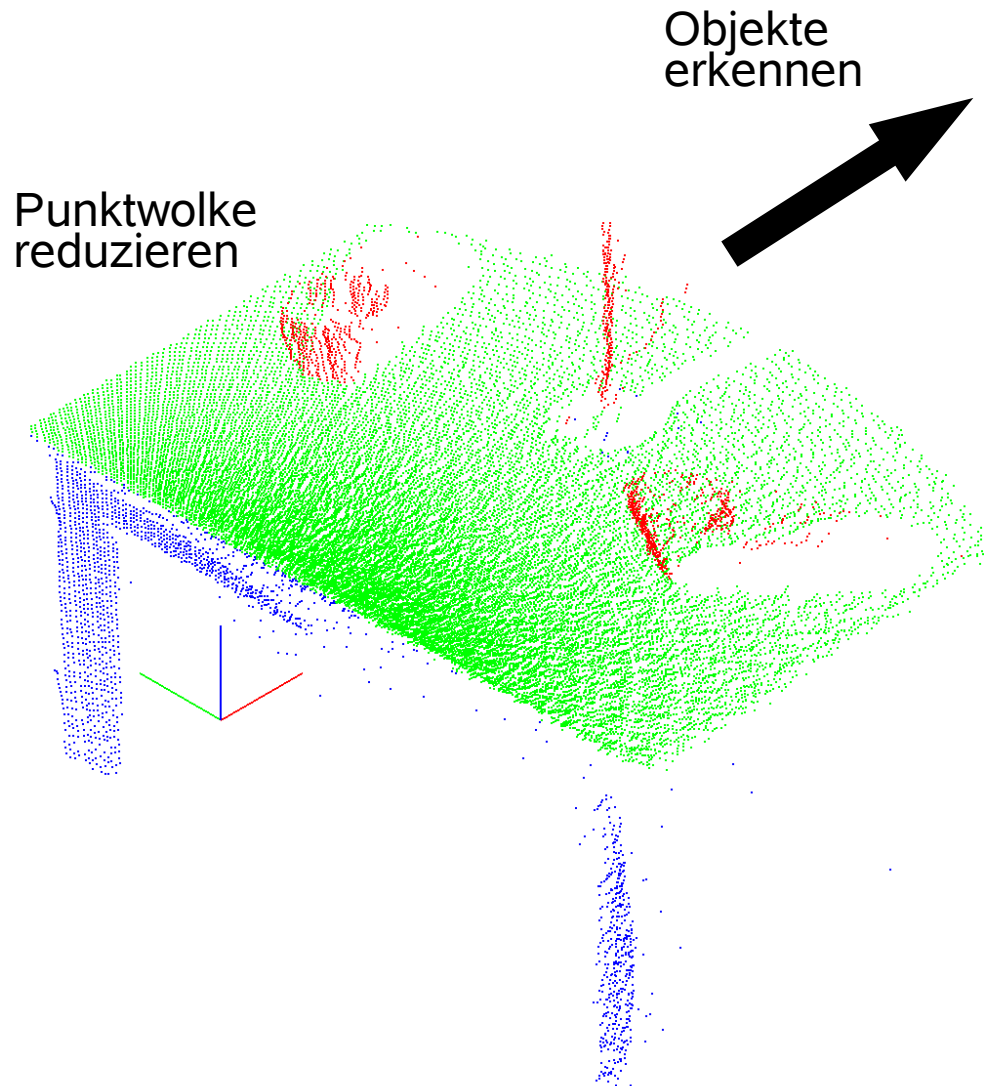
Punktwolke
reduzieren



3. Ulmer Robotertag - 2010

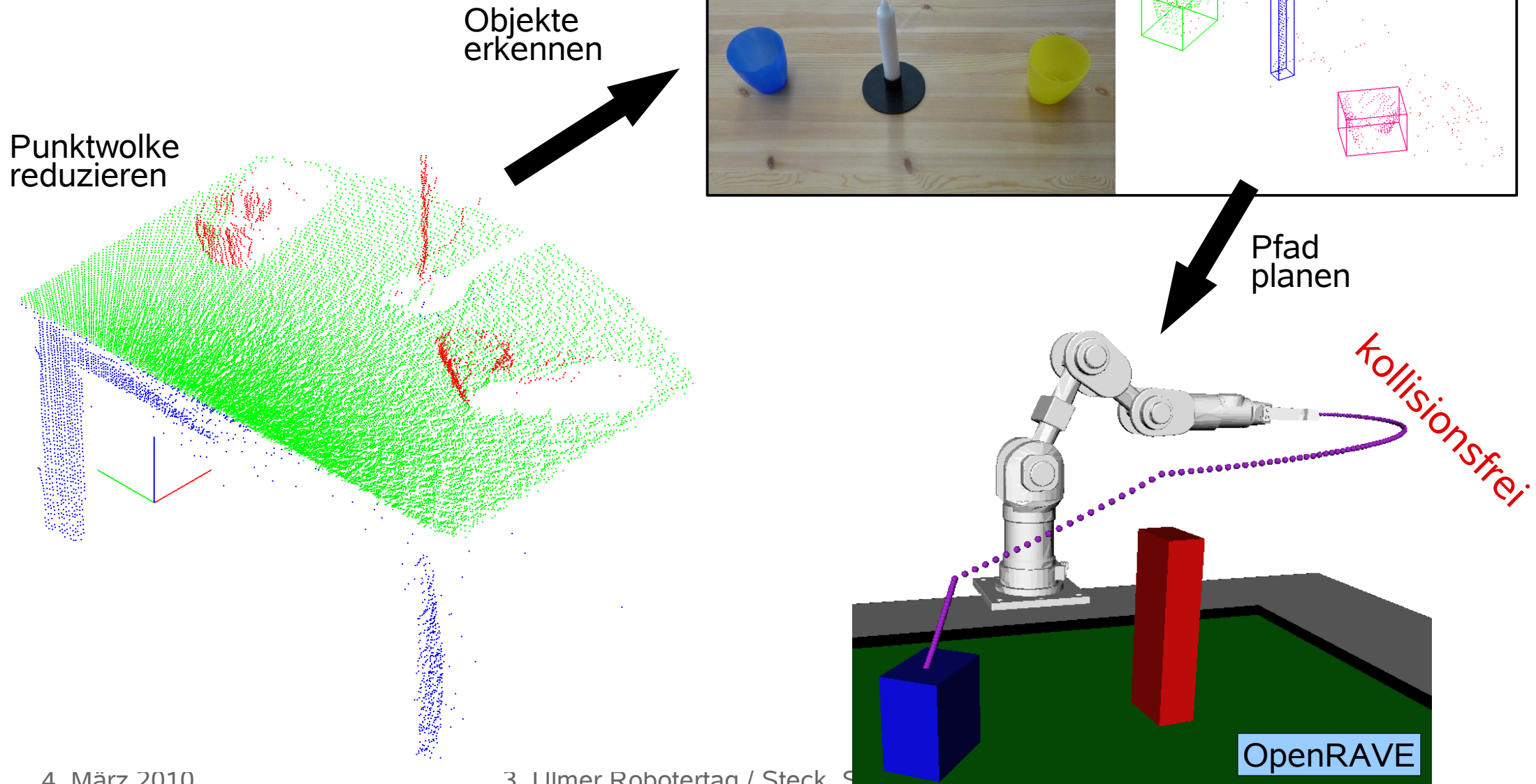
Szenario 2: Cleanup Table Scenario

overview



3. Ulmer Robotertag - 2010

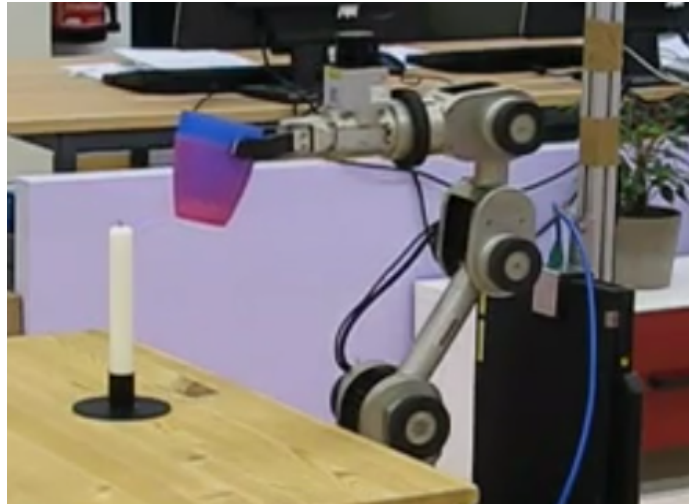
Szenario 2: Cleanup Table Scenario



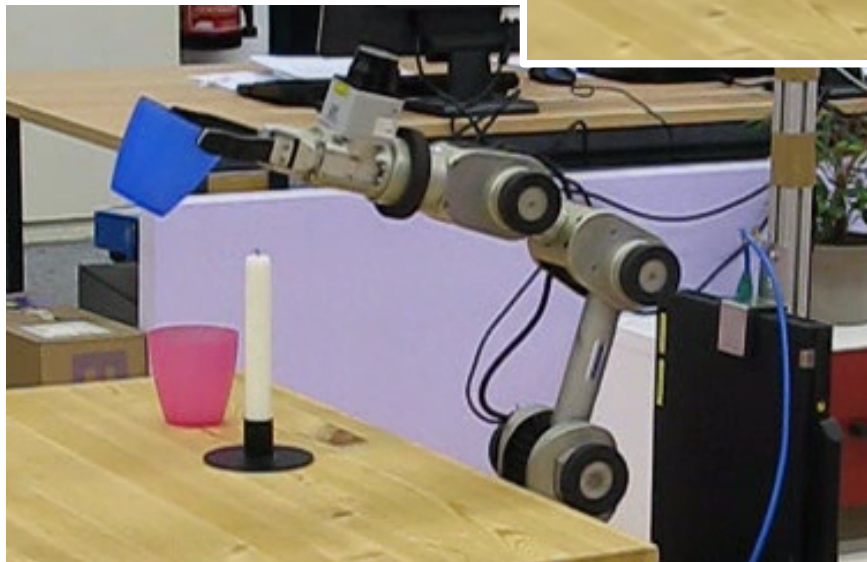
3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

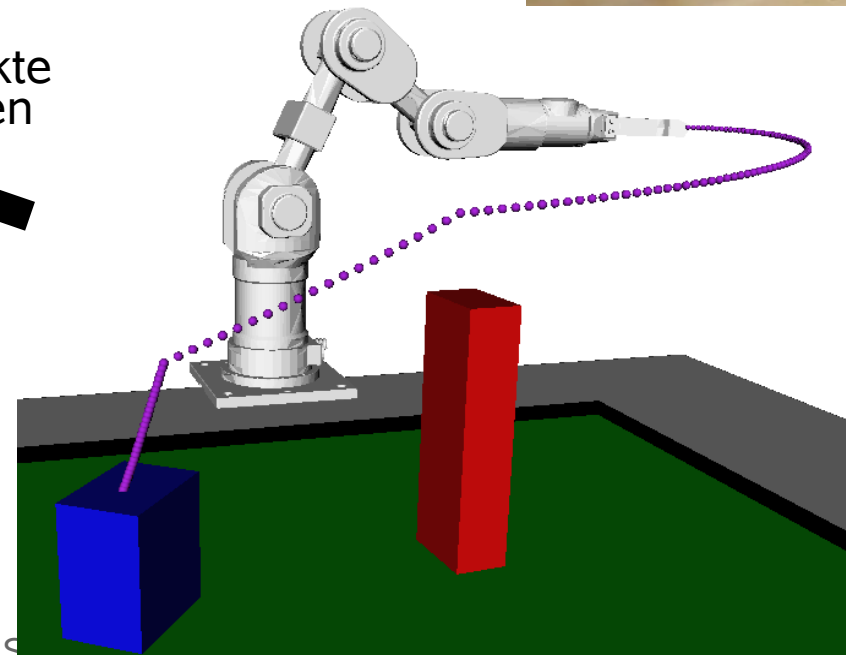
overview



Ziel (Mülleimer)
anfahen



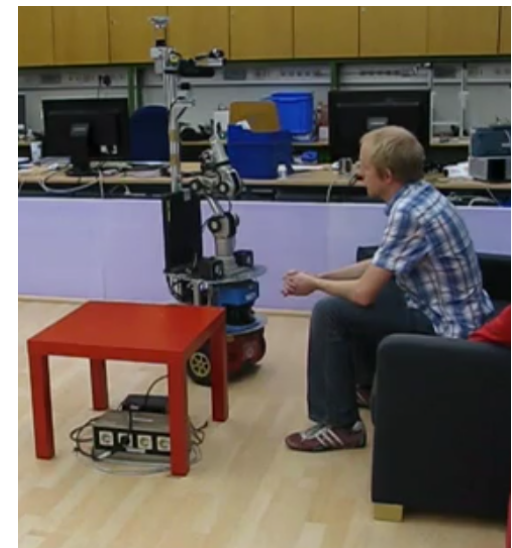
Objekte
greifen



3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

overview



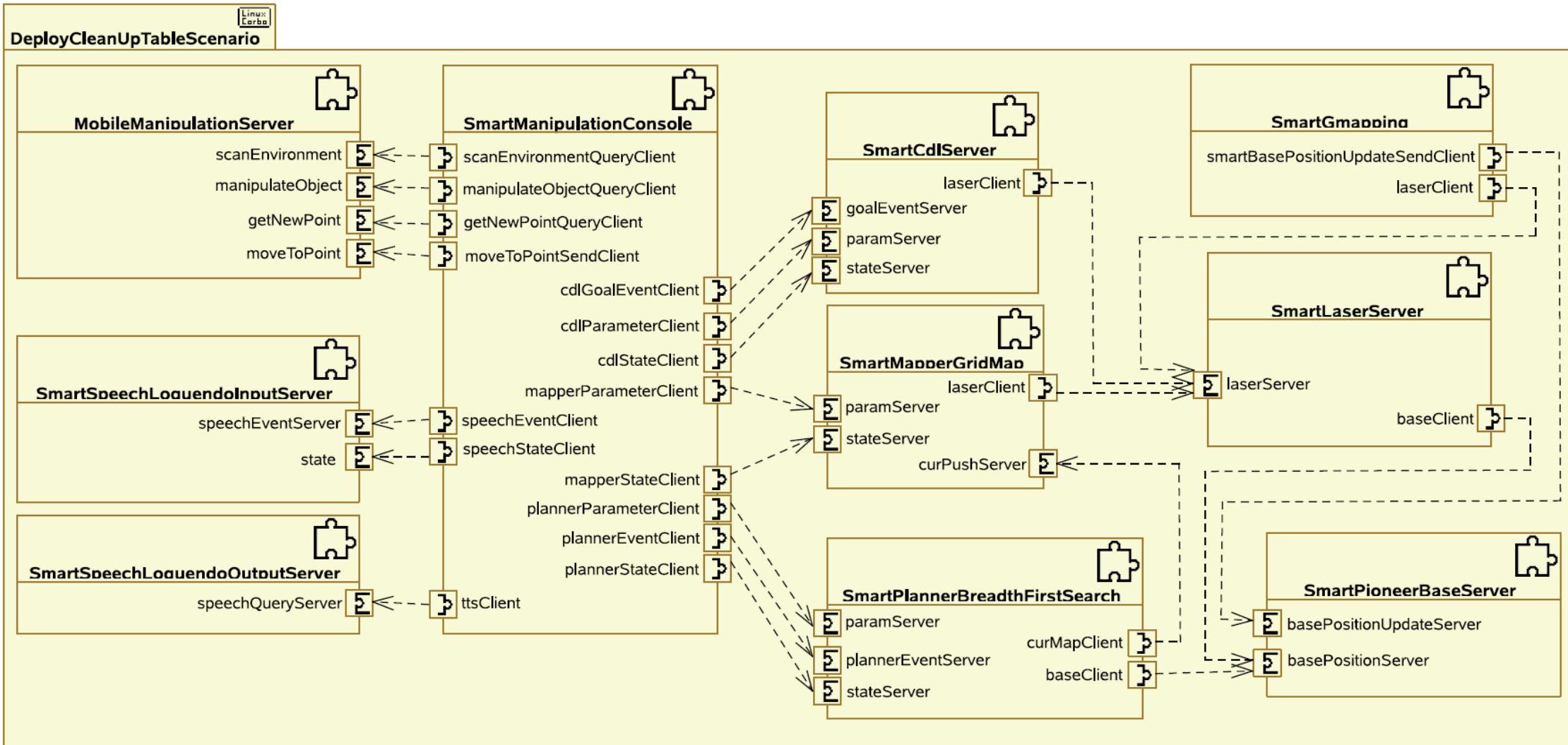
Positionskenntnis
für Navigation

OpenSLAM

3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

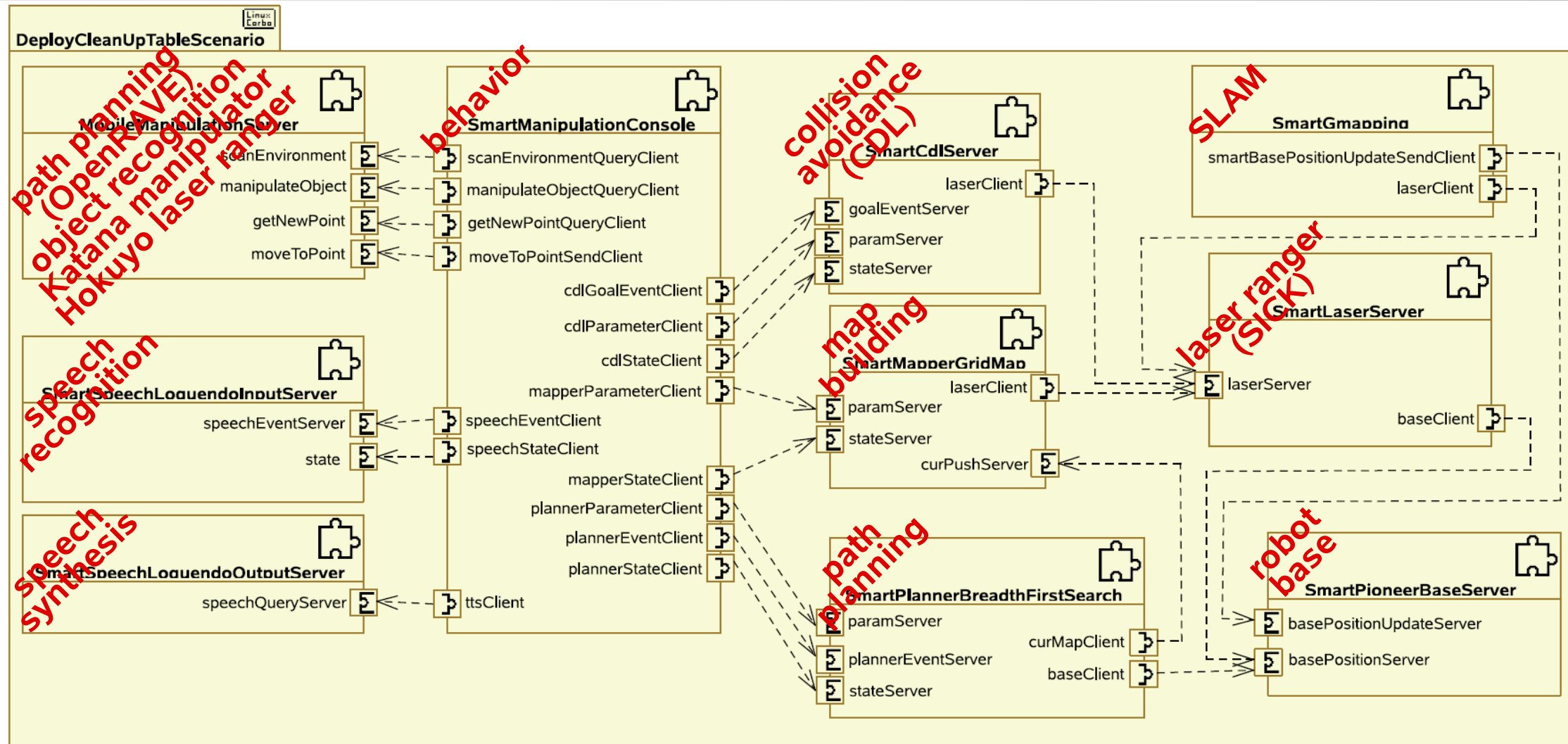
deployment



3. Ulmer Robotertag - 2010

Szenario 2: Cleanup Table Scenario

deployment





3. Ulmer Robotertag - 2010 SmartSoft MDSD Toolchain

Links

SmartSoft - Mozilla Firefox <2>

http://smart-robotics.sourceforge.net/

SmartSoft

Components and Toolchain for Robotics

Home

Overview

SmartSoft MDSD

CORBA / SmartSoft

ACE / SmartSoft

Components

Videos

Publications

Legal Notice

What is SmartSoft?

SmartSoft is a component approach for robotics software based on communication patterns as core of a robotics component model. The framework assists the component developer, the application builder and

standardized components whose requirements.

ZAFH - Autonome Mobile Serviceroboter - Mozilla Firefox <2>

http://www.zafh-servicerobotik.de/

service robotik

ZAFH

Zentrum für angewandte Forschung an Fachhochschulen

Autonome mobile Serviceroboter

YouTube - Kanal von RoboticsAtHsUlm - Mozilla Firefox

http://www.youtube.com/roboticsAtHsUlm

YouTube

Suchen

Abonnements

Protokoll

Video hochladen

Robotics@HS-Ulm

Kanal von RoboticsAtHsUlm

Abonnieren

Uploads

Suchen

Hinzugefügt am | Meist gesehen | Beste Bewertung

Follow Me - SmartBots@Ulm - 15 views - vor 5 Tagen

Mobile Manipulation using a Katana arm - 61 views - vor 1 Woche

Who is Who? - SmartBots@Ulm - 112 views - vor 1 Monat

Deployment of SmartSoft Components - Navigation 156 views - vor 3 Monaten

schungszentrum Servicerobotik
chon wird die Servicerobotik einen ähnlichen Stellenwert mobil-, IT- und Kommunikationsbranche - Roboter werden des Alltags. Um diesem Zukunftsanspruch gerecht zu ntwickeln Wissenschaftler der Hochschulen Ravensburg- annheim in einem von der Landesstiftung fördernten Projekt an neuen und richtungsweisenden



Addendum



Eclipse Modeling Framework Meta-Modeling

M3
meta-meta-model

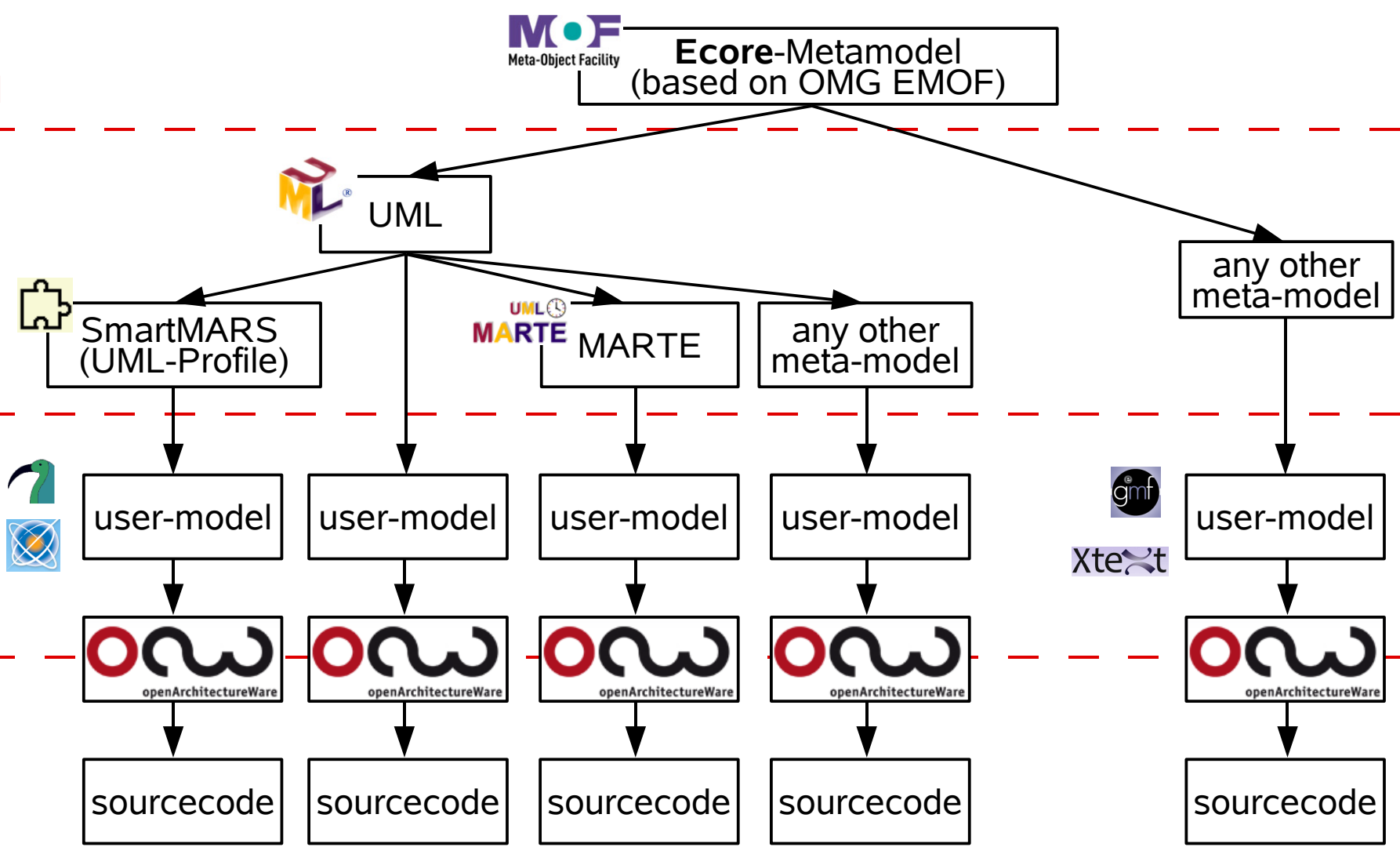
M2
meta-model

modeling tool

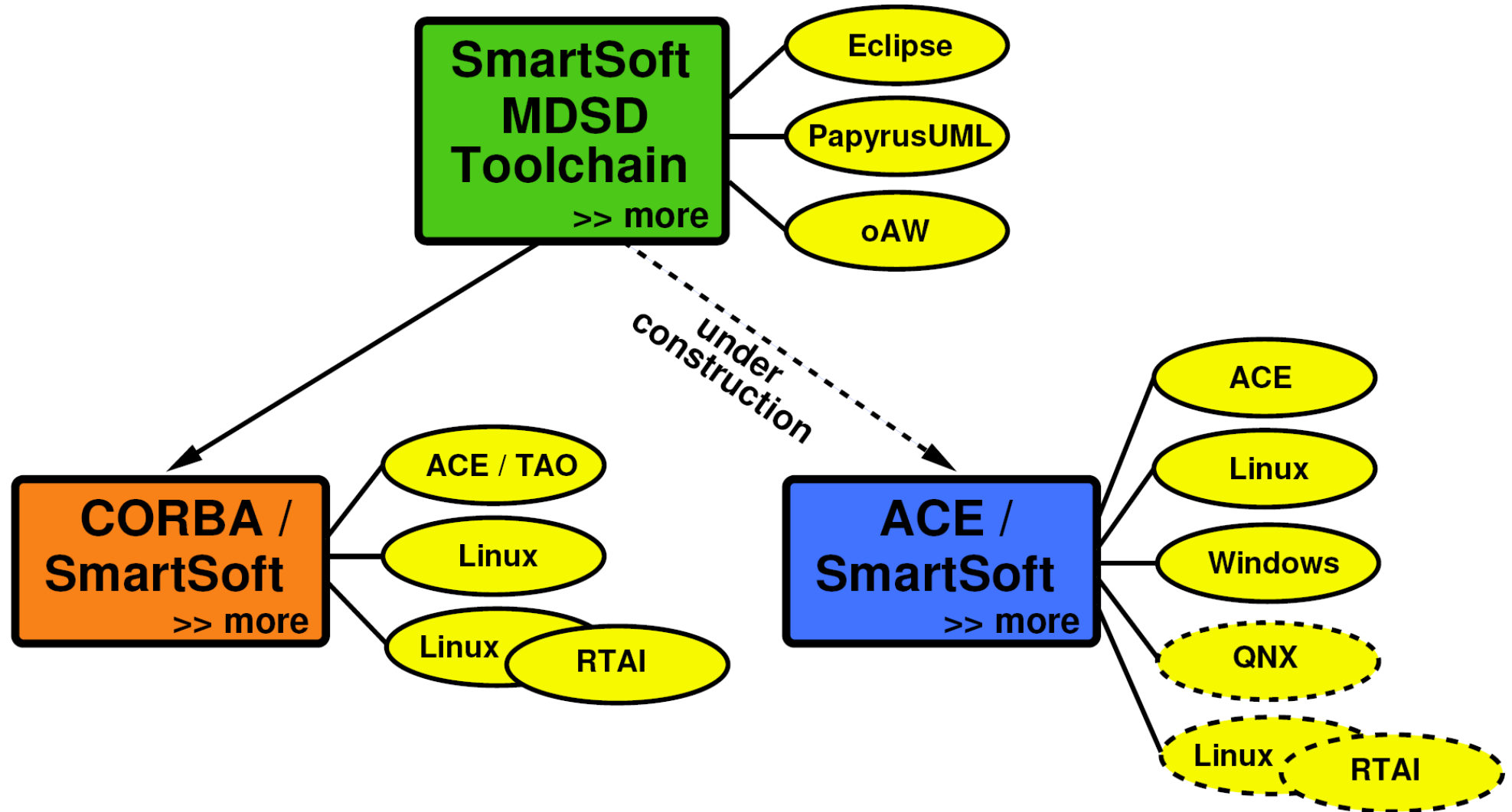
M1
model

code generation

M0
sourcecode/
text



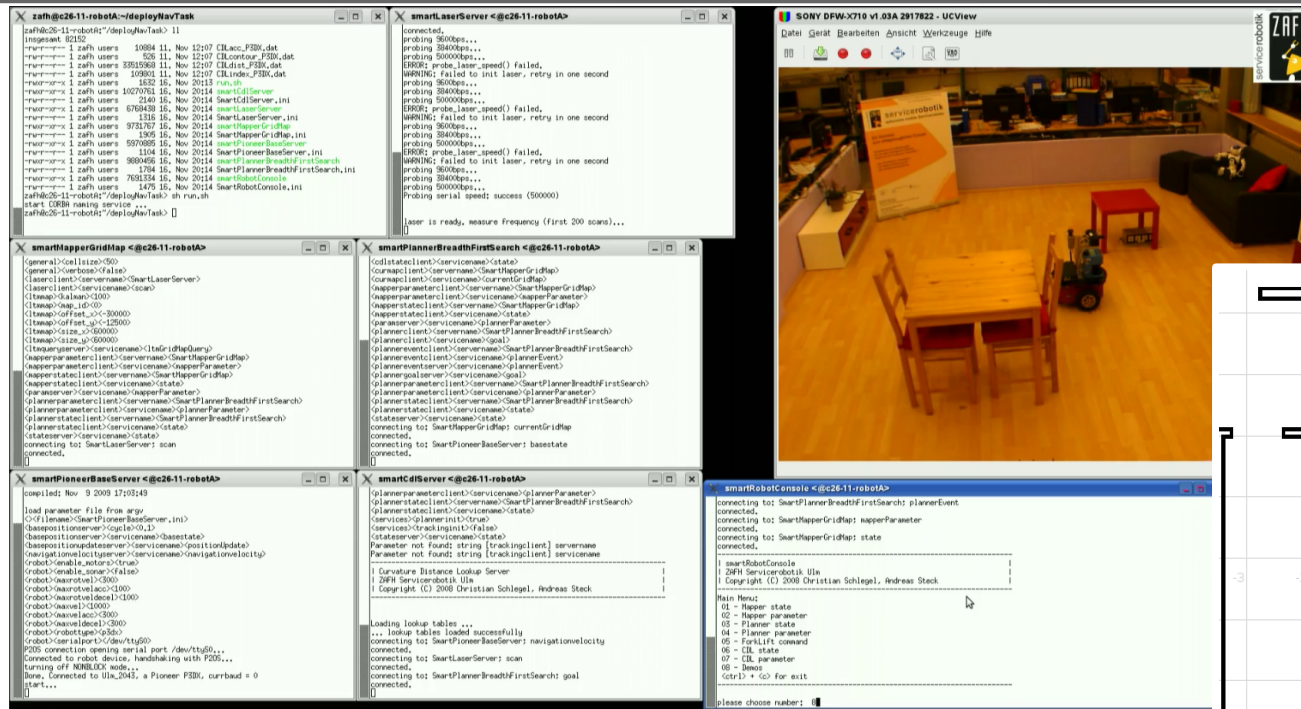
SmartSoft MDSD Toolchain



SmartSoft DSD Toolchain

Example 2: Navigation Task

overview
navigation task



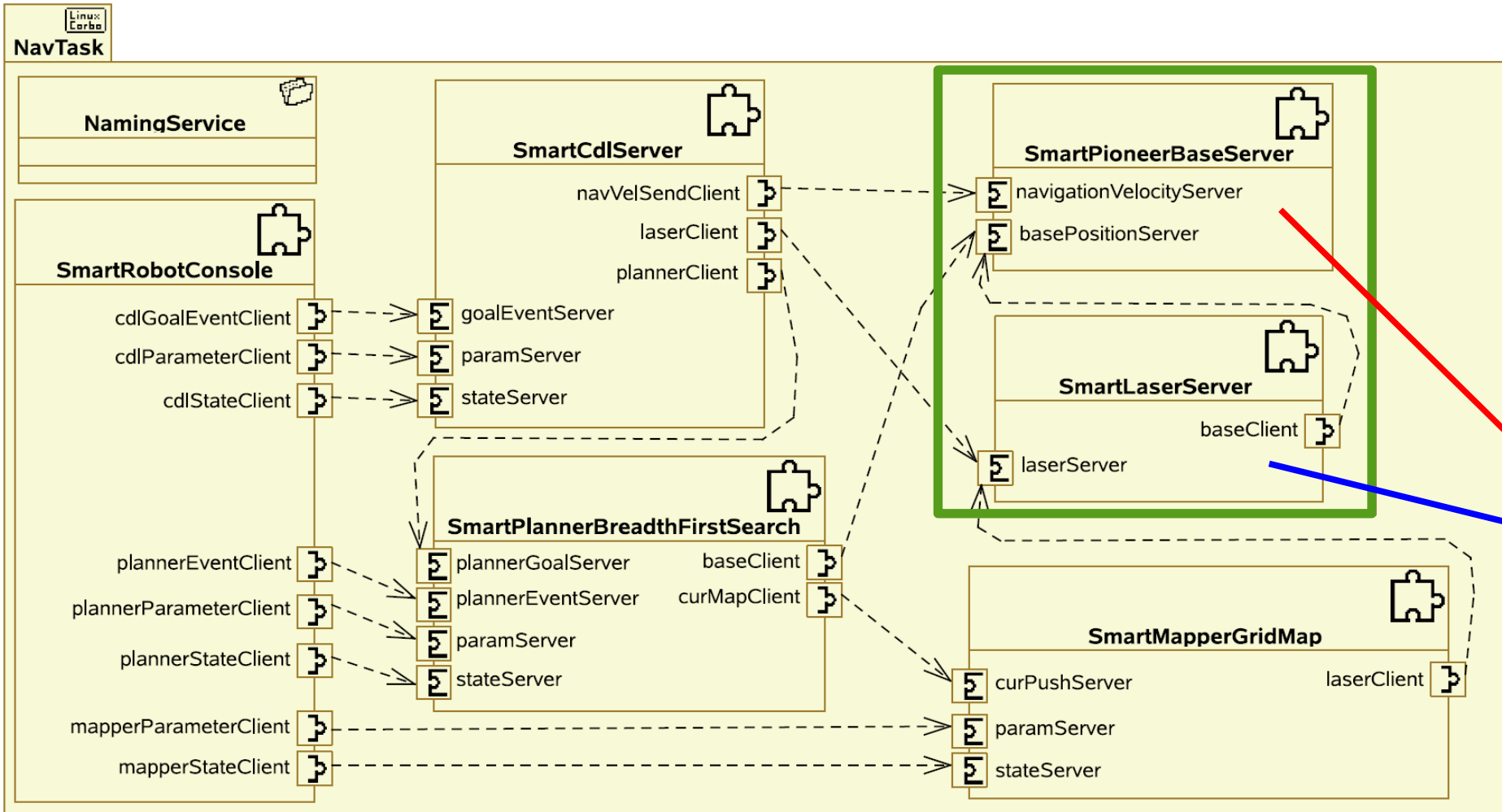
- deployment of COTS components
- simple replacement of components (P3DX/SICK ↔ Player/Stage)
- robot drives to positions given by operator
- collision avoidance, map building, path planning, etc.



SmartSoft MDSD Toolchain

Example 2: Navigation Task

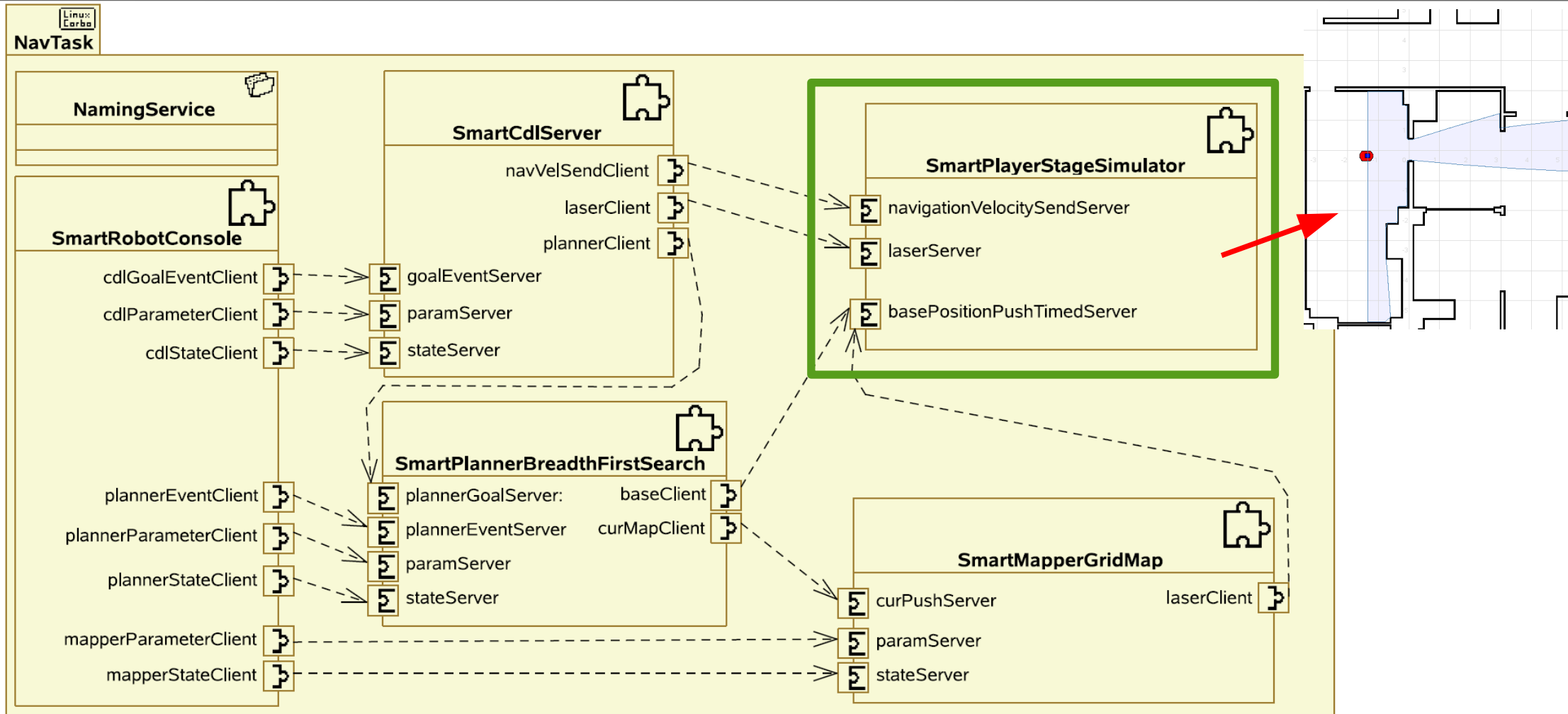
deployment
navigation task
P3DX/SICK



SmartSoft MDSD Toolchain

Example 2: Navigation Task

deployment
navigation task
Player/Stage



SmartSoft MDSD Toolchain

Example 2: Navigation Task

overview
navigation task

Live Demo

- how to create a deployment in SmartSoft MDSD Toolchain
- define the initial wiring between the components
- add platform specific details
- add target platform settings
- deploy scenario to target
- run scenario in Player/Stage simulator

watch on youtube:

<http://www.youtube.com/watch?v=4dZnDPgw3fA>

attached file:

2009-12-02-deploy-toolchain.mp4

