



RobMoSys

Introduction to the RobMoSys pilots

Susanne Bieller
EUnited Robotics



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410

What is the role of pilots in RobMoSys?



RobMoSys

- Pilots are used
 - to validate the methodology and
 - to demonstrate the use of its approach through the development of real robot applications targeted at real customers,
 - to illustrate vendor-neutral and environment-neutral composition of systems
- Pilots span
 - different domains,
 - different kind of applications,
 - different requirements.
- All pilots are centered around navigation and (mobile) manipulation

Can we use the pilots or interact with them?



RobMoSys

- RobMoSys is able to offer the following services and equipment to partners:
 - Robotics Innovation Facilities (RIFs) at CEA in Paris-Saclay
 - Centres of Competence (CoC) at TUM in Munich
 - Consortium pilots can be provided to project contributors to support designing, developing, testing, benchmarking and demonstrating their contribution.
- The realisation of the project's developments are not limited to the RobMoSys pilots, but can be created anywhere in the community.

Why does the first call not mention the pilots?



RobMoSys

- We will dedicate the **Second Open Call** to:
 - involve the community in extending the Pilot skeleton application, by using the system composition guidelines and models provided by the project;
 - develop functional components that conform 100% to these guidelines and models;
 - improve on the just-mentioned guidelines and models;
 - improve on the implementations of building blocks (whose implementation comes from the First Open Call);
 - document the integration process as a template for next-generation service robotics system integrators.



What do the RobMoSys pilots focus at?



RobMoSys

- **Goods transport in a company:**
 - Intralogistics Industry 4.0 Robot Fleet
- **Object manipulation for manufacturing applications on a production line:**
 - Flexible Assembly Cell
 - Human Robot Collaboration for Assembly
- **Mobile manipulation for assistive robotics in a domestic environment or in care institutions:**
 - Assistive Mobile Manipulation
- **Modular Educational Robot Pilot**

The core partners will be in charge of preparing shared system models and software components and developing of skeleton applications for the pilots.



Intralogistics Industry 4.0 Robot Fleet



RobMoSys

- This is a mobile goods transport scenario, such as factory intra-logistics.
- Key performance areas will be
 - performance of goods delivery and according non-functional requirements
 - ease of system integration - not just between the robotics systems themselves but also with the other IT systems in factories and companies.

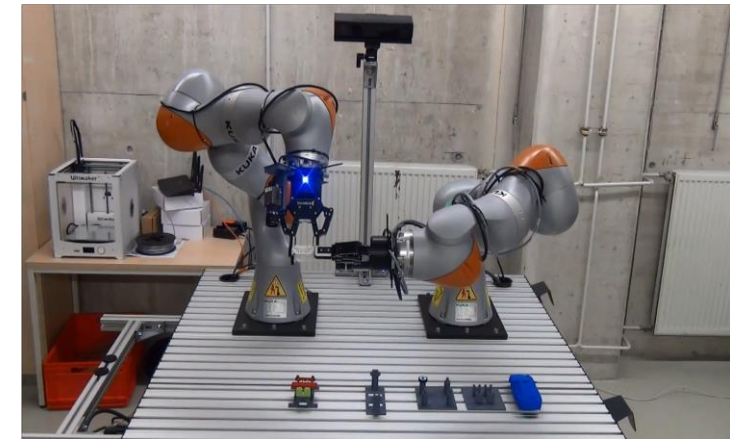


Flexible Assembly Cell



RobMoSys

- Object manipulation for manufacturing applications on a production line
 - Two robotic arms in a shared workspace
 - comparable to how two humans would share a task of moving boxes.
- Objective:
 - validate the RobMoSys methodology
 - by applying it on a discrete manufacturing task within a highly-flexible assembly cell.
 - through all stages, from design to task execution.
 - demonstrate replacement of components
- Key performance indicators include
 - Robustness
 - ease of integration and monitoring.



Human Robot Collaboration for Assembly



RobMoSys

- Object manipulation for manufacturing applications on a production line
- Objective:
 - Safety certification of the production site based on model-based risk analysis.
 - Modeling once, using everywhere: reusing task description for several robots
- This pilot demonstrates:
 - Safety certification
 - Easing the development of robotics systems
 - Flexibility and resistance to low-level changes



Assistive Mobile Manipulation



RobMoSys

- Mobile manipulation for assistive robotics in a domestic environment or in care institutions
- Objective
 - validate the RobMoSys methodology by applying it on an assistive robotics scenario in a domestic environment
 - validate the methodology through all stages from design to task execution.
- Key performance indicators:
 - ease of integration and flexibility to adaptation
 - easy comparison between different alternatives using metrics
- Use cases:
 - Replacing hardware/software components
 - Compose the robot with a new interface



Modular Educational Robot Pilot



RobMoSys

- Idea / objective of e.DO:
 - Small and modular robot, with a software development kit and optional parts for customization
 - Addressed at the educational world and a passionate community (community creation, building personal robots)
 - Modular Architecture Components for Robot and Automated Mobile Devices
 - Open Source platform development
 - Modular approach for arm and controls development
 - Application Storage Server and Community Management Tools (to share apps)
- Within RobMoSys:
 - Make the multiple submodules (today ROS compatible) compatible with the RobMoSys approach

