# Flexible Assembly Pilot

Pilot Sheet

RobMoSys defines a platform of assets and services to help **robotics industry to improve their software/system engineering practice**. Join us to **work together to create this ecosystem** and to demonstrate your own success story with **real world cases** in line with our **industrial pilots**.

Description

This pilot [1] is about highly-flexible industrial production. Advanced automation devices, like autonomous robotic systems, are no longer based on simple I/O signal communication but provide a full-fledged, high-level application programming interface to access the device's features and functionality.

This pilot showcases the development and programming of advanced production systems that can perform a large range of different tasks with high demands on performance and adaptability.
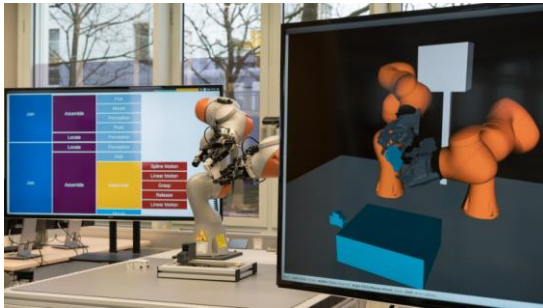

Expected Benefits

Engineering and (re)configuration of today's production systems makes automation only cost-effective for high-volume standardized production. This pilot is intended to validate the RobMoSys methodology in the context of seamless integration of hardware and software components for industrial production:

- Reduction of engineering costs for flexible production systems allowing personalized products with small batch sizes
- New approaches to automation by standardization of models and interfaces for intelligent hardware functionality
- Easy integration and extension of software tool-chains and eco-systems in industrial production setups in a vendor-neutral style
- Simplifying the entrance and usability of software components (ease of use)

Scenario Examples

- The Pilot's intended target system is an industrial production system with advanced automation equipment. A concrete example would be a mobile or a dual-arm manipulator system equipped with multiple 2D and 3D cameras.

- Potential Use-Cases would be:
    - Specification of system tasks, such as machine-tending or manufacturing, using reusable and composable task blocks in a hardware and middleware-agnostic way
    - Extend the functionality of the system with additional hardware or software
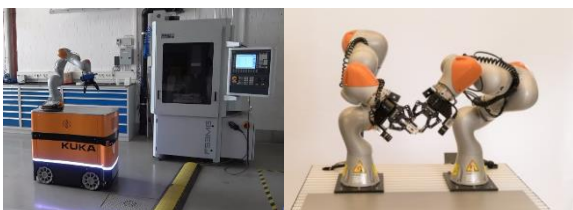
Pilot Resources

Base functionality such as object detection and manipulation, as well as navigation and an exemplary application, are available for contributors to extend, modify or build upon.
- Virtual machine with all required development tools (SmartMDSD Toolchain [2]), software and mock-up functionality implemented in ROS for programming a mobile manipulator in the context of tending a milling machine

[1] https://robmosys.eu/wiki/pilots:flexible-assembly
[2] https://robmosys.eu/wiki/baseline:components:smartsoft

Get involved in the **Second RobMoSys Open Call!**   Further information at: **www.robmosys.eu**