

ROS-Industrial in Europe

ROS-INDUSTRIAL IN EUROPE

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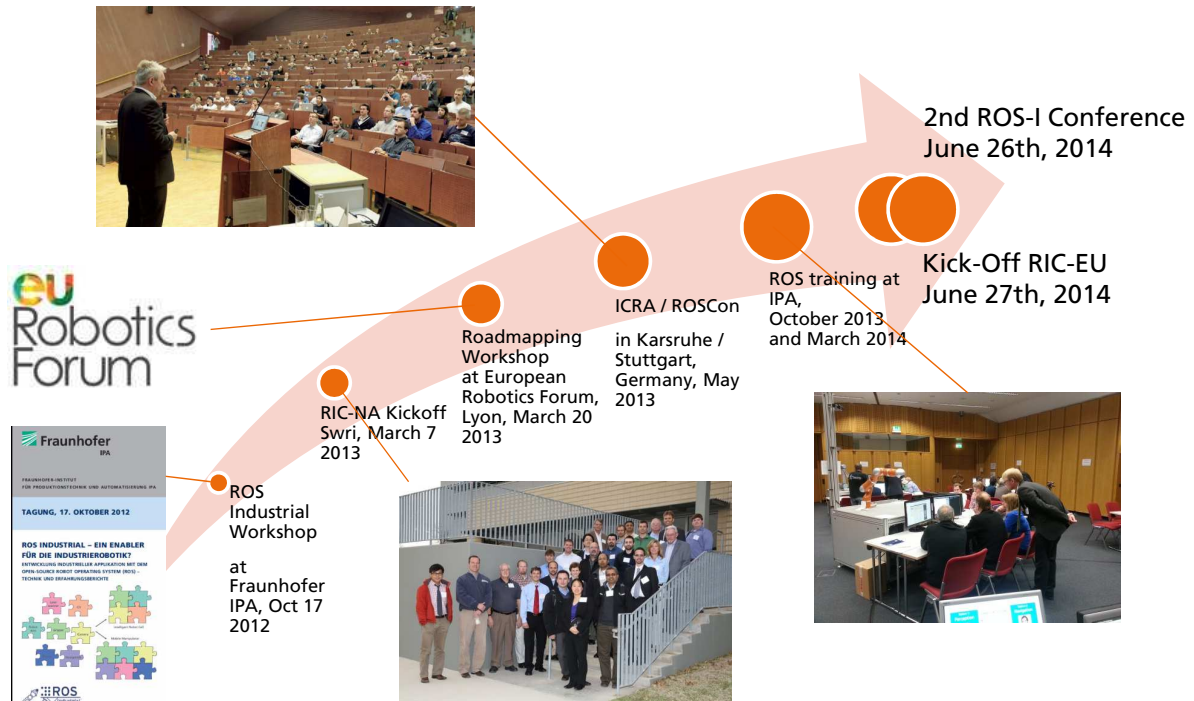
Outline

- RIC-EU Consortium Structure
- ROS-Industrial related projects in Europe
 - Factory-in-a-Day (EU/FP7)
 - ReApp (BMW)

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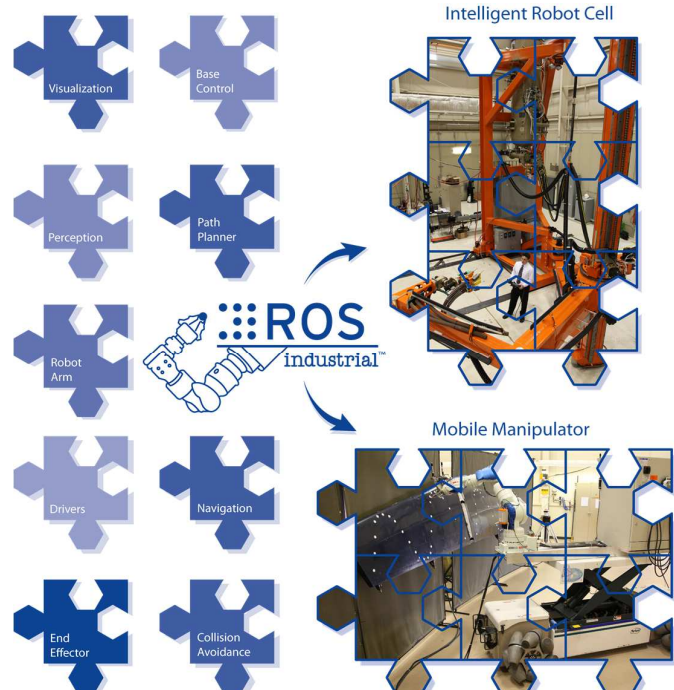
Timeline and Outlook



ROS-Industrial Initiative Motivation

Provide the following key benefits for robotics and automation industry:

- Availability of **manufacturer independent open source drivers**
- **Standardized interfaces** for industrial automation components
- **Intelligent software components** for flexible production cells
- Significant **reduction of installation times and integration efforts**



ROS-Industrial Europe Consortium

Mission



The mission of the Consortium is to accelerate the development of ROS-Industrial by:

- **Establishing a roadmap** to identify and prioritize ROS-Industrial capabilities for industrial robotics.
- Instituting and enforcing **code quality standards** appropriate for an industrial software product.
- Providing a **wide range of user services**, including technical support and training, to facilitate the continued adoption of ROS-Industrial by industry.
- Providing a mechanism for formal marketing and distribution of the code to a wider audience, thereby further **expanding the user community**, and providing greater capabilities.

ROS-Industrial Europe Consortium

Organization structure



Consortium Advisory Committee (CAC):

- Is composed of one representative from each Full Member
- Serves role of facilitating member interactions, program review and setting technical direction

Chairman of CAC:

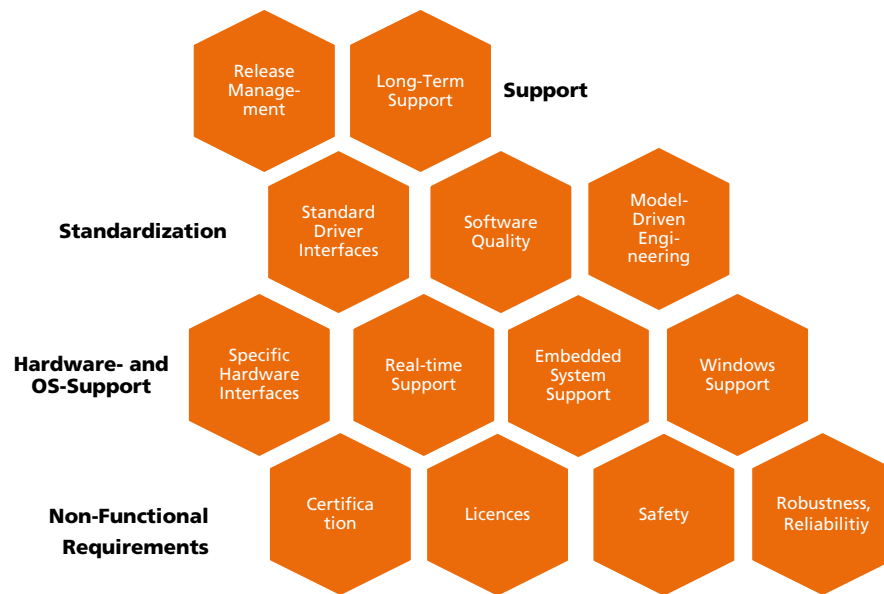
- Acts as a chairman of any CAC meeting

Consortium Manager:

- Responsible for connecting the consortium participants to the ROS-Industrial development team.
- Takes care about regular exchange with the RIC-NA
- Organizes workshops with presentations by the ROS-Industrial developers and Consortium participants along with open discussions among the entire Consortium

ROS-Industrial Europe Consortium

Technical Roadmap



ROS-Industrial Europe Consortium

Funded projects



Strategic Projects (SP)

- Initiation, Acceleration and Coordination of Open Source Community Efforts
- Goal: implementation of ROS-I roadmap and application independent basic technologies and tools
- Funded from consortium membership fees, selected by CAC
- Implemented together with Open Source community (Open Source)

Focused Technical Projects (FTP)

- Implementation of reference applications or application specific capabilities
- Proposed and sponsored by full members
- Implemented by consortium members (not directly Open Source)

ROS-Industrial Europe Consortium

Membership Levels



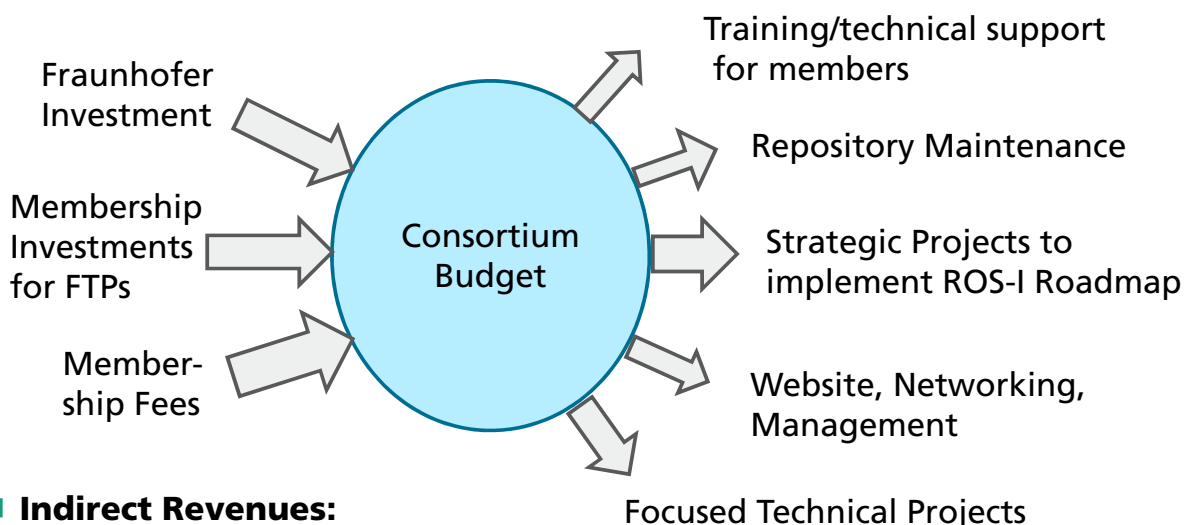
Level	Benefits/Participation Opportunities	Funding Level
Full Member	<ul style="list-style-type: none"> • Seat on the Consortium Advisory Committee • Votes to prioritize research conducted using membership fees, e.g. Focused Technical Projects (FTP) and Strategic Projects (SP) • Eligible to sponsor and participate in FTP and SP • ROS-I training of 2 persons per year (3 days workshop) • Up to 40 h Live Technical Support (direct via phone / mail) • Attendance at all events • Provide input to ROS-I roadmap • Networking 	10,000 €
Associate Member	<ul style="list-style-type: none"> • Eligible to participate in FTP and SP • Delayed access (2 years) to project data and technical reports arising from FTP (if not a participant) • Up to 20 h Live Technical Support (direct via phone / mail) • Attendance at all events • Provide input to ROS-I roadmap • Networking 	5,000 €
Research Member (University/Non-profit R&D)	<ul style="list-style-type: none"> • Eligible to participate in FTP and SP • No access to project data and technical reports arising from FTP (if not a participant) • Attendance at consortium events • Provide input to ROS-I roadmap • Networking 	2,500 €
Government Member	<ul style="list-style-type: none"> • Attendance at consortium events • Provide input to ROS-I roadmap • Networking 	0 €

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Financial structure



■ Indirect Revenues:

- Mainly publicly funded R&D projects to add specific new capabilities to ROS-I
- Technical support for non-members

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ROS-I related projects in Europe

Projects using ROS and ROS-I:

- FIAD (<http://www.factory-in-a-day.eu/>)
- ReApp (<http://www.reapp-projekt.de/>)
- LIAA (<http://www.project-leanautomation.eu/>)
- PRACE (<http://www.prace-project.eu/>)
- SMERobotics (<http://www.smerobotics.org/>)
- EUROCC (<http://www.euroc-project.eu/>)
- FIBREMAP (<http://fibremap.eu/>)
- R5COP (<http://www.r5-cop.eu/en/>)
- IFACOM (<http://www.ifacom.org/>)
- ... much more ...

Factory-in-a-Day



- Project goal: "Develop technologies and business models to reduce the installation time (and the related cost) from months to one single day."
- 18 partners ranging from research institutions and universities to small and medium-sized companies and industrial partners
- Project funded by European Union (EU-FP7), around 8M€ Budget
- More details and list of partners at <http://www.factory-in-a-day.eu>



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Analyze workflow



Design custom components for the job



Components are 3D printed



8:00 Everything is shipped to the factory



10:00 Unloading and self calibration



12:00 Instruction and teaching



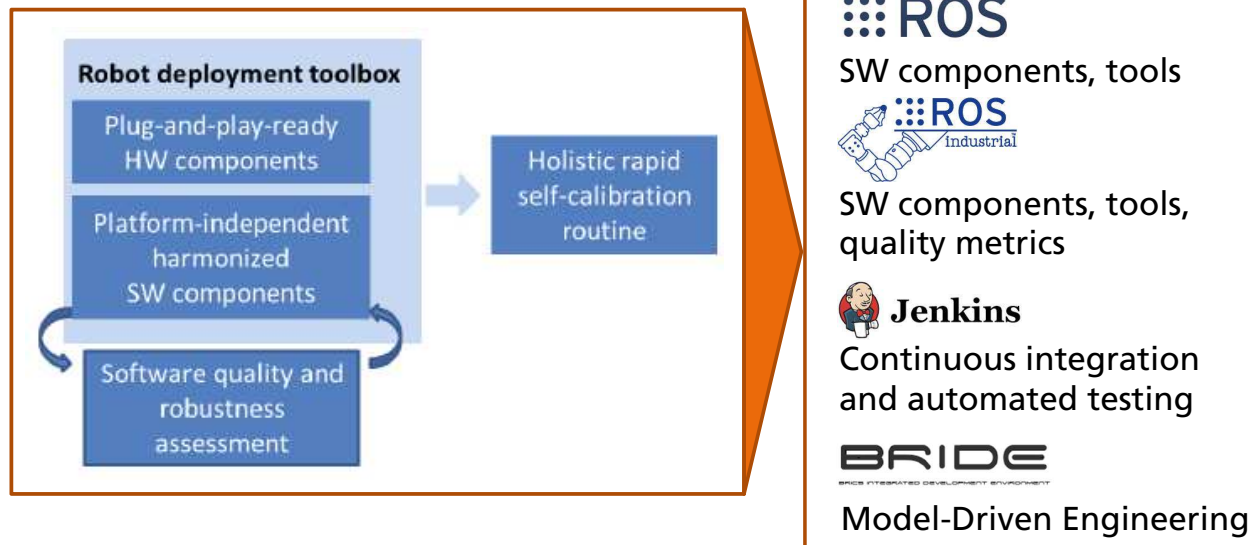
16:00 Done!



ROS-I related developments



- Integrated tool chain for developing, testing, installing and deploying SW components



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Gefördert durch:



Bundesministerium
für Wirtschaft
und Energie

aufgrund eines Beschlusses
des Deutschen Bundestages

Reusable Robotic Applications for flexible robot cells based on ROS-Industrial

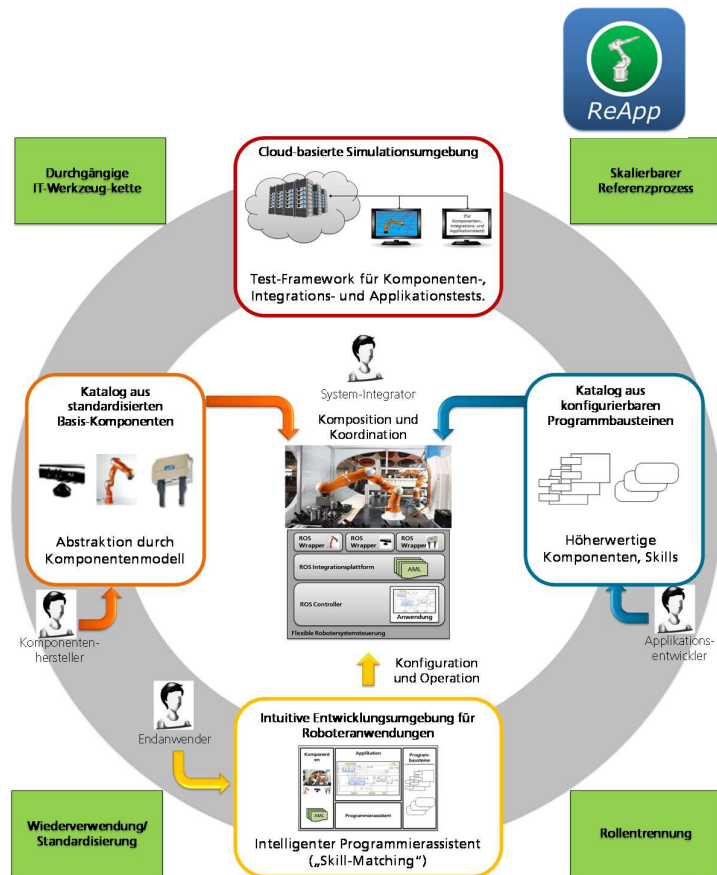


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ReApp Contributions

- Development of **intelligent components** (hardware, software) for robot systems based on ROS-I
- Provision of an **integration platform** for integrating components based on semantic technologies
- Development of an **IT toolchain** for component developers, hardware providers, system integrators and end users



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ROS-INDUSTRIAL

TECHNOLOGIES, TRENDS, APPLICATIONS