Concluding remarks

- How ROS(-I) can work for you
IPA/326 - Software Engineering and System Integration

Robot control architectures
Focus on system building “programming”

System & app. lifecycle
Focus on system testing, maintenance, improvement “DevOps / tech stacks”

Info. & runtime modeling
Focus on system composition “ecosystems”

Open Source Robotics
Interface between the community-based (bottom-up) and the industrial (top-down) approaches
How ROS(-I) can work for you

- OSR as an amplifier for your research: make it available at low TRLs, leverage communities and ecosystems to upgrade it to higher TRLs
- OSR as the “handover medium” to interface with partners along the TRL pipeline: [Science] -> [“packaged algorithms“] -> [functionalities / products / solutions]

L9: standard system
L8: first installation
L7: pilot
L6: trade fair demo
L5: lab demo
L4: feasibility shown on robot
L3: feasibility
L2: idea
L1: phenomenon
How ROS(-I) can work for you

- OSR as an amplifier for your research: make it available at low TRLs, leverage communities and ecosystems to upgrade it to higher TRLs
- OSR as the “handover medium” to interface with partners along the TRL pipeline: [Science] -> [“packaged algorithms”] -> [functionalities / products / solutions]
- OSR as the complement to other standards, e.g., I4.0-mandated

Applications

Perception, visualization, planning, debugging libs, ...

Middleware, motion control, engineering data, ...

HW-specific utils
Concluding remarks

- How ROS(-I) can work for you
- How you can work for ROS(-I)
How you can work for ROS(-I)

- Join the ROS-Industrial Community (free and open)
- Join a ROS-Industrial Regional Consortium (paid-for membership)
- ROS-I Consortia benefits:
  - Training (prioritized and discounted access – next up on Jan 22-26 at IPA)
  - Dissemination events (ditto)
  - ("standardization" / topic-specific WGs)
- ROS-I Consortia costs:
  - 2,500 – 10,000 $ / € / eq. in SG$ per year, depending on membership level (rosindustrial.org/s/ROS-Industrial-EU-Agreement.pdf)
Concluding remarks

- How ROS(-I) can work for you
- How you can work for ROS(-I)
- What’s next
Meet us at Automatica!
Selected the activities next year

- **Training:**
  - three editions of the ROS-I Academy at IPA, starting Jan 22-26
  - more training at third-party sites: not enough people knowing about ROS still mentioned as one of the most significant obstacles for the spread of OSS in automation
  - candidate third-party site? -> write mirko.bordignon@ipa.fraunhofer.de

- **Dissemination:**
  - ERF, Automatica, ROS-I Conference 2018, RIC-NA + APAC events

- **Technical stewardship:**
  - “roadmapping bottom-up”: facilitating the interaction on topics of increasing interest with a topic champion (-> WG chair)
  - candidates WGs: education, information models / profiles for HW modules
  - candidate topic? -> write mirko.bordignon@ipa.fraunhofer.de
ROS-Industrial Conference 2018

- Tentative dates: Dec 11-14, 2018
- Location: still Stuttgart, bigger hotel / conf. room 😊
- Content:
  - Like ’16 & ’17, a selection from ICRA, IROS, RIC-NA/APAC, Automatica, SPS, etc
  - Updates from Open Robotics, ROS-I Consortia
  - Updates from ROSIN
  - Topics / sessions under consideration:
    - Construction automation
    - Outdoor / agricultural robotics
    - Platforms (“API Economy”, etc)
    - Future of jobs / policy making
ROSS-Industrial Conference 2018 – side tour: ARENA2036

ARENA2036 Building

- Research space of about 10,000 m²
- Up to 160 fulltime employees
- 1 year construction time
- Funded with more than € 30 Mio. of state- and EU-Funding (EFRE)
- Build on the campus of the University of Stuttgart
- Cutting edge building technology

Mobility2036:

Automobile with highly integrated lightweight modules

Production2036:

Versatile production without production line

Industry 4.0 from development to production
Concluding remarks

- How ROS(-I) can work for you
- How you can work for ROS(-I)
- What’s next
- Acknowledgments
  - First and foremost: thanks to our speakers!
Thank you to members of the ROS-I Consortia worldwide
Further acknowledgements – IPA / 326

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Dr. Björn Kahl  
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Mathias Lüdtke  
Johannes Stoll

(joint affiliation KIT+IPA)

We are hiring!
mirko.wiki/jobs
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- All the exhibitors during the demo session: thanks!

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rosin-project.eu
Slides from the event will be available on rosinustrial.org ASAP

Questions?

mirko.bordignon@ipa.fraunhofer.de