ROS INDUSTRIAL – AN ENABLER FOR INDUSTRIAL ROBOTICS?

DEVELOPMENT OF INDUSTRIAL APPLICATIONS WITH ROS – EXPERIENCES
The integration of hardware and software components into new automation applications is still a big challenge regarding interface adaptations, communication, conduction of components and integration tests as well as optimization of parameters for the target scenario. In addition, applications in the automation domain are often developed from scratch with only limited software reuse.

Using component-based development in combination with reuse of existing software and hardware components promises a significant improvement in efficiency for application development.

A prominent example for a widely used component-based framework is ROS, which focuses on code reuse in robotics research and development and offers already great variety of mature robotic software components (e.g. SLAM, motion planning, 2D/3D perception).

In this conference methods and procedures for the component-based development with ROS are presented that increase the reusability of existing components. Furthermore, the ROS Industrial initiative is introduced that matches existing ROS components to the needs of industrial applications (e.g. quality assurance, robustness, etc.). Concrete examples how ROS is already used in industrial applications today are given in the conference.

We are looking forward to welcome you at Fraunhofer IPA at our conference.

September 2012

Directors

Prof. Dr.-Ing. Dr. h. c. Alexander Verl

Prof. Dr.-Ing. Thomas Bauernhansl
OBJECTIVES

In this conference we want to bring together representatives from academia and industry to exchange experiences on application development with ROS and clarify the needs of industry with respect to ROS Industrial. The participants have the opportunity to get information on the starting initiative of ROS Industrial and generate and influence the goals, timelines and development priorities of the community development.

Conference Topics:
- Presentation of methods and procedures of component-based development with ROS
- Introduction of the ROS Industrial initiative
- Examples of successful technology transfer from academia to industrial applications
- ROS for product development

TARGET AUDIENCE

This conference addresses developers of industrial robotic applications, system integrators and executive personal of small and medium-sized enterprises as well as R&D division of larger companies in the field of automation, logistics and production.
8.30 Coffee Break

9.00 Alexander Verl, Fraunhofer IPA
Welcome and Introduction

9.15 Shaun Edwards, Southwest Research Institute
**ROS Industrial – Open Software Components for Industrial Automation**
- Overview of the open source Robot Operating System
- Open software components for industrial automation
- The ROS Industrial Consortium, commercial support for an open source solution

10.15 Alexander Bubeck, Fraunhofer IPA
Model driven engineering: A Way to Handle Complexity, Quality and Processes in component based Robot Systems
- Introduction to model driven engineering (MDE)
- Application of process and component models to ROS
- Development of ROS systems with the BRICS IDE, an Eclipse based MDE-toolchain

10.45 Coffee Break

11.15 Christopher Parlitz, Schunk GmbH & Co. KG
**Industrial Gripping Technology and Components for mobile Production Assistants**
- Components of mobile manipulation
- Robotics as "science of integration"
- Example applications
- ROS as possible enabler
11.45  Florian Weißhardt, Fraunhofer IPA
Accelerating Technology Transfer through Open Source Components
• Existing open source components
• Description of application and hardware components
• Experiences on system integration and application development

12.15  Lunch

13.15  Lab Tour at the Fraunhofer IPA facilities

14.00  Benjamin Pitzer, Robert Bosch LLC, USA
ROS for Product Development
• ROS – A platform for academic research only?
• Analysis of ROS quality of code compared to code developed according to industrial standards
• Customization of ROS to industrial computation architectures

14.30  Cristina Cristalli, Loccioni Group
New Challenges for Mobile Service Robots conceived to Work in Industrial Environments
• Service and industrial robotics: two different worlds?
• Application case: Mo.Di.Bot: Mobile Diagnostic Robot
• Hardware setup, software architecture and system capabilities
• Validation in real-world scenarios

15.00  Robert Eidenberger, Siemens AG
Developing Industrial Applications with ROS
• Robotics at Siemens Corporate Technology: A survey and application examples
• The Active Perception Framework and the impact of ROS
• Key requirements of ROS towards industrial applications
15.30 Coffee Break

16.00 Erik Nieves, Yaskawa Motoman Robotics
Why Industrial Robot Manufacturers Should Care about ROS
• ROS speeds time to market by acting as a force multiplier for development
• The implications of ROS for peripherals and associated technologies
• ROS Industrial as an enabler for wide adoption

16.30 Kurt Nielsen, Danish Institute of Technology
How to Work with Innovation, Automation and Research when being a Manufacturing Company?
• How to select and implement strategic automation solutions
• Project examples (videos)

17.00 Final Discussion

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17.30 End of Conference
GENERAL CHAIR
Prof. Dr.-Ing. Dr. h. c. Alexander Verl
Director of Fraunhofer IPA
Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA, Stuttgart

SESSION CHAIR
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Group Manager Software Engineering und Systemintegration
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GENERAL INFORMATION

INFORMATION AND REGISTRATION
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ORGANIZATION
Verein zur Förderung produktionstechnischer Forschung e. V. (FpF), Stuttgart

CONFERENCE FEE
The conference fee is Euro 500,— per person.
This fee includes the participation in all presentations, conference documents with the presentation material, lunch and refreshments during the conference.

REGISTRATION
We request online registrations to the participation with informal mail containing the participant’s name, address and possibly deviating invoice address. After the registration, the invoice and further information will be sent to you if necessary.
The deadline for registration is Thursday, October 4, 2012.

CHANGE OF REGISTRATION
A change of registration to another participant is possible. Please inform the conference office about the alternate participant. This service is possible at any time and free of charge.

CANCELLATION OF REGISTRATION
For cancellations until 10 days before the conference we have to charge Euro 100. After this date the full participation fee is charged.
ACCOMMODATION IN STUTTGART

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Please ask for special Fraunhofer rates.

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CONFERENCE
OCTOBER 17, 2012
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DEVELOPMENT OF INDUSTRIAL APPLICATIONS WITH ROS – EXPERIENCES
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**REGISTRATION:**
Register for the Fraunhofer IPA Conference (Organisation Committee FpF)

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October 17, 2012
Conference Fee € 500,-

Please pay after having received the invoice and confirmation of registration

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