ROS-Industrial Consortium Americas

Driving to Advance Robotics Capability & Accessibility

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Industrial Robotics – Silos & Stagnation

Stagnated Due to Reliance on Large-scale Manufacturers that Leverage Sheer Volume to Offset Cost and Limitations

Industrial Robot Sales in North America 1993–2017

- Welding
- Material Handling
- Dispensing/Coating
- Other

Industrial robots are not evolving to do new tasks!
A Disruption in Software for Automation

Enter ROS – Robot Operating System

- Open Source
- Established to prevent re-inventing the wheel
- Maintained by Open Robotics
- Reusable Software Components
- >1,000,000 user downloads/mo
What is ROS-I?
Technical Vision Supported by Industry

Quality, Improved User Experience, Novel Intelligent Capability

- CAD to ROS
- 3D Reconstruction
- Perception
- Developer Tools
- Ease of Use
- Advanced Capability

- MTConnect
- PackML
- MTConnect/PackML
- IL, OEE Dashboards
- Interopability

- Collaborative
- Voice Command
- Human Interface
- & Reaction

Members

ROS Industrial Consortium

ROS-Industrial Consortium Americas
2020 Annual Meeting
Attacking End-User Opportunities

Significant inefficiencies driven by limitations in legacy systems & processes

Legacy Automation Support Costs

Cost Drivers that Challenge Period Cost Structure to Support Automation

**Program New Parts**
- Asset Specific
- Programs do not transfer or scale
- Creation of New Program is Cumbersome
- Validation ‘On the Fly’ – under supervision

**Update/Create Programs for Engineering Changes**
- Involves Detail Program Review
- Programs are still asset specific
- Validation ‘On the Fly’ – under supervision

**Modify Programs to Resolve Down Condition**
- Input Variations
- Limited Range to Manage Change in Condition
- Desire to Meet Delivery Timelines
- Difficult to manage in a PCN culture

Automated – In the context of time – 66% of time is manual activity to enable and compliment the automation
Consortium Driven ROS Development

• Provide Direction
• Enable Investment to Accelerate Development
• Education
• Efficient Pipeline from Universities to End-Users
• Global Leverage with Regional Focus
Delivering Capability Into Production

Intuitive Process Application – Registration, Multi-ProcessPlanning
Driving End-User Value through Collaboration

People and Machines Working Together

Enable Hardware to Work Together

Seamless Set Up and Production
Improved User Experience

Training
Workshops
Front-End Utilities

End-User Off-Line Process Planner

First ROS2 Training for Industrial Partners
MoveIt Workshop in Macau 2019
ROS Qt Creator PlugIn with ROS2 Support
End-User Off-Line Process Planner
Means to Collaborate & Work Together

- Member Forum
- Quarterly Community Meetings to Share Progress
- Mid-Year Consortium Advisory Council Meeting
- Focused Technical Projects
Member Feedback to Capability

- Improved Reconstruction Tools
- Process Planning
- Hybrid Planning
- Optimization-based Free Space Planning
- Process Analysis Tools
Combining Forces to Accelerate Progress

- ARM Institute
- Open Robotics
- MoveIt
- Workshops across communities
- Work with members to collaborate on opportunities
- Scale training
Leverage of Developed Building Blocks

• Grab and Go Capability
• Cross-Platform
• Assured Quality and Performance
• Non-expert Application Set Up
• Enable Solution Developer and End-User Value

GUI-Based Registration & Process Application
Continue to Foster Collaboration

- Break down barriers to enable efficient project launch
- Drive value through capability and ability for IP development
- Collaborate across global network to leverage each region focus areas
- Provide the tools to enable a broader community
ROS-Industrial is a community

• Each member contributes to the vision

• A foundational repository of enabling building blocks

• Grow a community with a passion towards open source for industry
Tools & Resources for the Community

- ROS-Industrial
  - Home: rosindustrial.org
  - Documentation: wiki.ros.org/industrial
  - Training: http://ros-industrial.github.io/industrial_training/
  - ROSin: http://rosin-project.eu/
  - Upcoming Events (https://rosindustrial.org/events-summary/)
Thank You!