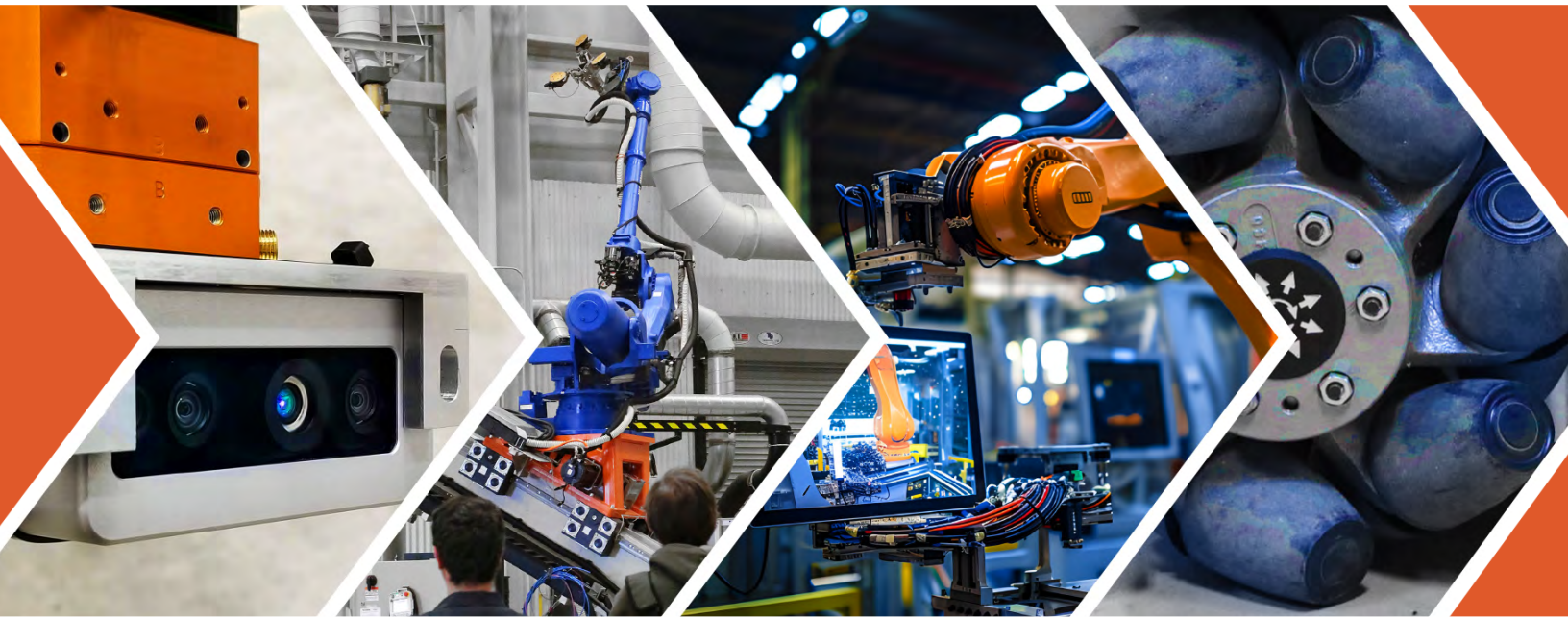


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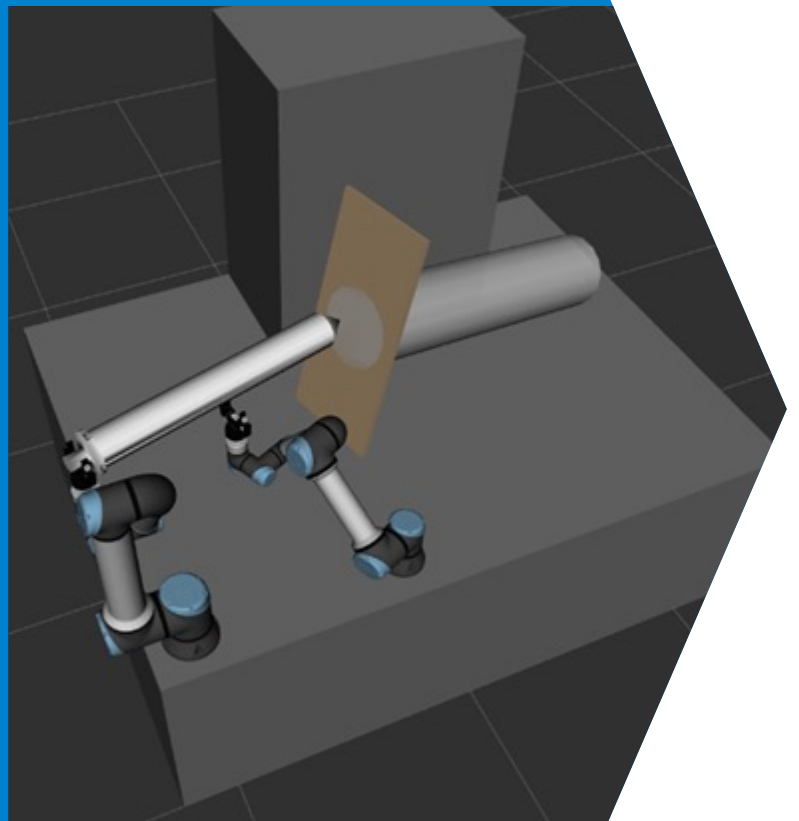
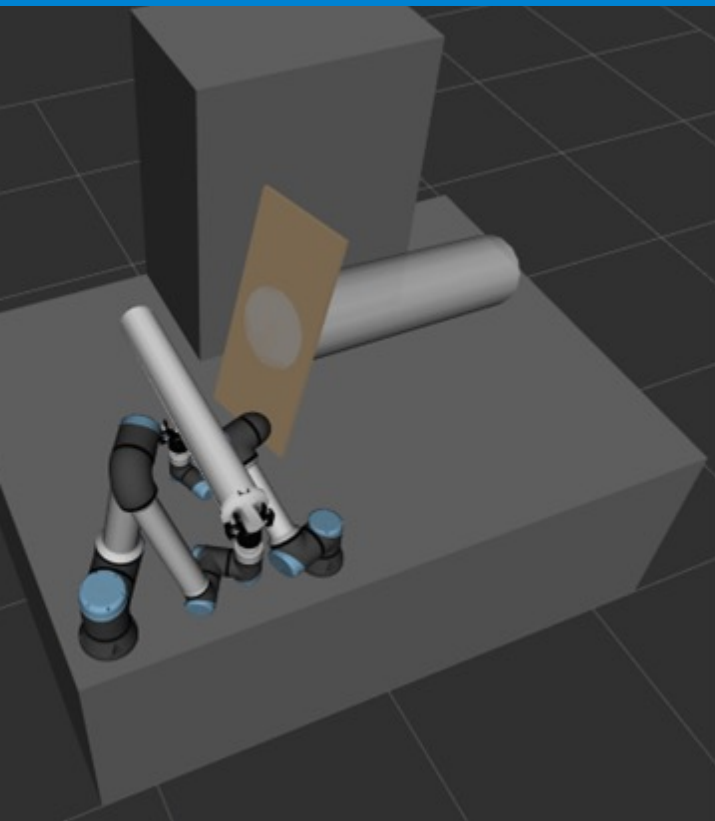


D E T R O I T

ROS-Industrial Consortium – Americas 2025 Annual Meeting

Detroit, MI • May 14-15, 2025

ROS-Industrial Consortium Americas Annual Meeting 2025



In-the-loop motion plan for dual manipulator coordinated handling.

Renewed Focus on What the ROS-Industrial Open Source Project Delivers

ROS-Industrial is an open source project that applies the advanced capabilities of ROS to relevant industrial hardware and robotics applications. Now in its thirteenth year, ROS-Industrial is helping to enable industrial innovation that was previously infeasible or cost-prohibitive for manufacturing and industrial robotics.

Not long ago, it was thought that the primary focus of a ROS-Industrial project was just to drive engagement in the idea that open source software could be used for industrial robotic applications. This goal has not only been realized, but it could be considered that open source capability has laid the foundation for the acceleration of some of the most compelling advanced robotics capability emerging from the sector.

The ROS-Industrial Consortia collaborate in a federated way, optimizing regional opportunities but working in concert to forward a vision. In the European Union, progress continues via AI-Matters, a European Union Grant program, which aims to provide reference hardware implementations that work efficiently with ROS 2 in meaningful industrial settings. Within the Asia-Pacific region, there has been significant development around a technology demonstration for Robotics Middleware Framework and focusing on application level easy to use technology components, such as easy perception and easy manipulation frameworks. These ROS-Industrial aligned initiatives, along with the individual contributions of members in the core ROS and ROS 2 technical support communities, have combined to enable ROS to gain traction in a way that ROS is nearly considered a standard for robotics application development.

Within the Americas specifically, the ROS-Industrial initiative has continued to grow to include new compelling capabilities:

- Optimization-based Path Planning
- Dynamic Part Reconstruction
- Improved Architectural Approaches
- Sample Applications for Teaching

That said, we spent the last year revisiting the roadmap through engagement with the Americas community and global discussions about proposed approaches. A newly drafted roadmap builds on the concepts of modularity and frameworks to enable more efficient application development. Working with sister Consortia in parallel ensures the best solutions migrate into the ROS-Industrial ecosystem while leveraging synergies to enable more efficient utilization of resources.

Welcome to the twelfth edition of the ROS-Industrial Consortium Americas Annual Meeting. We look forward to providing both a valuable update relative to what has been accomplished but we also seek to leverage this time to improve the overall ROS-Industrial project and affiliated resources.

Goals & Strategies

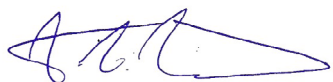
As we have provided in the past, the goals across the Consortia include:

1. Provide a one-stop location for manufacturing-related ROS software
2. Strive toward software robustness and reliability to meet the needs of industrial applications
3. Combine the relative strengths of ROS and existing technology, combining ROS high-level functionality with the low-level reliability and safety of an industrial robot controller
4. Stimulate the development of hardware-agnostic software by standardizing interfaces
5. Provide an “easy” path to apply cutting-edge research to industrial applications by using a common ROS architecture
6. Provide simple, easy-to-use, well-documented application programming interfaces

The Consortia and their memberships have been actively influencing this strategy. It is evident that this collaboration is leading to tangible benefits that move from university into industry adopters.

Thank you for participating in the idea of open source robotics for industry. As with any change, this takes a community to enable the realization of any vision, so thank you for being a part of the ROS-Industrial Community!

Thanks, Matt Robinson, RIC-Americas Program Manager



Objectives of the ROS-Industrial Consortium Annual Meeting

The ROS-Industrial Consortium Americas Annual Meeting brings together Consortium members to review recent developments, stakeholder and partner initiatives, activities from sister Consortia, and to discuss and provide input on the vision and strategic direction of ROS-Industrial.

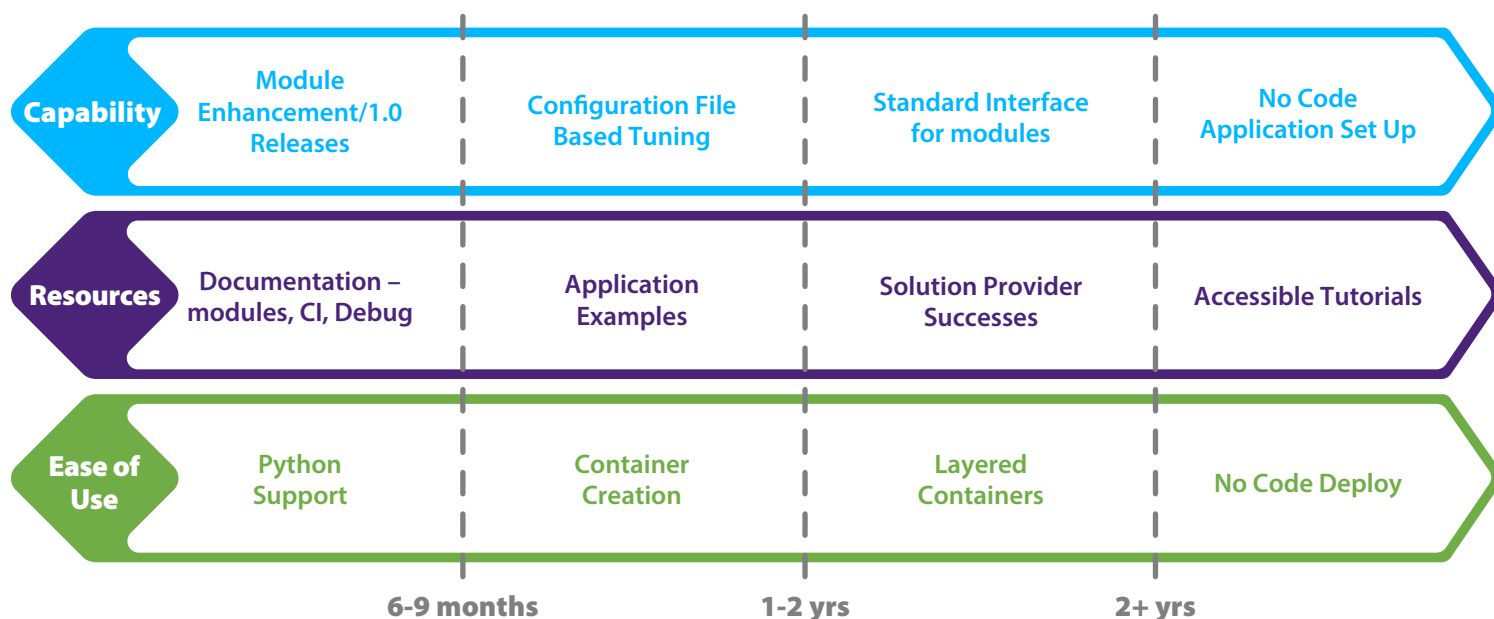
This event includes both public and private sessions to foster awareness and promote the growth of the ROS-Industrial network through collaborative workshops and engaging presentations. These sessions highlight the value and progress within ROS-Industrial and demonstrate how the Consortium supports its vision.



The specific objectives of this event are:

1. To understand the current technical and sustainability status of ROS-Industrial, review the past year's progress, and discuss future proposals.
2. To learn about the latest strategic, non-technical initiatives that advance the use, adoption, and support of ROS-Industrial.
3. To engage in updated collaborative workshops focusing on the draft roadmap, global collaboration goals, and guidance for interface development.
4. To communicate successes and challenges during workshops and networking opportunities.
5. To generate compelling project topics that address the biggest challenges faced by members, based on identified problems.
6. To share the insights gained with your organizations, provide feedback, and continue participating in these events and other regional meetings throughout the year. Active engagement from members and the community is essential for the realization of ROS-Industrial's full potential

Roadmap



Note: Collaborative Projects like Robotic Blending and challenge events (Intrinsic and OpenCV Challenge!), and additional collaborative Consortia activities help realize the stated delivery times.

Chairs

Matt Robinson – Program Manager, ROS-Industrial Consortium Americas

Paul T. Evans, P.E. – Executive Director, SwRI, Intelligent Systems Division

Michael Ripperger – Technical Lead, ROS-Industrial Consortium Americas

May 14 - Welcome & Networking Dinner

Ottava Via
1400 Michigan Ave., Corktown, Detroit, MI
(313) 962-5500

The welcome dinner is a chance for members and guests to network and socialize in a relaxed atmosphere. The dinner is included with registration and open to all attendees, but advanced registration is required. Dinner starts at 6:30 p.m. Eastern.

Agenda

May 15

Huntington Place, Room 140DEF

0815	Light Breakfast, Check In	
0835	Welcome and ROS-I Americas State of the Consortium	Matt Robinson, RIC-Americas Program Manager, SwRI & Michael Ripperger, RIC-Americas Tech Lead
0910	ROS-Industrial Consortium Updates from the EU	Yasmine Makkaoui, RIC EU Scientific coordinator, Fraunhofer IPA
0935	Accelerate Robotics Deployment with a Digital-Twin and Multi-Agent AI Platform	Maria Vergo, RIC AP Program Manager, ARTC
1000	Break	
1020	Winding Down ROS 1, and Winding Up Kilted Kaiju	Kat Scott, Developer Relations, Intrinsic
1045	AI in Automotive Assembly with MoveIt Pro and ROS	Dave Grant, CEO and Dave Coleman, Founder of PickNik Robotics
1110	ARM Institute Technical Update: Key Initiatives in Robotics, AI, and Advanced Manufacturing	Miguel Rodriguez, Programs Manager, ARM (Advanced Robotics in Manufacturing) Institute
1135	Lunch	
1200	Keynote – Industry Leveraging Local Universities for Technology and Skill Development in ROS	Andrew Roberts, Research and Technology Manager (NDI/DM), Spirit AeroSystems
1300	The Latest in Communication and Interoperability from PushCorp	Max Falcone, VP of Sales Engineering, PushCorp
1325	The Challenges of Robot and Process Agnostic Methodologies for Convergent Manufacturing Applications	Logan McNeil, Applications Engineer, EWI
1350	Break	
1400	An Introduction to the FANUC ROS 2 Driver	Eric Lattas, Staff Engineer, Fanuc
1425	Industry Partners in Intelligent Robotics: The Tec de Monterrey Model for Training the Next Generation of Engineers	Prof. Alberto Munoz, EIC-Tec de Monterrey
1450	Break	
1500	Rotating Workshops ROS-I Roadmap and Prioritization – Review/Throw Rocks Documents and Resources for Improved Leverage – OEM Drivers. More efficient leverage and use of developed resources	
1630	Summary of Workshop outputs	
1645	Closing Remarks	
1700	Adjourn	

Welcome & State of the ROS-Industrial Consortium Americas



Matt Robinson, ROS-I Consortium Americas Program Manager, SwRI

Abstract: Matt Robinson will cover the latest developments out of ROS-Industrial Consortium Americas, what resources have been provided, and what are the upcoming initiatives that are of interest or aligned with the Consortium objectives.

Bio: Matt Robinson is the Program Manager for the ROS-Industrial Consortium Americas, an industry-driven open source program bringing advanced manufacturing solutions for the industrial robotics community. Prior to his current role, Mr. Robinson was team leader for Caterpillar's Manufacturing Technology Automation Research where he led development and deployment of automation tools to improve the performance and productivity of Caterpillar manufacturing facilities around the globe.

Mr. Robinson also led manufacturing value stream design initiatives that led to the deployment of over 50 robotic/automated manufacturing systems around the world.



Michael Ripperger, ROS-I Americas Tech Lead, SwRI

Abstract: Michael Ripperger will be sharing the latest technical developments within the ROS-Industrial Consortium Americas, focusing on updates to repositories and capabilities, and what is upcoming relative to ease of use, modularity and application-level development approaches.

Bio: Michael Ripperger is a Senior Research Engineer at Southwest Research Institute. He leads the development, design, and deployment of advanced "scan and plan" robotics systems, which use sensor data to autonomously perform various manufacturing tasks with minimal user guidance. In these efforts he has developed software for the perception, tool path and motion planning, hardware interface, and user interface components of these applications. He currently serves as the software lead for several automation projects in a variety of fields, including the Advanced Automation for Agile Aerospace Applications (A5) program.

ROS-Industrial Consortium updates from the EU



Yasmine Makkaoui, ROS-I Consortium EU Scientific Coordinator, Fraunhofer IPA

Abstract: This presentation will cover updates from the Europe side of the ROS-Industrial Consortium and will share recent activities from the European consortium members.

Bio: Yasmine Makkaoui is a research engineer in the Robotics Department at Fraunhofer IPA in Stuttgart, where she develops software for advanced robotic systems.

She also recently joined ROS-Industrial Europe as the Scientific Coordinator, leading efforts in public funding acquisition and organizing collaborative events to strengthen industry-academia engagement.

Accelerate Robotics Deployment with a Digital-Twin and Multi-Agent AI Platform

Maria Vergo, ROS-Industrial Consortium Asia-Pacific, Program Manager, ARTC



Abstract: In this presentation, we will discuss the latest advancements in the Robotic Middleware Framework (RMF) and its crucial role in enhancing robotics interoperability across various sectors. We will provide an update on RMF 2.0, illustrating how it is being tailored to address the complex demands of manufacturing and logistics environments.

As part of our regional development strategy, we are focused on increasing ROS adoption through initiatives aimed at building capabilities and engaging the ecosystem. A significant milestone is the upcoming launch of the first assessment under the new Train-and-Place program, which is designed to accelerate talent development and deployment in robotics applications.

Additionally, we will share progress in our work on multi-agent AI, which enables intelligent coordination among diverse robotic platforms, seamlessly integrated with RMF. These combined efforts aim to enhance agility, scalability, and efficiency in robotic systems through robust interoperability.

Bio: Maria Vergo is a talented professional with a diverse background in digital solutions. She graduated with a first-class honors in Chemical Engineering specializing in control and automation. She started her career in engineering before transitioning to a techno-commercial role. It was in this role that she discovered her passion for business development, particularly in the field of robotics.

Currently, Maria serves as a Consortium Manager of ROS-Industrial Consortium Asia Pacific, where she manages complex projects and stakeholder management while ensuring successful project execution. Her extensive experience in digital solutions for multinational companies has given her a unique perspective on the challenges and opportunities that arise in this field.

Winding Down ROS 1, and Winding Up Kilted Kaiju

Katherine Scott, Kat Scott, Developer Relations, Intrinsic

Abstract: In this short talk, Katherine Scott, the ROS Developer Advocate for the Open Source Robotics Alliance (OSRA), will give a brief tour of upcoming features in the ROS 2 Kilted Kaiju release, address the upcoming ROS 1 end of life, discuss recent changes to the project with the formation of the OSRA, and highlight recent ROS advancements and events.



Bio: Katherine Scott is the developer advocate for the Robot Operating System (ROS) and Gazebo projects at Intrinsic, an Alphabet subsidiary, as well as the developer advocate for the Open Source Robotics Alliance. She is also a board member of the Open Source Hardware Association (OSHW). Prior to working on the ROS project, Katherine was the image analytics team lead at Planet Labs and 3Scan, and founder and lead software engineer for both Tempo Automation and Sight Machine. Katherine holds a master's degree from Columbia University and electrical engineering and computer engineering undergraduate degrees from the University of Michigan. Katherine is currently an advisor to the University of Michigan's undergraduate robotics engineering program.

AI in Automotive Assembly with Movelt Pro and ROS

Dave Grant, CEO, and Dr. Dave Coleman, Founder of PickNik Robotics



Abstract: While robotics have revolutionized automotive body shops and paint lines over the past decades, the complex, variable tasks in pre-assembly and final assembly have remained largely manual—until now. This session explores how AI-powered robotics are finally breaking through these long-standing barriers, enabling Western automotive manufacturers to automate previously "impossible" tasks while enhancing both competitiveness and workplace quality. We will talk about how PickNik is making ROS more reliable for industrial platforms that are using Movelt.

Bios: Prior to being named CEO, Dave Grant spearheaded PickNik's Sales and Marketing team, driving company growth and solidifying PickNik's position as the industry leader in advanced robotics applications. His proven track record in scaling businesses includes notable successes such as Uplight, which achieved unicorn status with a billion-dollar valuation, and Smartabase, where he oversaw a fivefold growth. Grant brings this wealth of experience and strategic vision to his role as CEO, guiding PickNik towards continued innovation and market expansion. Outside of work, Grant is an avid skier who relishes the steep and deep runs at his favorite resort, Arapahoe Basin.



Dr. Dave Coleman is the founder and Chief Product Officer of PickNik Robotics, and an industry thought leader in unstructured applications for robotics. PickNik has been successfully delivering robotic manipulation innovations on and off Earth over the past 9 years to over 120 customers, based on its Movelt line of products. Before founding PickNik, Dr. Coleman worked at Google Robotics, Open Robotics, and Willow Garage. Dr. Coleman is an international advocate of robotic interoperability and a published expert in autonomous motion control. His insights into robot-agnostic platforms for different morphologies and different end-user technical requirements give him a well-rounded understanding of the needs of powerful robotic software.

ARM Institute Technical Update: Key Initiatives in Robotics, AI, and Advanced Manufacturing



Miguel Rodriguez Programs Manager, ARM (Advanced Robotics in Manufacturing) Institute

Abstract: The ARM Institute is the nation's leading robotics and AI manufacturing innovation institute. Since 2017, the ARM Institute has worked with its 450+ consortium members on a shared mission to strengthen U.S. manufacturing through innovations in advanced manufacturing technology, particularly robotics and artificial intelligence (AI), and prepare the workforce to work alongside these technologies. The ARM Institute fosters collaboration between those who can create and maintain robotics with those who can leverage it for maximum economic impact.

Miguel Rodriguez will provide an update on key initiatives underway at the ARM Institute in areas such as AI powered robotics for manufacturing and human-robot interaction, as well as industry initiatives in sectors like apparel manufacturing and casting and forging.

Bio: Miguel Rodriguez is Programs Manager at the ARM Institute. In this role, Miguel is responsible for managing a multi-million-dollar portfolio of ARM's Technology and Workforce Development projects and supporting the process by which they are selected. Through this work, Miguel helps to fulfill ARM's mission of increasing U.S. global competitiveness by accelerating innovative technologies and workforce programs that make robots more accessible to U.S. manufacturers.

Prior to joining the ARM Institute, Miguel was the Vice President of Engineering for Rapid TPC, a Pittsburgh based startup that specializes in the manufacturing of thermoplastic composites parts at volume. His main responsibility there was to develop automated technologies to improve the manufacturing of composite parts to accelerate the business' growth. Miguel also held the position of Systems Engineer at Seegrid Corporation, where he worked on a wide range of Autonomous Mobile Robots (AMR) subsystems with the goal of improving their performance and enhancing their safety.

Miguel has a Bachelor of Science in Mechanical Engineering from Columbia University in the City of New York. He was part of a team of inventors granted US Patent 10228189B1 for "Heating System for Composite Materials".

LUNCH Keynote: Industry Leveraging Local Universities for Technology and Skill Development in ROS



Andrew Roberts, Research and Technology Manager (NDI/DM), Spirit AeroSystems

Abstract: Andrew Roberts offers five ingredients for building a successful collaboration between industry and local universities in order to prepare future talent to enter the industry, with the automation skills of tomorrow.

Bio: As a Research and Technology Manager, Andrew Roberts leads a team of fourteen engineers and scientists to bring near-horizon technologies home to Spirit Aerosystems Inc. under the domain of enabling compliance through inspection evaluation methods, including automation. He has worked at Spirit for over five years, starting as an engineer working in stress analysis and certification in support of Boeing aircraft. He then transitioned to R&T where he became engrossed in learning ROS (Noetic) for automation inspection applications and now uses that experience to formulate the next generation of ROS developers in the local area.

The Latest in Communication and Interoperability from PushCorp



Max Falcone, VP of Sales Engineering, PushCorp

Abstract: Max will cover the latest developments out of ROS-Industrial Abstract: As AI and system interfaces evolve within the genre of industrial automation, hardware is at the forefront of integration. PushCorp has started the process of opening up their architecture to allow for its systems to become more integrated into industrial solutions. During this talk we will show snippets of the features that are available, some examples of the work that has been done and look forward to receiving feedback afterwards on where we could go.

Bio: Maximiliano A. Falcone leads sales, technical support, and application engineering for PushCorp out of Wixom Michigan. He has more than 20 years of robotic automation experience having time working directly with large system integrators, robot OEMs and now having served a diverse customer base with PushCorp. He has extensive hands on field knowledge of large system installations especially pertaining to metal finishing. Max holds a Bachelor of Science in Mechanical Engineering and Masters of Science in Product Development from the University of Detroit-Mercy where he also resides on the advisory board for the School of Mechanical Engineering.

The Challenges of Robot and Process Agnostic Methodologies for Convergent Manufacturing Applications

Logan McNeil, Applications Engineer, EWI

Abstract: Robotic welding and allied support process applications continue growing to meet labor shortages and improve competitiveness. A significant current trend with automated systems has been the rise of robotic Convergent Manufacturing [CM]. CM is defined as processes and workflows in which intelligent, automated systems are used to apply additive, subtractive, and transformative manufacturing techniques into a single workflow and/or hardware system. CM is meant to be an agile manufacturing process in which multiple automated processes can be used on a part without having to re-fixturing and/or retool the system, allowing the CM workflow to leverage processes ideal for each type of feature.



At EWI, advanced digital twins utilizing COTS CAM and simulation software have been and continue to be used to convert industrial robotic systems into CM systems. The software, hardware, and workflows from these integrated robotic systems provides a framework for robots and process agnostic solutions for manufacturing applications. In addition, intelligent multi-process systems are being developed that automate workflows for high-mix, low-volume manufacturing and repair providing significantly improved cycle time and reduced costs by integrating sensors and apparatus into the system and workflow. This is especially important with the growth in large structure production industries, such as offshore, next-generation nuclear, shipbuilding, and defense (to name a few) while the availability of skilled workers continues to decrease.

This presentation will provide examples of CM workflows and systems demonstrated over previous projects at EWI across a wide array of industry as well as the challenges faced with COTS solutions as well as the complexity of workflow needs grows. A major gap for these types of systems is standardized data workflows and storage – driving the need to contextualize design data, process plans, and resulting microstructure/property relationships into an open data format compatible across various sensors, robotic systems, and process power supplies. The need for developing tools which can be compatible across multiple systems which gives similar contextual data on the processes is the only way forward to developing “lights-out” capabilities for CM systems.

Bio: Logan McNeil has been part of the arc welding and directed energy deposition (DED) processes group at EWI since 2021. His expertise includes process automation, robotics, real-time control, and digital twin implementation across various automation solutions. He performs robotic DED in several OEM robotic cells (ABB, Fanuc, Motoman, CLOOS, UR, Kuka, OTC) using both Arc and Laser processes. Currently, Logan focuses on implementing Convergent Manufacturing (CM) at EWI, spanning processes from arc welding to cold spray. He collaborates with process experts to develop and implement sensing and control solutions tailored to various automation needs.

Logan earned his Ph.D. from the University of Tennessee, Knoxville (UTK), where he developed custom trajectory planning strategies for non-gravity-aligned bead geometry in Arc-DED systems as part of his doctoral research. Additionally, he worked on the Tracking Fluoroscope System (TFS), a custom research robot for performing fluoroscopy on knee replacement patients.

At the Manufacturing Demonstration Facility (MDF) at Oak Ridge National Labs (ORNL), Logan worked on projects involving in-situ monitoring, data correlation for Laser Powder Bed Fusion (L-PBF), and large-scale Arc-DED. He also integrated his trajectory planning techniques with the metal Big Area Additive Manufacturing (mBAAM) group.

An Introduction to the FANUC ROS 2 Driver

Eric Lattas, Staff Engineer, Fanuc



Abstract: This session introduces the FANUC ROS 2 driver implementation. Eric Lattas explains how the FANUC ROS 2 driver works with the Remote Motion Interface and HMI Device robot options to control the robot from a ROS 2 application. Details about the contents of the FANUC ROS 2 driver package and some technical notes related to the use of the ROS 2 driver are also reviewed.

Bio: Eric Lattas is a Staff Engineer and Product Manager at FANUC America, where he brings over 25 years of experience in robotics and automation. Eric began his career at FANUC integrating robotic automation systems and soon moved into a role supporting the development of the FANUC America integrator network by showing them how to apply FANUC technology to their applications. With his extensive experience with FANUC robots, Eric eventually took on the position of Product Manager for controller software in the Robot Segment group.

Known for mentoring both colleagues and FANUC robot users, Eric is dedicated to fostering innovation and sharing his expertise with colleagues and clients alike. His work focuses on ensuring that FANUC can provide customers with the best software products to meet and exceed the needs of their applications.

Industry Partners in Intelligent Robotics: The Tec de Monterrey Model for Training the Next Generation of Engineers

Dr. Alberto Munoz, Professor, EIC-Tec de Monterrey

Abstract: Training engineers in intelligent robotics requires a hands-on approach aligned with industry needs. In this talk, we will explore how integrating industry partners into the educational process enables undergraduate students to develop essential skills in robotics and automation. We will present a model in which collaboration with industry translates into live demonstration spaces on campus, where companies can interact with our students and experience cutting-edge technologies such as ROS 2 and ROS-Industrial leveraging state-of-the-art robots on campus.



This talk will include case studies and strategies to strengthen the relationship between academia and industry, and the impact of this approach on employability and talent development. Additionally, we will analyze how these initiatives can accelerate the adoption of new technologies in key sectors, fostering an effective transition from theoretical learning to professional practice.

Bio: Dr. Luis Alberto Muñoz Ubando is an Electronic Systems Engineer (ITESM), with an MSc/Ph.D. from INRIA, France, and has completed Postdoctoral work at Oxford, UK, and TUWien, Austria. Throughout his career, he has worked with various international organizations, including the World Bank (1999-2002) and the Inter-American Development Bank (2008, 2015, 2021). Currently, Dr. Muñoz is a Full Professor at Tecnológico de Monterrey's School of Engineering and Sciences, where he teaches courses on robotics, multi-agent systems, artificial intelligence, and data science. In collaboration with his students and colleagues, he has participated in various international robotics competitions, such as XPrize ANA Avatar and Accelnet, as well as research projects at AirLab. Beyond his teaching duties, he has delivered over 500 lectures, published more than 200 articles, and supervised over 100 theses across various academic levels. He also regularly contributes with a column to El Financiero newspaper.

Rotating Workshops

ROS-Industrial Roadmap and Prioritization Discussion

Moderator: Matt Robinson, ROS-I Consortium Americas Program Manager, SwRI

Review of the recently released ROS-Industrial roadmap and the idea of modules and frameworks as workable components to build applications. What are the challenges in this approach and is the scope appropriate for industry needs where diversity in application and deployment drive inevitable customization? There will be an opportunity to ask questions, mark up and propose different approaches relative to steering the technical development of the ROS-Industrial project.

Documents and Resources for Improved Leverage – OEM Drivers

Moderator: Maria Vergo, ROS-I Consortium Asia-Pacific Program Manager, ARTC

To support and improve the development and deployment of industrial systems in the wild, one challenge has been the lack or slow release of OEM-supported ROS 2 interfaces. In the early years of the ROS-Industrial project a handful of drivers were created and a robotic driver specification was created. This had benefit but also was restrictive to OEMs that were not positioned to immediately align to the specification or had more advanced capabilities that went beyond the specification. This discussion focuses on what resources may help OEMs develop interfaces that align to certain classes where the behavior in an application may be understood, without limiting OEM innovation, or driving a burden to an OEM in aligning to a prescriptive standard, thereby stalling progress.

To More Efficient Leverage and Use of Developed Resources

Moderator: Michael Ripperger, ROS-I Consortium Americas Tech Lead, SwRI

A number of capabilities have been provided across the ROS-Industrial ecosystem, by the regional Consortia or by the community. Some have had moderate success in being utilized by industrial application developers, while others do not seem to gain traction. This discussion seeks to understand the challenges and limitations in use and leverage of ROS-I developed and maintained components and what can be done to improve utilization of these resources.

Members Exhibiting

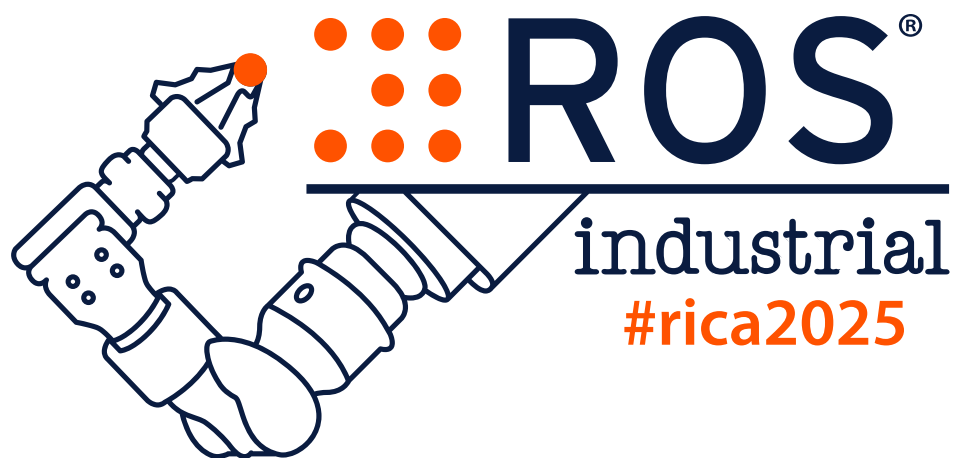
Being co-located with Automate 2023 has given the opportunity to highlight ROS-Industrial members that are exhibiting on the show floor. The below list are the ROS-Industrial members that are exhibiting and showcasing capabilities offered through their products or services. For the latest exhibiting info please refer to: <https://www.automateshow.com/exhibitors>

- ABB - Booth #8614, 2632
- ARM - Advanced Robotics for Manufacturing Institute - Booth #8918
- Intel RealSense - Booth #8523
- KEB America Inc. - Booth #946
- KEBA Industrial Automation - Booth #5408
- Pepperl+Fuchs - Booth #244
- Phoenix Contact USA, Inc - Booth #5232
- PushCorp - Booth #1032
- Schaeffler - Booth #835
- Siemens Industry, Inc. - Booth #3232
- Southwest Research Institute - Booth #5607
- Universal Robots - Booth #4023, #8617

Thank you to our Members

ROS-I is supported by an international Consortium of industry and research members. The ROS-Industrial Consortium-Americas Annual Meeting is supported by the Membership. Thank you to all of the members for their continued support of ROS-Industrial and the open source industrial robotics community!





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