

# ERF2026 Combined WS Descriptions

2026-03-04

## Contents

<b>WS 1 – Advanced Robotics, Sensing and Digital Twins for Sustainable Agriculture</b>	<b>4</b>
<b>WS 2 – From Lab to Farm: Accelerating the Adoption of Agricultural Robotics</b>	<b>7</b>
<b>WS 3 – Robotics for Strategic Reindustrialisation: Securing Europe’s Economic Future and Resilience</b>	<b>10</b>
<b>WS 4 – From fundamental research to SMEs: the challenge of technology transfer</b>	<b>12</b>
<b>WS 5 – AI and Data-Driven Methods for Robotics Safety</b>	<b>14</b>
<b>WS 6 – Building Sustainable and Trustworthy Cognitive Robotics for Europe</b>	<b>16</b>
<b>WS 7 – GenAI for Robotics</b>	<b>18</b>
<b>WS 8 – Human-centric robotics implementation and collaboration in practice: tools, methods and best practices from industry</b>	<b>20</b>
<b>WS 9 – Addressing Demographic Challenges through Robotics: Exploring Advanced Robotics and Exoskeletons</b>	<b>24</b>
<b>WS 10 – From European research projects to the classroom: How robotics and AI research shapes university education</b>	<b>26</b>
<b>WS 11 – Autonomy levels framework for pathway to autonomous mobile machine</b>	<b>28</b>
<b>WS 12 – Healthcare and Service Robotics 1 - Embodied Intelligence for Next Generation Service Robots in Healthcare and Beyond</b>	<b>30</b>
<b>WS 13 – From Innovation to Certification: Pathways for Safe and Ethical Healthcare Robotics and related sectors</b>	<b>32</b>
<b>WS 14 – Microrobotics at the Service of MedTech and BioTech Innovation</b>	<b>35</b>
<b>WS 15 – From black box to open book: Cracking the code of cognitive robotics</b>	<b>37</b>
<b>WS 16 – Is it the Human or the Robot? Come explore the Human Factors that make Collaboration successful.</b>	<b>39</b>
<b>WS 17 – Scaling Human-Robot Collaboration in Industry: Open-Source Middleware, Modular AI, and Safe Heavy-Duty Interaction</b>	<b>41</b>
<b>WS 18 – Who’s Guiding Whom? Human-in-the-Loop AI for Reconfigurable Systems</b>	<b>43</b>
<b>WS 19 – Beyond Compliance: Designing for Social Acceptance.</b>	<b>45</b>

<b>WS 20 – EDIH 3.0 - Repositioning the Network for Europe’s AI and Digital Leadership Ambitions</b>	<b>47</b>
<b>WS 21 – Test Before Invest: Robotics Benchmarking, Experiment reproducibility, Software and Middlewares, Testing and Quality Assurance</b>	<b>49</b>
<b>WS 22 – Creating impact - exploiting the policy landscape</b>	<b>51</b>
<b>WS 23 – Co-Creating the Future: Accelerating SME Innovation through Robotics and AI, and EDIH Collaboration</b>	<b>53</b>
<b>WS 24 – Robotics Business and Social Innovation</b>	<b>56</b>
<b>WS 25 – Success through innovation: Norway’s journey forward</b>	<b>58</b>
<b>WS 26 – Digital green tech and beyond: robotics for a cleaner planet</b>	<b>59</b>
<b>WS 27 – Nature’s New Allies: Robotics for Conservation</b>	<b>62</b>
<b>WS 28 – Human-centric robotics in Industry 5.0: designing for trust, human oversight, safety, and acceptance.</b>	<b>64</b>
<b>WS 29 – How can the European robotic industry cope with planetary boundaries and resource depletion?</b>	<b>67</b>
<b>WS 30 – Automating humans or humanizing production? - 13th Hybrid Production Systems Workshop</b>	<b>69</b>
<b>WS 31 – AI and Robotics in Construction: From Perception to Action</b>	<b>72</b>
<b>WS 32 – From Lab to Fab: Advanced Control Strategies, RL, and Interfaces for Industrial Robotics</b>	<b>74</b>
<b>WS 33 – Additive Manufacturing in Robotics</b>	<b>76</b>
<b>WS 34 – Coupling Mobile Robotics &amp; Manipulation</b>	<b>78</b>
<b>WS 35 – Humanoids at Work: Defining Strategic Priorities for Real-World Deployment</b>	<b>80</b>
<b>WS 36 – AI and marine robotics: an end-user perspective on new technologies</b>	<b>82</b>
<b>WS 37 – Innovation and Developments in Robotic GNSS-Denied Localisation for Inspection &amp; Maintenance</b>	<b>84</b>
<b>WS 38 – Nuclear Applications of Intelligent Robots</b>	<b>86</b>
<b>WS 39 – Infrastructure resilience through next-gen I&amp;M robotics</b>	<b>88</b>
<b>WS 40 – Drones for difficult and challenging applications in labs, healthcare, inspection and maintenance</b>	<b>90</b>
<b>WS 41 – Dual-Use Robotics: bridging robotics and defence innovation</b>	<b>92</b>
<b>WS 42 – Unlocking Resilient Telerobotic Operations for Critical Maritime Infrastructure and Port Automation</b>	<b>94</b>
<b>WS 43 – Robots Among the Stars: AI Revolutionising the Next Era of Space Robotic Missions and Services</b>	<b>96</b>
<b>WS 44 – Software Engineering in Robotics and Automation – Configuration, DevOps &amp; Runtime Adaptation</b>	<b>98</b>
<b>WS 45 – Robot Systems Engineering and Robotic Systems Integration</b>	<b>100</b>
<b>WS 46 – From Awareness to Action: Co-Creating the euRobotics Diversity Initiative</b>	<b>102</b>

<b>WS 47 – 6G empowering Future Multipurpose Robotics</b>	<b>103</b>
<b>WS 48 – Safety in Robotics - Limits and Perspectives</b>	<b>106</b>
<b>WS 49 – Bringing Soft Robotics to Application</b>	<b>108</b>
<b>WS 50 – Mechatronics and Tactile Sensing for Advanced Robot Dexterity and Grasping</b>	<b>110</b>
<b>WS 51 – Bio-inspired intelligence and technology for next-generation industrial robotics</b>	<b>112</b>
<b>WS 52 – Parallel-Kinematic Robotics – new products and application experiences</b>	<b>114</b>
<b>WS 53 – Advanced Robot Manipulation of Deformable and Fragile Objects</b>	<b>116</b>
<b>WS 54 – 3D Perception as a Key Enabler for AI-Based Robotics</b>	<b>118</b>
<b>WS 55 – Blockchain, Data and Robotics for Smart Cities</b>	<b>120</b>
<b>WS 56 – Data Spaces Beyond the Basics: Toward Operational AI and Robotics</b>	<b>122</b>
<b>WS 57 – Industry Challenges for Robotics - Towards Co-Creating Solutions</b>	<b>124</b>
<b>WS 58 – Rewriting the smart sustainable manufacturing playbook</b>	<b>127</b>
<b>WS 59 – Sustainable Manufacturing Key Technologies and Challenges of Robotic Disassembly for a Circular Future</b>	<b>129</b>
<b>WS 60 – Modular and Interoperable robotics future: Come join the workshop to Revolutionise the European Robotics Ecosystem</b>	<b>132</b>
<b>WS 61 – Horizon Europe proposals - How to make reviewers say ‘yes!’, not ‘yawn’</b>	<b>135</b>
<b>WS 63 – Success Stories from EU-Funded Projects</b>	<b>136</b>
<b>WS 64 – Apply AI Strategy and Robotics</b>	<b>138</b>
<b>WS 65 – Robotics to overcome labour shortages in hospitality and tourism</b>	<b>139</b>
<b>WS 66 – Advancing AI-Powered Robotic Cognition, Deliberation and Learning for Real-World Applications</b>	<b>140</b>
<b>WS 67 – General Assembly in the RIMA Alliance (attendance by invitation only)</b>	<b>142</b>
<b>WS 69 – Scientific Track</b>	<b>143</b>
<b>WS 70 – Renaud Champion Entrepreneurship Award</b>	<b>144</b>
<b>WS 71 – Georges Giralt PhD Award</b>	<b>146</b>
<b>WS 72 – euRobotics TechTransfer Award 2026</b>	<b>147</b>
<b>WS 73 – Sustainability Leadership Recognition in Robotics 2026</b>	<b>149</b>
<b>WS 78 – Award Ceremony</b>	<b>151</b>
<b>WS 79 – Feedback Session</b>	<b>153</b>

# WS 1 – Advanced Robotics, Sensing and Digital Twins for Sustainable Agriculture

## Main questions to be answered

- How can advanced sensing technologies (RGBD, multispectral, thermal, geophysical) and robotics be effectively integrated for robust, real-world agricultural monitoring?
- What is the role of digital twins and living labs in enabling data-driven decision support, simulation, and validation of robotic solutions in agriculture?
- Which key technical challenges—such as interoperability, scalability, and system robustness—must be overcome to deploy next-generation robotic systems in complex agricultural environments?

## WS Content

Sustainable agri-food production increasingly relies on intelligent, field-ready systems that can perceive complex environments, reason over heterogeneous data, and operate reliably at scale. While recent advances in robotics, multimodal sensing, and digital twins are enabling new capabilities for monitoring, planning, and decision support, their integration into real-world farming remains a central technical challenge.

This workshop highlights recent progress in agricultural robotics, sensing, and digital-twin technologies, with an emphasis on field-validated and commercially available solutions. It will span the breadth of agricultural robotics ranging from mobile platforms for environmental sensing, to domain-specific systems such as harvesting and thinning robots, autonomous ground and aerial vehicles for scouting and spraying, robotic manipulators for canopy operations, stationary/gantry robots for controlled environments, and coordinated multi-robot systems. Use cases will include crop and orchard monitoring, subsurface soil assessment, and task execution under variable outdoor conditions, leveraging RGB-D, multispectral, thermal, and geophysical sensing.

Complementing this, the sessions will examine the role of digital twins and living labs in supporting advanced simulation, data integration, and data-driven decision support for precision agriculture. By focusing on technical breakthroughs, integration pathways, and cross-domain applications, in addition to addressing deployment barriers such as interoperability, scalability, and system robustness, the workshop provides a forum for farmers, agricultural organizations, researchers, engineers, solution providers, and technology developers to exchange insights, compare methodologies, and define an open research and development agenda for sustainable agri-food production.

### Workshop Objectives:

This workshop aims to address the integration of heterogeneous robotic systems and data pipelines into reliable, field-ready solutions that scale across crops and environments. The focus will be on:

- Showcasing field-validated and commercially available solutions across domains—mobile robots for sensing, harvesting/thinning robots, UAVs for scouting/spraying, stationary/gantry systems, and coordinated multi-robot fleets.
- Defining best-practice integration patterns for multimodal sensing (RGB-D, multispectral, thermal, geophysical) and control, including calibration, synchronization, uncertainty handling, and sim-to-real transfer.
- Establishing reference designs for digital twins and living labs that link data ingestion, simulation, and decision-support workflows for precision agriculture.
- Identifying technical, economic, and regulatory enablers—interoperability standards, scalability, robustness, safety, cost/ROI, and sustainability metrics—to accelerate deployment.
- Addressing ethical and social considerations to ensure privacy-aware data practices and equitable benefits for farms of all sizes, including smallholders.

The workshop aims to deliver practical recommendations, open reference workflows (code/data), and a prioritized roadmap of benchmarks and pilot projects to speed up the adoption of versatile, sustainable, and impactful agricultural robotic systems.

## WS Organisation

This session will blend concise, targeted presentations with an interactive round-table to maximise knowledge exchange and co-creation. Speakers will include academic researchers, technology providers, and representatives from farming organisations with hands-on experience deploying or adopting agricultural robotic solutions. The participatory format is designed to surface practical insights, compare approaches across domains (sensing, harvesting, UAVs, stationary/gantry, multi-robot), and distil them into actionable guidance.

Format at a glance

- Short, focused talks showcasing field-validated and market-ready solutions.
- A moderated round-table linking technical lessons to adoption pathways.
- Brief video walkthroughs of key systems and workflows.
- Real-time capture of recommendations and open questions.

What attendees will do

- Engage directly with real-world case studies spanning sensing, manipulation, and autonomous scouting/spraying.
- Contribute perspectives during the round-table on integration, reliability, cost/ROI, and sustainability.
- Collaboratively identify adoption challenges and enablers (interoperability, standards, workforce, regulation).
- Co-create a concise set of recommendations, reference workflows, and priority benchmarks to share with the broader ERF community.

## Intended outcome

This workshop will produce concrete, community-driven outputs to accelerate the adoption of agricultural robotics:

- Shared landscape of adoption factors: A concise, structured map of challenges and enablers across technical, economic, social, and regulatory dimensions.
- Best-practice compendium: Curated lessons learned from researchers, companies, and farmers who have successfully bridged the lab-to-farm gap.
- Actionable design guidance: Recommendations for versatile, affordable, and farmer-centred robotic systems applicable across diverse crops, scales, and environments.
- Collaboration network: A living directory connecting researchers, technology developers, and agricultural stakeholders to seed future projects and partnerships.
- Workshop report / position paper: A succinct synthesis of insights and priorities to share with the ERF community and, where appropriate, with policymakers and funding agencies.

Through this process, participants will not only exchange experiences but also co-create a pragmatic roadmap to ensure agricultural robotics delivers measurable, equitable impact across present and future food systems.

## **People actively involved (e.g. speakers, panelists, moderators)**

Moderators: - El Houssein Chouaib Harik, SINTEF, Norway

- Eric Pernot, Aquitaine Robotics, France

Keynote speakers/panelists:

- Ouiddad Labbani-Igbida, University of Limoge, France (Speaker/Panelist). AI, robotics and digital twins for agroecological practices.

- David Caballero Flores, UPC, Spain (Speaker/Panelist). Mobile robotics for continuous crop monitoring: field applications and challenges.

- Gregory Mygdakos, AgroAps, Greece.

- Sillaurren Landaburu Sara/Bastida Merino Leire, Tecnalia, Spain (Speaker/Panelist). Assisted and Autonomous Pruning Systems for High-Value Crops: Robotics Insights from AgRimate.

- Ståle Undheim, NIBIO, Norway (Panelist).

## **Topic Groups and/or Innovation Networks involved**

Agricultural Robots

## **Projects involved**

ArgiMate: <https://agrimate-project.eu/> AgRiBot: <https://agribot-project.eu/>

## **Main organiser mail**

Chouaib Harik (SINTEF AS) – [chouaib.harik@sintef.no](mailto:chouaib.harik@sintef.no)

## **Co-organisers**

- Ouiddad Labbani (UniLim), [ouiddad.labbani-igbida@unilim.fr](mailto:ouiddad.labbani-igbida@unilim.fr)
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- Eric Pernot (Aquitaine Robotics), [eric.pernot@aquitaine-robotics.fr](mailto:eric.pernot@aquitaine-robotics.fr)

## WS 2 – From Lab to Farm: Accelerating the Adoption of Agricultural Robotics

### Main questions to be answered

- What are the main barriers preventing robotic solutions in agriculture from moving beyond prototypes and into widespread use on farms?
  - How can researchers, companies, and farmers work together to design robotic systems that are versatile, affordable, and truly meet agricultural needs?
  - What best practices and lessons learned can guide successful technology transfer and accelerate the real-world impact of agricultural robotics?

### WS Content

By 2050, the global population is expected to reach 9.6 billion, putting unprecedented pressure on food systems to become more productive, sustainable, and resilient. The fresh food sector is already facing challenges related to high labor costs, seasonal constraints, and market competition, creating strong interest in robotics for both repetitive and delicate tasks. Yet, despite promising advances, the adoption of robotics in agriculture remains limited. For small and medium farms in particular, the cost of task-specific robots—such as those used for apple harvesting or early-stage weeding—often outweighs their benefits, as these tasks are only performed during short periods of the year.

To ensure a sustainable and equitable food industry, it is essential to move beyond technical innovation and address the economic, social, and ethical dimensions of robotic integration. More versatile, cost-effective systems are needed, alongside stronger collaboration among researchers, industry stakeholders, and agricultural communities.

Workshop Objectives:

This workshop will build on the momentum of previous ERF sessions on agricultural robotics and address a crucial gap: how to translate academic research and prototypes into real-world, market-ready solutions that farmers can adopt. The focus will be on:

- Sharing success stories and lessons learned from institutions and companies that have bridged the lab-to-farm gap.
- Identifying technical, economic, and regulatory enablers for adoption.
- Discussing ethical and social considerations to ensure equitable benefits across different farm scales.
- Highlighting pathways to make robotic solutions versatile and cost-effective for smallholders.

The workshop aims to deliver a set of practical recommendations and best practices to accelerate the adoption of agricultural robotics. These insights will support the design of versatile, sustainable, and impactful robotic systems, fostering innovation that responds to real agricultural needs and contributes to the transformation of global food systems.

### WS Organisation

This session combines short, focused presentations with an interactive round-table discussion. Speakers will include researchers, industry leaders, and agricultural representatives who have hands-on experience in bringing robotic solutions to market and supporting their adoption.

The participatory format is designed to maximize audience engagement, enabling attendees to exchange perspectives and co-create actionable insights. To ensure that all voices are captured, participants' inputs will also be collected through a live online questionnaire, allowing contributions both during and after the discussions.

What attendees will do:

- Engage directly with real-world case studies.
- Contribute their own perspectives in round-table discussions.
- Share feedback and ideas via an online questionnaire to ensure all contributions are documented.
- Collaboratively identify adoption challenges and enablers.

- Co-create a set of recommendations to be shared with the broader ERF community.

### **Intended outcome**

The workshop will generate concrete, community-driven insights on how to accelerate the adoption of robotics in agriculture. Specifically, we expect to achieve:

- A shared map of adoption challenges and enablers across technical, economic, social, and regulatory dimensions.
- Best practices and lessons learned from research groups, companies, and farmers who have successfully transitioned solutions from lab to market.
- Actionable recommendations for designing versatile, affordable, and farmer-friendly robotic systems that can be applied across diverse agricultural contexts.
- A collaborative network connecting researchers, technology developers, and agricultural stakeholders interested in future projects and partnerships.
- A workshop report or position paper summarizing the key insights, to be shared with the ERF community and potentially published as a resource for policymakers and funding agencies.

Through this process, attendees will not only exchange experiences but also actively co-create a roadmap that can help ensure agricultural robotics delivers real-world impact and equitable benefits for food systems of the future.

### **People actively involved (e.g. speakers, panelists, moderators)**

List of potential speakers:

- Wilson Ruotolo, CTO, Hedgehog foods. - Tentative Title: Real world techno economics: analyzing the cost stack for business opportunities. (CONFIRMED)
- Sarah Terrari, Project Manager, PAL Robotics.
- Andrea Bertolini, Associate Professor, Scuola Superiore Sant'Anna - Tentative Title: Bringing innovation into market: the European regulatory framework. (CONFIRMED)
- Filipe Neves dos Santos, Professor at the University of Porto, Founder and Manager of TRIBE LAB – Laboratory of Robotics and IoT for Agriculture and Forestry, and Coordinator of TEC4AGRO-FOOD - Tentative Title: Affordable Robotics for Permanent Woody Crops: The TRIBE LAB@INESC TEC Journey. (CONFIRMED)
- Johannes Frey and Jonas Otto, Navigation mobile Robots, Fraunhofer-Institute for Manufacturing Engineering and Automation IPA - Tentative Title: From a user-driven niche to a universal robot platform (CONFIRMED)

The workshop will be moderated by its two organizers, Martina Maselli e Carlos Rizzo, who will guide the discussions and ensure active participation throughout the session.

### **Topic Groups and/or Innovation Networks involved**

Agricultural Robots, TG Autonomous Navigation

## **Projects involved**

- ARISE (EU Grant 101135959): Developing innovative agricultural robotics solutions to support sustainable food production, bridging research and real-world farm applications.

- CAPIO ROBOTICS: A startup Initiative bringing soft robotic grippers to market for safe handling and harvesting of delicate fruits and vegetables, illustrating the challenges of translating prototypes into commercial adoption.

## **Main organiser mail**

Martina Maselli (Scuola Superiore Sant'Anna) – [martina.maselli@santannapisa.it](mailto:martina.maselli@santannapisa.it)

## **Co-organisers**

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- Erik, Pekkeriet, Wageningen University & Research, [erik.pekkeriet@wur.nl](mailto:erik.pekkeriet@wur.nl)
- El Houssein Chouaib Harik, SINTEF Industry, [chouaib.harik@sintef.no](mailto:chouaib.harik@sintef.no)

## **WS 3 – Robotics for Strategic Reindustrialisation: Securing Europe’s Economic Future and Resilience**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time:

- Where should Europe concentrate its efforts to regain strategic autonomy in robotics, particularly in critical hardware and dual-use technologies?
- What practical steps can industry and governments take to secure a resilient, Europe-based robotics supply chain?
- Which policy or funding mechanisms would most effectively help European robotics firms innovate, scale, and remain globally competitive?

### **WS Content**

Building on last year’s “Robotics for a Changing World”, this workshop addresses a significantly altered context in which geopolitical tensions, supply-chain fragility and accelerating technological competition have exposed Europe’s dependencies and undermined its strategic autonomy. We will focus on the challenge of strengthening the resilience of Europe’s manufacturing supply chains, including those for robotics hardware and software as the foundation of competitiveness and sovereignty.

The session will examine how Europe can secure sovereign technology development and manufacturing capability, ensure adaptable and crisis-ready supply networks, and establish credible European alternatives for key components and systems. It will consider how to modernise production technologies for both civil and defence needs, and how to attract talent and capital to rebuild Europe-based capacity at scale through collaboration between industry, government and the public sector.

Our goal is to identify concrete opportunity areas where the euRobotics community can inform and influence European end-users, policymakers and industry stakeholders, positioning robotics as a strategic enabler of productivity, resilience and technological independence. Insights will feed into the Robotics for a Changing World Task Force.

This workshop is aligned with the “Robotics for a Changing World” Task Force activities.

### **WS Organisation**

0-15 min Introduction and Framing presentation

15-60 min Group discussions on key areas of interest 60-80 min Feedback to the whole group and summary of future actions

### **Intended outcome**

- Update on what has happened since the last workshop in 2025 and within the Task Force so attendees of that workshop feel progress has been made.
- Identified concrete opportunity areas where euRobotics community can influence and inform European end-users (industrial and governments) and policy makers regarding robotics enabling productivity and supply chain resilience.
- Feedback into Robotics for a Changing World Task Force for further actions.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Karol Janik, MTC
- Agata Suwala, MTC
- Rich Walker, Shadow Robot
- Franziska Kirstein, Three Robotics
- euRobotics Robotics for a Changing World Task Force Members

## **Topic Groups and/or Innovation Networks involved**

TG Industrial Robotics, TG Sustainability, Robotics for a Changing World Task Force

## **Main organiser mail**

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## **Co-organisers**

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- Agata Suwala, Manufacturing Technology Centre (MTC), agata.suwala@the-mtc.org

## **WS 4 – From fundamental research to SMEs: the challenge of technology transfer**

### **Main questions to be answered**

An interactive World Café workshop exploring the challenge of technology transfer from fundamental research to SMEs. World Café format aims to facilitate collaborative discussions among researchers, industrials, policy-makers, and stakeholders. Organized around multiple thematic tables, discussions will focus on clearly defining why many good ideas or results from research do not translate into industry ? what are the hurdles (esp. For SMEs) ? what are the technical barriers ? on the opposite, are there success stories we can learn from ?

The goal is to create actionable roadmaps for the future.

### **WS Content**

The workshop is designed to maximize interaction, fostering diverse perspectives and actionable outcomes. We recommend facilitating the session with experts leading each thematic table. Additionally, we will initiate the discussions beforehand through our respective networks, including the Technical Group AI and Cognition in Robotics from euRobotics

To have an interesting discussion, it needs to be prepared, i see two possibilities given how we cant to frame the discussion (but also which inputs we have)

- Gather SMEs needs and exhibit them to the researcher’s community to see if solutions exist.
- Get successful (transfer) stories and try to find what makes a difference ?
- ...

### **WS Organisation**

How will you use the time in the workshop? What will the attendees do?

A general presentation followed by a WorldCafé organised through several tables.

### **Intended outcome**

We don’t expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards “We did X at ERF2025”.

Identification of some barriers of technology transfer and how to overcome them.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Aurélie Clodic, LAAS CNRS

### **Topic Groups and/or Innovation Networks involved**

- TG AICor
- TRINITY Innovation Network, <https://trinityrobotics.eu/>

### **Projects involved**

- JARVIS, <https://www.jarvis-project.eu/>
- ManuGenius, <https://www.six.fi/sixnet/manugenius>

### **Main organiser mail**

aurelie.clodic@laas.fr, Aurélie Clodic, LAAS CNRS

## Co-organisers

- Roel Pieters, Tampere University, Finland, roel.pieters@tuni.fi
- Markus Ikeda, Profactor, markus.ikeda@profactor.at

## WS 5 – AI and Data-Driven Methods for Robotics Safety

### Main questions to be answered

This workshop delves into the transformative role of Artificial Intelligence in enhancing safety within robotic systems, with a focus on the role of data-driven approaches. As AI technologies become increasingly embedded in autonomous and collaborative robots, ensuring their safe and reliable operation demands new paradigms in safety engineering. This session explores how data-driven approaches and machine learning techniques can be systematically integrated into robotics systems and enhancing performance and efficiency while maintaining an appropriate level of safety. The main questions to be answered are:

- Which established safety methodologies are applicable to AI and data-driven models within robotics systems?
- Which particular role do data-driven approaches have? What changes for the safety assurance for data-driven models?
- Which regulatory frameworks are already in place and which ones are needed in the future?

### WS Content

This workshop will open with an introduction, followed by three expert presentations that explore diverse facets of AI and data-driven methods in robotics safety. Three distinguished speakers will share insights from industry, regulatory, and research perspectives, addressing both the design-time and runtime integration of AI into robotic systems and the safety challenges which come along. A particular emphasis will be placed on autonomous robots, where the complexity and unpredictability of environments demand robust, adaptive safety mechanisms.

The presentations will lay the groundwork for a moderated discussion between the speakers and experts from the audience. Key topics will include the requirements for high-quality datasets, techniques for evaluating data reliability, and the lifecycle management of data-driven models used in safety applications. The session will also delve into the Verification and Validation (V&V) of AI-based safety systems.

Participants will engage with forward-looking discussions on how data-driven approaches are reshaping the safety landscape in robotics, including the potential for new standards and certification pathways. This workshop offers a valuable opportunity for professionals to deepen their understanding, exchange ideas, and contribute to the evolution of safe and intelligent robotic systems.

### WS Organisation

Three focus talks will open the session and pave the ground for an interactive discussion of the speakers and the audience. The workshop will utilize the so-called fish-bowl discussion format to actively engage experts from the audience, while making sure that we keep focus.

### Intended outcome

Gain experience from different fields to be applied in robotics.

- Strengthen the euRobotics network and engage members especially of TG safety, TG industrial robotics, TG Standardisation and TG Laboratory Robotics.
- Potential outcome could be a whitepaper on challenges and particularities of data-driven approaches within the safety of robotics systems.

### People actively involved (e.g. speakers, panelists, moderators)

Moderators

- Dr. Magnus Albert – SICK AG, Germany
- Dr. Björn Matthias – ABB, Germany

- José Saenz — Fraunhofer IFF, Germany

#### Speakers

- Robert Puto, Senior Vice President TÜV Süd Hong-Kong
- Alexander Hirsch, Senior AI Safety Engineer, NVIDIA
- Johan Stärner, R&D Principal Engineer, ABB Robotics

#### **Topic Groups and/or Innovation Networks involved**

TG safety, TG industrial robotics, TG Standardisation and TG Laboratory Robotics.

#### **Projects involved**

NA

#### **Main organiser mail**

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#### **Co-organisers**

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- Björn Matthias (ABB), bjoern.matthias@de.abb.com
- José Saenz (Fraunhofer IFF), jose.saenz@iff.fraunhofer.de

## WS 6 – Building Sustainable and Trustworthy Cognitive Robotics for Europe

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- How to strengthen AI and Robotics in Europe?
- How can AI NoEs be sustainable after the projects end?
- How can Edge AI empower Robots capabilities in perception?
- How Can Trustworthy AI Enable Sustainable Autonomous Systems for Environmental and Societal Benefit?
- How can Europe accelerate the transition from successful AI and robotics pilots to large-scale enterprise deployment?

### WS Content

This workshop brings together major European AI Networks of Excellence (NoEs) (dAIEDGE, euROBIN, ELIAS, ELSA, and ENFIELD) to discuss how AI and Robotics can be strengthened and scaled in Europe.

Through short keynotes and an interactive panel, the workshop will highlight advances in Edge AI for robotic perception and interaction, explore sustainability beyond project lifetimes, and address challenges in transitioning from research pilots to large-scale enterprise deployment. Active audience engagement will foster cross-project exchange and actionable insights.

### WS Organisation

How will you use the time in the workshop? What will the attendees do?

40 Minutes: 5 Keynotes (8 minutes each)

- 2 minutes - Rebecca - Introduction - 2 minutes
- 5 minutes - Mohamed (dAledge)
- 5 minutes - Alin Albu-Schaeffer (euROBIN)
- 5 minutes - Pankaj Pandey (ENFIELD)
- 5 minutes - Josef Sivic (ELIAS)
- 5 minutes - Tobias Lorenz (ELSA)
- 10 minutes - Cecile Huet (EU AI Office)

40 Minutes: Interactive panel discussion with the speakers and engaging the audience

Panel with the 5 panellists and 2 moderators (Mohamed and Rebecca)

Panellists:

- Cecile Huet
- Alin Albu-Schaeffer
- Pankaj Pandey
- Josef Sivic
- Tobias Lorenz

Questions for the panel (and audience (tbc)):

- How to strengthen AI and Robotics in Europe?
- How can AI NoEs be sustainable after the projects end?
- How can Edge AI empower Robots capabilities in perception?
- How Can Trustworthy AI Enable Sustainable Autonomous Systems for Environmental and Societal Benefit?
- How can Europe accelerate the transition from successful AI and robotics pilots to large-scale enterprise deployment?

### **Intended outcome**

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards "We did X at ERF2025".

- A shared cross-NoE perspective on how Edge AI, trustworthy AI, and cognitive robotics can be combined to strengthen Europe's AI and robotics ecosystem and ensure sustainability beyond individual project lifetimes.
- A set of concrete recommendations identifying key technical, organisational, and business enablers needed to move from AI and robotics pilots to large-scale enterprise deployment in Europe.

### **People actively involved (e.g. speakers, panelists, moderators)**

- euROBIN: Prof. Dr. Alin Albu-Schaeffer, German Aerospace Center, DLR-RM
- dAIEDGE: Dr. Mohamed Selim, German Research Center for Artificial Intelligence, DFKI
- ELIAS, Prof. Dr. Josef Sivic, Czech Tech University, CTU
- ELSA, Tobias Lorenz, CISPA Helmholtz Center for Information Security, CISPA
- ENFIELD, TBC

### **Projects involved**

euROBIN, dAIEDGE, ELIAS, ENFIELD, ELSA

### **Main organiser mail**

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### **Co-organisers**

- Rebecca Warpup, DLR-RM, rebecca.schedl-warpup@dlr.de
- Cecilia Zanazzo, University of Trento - ELIAS, cecilia.zanazzo@unitn.it
- Miriam Schwartz, CISPA Helmholtz Center for Information Security, schwartz@cispa.de

## WS 7 – GenAI for Robotics

### Main questions to be answered

- What is the current state-of-the-art in genAI for Robotics from research and industry perspective?
- What limitations around genAI for Robotics exist and are to be addressed to increase European competitiveness from research and industry perspective?

### WS Content

Generative AI (GenAI) is redefining how robots perceive, reason, and act. From large language models (LLM) that facilitate robot programming to multimodal foundation models for robot control, both research and industry are exploring how GenAI can expand capabilities and value of robots across different domains.

However, alongside this progress, there are open questions around maturity, robustness, data access, safety, regulations, and the ability of European actors to compete with large global players. To guide future research and innovation activities, the current state of the art and the key limitations that must be addressed, have to be understood. These themes are the focus of this workshop, which will combine short statements from key stakeholders with an interactive plenary discussion.

### WS Organisation

14:00–14:50 Short, 10-minute presentations / statements

Indicative contributions:

- Foundation models and embodied AI for robotics Speaker: Academic research group (e.g., TAU) Focus: Latest research on multimodal and robotics foundation models, their capabilities for planning and control, and gaps to real-world deployment.
- Industrial adoption of GenAI in robotics products and services Speaker: European robotics manufacturer or integrator (e.g., KUKA) Focus: Concrete use cases where GenAI is already used (e.g., programming, perception, decision support), business impact, and practical constraints.
- Key enablers for GenAI-powered robots in real and uncertain worlds Speaker: Research and Technology Centre (e.g., Eurecat) Focus: Core enablers for GenAI-driven robots in real unstructured environments: uncertainty-aware reasoning to produce reliable behaviours; long-term learning from interaction; synthetic data and democratization strategies to address data scarcity; and shared technical tools and datasets to scale GenAI robotics across Europe.
- SME perspectives on GenAI-enabled robotics in Europe Speaker: European start-up or SME (e.g., Pal robotics, ManuGenius) Focus: Opportunities and barriers for smaller players: access to models, data, talent, ecosystems, and markets.
- Strategic view on European GenAI–robotics ecosystems Speaker: Representative from a European network/association (e.g., ADRA, euRobotics) Focus: How Europe can position itself: collaboration, open platforms, funding instruments, and priority areas.

14:50–15:20 Active plenary discussion

An open plenary discussion with all participants (speakers and attendees) will synthesize insights around:

- Current strengths and weaknesses of Europe in GenAI for robotics.
- Priority technical, regulatory, and ecosystem actions needed to strengthen competitiveness.
- Opportunities for joint projects, shared infrastructure, and common roadmaps.

## **Intended outcome**

The workshop targets the following main outcomes for end-users, suppliers, policymakers, and researchers:

- Shared overview of the state of the art in GenAI for robotics from both research and industry perspectives, with concrete examples of applications, technologies, and ongoing initiatives.
- Clear articulation of key limitations and gaps (technical, data-related, regulatory, economic, and organizational) that currently hinder large-scale and competitive use of GenAI in robotics in Europe.

A summary of the workshop discussions and, where possible, the presentations will be compiled and shared with participants and relevant communities. These materials can serve as inputs for strategy work and as a basis for follow-up projects and collaborations focused on GenAI-enabled robotics in Europe.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Roel Pieters, Tampere University, Finland
- Sarah Terreri - Pal robotics, Spain
- Magi Dalmau Moreno, Eurecat, Spain
- James Fant-Male - Tampere University, Finland

## **Topic Groups and/or Innovation Networks involved**

TRINITY Innovation Network, <https://trinityrobotics.eu/>

## **Projects involved**

EU and national projects involved include:

- JARVIS, <https://www.jarvis-project.eu/>
- SustAIInLivWork, <https://www.sustainlivwork.eu/>
- ManuGenius, <https://www.six.fi/sixnet/manugenius>

## **Main organiser mail**

roel.pieters@tuni.fi

## **Co-organisers**

- Sarah Terreri - Pal robotics, Spain
- Magi Dalmau Moreno, Eurecat, Spain

## **WS 8 – Human-centric robotics implementation and collaboration in practice: tools, methods and best practices from industry**

### **Main questions to be answered**

- How can worker participation be systematically integrated into the design, deployment, and continuous improvement of robotics implementation and human-robot collaborations?
- Which human capabilities remain essential as robotics and AI systems become more autonomous
- What concrete tools, methods, and design approaches help translate human-centric and Industry 5.0 principles into operational robotic solutions?
- What worker participation approaches enable the co-design principles (such as safety, trust, and acceptance) when introducing collaborative robots and AI-driven systems?

### **WS Content**

The interaction between AI, robotics, and human practices within industrial contexts will continue to transform work practices across multiple industries. Simultaneously ensuring efficiency and human-centricity support not only productivity and safety but also skills, job satisfaction, and upholding human values (such as trust). This workshop, organised as part of the SEISMEC project and in collaboration with Saxion University of Applied Sciences, explores the integration of human feedback and expertise in the development, regulation, and application of intelligent robotic systems within the framework of Industry 5.0.

The topics that will be discussed during the workshop include:

- The importance of transitioning to Industry 5.0 for increasing industrial competitiveness and sustainability of companies within the EU;
- tools, technologies, and methods designed to support human-centric innovation,
- a methodical approach for worker participation providing a structured and step-by step guidelines that combines design concepts, principles, and techniques, organizational dynamics, and stakeholder collaboration to ensure meaningful and sustainable participation.
- Integral robotisation - a holistic view on the collaboration between humans and robots.

These topics will be backed up by examples from real-world companies that are adopting human-centric approaches in their technology solutions.

By emphasizing upskilling, interdisciplinary collaboration, and integrated human-AI-robot teamwork, the workshop will equip participants with actionable insights to support sustainable, human-centred innovation in line with Industry 5.0 principles and EU priorities

### **WS Organisation**

The workshop will be a combination of expert presentations with structured and interactive participant engagement, through online polls, open discussion, and case study analysis.

The overall structure of the workshop will be as follows:

- Expert talks, presenting the key concepts of the workshop topic
- Interactive group work based on real-world case study analysis
- Open discussion and roundtable session connecting the presentations to participants' own industrial, research, and application contexts

Attendees will, therefore, reflect on how worker participation and human-centric design are (or are not) addressed in their own projects, as well as contribute experiences, challenges, and success factors from industry, research, and policy perspectives.

The workshop preliminary agenda is:

1. Welcome and introduction – 5 mins

Speaker: Moderator

2. Quick poll on participants' main interests and expectations from the workshop and current challenges regarding robotics implementation and human-robot collaboration? - 5 min

3. Experts talk 1: Worker participation in human-robot collaboration – 15 mins

Speaker: Veronika Bak, Vladimer Kobayashi, Erasmus University Rotterdam (EUR)

- Worker participation in technology design: benefits and challenges
- AGILE guidebook for worker participation: steps for involving workers in technology design and implementation within companies
- Real world examples of companies following the AGILE approach to workers participation

4. Experts talk 2 – Human-centric design solutions for robotics – 15 mins

Speaker: Wietse van Dijk, Anne de Vries, the Netherlands Organisation for Applied Scientific Research (TNO)

- Introduction to the systematic SEISMEC approach
- Introduction to solution directions and design guidelines: tools and guidelines that support placing humans at the centre of technological development
- Real-world examples of companies applying human-centric solutions

Expert talk 3 – Integral Robotization: Designing Human–Robot Collaboration that actually works – 15 min

Speakers: Milan Wolffgramm, Workplace Innovation, Abeje Y. Mersha, Professor of Smart Mechatronics and Robotics

- Holistic integral robotization by design
- Technology, human capital and organization
- Practical examples: challenges and opportunities

5. Case study work (in line with each expert talk); participants may choose which case study to tackle – 25 mins

Participants, speakers, moderator

Track A: AGILE and iterative worker participation methods

- Working through a real company case showing 3 iteration cycles
- Identifying what worked/didn't work at each stage
- Proposing refinements for the next iteration
- Discussion: How to apply this iterative approach in participants' own contexts?

Track B: Human-centric solution directions and guidelines in practice

- Analysing company examples of solution direction application
- Fill in the SEISMEC approach schema for an example use case
- Identify the solution directions best suited for the case study

## Track C: Designing an Integral Human–Robot System for the assembly of a one-minute drone

- Task allocation between human and robot
- Design and oversight, including safety, ethics, and legal responsibility
- Performance and adaptability

### 6. Roundtable discussion: conclusions and exchange – 10 minutes

#### Moderators and speakers

- Key takeaways from the workshop, reflecting on the most relevant insights, concepts, and practical lessons learned
- Participants' perspectives on applying the presented tools, methods, and solution directions to drive more human-centric approaches within their own companies, sectors, or application domains
- Insights gained from SEISMEC on the successful deployment of human-centric robotics in industry, and alignment with other Industry 5.0 initiatives

### 7. Closing remarks

## **Intended outcome**

The workshop will provide participants with a clear and comprehensive understanding of human-centricity and its strategic relevance for strengthening company competitiveness, resilience, and long-term sustainability in the context of Industry 5.0. It will highlight why human involvement remains essential in the design, deployment, and continuous improvement of robotics and AI systems, emphasizing the unique value of human judgment, creativity, and contextual awareness alongside advanced technologies.

Specifically, participants will:

- understand how iterative, agile-inspired approaches can be adapted for worker participation, enabling continuous co-design and refinement cycles;
- gain an overview of concrete tools, methods, and design approaches that enable effective, safe, and responsible human–robot collaboration in real industrial environments;
- learn how human-centric robotics and active worker participation can be successfully implemented in practice;
- learn the key risks, trade-offs, and enabling conditions associated with applying human-centric approaches in industrial robotics, helping participants make more informed decisions.
- empower participants to identify opportunities to improve human–robot collaboration within their own organisations, projects, or research activities.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Alexandru Roja, PhD, Transilvania IT Cluster
- Wietse van Dijk, Scientist, Netherlands Organisation for Applied Scientific Research (TNO)
- Anne de Vries, Scientist Innovator at Netherlands Organisation for Applied Scientific Research (TNO)
- Veronika Bak, PhD researcher, Erasmus University Rotterdam
- Vladimer Kobayashi, postdoctoral researcher, Erasmus University Rotterdam
- Milan Wolffgramm, Workplace innovation
- Abeje Y. Mersha, Professor of Smart Mechatronics and Robotics, Saxion University of Applied Sciences

## Topic Groups and/or Innovation Networks involved

TNO, Erasmus University Rotterdam, Transilvania IT Cluster, Saxion University of Applied Sciences, TECHOOST

## Projects involved

- SEISMEC project (Grant Agreement 101135884)
- TECH OOST SMART Implementations

## Further information (e.g. links, references)

de Vries, A., Rahma, A., Ngo, Q. T., van Dijk, W., Krause, F., Confurius, D., Oeij, P., de Vries, A., Hartmann, T., Kampert, P., Korteling, W., Ho, C., Bak, V., Sanchez, A., Kobayashi, V., Mărcuț, M., Fitkau, I., Colomer, J., Badeka, E., & Toumpas, A. (2025). D2.1 - Design guidelines, instruments and assessment criteria. Zenodo. <https://doi.org/10.5281/zenodo.17725599>

Kobayashi, V., Bak, V., Sanchez, A., Pridmore, J., Karanovic, J., & Ho, C. (2025). D2.2 - AGILE guidebook for iterative and collaborative participation. Zenodo. <https://doi.org/10.5281/zenodo.17725759>

SEISMEC. (n.d.) Solution Directions. <https://seismec.eu/solution-directions/>

SEISMEC. (n.d.) Guidebook for Worker Participation. <https://seismec.eu/guidebook-for-worker-participation/>

Baltrusch, S. J., Krause, F., de Vries, A. W., van Dijk, W., & de Looze, M. P. (2022). What about the human in human robot collaboration?. *Ergonomics*, 65(5), 719–740. <https://doi.org/10.1080/00140139.2021.1984585>

SEISMEC Project website, <https://seismec.eu>

## Main organiser mail

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## Co-organisers

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## WS 9 – Addressing Demographic Challenges through Robotics: Exploring Advanced Robotics and Exoskeletons

### Main questions to be answered

- How can robots help address demographic challenges such as labor shortages, aging workers, and people with disabilities?
- What is the current technological readiness of advanced robotic systems for real-world workplace applications?
- How can robotic systems be designed to support diverse users (e.g., aging workers, people with disabilities) while ensuring safety and acceptance?
- What strategies and priorities are needed for responsible, human-centred deployment of robots across sectors?

### WS Content

Deploying robots in workplaces creates new opportunities to address demographic challenges such as labour shortages, ageing workforces and the inclusion of disabled people. This interactive workshop will explore how various robotic solutions, such as advanced robots allowing human-robot interaction and wearable robots (exoskeletons) can contribute to safer, more inclusive and productive work environments. The workshop is organised into two parts. First, there will be short pitch presentations introducing the relevant topics and discussing the possibilities of advanced robotics in demographically challenging workplaces. Secondly, there will be a guided, interactive discussion to answer questions and collect relevant discussion points.

The first part will include the following preliminary presentations:

- Evaluating Exoskeletons for Demographic Challenges: Insights from Lab and Field Research - Cecilia Scocia
- Evaluation of industrial exoskeletons: experiences and learned lessons - Dr. Angel Dacal
- Inclusive Manufacturing through Human–Robot Collaboration: Evaluation Insights and Lessons Learned - Clara Wiederschwinger-Fischer
- Managing physical and psychosocial risks in automated environments: The EU-OSHA Online Risk Assessment (OiRA) tool for the automation of tasks - Patricia Helen Rosen

Afterwards, a moderated interactive plenary session will invite participants to discuss the potentials and challenges of these technologies in addressing demographic change, with particular attention to risk assessment, the use of the OiRA tool, and remaining challenges.

The expected outcome is an understanding of how advanced robots including humanoids, advanced robots that interact and collaborate with humans, and wearable systems such as exoskeletons can support diverse workers and contribute to sustainable workplaces.

### WS Organisation

The workshop will start with short pitch presentations introducing use cases, industrial case studies, and best-practice examples on addressing demographic challenges through advanced robotic interactions, such as wearable robots (exoskeletons) and collaborative applications. These talks will be complemented by a presentation of the EU-OSHA Online Risk Assessment (OiRA) tool and its potential application to the presented solutions.

After the presentations, participants will take part in interactive activities such as brainwriting, 'Do–Continue–Stop', and open discussions. Participants will apply the OiRA tool to deployment scenarios of advanced robotics, identifying key risks, mitigation strategies, and open gaps. These activities will enable attendees to share experiences, recognise challenges and develop ideas collectively for safe, inclusive and human-centred robotic solutions.

The session will conclude with a synthesis of the key findings and cross-cutting themes..

## **Intended outcome**

Attendees will gain an overview of the challenges and opportunities presented by the current state of technology, as well as its potential applications in relation to all three topics. They will also engage in discussions about the potential impact of demographic changes on the workforce. In addition, participants will develop an understanding of how structured risk assessment tools such as the OiRA can support the practical integration of advanced robotic systems into real workplace environments. They will also develop a deeper understanding of the gaps in research and development needed to address current and future demographic challenges.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Rebecca Erlebach, Federal Institute for Occupational Safety and Health (BAuA, Moderator)
- Dr. Patricia Helen Rosen, Federal Institute for Occupational Safety and Health (BAuA, Speaker)
- Dr. Clara Wiederschwinger-Fischer, JOANNEUM RESEARCH (JR) ROBOTICS (Speaker)
- Dr. Cecilia Scoccia, Università Politecnica delle Marche (Speaker)
- Dr. Angel Dacal, Centro Tecnológico de Automoción de Galicia (Speaker)

## **Projects involved**

- JOANNEUM RESEARCH ROBOTICS: SAFEIVERSE:- Integrating diversity and inclusion into the design of safe human-robot collaboration - <https://www.joanneum.at/robotics/en/projects/safeiverse/>
- Marche Polytechnic University (DIISM - Department of Industrial Engineering and Mathematical Sciences) VITALITY: Innovative system for sustainable manufacturing in the living environment industry

## **Further information (e.g. links, references)**

- EU-OSHA OiRA tool: Online interactive Risk Assessment: <https://osha.europa.eu/en/tools-and-resources/oira>

## **Main organiser mail**

- Dr. Clara Wiederschwinger-Fischer, JR, [clara.fischer@joanneum.at](mailto:clara.fischer@joanneum.at)

## **Co-organisers**

- Dr. Sascha Wischniewski, Federal Institute for Occupational Safety and Health (BAuA), [wischniewski.sascha@baua.bur](mailto:wischniewski.sascha@baua.bur)
- Dr. Clara Wiederschwinger-Fischer, JR, [clara.fischer@joanneum.at](mailto:clara.fischer@joanneum.at)
- Dr. Cecilia Scoccia, Polytechnic University of Marche, [c.scoccia@staff.univpm.it](mailto:c.scoccia@staff.univpm.it)

## **WS 10 – From European research projects to the classroom: How robotics and AI research shapes university education**

### **Main questions to be answered**

- How do European-funded robotics and AI research projects currently influence engineering education at universities, and where is their impact strongest (or weakest)?
- What are effective ways to translate research outcomes, such as use cases, methodologies, and large-scale demonstrators, into meaningful teaching formats (courses, labs, and thesis projects)?
- What challenges and structural barriers limit the integration of ongoing European research into university curricula, and how can they be addressed collaboratively?

### **WS Content**

European research projects in robotics and artificial intelligence play a central role in advancing the state of the art, while also strongly influencing how these topics are taught at universities. This round table focuses on the role of European-funded robotics and AI projects in shaping engineering education.

The discussion will explore how results, methodologies, and challenges emerging from research projects can be effectively integrated into university teaching. Topics include the incorporation of real research use cases into theoretical courses, the design of laboratory exercises inspired by large-scale research demonstrators, the development of Master's thesis topics connected to real-world problems, and the influence of ongoing research on advanced Master's-level curricula.

The session is organised as an interactive round table, encouraging active participation from both panelists and the audience. By sharing experiences from different institutions and projects, the discussion aims to identify best practices, common challenges, and lessons learned in using European robotics and AI research to enhance education and training.

### **WS Organisation**

- Introduction by the organizers (5min)
- Introduction of panelists and impulse talks by each panelist (4x5min)
- Panel discussion, with questions from the audience (50min)
- Closing (5min)

### **Intended outcome**

The session will result in a shared set of best practices, lessons learned, and potentially actionable recommendations for effectively integrating European-funded robotics and AI research into university engineering education.

### **People actively involved (e.g. speakers, panelists, moderators)**

Moderator: Raul Suárez, PhD. Research Director at the Institute of Industrial and Control Engineering, Universitat Politècnica de Catalunya.

Gianluca Palli, PhD. Full Professor and Director of the First-Cycle Degree in Mechatronics, University of Bologna, DEI – Department of Electrical, Electronic and Information Engineering. Teaching courses in the Master's Degree in Automation Engineering, including Autonomous and Mobile Robotics and Automation Software and Design Patterns.

Roberto Meattini, PhD. Assistant Professor, University of Bologna, DEI – Department of Electrical, Electronic and Information Engineering. Teaching courses in the Bachelor's Degree in Automation Engineering, including Foundations of Industrial Robotics and Control Systems Technology.

Isiah Zaplana, PhD. Assistant Professor, Universitat Politècnica de Catalunya, Automatic Control Department. Teaching courses in the Bachelor's Degree in Artificial Intelligence, including Computer Vision, Introduction to Robotics, and Advanced Robotics.

Jan Rosell, PhD. Associate Professor, Universitat Politècnica de Catalunya, Automatic Control Department. Teaching courses in the Master's Degree in Automatic Control and Robotics, including Robotics: Kinematics, Dynamics and Control, Planning and Implementation of Robotic Systems, and Introduction to ROS.

### **Main organiser mail**

Isiah Zaplana, UPC, Spain [isiah.zaplana@upc.edu](mailto:isiah.zaplana@upc.edu)

### **Co-organisers**

- Jan Rosell, UPC, [jan.rosell@upc.edu](mailto:jan.rosell@upc.edu)

## WS 11 – Autonomy levels framework for pathway to autonomous mobile machine

### Main questions to be answered

· Relevance to Track: Autonomy is a key future property to field robotics.

Objectives + impact: Common language and definitions to autonomy levels to support collaboration between many parties (OEM companies, SMEs, Research, regulation and standardisation parties)

Content originality: Framework for autonomy levels for heavy mobile machines was first introduced in 2025. No similar exists which is meant for wide use (white paper by VTT). This continues to further develop the concepts and provides examples of applications.

Complementary nature: Framework can be applied in many kinds of machines, also inside many euRobotics topic groups.

The workshop provides and seeks answers: - How to define the levels and dimensions of autonomy for field robotics / mobile work machines? - What are the dimensions for autonomous construction applications? - What if there is a human with autonomous machines?

Companies and other stakeholders can utilize the framework and analysis in their development and business in various ways, such as communicating in sales activities, defining the benefits of automated systems, safety analysis and defining the requirements of their system.

As discussed, and supported in the last workshop, establishing a framework for autonomy levels is beneficial for speeding up the development and deployment of autonomous systems. It provides a structured approach to assess the potential of autonomy in various processes, supporting cross-industrial collaboration through a common language and utilizing standards and guidelines. The framework aids in understanding the specific requirements for machines within a system, whether they operate individually or as part of a fleet or a wider system. It also distinguishes the different scenarios autonomous systems may encounter, from open to closed systems and simple to complex sets of tasks. Such a framework supports the development of safe, efficient, and cost-effective autonomous technologies. In the end it offers methodology to evaluate the business value of investments in fully or partly autonomous systems.

The framework can be the basis of creating a roadmap with various phases defined for.

### WS Content

The objectives and impact of the workshop is to introduce a framework of levels of autonomy that enables us to understand how to utilize autonomous solutions efficiently and sustainably in various applications and environments. The framework includes a spectrum of machines from basic automation to full autonomy including individual components, machines as well as entire systems and processes. A common language and definitions to autonomy levels will support collaboration between many parties (OEM companies, SMEs, Research, regulation and standardization parties). The framework helps to define the roles of co-working human operated and autonomous machines and to optimize this collaboration on work sites.

The benefits of establishing a framework for autonomy will be further discussed and evaluated.

The benefits can be:

- A well-structured framework speeds up the development and deployment of autonomous systems.
- Cross-Industrial collaboration - By establishing a common language and standards, the potential for collaboration is enabled across diverse industries.
  - Defining system requirements - Grasping the specific needs of machines, whether they operate solo or as part of a larger ensemble, ensures they perform optimally and cohesively, driving forward the future of autonomy.
  - Supporting the development of safe, efficient, and cost-effective autonomous technologies.
  - Offering methodology to evaluate the business value of investments in fully or partly autonomous systems.

### Intended outcome

Further to develop the levels of autonomy concepts and provide examples of applications from the field of mobile machinery and field robotics. Together the workshop provides insights and considers how this can be applied to participants' solutions and businesses.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Juha Röning, University of Oulu
- Ian De Dobbelaere, Komatsu
- Arbnor Bunjaku, Konecranes
- Johannes Hyrynen, VTT
- Veli-Matti Mäkelä, Veli-Mikko Mäkelä, SIX Mobile Work Machines, Tamlink Oy
- Armin Wedler, DLR
- Mika Vaini, GIM

## **Main organiser mail**

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## **Co-organisers**

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- Veli-Mikko Mäkelä, SIX Mobile Work Machines, Tamlink Oy, veli-mikko.makela@tamlink.fi

## **WS 12 – Healthcare and Service Robotics 1 - Embodied Intelligence for Next Generation Service Robots in Healthcare and Beyond**

### **Main questions to be answered**

Through concise presentations and a moderated panel discussion, participants will exchange perspectives on how embodied intelligence can enhance safety, adaptability, and user experience in healthcare robotics. The discussion will also address the key barriers that continue to limit large-scale deployment, exploring potential strategies to overcome them, as well as the role of interdisciplinary collaboration across AI, robotics, and clinical practice in shaping the next generation of service robots.

### **WS Content**

Short description: The workshop will explore how the transformative impact of AI-driven robotics is enabling the next generation of service robots, fostering adaptive, safe, and socially aware systems applicable to healthcare, assistive, and general service domains.

Full description: Recent advances in AI and robotics are driving the evolution of the next generation of service robots, capable of operating safely and adaptively in human-centred environments. Such systems are increasingly being deployed across diverse domains, in which close interaction with the users, autonomy, and reliability are essential.

Within this broader context, healthcare represents a key application domain in which service robots are already demonstrating tangible benefits. From AI-powered solutions to improve accuracy in diagnostics to robotic systems that support patients care activities and healthcare workers in logistics, these technologies are already being adopted in numerous hospitals worldwide. Despite challenges in large-scale adoption, these innovations are steadily reshaping the landscape of patient care, operational efficiency, and hospital management, with promising results in both developed and emerging healthcare systems.

This workshop will bring together experts from academia, industry, and healthcare organizations to explore how the transition from research to real-world impact can be accelerated.

Through concise presentations and a moderated panel discussion, participants will exchange perspectives on how embodied intelligence can enhance safety, adaptability, and user experience in healthcare robotics. The discussion will also address the key barriers that continue to limit large-scale deployment, exploring potential strategies to overcome them, as well as the role of interdisciplinary collaboration across AI, robotics, and clinical practice in shaping the next generation of service robots.

### **WS Organisation**

How will you use the time in the workshop? What will the attendees do?

Agenda Overview:

- Introduction (10 min)
- Keynote presentation (10 min): AI-powered Robotics for the Hospitals of the future: opportunities and main challenges (L. Zollo, F. Scotto di Luzio, N. Tagliamonte).
- Keynote presentation (10 min) – TBC (PAL guest from ARISE)
- Keynote presentation (10 min) – Dimitrios Giakoumis (CERTH, Greece, TBC)
- Keynote presentation (10min) - Dimitris Fotiadis/Gastone Ciuti (FORTH, Greece, or SSSA – Italy, TBC)
- Keynote presentation (10 min) – Transforming research in healthcare into reality (Gizem Bozdemir, PAL Robotics)
- Panel Discussion and Questions from audience – “Challenges and Future Directions in AI-driven Service Robotics for Healthcare” (15 min)
- Closing Remarks (5 min)

## **Intended outcome**

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards "We did X at ERF2025".

## **People actively involved (e.g. speakers, panelists, moderators)**

- L. Zollo
- F. Scotto di Luzio
- N. Tagliamonte).
- TBC (PAL guest from ARISE)
- Dimitrios Giakoumis (CERTH, Greece, TBC)
- Dimitris Fotiadis/Gastone Ciuti (FORTH, Greece, or SSSA – Italy, TBC)
- Gizem Bozdemir, PAL Robotics)

## **Projects involved**

European projects—such as IcALo, Safe-LY, ARISE, ODIN, and SOMA—will be presented and discussed in depth.

## **Main organiser mail**

Zollo Loredana <l.zollo@unicampus.it>

## **Co-organisers**

- F. Scotto di Luzio (UCBM)
- N.L. Tagliamonte (UCBM)
- G. Bozdemir (PAL Robotics)
- L. Zollo (UCBM)

## **WS 13 – From Innovation to Certification: Pathways for Safe and Ethical Healthcare Robotics and related sectors**

### **Main questions to be answered**

- How can we accelerate the transition of healthcare robotics from low TRL to clinical deployment?
- What regulatory, ethical, and certification frameworks are essential for safe integration?
- How do we balance innovation with compliance in healthcare and related sectors? Particularly with a view to building trust.
- How can robotics and automation have a positive impact on the pharmaceutical sector?
- What are the primary sources of contamination in controlled environments today, and what are the key objectives for reducing them?
- What are the design challenges when moving from a traditional 'cleanroom robot' to a fully integrated Isolator/RABS (Restricted Access Barrier System) environment?
- In aseptic filling, how can robotics minimize the 'human intervention' factor, which remains the primary source of particulate contamination?
- With the rise of Cell & Gene Therapy (CGT), how can robotics transition from high-speed mass production to 'Batch of One' processing without losing efficiency?
- Can Collaborative Robots (Cobots) be effectively used in lab-scale production where space is limited but ISO 5 cleanliness is still required?
- Autonomous Mobile Robots (AMRs) are replacing fixed conveyor belts. How do we manage the dynamic mapping of these robots in environments where every square meter is strictly validated for safety and flow?

### **WS Content**

This workshop will focus on bridging the gap between research and real-world application:

- Strategies for moving from prototypes to certified systems.
- Regulatory and ethical considerations for healthcare, pharma, and food-contact robotics.
- Expert perspectives on building trust and ensuring safety in robotic healthcare solutions.
- Robotics and automation as a means to reduce contamination in controlled environments and increase productivity in the pharmaceutical industry.
- Here is the translation, utilizing standard industry terminology for high-containment and aseptic processing:
- Defining fully isolated and automated environments—with zero human access—to enhance safety for both end-users and workers.
- ROI to switch from manual to automated production
- Practical Applications for robotics and technology in pharma sector
- AI in Drug developments and productions
- Biopharmaceuticals
- Trends and growing markets

## WS Organisation

10 min Introduction to webinar and speakers presentations

20 min Comau - An introduction to anthropomorphic robotics in the pharma sector for pick & place applications: exploring the benefits, how it reduces contamination, and how it enhances safety. This includes automated quality inspection systems utilizing vision technology to eliminate human error, alongside the use of Mobile Robotics for machinery tending and cleanroom material flow to minimize human intervention.

Collaborative robots in secondary packaging: increasing repeatability and reducing human-related risks.

Focus to main certifications

10 min - QUESTION AND OPEN CONVERSATION

20 min SCHUNK - SCHUNK provides a key link between robotic innovation and validated pharma manufacturing. We showcase enabling technologies that support EU GMP Annex 1 requirements, including aseptic EOAT such as VHP/H<sub>2</sub>O<sub>2</sub>-compatible tool changers and electric grippers engineered to minimize particle generation for use in Grade A and isolator environments. An additional central focus is the integration of Force-Torque-Sensor Technology to enable force-controlled handling - reducing the risk of e.g. glass breakage and improving process robustness through real-time force monitoring. We will highlight how customized engineering supports the Contamination Control Strategy (CCS), for example by replacing complex translational mechanisms with rotation-based, easy-to-clean design principles. Finally, we discuss scalable approaches for fully isolated “gloveless” environments and mobile platforms (AMRs), with a focus on high-containment reliability, efficient qualification/validation, and a robust ROI in biopharma automation.

10 min - QUESTION AND OPEN CONVERSATION

20 min Siemens - SIEMENS will demonstrate how integrated robotics is reshaping pharmaceutical production. By combining Siemens' SIMATIC automation platform with Comau's high-precision articulated robots and mobile systems, we create safer, cleaner, and more efficient workflows. Together, we will showcase how pick-and-place applications in pharma production are enhanced through improved repeatability, reduced contamination risks, and strengthened operator safety. Additionally, we will present automated quality inspection powered by advanced vision technology, eliminating human error and ensuring consistent product integrity across sensitive production steps. The workshop further highlights how mobile robotic platforms, seamlessly integrated through Siemens' control architecture, support sterile material flow and machine tending in cleanroom environments, minimizing human involvement where contamination control is essential. In secondary packaging, we will demonstrate how collaborative robots increase process repeatability while reducing ergonomically challenging or safety-critical manual tasks. SCHUNK grippers, specifically designed for pharmaceutical applications, provide cleanroom-compatible, hygienic end-effectors that ensure gentle, precise handling while meeting the strict regulatory and contamination control standards of the industry. Participants will gain a clear understanding of how the Siemens and Comau integrated robotics solution elevates pharmaceutical manufacturing—delivering higher efficiency, improved safety protocols, and fully traceable, future-ready automation.

10 min QUESTION AND OPEN CONVERSATION

## Intended outcome

Outlining the clear impact of automation on enhancing production workflows and safety protocols in Pharma

## People actively involved (e.g. speakers, panelists, moderators)

Gioacchino Civiletti - Comau

Mike Mayer - Schunk

TBD - Siemens

## Further information (e.g. links, references)

<https://www.comau.com/en/our-offer/products-and-solutions/robot-team/racer-5-robot/>

**Main organiser mail**

Gioacchino Civiletti <gioacchino.civiletti@comau.com>

## **WS 14 – Microrobotics at the Service of MedTech and BioTech Innovation**

### **Main questions to be answered**

- How can microrobotics revolutionise medical and biotech applications?
- What are the technical and operational challenges in integrating microrobotics with laboratory systems?
- How do we foster collaboration between healthcare and microrobotics for maximum impact?

### **WS Content**

MedTech and BioTech industries push the boundaries of miniaturization to make medical interventions and therapies delivery increasingly less invasive. The use of micro-robots in the human body for medical purposes, once seen as a distant ambition, is now possible thanks to the last major research advances in navigation, in situ or remote control, the development of new materials, micro assembly performances, as well as micro and nano technologies. These advances contribute to open especially to new treatment processes and minimally invasive interventions.

This workshop aims to present the latest research advances in these fields and to discuss how microrobotics and healthcare can contribute to each other to create tomorrow's healthcare innovations. The workshop will be interesting for TG members, clinicians, researchers, engineers, technology providers, and all interested in the topic and who wants to explore:

- Applications in minimally invasive procedures, diagnostics, and biotech processes.
- Synergies between microrobotics and laboratory automation for precision and efficiency.
- End-user challenges and opportunities for scaling microrobotic solutions.
- Industry and research perspectives on future directions in micro-scale robotics.

### **WS Organisation**

During this workshop, each speaker will give a 15-minute presentation, followed by a 5-minute question-and-answer session.

The structure can be adjusted depending on the participants' proposals (e.g. more time for questions and discussions, a round table after the presentations).

### **Intended outcome**

The expected outcomes are:

- better understanding of how micro robotics and medical and biotechnologies can collaborate to drive innovation,
- identification of some areas where micro robotics could help in medtech and biotech,
- identification of how micro robotics can enable innovation in medtech and biotech,
- networking and synergy-building opportunities between ongoing Horizon Europe projects.

A summary of the workshop discussions, and the presentations will be compiled and shared with participants and relevant communities.

**People actively involved (e.g. speakers, panelists, moderators)**

- Hakan CEYLAN, Assistant Professor of Biomedical Engineering in the Department of Physiology and Biomedical Engineering at the Mayo Clinic College of Medicine and Science in Rochester (Minnesota, USA).

- Sinan HALIYO, Professor at the Institute of Intelligent Systems and Robotics (ISIR) at Sorbonne University in Paris (FRANCE), who leads the 'Multiscale Interactions' Lab.

- Anne DELETTRE, R&D Manager at Percipio Robotics SA, Besançon (FRANCE), and Co-coordinator of Miniaturised Robotics Topic Group, euRobotics (EU).

**Topic Groups and/or Innovation Networks involved**

Miniaturised robotics

**Main organiser mail**

Anne Delettre, Percipio Robotics, FR, <anne.delettre@percipio-robotics.com>

**Co-organisers**

Maxime Etiévant, Percipio Robotics, FR, <maxime.etievant@percipio-robotics.com>

## **WS 15 – From black box to open book: Cracking the code of cognitive robotics**

### **Main questions to be answered**

Explainability in AI & robotics: How can we design explainable AI methods that provide actionable transparency for both developers and end-users in embodied robotic systems?

Scalability of cognitive solutions: What strategies enable cognitive architectures to scale from controlled lab environments to real-world, multi-agent and multi-task robotic deployments?

Embodied AI: How does embodiment (physical form) influence the effectiveness of learning, adaptation and explainability in robots?

### **WS Content**

Imagine robots that don't just act intelligently, but can explain why, adapt anywhere and scale seamlessly from the lab to the real world. Many cutting-edge systems remain black boxes, leaving users guessing about their decisions. Sometimes, even advanced architectures struggle to perform reliably outside controlled environments. In this workshop, we will explore how cognitive techniques can be combined with explainability mechanisms to create robots that are smart, trustworthy and capable of operating at scale across diverse tasks and environments.

We won't be sitting through slides for long! Instead, expect an interactive, fast-paced session where participants collaborate on concrete scenarios. Through group sessions, scenario mapping and cross-theme exploration, we will dig into the trade-offs and hidden synergies across explainability, scalability and embodiment. The outcome will be a jointly defined set of research priorities designed to spark fresh thinking and guide the future of intelligent robotics.

### **WS Organisation**

Opening statement 4 minutes

Talk BRSU 9 minutes

Talk Chalmers 9 minutes

Talk PAL Robotics 9 minutes

Talk COGNIMAN 9 minutes

Group workshop 30 minutes

Wrap up and results 10 minutes

### **Intended outcome**

The main outcome of the workshop will be a collaborative whitepaper capturing the insights, discussions and results from the group sessions. It will serve as a shared reference point for the community, highlighting actionable priorities and opportunities for advancing intelligent, trustworthy and adaptable robotic systems.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Lakshmy Arvind: Introduction to the workshop. Introducing the speakers one by one. Also presenting COGNIMAN
- Teena Hassan (Professor, Institute for AI and Autonomous Systems, Bonn-Rhein-Sieg University of Applied Sciences): Human-robot interaction, affective computing, social robotics
- Dr Shane Keaveney - Research and Development Manager at CROOM Medical. They additively manufacture medical implants. Current use case of COGNIMAN that is testing the use of robots to automate the post-processing of the implants. He can bring in an industry perspective and the importance of scalability and precision. He would be perfect as workshop co-moderator.
- Wissam Mallouli - CTO at Montimage. He leads the work package that develops all the technical solutions in COGNIMAN. Co-moderator of a group session.

- Francesco Ferro - PAL Robotics. He would present the company.

### **Projects involved**

COGNIMAN (<https://cogniman.eu/>)

KEROL (<https://www.h-brs.de/en/kerol>)

### **Further information (e.g. links, references)**

<https://robot-failures.github.io/erf2026>

### **Main organiser mail**

Lakshmy Arvind, EIT Manufacturing, [lakshmy.arvind@eitmanufacturing.eu](mailto:lakshmy.arvind@eitmanufacturing.eu)

### **Co-organisers**

- Youssef Mahmoud Youssef, Institute for AI and Autonomous Systems (A2S), Bonn-Rhein-Sieg University of Applied Sciences, [youssef.youssef@h-brs.de](mailto:youssef.youssef@h-brs.de)
- Dr. Alex Mitrevski, Division of Systems and Control, Chalmers University of Technology ([alemitr@chalmers.se](mailto:alemitr@chalmers.se))
- Sarah Terreri, PAL Robotics, [sarah.terreri@pal-robotics.com](mailto:sarah.terreri@pal-robotics.com)

## **WS 16 – Is it the Human or the Robot? Come explore the Human Factors that make Collaboration successful.**

### **Main questions to be answered**

- Which human factors actually matter in human–robot collaboration?

We will identify a small, practical list of human factors (e.g. trust, shared awareness, cognitive load, wellbeing, skill and training) and map when each matters most across industrial and agricultural contexts (programming/teaching, close-proximity tasks, exceptions handling).

- How do these factors affect real system performance?

We will connect each factor to simple, trackable measurable outcomes (such as output and quality, safety incidents/near-misses, time variation, recovery after a problem, operator comfort and acceptance), making common trade-offs visible (e.g., speed vs perceived safety).

- How should developers design for them in practice (beyond “awareness”)?

### **WS Content**

Modern industrial robotics is shifting from isolated automation to shared work cells where people and robots coordinate in real time. To be successful, these collaborations need to be designed to satisfy requirements of both the human and the robot. This workshop focuses on turning human factors into concrete design inputs and validation criteria, so that attendees will learn how to design systems that perform safely and reliably in industrial settings.

Drawing on field and research experience, we will interactively examine how teams calibrate trust, communicate intent, manage workload and wellbeing, and keep roles clear across the HRC lifecycle using plain cues, predictable robot behaviours, and lightweight procedures rather than heavy theory. The emphasis is on what practitioners can apply directly in their development and integration work.

The workshop aims to bridge concise human factors frameworks with actionable implementation approaches (behaviour, interface, workspace, process, digital twins), equipping teams to build systems that collaborate with people, not just operate around them.

### **WS Organisation**

- 5 min - Introduction - Why human factors matter: Live digital warm-up poll/quiz.
- 3 × 5 min - Impulse talks - Short expert statements from different perspectives on human factors
- 10 min - Task setup & group formation - Explain the group work and capture method
- 35 min - Group Activity - Teams will map high-impact human factors to metrics and industrial outcomes, and identify integration challenges and potential solutions. Moderators will guide the work with structured templates.
- 15 min - Wrap-Up - Summary of group outcomes

### **Intended outcome**

- Practical guidance and checklists for bringing key human factors into cobot design and integration, including how to adapt robot behaviour to the person, task, and context (clear cues, adjustable speed/force, handover styles).
  - Clear links to performance: simple ways to connect factors to throughput, quality, safety, and recovery time, plus quick tests to show the benefits of adaptability (before/after timings, A/B of cues, short pilot runs).
  - New collaborations: connect participants with similar HRC challenges to seed adaptive cobot pilots and explore future opportunities..

## **People actively involved (e.g. speakers, panelists, moderators)**

- Leire Bastida, TECNALIA
- Sarah Fletcher, Cranfield University
- Sharath Chandra Akkaladevi, PROFACTOR GmbH
- Wael Mohammed, Tampere University

## **Projects involved**

- FORTIS (<https://fortis-project.eu/>)
  - SOPRANO (<https://www.soprano-project.org/> )
  - CONVERGING (<https://www.converging-project.eu/>)

## **Main organiser mail**

- Leire Bastida (TECNALIA), <Leire.Bastida@tecnalia.com>

## **Co-organisers**

- Leire Bastida, TECNALIA, Spain, Leire.Bastida@tecnalia.com
- Wael Mohammed, Tampere University, Finland, wael.mohammed@tuni.fi
- Sarah Fletcher, Cranfield University, UK, s.fletcher@cranfield.ac.uk
- Sharath Chandra Akkaladevi, PROFACTOR GMBH, Austria, sharath.akkaladevi@profactor.at

## **WS 17 – Scaling Human-Robot Collaboration in Industry: Open-Source Middleware, Modular AI, and Safe Heavy-Duty Interaction**

### **Main questions to be answered**

TOPIC: Infrastructures, frameworks, and industrial deployment challenges needed for robust human-robot collaboration at scale

- Human-Centric Collaboration
- How can HRC systems be designed to adapt to human skills, preferences, and roles — enabling intuitive interaction and intent communication, cognitive support, and effective human–machine teaming in real production scenarios?

Description: A moderated panel discussion with industrial end-users, ergonomics experts, and HRI researchers presenting case studies where adaptive systems were trialed, challenges and designs for human-centric HRC.

- (Enabling Frameworks) Middleware & Modularity
- How can open-source middleware and reusable AI modules be designed to enable interoperability, scalability, and cross-domain adoption of human–robot collaboration (HRC) systems in industrial environments?

Description: Short technical presentations from ARISE, and sister projects (FORTIS, JARVIS) showcasing reusable AI modules and middleware stacks, followed by an interactive session and discussion on, lessons learned, standardisation and adoption barriers.

- (Safe Infrastructures) Safety & Trust in Heavy-Duty HRC
- What new methods, standards, and assurance mechanisms are needed to guarantee safety, trust, resilience, and efficiency, when humans collaborate with heavy-duty robots in dynamic, high-risk industrial settings?

Description: A presentation by industrial partners describing real-world risk scenarios. Interactive exercise where participants co-create a roadmap of missing standards, assurance mechanisms, and testbeds needed.

- Deployment & Integration at Scale
- Which infrastructure and integration challenges must be overcome to deploy modular HRC solutions seamlessly across diverse factory environments, while reducing costs, complexity, and time-to-market?

Description: A panel with SMEs (a beneficiary from our ARISE'S open calls, to be confirmed) or large manufacturers sharing lessons learned from pilot deployments, complemented by a roundtable to identify gaps in current infrastructures and opportunities for joint experimentation.

### **WS Content**

The workshop will combine:

- Introductory pitches (10 min) and invited keynote (20 min) contributions to middleware, modular AI, and industrial deployment.
- Interactive panel discussions around the four guiding questions, with input from researchers, industry, and standardisation. Where participants co-develop recommendations for scaling human–robot collaboration, focusing on middleware adoption, safety, and deployment at scale.
- Plenary wrap-up (15 min) to consolidate outcomes, identify synergies, and define follow-up actions.

## **WS Organisation**

The workshop will use a mixed format:

- Panel discussions with Q&A to integrate multiple perspectives to interaction and gather structured feedback from participants.
- A final plenary session to align results and define concrete next steps.

Attendees will:

- Gain insight into ongoing EU projects and open-source middleware initiatives.
- Actively contribute to shaping the roadmap for safe and scalable HRC.
- Network with experts from research, SMEs, and large industries.

## **Intended outcome**

- Identification of standardisation and certification gaps relevant to HRC.
- Concrete recommendations for experimentation infrastructures and open calls in future EU programmes.
- A joint vision document (white paper draft) on modular AI and middleware for scalable HRC, safety frameworks for heavy-duty collaboration, and deployment roadmaps.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Mireya de Diego, CARTIF – ARISE Coordinator
- Representative from FORTIS project or JARVIS project (to be confirmed)
- Industrial end-user partner (to be confirmed)
- Safety and standardisation expert (to be confirmed)
- Option to Moderation: Jointly by FIWARE

## **Projects involved**

- FORTIS <https://fortis-project.eu/> , JARVIS <https://jarvis-project.eu/> both sister projects under the same call of ARISE. .
- VRoboCoop (<https://www.profactor.at/forschung/industrielle-automatisierungssysteme/robotik/projekte/vrobocoop>)

## **Main organiser mail**

- Mireya de Diego, CARTIF, [mirdie@cartif.es](mailto:mirdie@cartif.es)

## **Co-organisers**

- Francisco Meléndez, FIWARE Foundation, [francisco.melendez@fiware.org](mailto:francisco.melendez@fiware.org)
- Matthias Propst, PROFACTOR GmbH, [matthias.propst@profactor.at](mailto:matthias.propst@profactor.at)

## WS 18 – Who’s Guiding Whom? Human-in-the-Loop AI for Reconfigurable Systems

### Main questions to be answered

- How can AI-based assistants leverage multimodal interfaces (XR, GUIs, voice, or messaging) to support users with varying expertise across the entire product creation process? The focus is on how intelligent assistants interpret and translate human intentions into actionable insights or executable tasks, facilitating collaboration between engineers, operators, and autonomous systems in design, operation, and reconfiguration phases.
- How can formal knowledge representations serve as the backbone for contextual reasoning and dynamic adaptation in reconfigurable systems? This includes exploring how structured models—such as ontologies, digital twins, and semantic process descriptions—enable both human and machine understanding of complex task contexts, supporting flexible planning, safe task adaptation, and shared decision-making.
- How can transparency, trustworthiness, and explainability be ensured in human–AI communication and decision-making? This question addresses the technical and human factors that influence user confidence in AI systems—how reasoning processes, task allocation, and system behavior can be made understandable and predictable to maintain safety, trust, and accountability in collaborative human–AI ecosystems.

### WS Content

Modern manufacturing is evolving toward adaptive, intelligent, and reconfigurable production systems where humans, robots, and AI collaborate seamlessly. This workshop explores how human-in-the-loop guidance, formal knowledge representation, and AI-based assistants can enable reconfiguration, transparency, and trust in real industrial environments.

Through insights from manufacturing, agriculture, and medical domains, we will examine how AI assistants and agentic systems can interact with humans of varying expertise, interpret context through multimodal interfaces (XR, GUI, voice, projection), and dynamically adapt to disruptions.

The workshop aims to bridge conceptual frameworks (formal models, semantic reasoning, digital twins) with practical AI implementations that empower human operators, supporting a shift from automation for humans to intelligent systems with humans.

### WS Organisation

- 5 min - Introduction - Setting context: From automation to human-guided intelligence
- 3 × 8 min - Domain Stories - Short expert statements from Medical, Agriculture, and Manufacturing domains
- 10 min - Task description - Explain the group work
- 30 min - Group Work - Participants split into domain groups to co-develop project ideas or research challenges, guided by moderators using structured templates
- 10 min - Wrap-Up - Summary of group outcomes and discussion of future collaborations

### Intended outcome

Practical examples of AI assistants and agent-based orchestration in real-world scenarios

Framework concepts for trustworthy, explainable, and human-centered AI in production

Networking and idea generation for potential EU project proposals or innovation actions

### **People actively involved (e.g. speakers, panelists, moderators)**

- Mayte Carracedo (Manufacturing);
- Sharath Chandra Akkaladevi (Manufacturing)
- Leire Bastida/Wael Mohammed (Agriculture)
- Dominik Mittel (Medical)

### **Topic Groups and/or Innovation Networks involved**

- EDIH DInO: digital transformation and promotion of innovation in rural regions of Eastern Bavaria
- TG Sustainability

### **Projects involved**

- SOPRANO (<https://www.soprano-project.org>)
- RaRe2 (<https://raresquare.eu>)
- R3Group (<https://r3group-project.com> )
- AgRimate (<https://agrimate-project.eu> )
- FORTIS (<https://fortis-project.eu>)
- GRATA (<https://augenlinik.mri.tum.de/de/grata> )

### **Main organiser mail**

Sharath Chandra Akkaladevi, PROFACTOR GMBH, [sharath.akkaladevi@profactor.at](mailto:sharath.akkaladevi@profactor.at)

### **Co-organisers**

- Alexander Perzylo, fortiss GmbH, [perzylo@fortiss.org](mailto:perzylo@fortiss.org)
- Mayte Carracedo, Funding box, [mayte.carracedo@fundingbox.com](mailto:mayte.carracedo@fundingbox.com)

## **WS 19 – Beyond Compliance: Designing for Social Acceptance.**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Is your robot prepared to be accepted by society?
- Are you sure your robot is compliant by design to every significant regulation?
- Is your robot reliable, ethically adequate and safe in the real and the cyber world?

### **WS Content**

This workshop is designed to build a practical bridge between law and engineering, helping participants understand how European AI regulation directly affects the design and development of robotic systems. Through short, focused talks, legal experts will explain how to identify when an AI system qualifies as high-risk, why this classification is crucial under the EU AI Act, and how regulatory choices translate into concrete technical and design constraints.

A central theme of the workshop is compliance by design: regulation is presented not as an external burden, but as a strategic element to be embedded from the earliest stages of system development. Topics include European standardisation efforts for AI systems, legal limits on social robotics and potentially prohibited AI practices, cybersecurity risks and their management, and the legal challenges of technology transfer. The workshop will show how integrating legal requirements into system architecture can reduce uncertainty, prevent costly redesigns, and support trustworthy and market-ready innovation. The final Q&A session encourages open dialogue with engineers, focusing on real-world scenarios and practical questions.

### **WS Organisation**

Panel

### **Intended outcome**

The overall aim is to demonstrate that regulatory compliance is not an afterthought, but a key component of acceptable, robust, reliable, and responsible AI and robotic systems

### **People actively involved (e.g. speakers, panelists, moderators)**

Andrea Bertolini

Marta Mariolina Mollicone

Ludovica Sposini

Josè Saenz

Rocco Limongelli

Stefano Aterno

Luca Sambucci

AI4I representative (to be determine)

### **Main organiser mail**

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## **Co-organisers**

saterno@e-lex.it

luca@cybersecurity.it

## WS 20 – EDIH 3.0 - Repositioning the Network for Europe’s AI and Digital Leadership Ambitions

### Main questions to be answered

The workshop will focus on the future of the EDIH network and logically place it in the context of the European Competitiveness Fund by responding to the following key questions:

- Taking into account the rapid evolution of AI and digital technologies, what future capabilities will European SMEs and mid-caps need to develop in order to benefit from, and contribute to, the EU’s strategic technology priorities and overall competitiveness?
- How should they be supported in order to ensure that they can reap the full potential of AI and the digital transformation in line with EU policies and ambitions for the continent?
- What architecture, governance model, funding framework and ecosystem would be most relevant to deliver the required support services effectively, coherently and at scale across Europe?
- Should Europe maintain separate instruments (e.g. EDIHs, EEN, TEFs, AI Factories), or move towards a consolidated Digital Competitiveness Support System capable of delivering integrated services to SMEs and mid-caps under the European Competitiveness Fund?
- In a potential consolidated European Digital Competitiveness Support System, what role should the current EDIH network play — backbone infrastructure, specialised service nodes, regional coordinators, or be structurally integrated/merged with other EU digital innovation instruments?

### WS Content

The Digital Europe Programme and its European Digital Innovation Hub (EDIH) Network will conclude in 2028. The upcoming EU programming period (2028–2034) marks a structural shift in the Union’s funding architecture with the establishment of the European Competitiveness Fund (ECF). The ECF is expected to streamline existing instruments and strengthen Europe’s strategic technology capacity, with a strong focus on AI, advanced digital technologies, quantum computing, and digital infrastructures.

At the same time, the European Commission’s ambition for a “Bolder, Simpler, Faster” Union calls for greater coherence, reduced fragmentation, measurable impact, and accelerated deployment of innovation across the Single Market. Within this evolving framework, the role and positioning of the EDIH network must be reconsidered.

Since its creation, the EDIH Network has built a pan-European infrastructure supporting SMEs and public sector organisations in their digital transformation through testing facilities, competence centres, training, ecosystem brokerage, and access to finance. The key strategic question now is how this established network can evolve from a programme-based instrument into a structural pillar of Europe’s digital competitiveness architecture.

The workshop will therefore explore:

- How the EDIH Network can contribute to accelerating AI deployment and digital uptake among SMEs and mid-caps;
- Whether and how EDIHs should be integrated into a broader, potentially consolidated Digital Competitiveness Support System under the European Competitiveness Fund;
- What governance, funding and performance model would allow such a system to operate coherently, efficiently and at scale across Europe;
- How to ensure continuity of expertise and regional ecosystems while aligning with the new strategic technology priorities of the EU.

By bringing together policymakers, EDIH representatives, industry stakeholders and innovation ecosystem actors, the session aims to generate concrete input for shaping the future architecture of digital innovation support in Europe — ensuring that SMEs and mid-caps remain at the centre of Europe’s digital leadership and industrial competitiveness strategy.

## **WS Organisation**

This session combines short, focused presentations with an interactive round-table discussion:

- Welcome & introduction, 10 min
- Keynotes by the European Commission officials on
  - the AI & digital ambitions in the European Competitiveness Fund and aligning support to developing AI and digital capabilities placing its industry at the forefront of global markets, 15 min
  - the current impact of the EDIH network and perspectives on how such impact could be aligned and scaled to the the ambitions of the European Competitiveness Fund and the EU policies? 15 min
- Round-table discussion on the how the EDIH network could transform into a valuable instrument integral to the European Competitiveness Fund (World Café format) 40 min

The participatory format, involving all participants, allows all voices to be heard and co-create perspectives on the future of the EDIH network in addition to serve strategic and operational alignment of European Digital Innovation Hubs to the European Competitiveness Fund

## **Intended outcome**

The take-away for participants in the workshop:

- Perspective on the future value and impact of the EDIH network in the context of the European Competitiveness Fund
- Input for strategic and operational alignment of European Digital Innovation Hubs to the European Competitiveness Fund

## **People actively involved (e.g. speakers, panelists, moderators)**

To be confirmed

## **Topic Groups and/or Innovation Networks involved**

- EDIH Network
- Enterprise Europe Network

## **Projects involved**

EDIH Oceanopolis

## **Main organiser mail**

- Stig Marthinsen, Digital Innovation Hub Oceanopolis, [stig@dihooceanopolis.com](mailto:stig@dihooceanopolis.com)

## **Co-organisers**

- Silje Horrisland Whist, Special Advisor, Innovation Norway / Enterprise Europe Network

## **WS 21 – Test Before Invest: Robotics Benchmarking, Experiment reproducibility, Software and Middlewares, Testing and Quality Assurance**

### **Main questions to be answered**

- When can research results be considered ‘true’?
- What does it mean that some research results are ‘reproducible’?
- How can different approaches to cope with the same task sets be compared?
- How to estimate the TRL of a robotic solution?
- What is the role of software middlewares?
- Does it make sense to talk about ‘Evidence Based’ Investing and Technology Transfer in Robotics?
- How to encourage modular, transferable and reusable solutions for robotics subsystems?
- What should an investor look for in a competition/challenge?
- What should be measured and which aspects of robot behavior should be prioritized for evaluation?
- What criteria make a metric meaningful and reliable in robotics behavior validation?

### **WS Content**

Test Before Invest. The fundamental objective of this workshop is to furnish practical examples, case studies, and directions for a thorough comprehension of the role of reproducibility, benchmarking, competitions and challenges in robotics, facilitated by expert inspiration and mentoring. By emphasizing the importance of consistent and reproducible results in validation of practical robotic applications, we seek to expand knowledge, facilitate collaborative research and crucially speed up the rate of innovation. We will emphasize the importance of modular and reconfigurable software platforms and middlewares that can be integrated with robotics hardware at component and system levels and facilitate validation of robotics behavior. We will discuss the relevance of open source best practices for developing and strengthening an integrated and resilient EU supply chain for intelligent robotics.

We will discuss challenges, competitions, reproducibility and benchmarking can accelerate the transition to sustainable Manufacturing, Circular Economy and Smart Cities.

### **WS Organisation**

Short (10-15’) TED-Style Talks, some invited, some coming from an open call

Topics will include

- Robotics Benchmarking
- Experiment reproducibility
- Software and Middlewares
- Testing and Quality Assurance

Interactive discussion based on tools like mentimeter, pol.is and Mira to collect feedback and facilitate dialog will be used.

## Intended outcome

A 5 pages white paper about Robotics Benchmarking, Experiment reproducibility, Software and Middlewares, Testing and Quality Assurance.

We also aim to divulgate, expand, integrate and validate the 'Rimini Declaration' and a one page summary of it.

## People actively involved (e.g. speakers, panelists, moderators)

- Fabio Bonsignorio, University of Zagreb Faculty of Electrical Engineering and Computing and Heron Robots, Reproducibility, Benchmarking and the Challenges in Engineering Reliable Autonomous Systems
- Nico Hochgeschwender, University of Bremen, Mahsa Varshosaz, IT University of Copenhagen, mahv@itu.dk, MSCA CAVECORE
- Gerald Steinbauer, TU Graz, Benchmarking challenges in the field of field robotics
- Pedro Lima, Tecnico Lisboa, An Introduction to Coopetitions: examples from the euROBIN Project
- ...

## Topic Groups and/or Innovation Networks involved

Benchmarking and Competitions, Software Engineering, Industrial Robotics, Service Robotics, Systems Integration and Systems Engineering

## Projects involved

euROBIN, <https://www.eurobin-project.eu/>, EU Grant No 101070596

## Further information (e.g. links, references)

<https://www.eurobin-project.eu/>

F. Bonsignorio and A. P. del Pobil, "Toward Replicable and Measurable Robotics Research [From the Guest Editors]," in IEEE Robotics & Automation Magazine, vol. 22, no. 3, pp. 32-35, Sept. 2015, doi: 10.1109/MRA.2015.2452073.

F. Bonsignorio, "A New Kind of Article for Reproducible Research in Intelligent Robotics [From the Field]," in IEEE Robotics & Automation Magazine, vol. 24, no. 3, pp. 178-182, Sept. 2017, doi: 10.1109/MRA.2017.2722918.

The Rimini Declaration:

<https://drive.google.com/file/d/1i1kJrTM3RA4h-i7wor8ACiopaMAN7deS/view?usp=sharing>

The Euron GEM Guidelines:

Bonsignorio, F., Del Pobil, A. P., & Hallam, J. (2008). GEM Guidelines. Zenodo. <https://doi.org/10.5281/zenodo.1645248>

## Main organiser mail

fabio.bonsignorio@gmail.com (Fabio Bonsignorio, University of Zagreb Faculty of Electrical Engineering and Computing and Heron Robots)

## Co-organisers

- Fabio Bonsignorio, University of Zagreb Faculty of Electrical Engineering and Computing and Heron Robots, fabio.bonsignorio@ [ gmail.com, fer.unizg.hr, heronrobots.com]
- Nico Hochgeschwender, University of Bremen, nico.hochgeschwender@uni-bremen.de
- Mahsa Varshosaz, IT University of Copenhagen, mahv@itu.dk

## WS 22 – Creating impact - exploiting the policy landscape

### Main questions to be answered

We expect to bring together policymakers (European, national, regional) and innovators from industry (large, midcap, SME, startups), share knowledge and help improve the robotics innovation landscape for the future.

We will explore:

- What European and National initiatives are giving us frameworks to develop robotics in? (Top down and bottom up)
- What do SMEs and Midcaps need to develop robotics technologies? (What sort of support or funding or networks or...)
- How can we get development agencies to support us?

### WS Content

This interactive workshop brings together policymakers and robotics innovators to explore how European, national, and regional policy instruments and innovation ecosystems can better support robotics innovation. Through hands-on discussion, we will examine existing top-down and bottom-up initiatives, identify what SMEs and midcaps need to scale robotics technologies, and explore how development agencies can more effectively contribute. The session is designed to be highly participatory, focused on concrete tactics and strategic ideas to strengthen Europe's robotics innovation landscape for the future.

### WS Organisation

00-05: Introduction by organizers

05-15: Introduction and impulse talks on the topic from each panelist

15-35: Group work with feedback: What experience does the audience have with the ecosystem - what works and what doesn't?

35-45: Standup and pitch ideas

45-50: Audience engagement: summary of key items from pitch ideas and audience voting

50-70: Group work: deep dive per table into one of the ideas

70-80: Closing discussion and reflection of ideas

### Intended outcome

A list of ideas for policies that could make a real difference to innovation in robotics and innovation with robotics business.

This will feed future activities from euRobotics and form recommendations to steer programmes in the landscape

The attendees have been inspired by a range of new ideas and approaches, and can see how they can use some of the existing tools in the landscape.

### People actively involved (e.g. speakers, panelists, moderators)

- Iddo Bante, University of Twente (NL); Coordinator Adra Topic Group Innovation, Uptake & Deployment of ADR technologies
- Oswald Bratu, Profactor GmbH
- Christian Wögerer, Profactor GmbH
- Rich Walker, euRobotics

### **Topic Groups and/or Innovation Networks involved**

euRobotics Topic Group Entrepreneurship Adra Topic Group Innovation, Uptake and Deployment of AI-Data-Robotics technologies

### **Projects involved**

EU: Adra-e EU: EDIH Boost Robotics East Netherlands

EU: EDIH AI5innovation

### **Main organiser mail**

Wögerer Christian <christian.woegerer@profactor.at>

### **Co-organisers**

- Iddo Bante, University of Twente (Netherlands), I.Bante@utwente.nl
- Oswald Bratu <oswald.bratu@profactor.at> Profactor GmbH
- Christian Wögerer, christian.woegerer@profactor.at, Profactor GmbH
- Rich Walker <rw@shadowrobot.com>, euRobotics

## **WS 23 – Co-Creating the Future: Accelerating SME Innovation through Robotics and AI, and EDIH Collaboration**

### **Main questions to be answered**

- How can SMEs practically adopt and benefit from robotics and AI solutions despite limited resources, expertise, or capacity?
- What role do EDIHs and co-creation methodologies play in reducing barriers and accelerating innovation across sectors?
- What collaborative models between SMEs, technology providers, and EDIHs can most effectively scale digital and robotic adoption in Europe?

### **WS Content**

This workshop explores how SMEs can accelerate innovation and competitiveness by combining robotic technologies, AI solutions, and co-creation support from European Digital Innovation Hubs (EDIHs). Through expert pitches and an engaging Liberating Structure–based panel discussion, participants will uncover practical pathways for adoption, collaboration, and real-world impact. The session also highlights the challenges faced by SMEs, which are the backbone of regional economies. This workshop also examines how collaborative ecosystems can help overcome them.

In addition to robotics- and AI-driven innovation, the workshop will address several key cross-cutting dimensions identified in recent research, including:

- The need for AI training and upskilling of non-technical employees, helping SMEs reduce scepticism and build a future-ready workforce.
- Data privacy and security barriers, and how SMEs can integrate AI tools safely without risking confidential information.
- The importance of establishing an AI culture among future generations, including early educational exposure.
- Differences in AI adoption rates across sectors (e.g., IT vs. agriculture) and how support ecosystems can bridge these gaps.
- The transformation of business models, services, and supply chains through AI to improve ROI.
- The financial dimension, including how SMEs can access funding through EDIHs, government programmes, and industry collaboration.

### **WS Organisation**

0–10 min — Introduction (by Abeje)

- Welcome, objectives, and a brief overview of the workshop flow
- Short explanation of the three themes:
- Robotics for SMEs
- AI adoption across sectors
- Co-creation and EDIH support

10–25 min — Pitch Round 1 (3 pitches × 5 minutes each)

- Accelerating Robotic Innovation and uptake by SMEs
- AI Supporting SMEs in Production, Logistics, Customer Service & Communications
- Co-Create Europe: How EDIHs Empower SMEs

25–40 min — Reflection & Exchange (Liberating Structure: “1-2-4-All”)

- 1 minute alone: What insights stood out from Round 1?
- 2 minutes in pairs: Share key reflections
- 4 minutes in small groups: Identify key opportunities and concerns
- 8 minutes: Whole-group share-out

40–55 min — Pitch Round 2 (same 3 pitches, deeper angle)

Each presenter delivers a second 5-minute pitch focusing on:

- Barriers to adoption
- Key enablers (technology, skills, funding)
- Successful examples

55–70 min — Panel Discussion (Liberating Structure: “Conversation Café”)

Moderated discussion with pitch speakers and participants:

- Two rounds of structured dialogue (3 minutes per speaker per round)
- Open-floor contributions in the final round

70–80 min — Conclusion & Collective Takeaways (Abeje/ Nivedhitha)

- summarising main insights
- Participants identify the top 3 actionable recommendations
- Closing remarks

### **Intended outcome**

- Clear understanding of how robotics, AI, and co-creation can concretely support SME challenges
- Identified barriers and enablers for digital and robotic uptake within SMEs
- Actionable recommendations for SMEs, EDIHs, and technology developers
- Shared insights and cross-sector learning on what works in real deployment scenarios
- Strengthened networks between SMEs, EDIHs, researchers, and innovators through collaborative dialogue

### **Topic Groups and/or Innovation Networks involved**

None

### **Projects involved**

EDIH

## **Main organiser mail**

Abeje Yenehun Mersha (a.y.mersha@saxion.nl)  
Professor - Smart Mechatronics And RoboTics (SMART)  
Saxion University of Applied Sciences

## **Co-organisers**

- Prakash, Nivedhitha, st191425@stud.uni-stuttgart.de

## WS 24 – Robotics Business and Social Innovation

### Main questions to be answered

- Do you want to discover engaging business and funding models driving robotics innovation?
- Do you want to develop socially and financially sustainable business models?
- Are you excited to explore how “robot libraries” make robots accessible to all?

### WS Content

This workshop will explore what business models could be implemented to support new Robotics Business and Social Innovation. For instance, we will see how robotics access can move beyond ownership models through innovative lending and sharing schemes, in initiatives such as FARI, AugmentX in Belgium. By examining real-world cases where companies implement robotic solutions for their clients, we will highlight how business and funding models can enable wider accessibility, stimulate innovation, and support sustainability. The discussion will address both opportunities and challenges, including cost-effectiveness, public-private partnerships, and the balance of benefits among stakeholders. A key focus will be on assessing economic viability and societal impact, with attention to metrics for inclusion, uptake, and long-term sustainability of such initiatives. We will ask for participants’ practical experience and concrete suggestions on how to make this right.

### WS Organisation

00:00 – 00:05 Introduction - dr. Shirley A. Elprama (imec-SMIT, Vrije Universiteit Brussel)  
00:05 – 00:12 Use Case: Manufacturing - Christian Wögerer (PROFACTOR GmbH)  
00:12 - 00:20 Extra speaker - RoboHouse?  
00:20 - 00:35 FABRIC - Arjun Chaliyath (FARI – AI for the Common Good) & dr. Shirley A. Elprama (imec-SMIT, Vrije Universiteit Brussel)  
00:35 – 01:00 Business model development in groups followed by a round-table discussion  
01:00 – 01:15 Plenary Reflection: Making FABRIC Financially Sustainable - Moderated by Carl Mörch with speakers  
01:15 – 01:20 Closing - dr. Carl Mörch

### Intended outcome

- Attendees identified key business and funding opportunities for widening robotics access.
- Attendees outlined practical indicators to assess the impact of robot libraries and other sharing models
- Learn about costs related to implementing robotic systems in practice (e.g. in manufacturing or retail)

### People actively involved (e.g. speakers, panelists, moderators)

- Dr. Carl Maria MÖRCH, FARI - AI for the Common Good Institute, Université Libre de Bruxelles
- Dr. Shirley A. ELPRAMA, imec-SMIT, Vrije Universiteit Brussel
- Christian Wögerer, PROFACTOR GmbH
- Arjun Chaliyath - AI for the Common Good Institute, Vrije Universiteit Brussel
- Speakers: (TBC)

### Topic Groups and/or Innovation Networks involved

euRobotics - Sustainability Topic Group

## **Projects involved**

KIRAMET

AI5production - AI5innovation

SMART CIRCUIT

ZERO3

EU Robin

## **Further information (e.g. links, references)**

<https://www.unileoben.ac.at/kiramet/home>

<https://ai5production.at/> (Now: AI5innovation)

<https://www.interreg-central.eu/projects/smart-circuit/>

<https://www.zero3.at/>

<https://www.eurobin-project.eu/>

<https://robohouse.nl/>

## **Main organiser mail**

Carl Mörch [carl.morch@fari.brussels](mailto:carl.morch@fari.brussels)

## **Co-organisers**

- Carl Mörch, FARI AI for the Common good, [carl.morch@fari.brussels](mailto:carl.morch@fari.brussels)
- Christian Wögerer, PROFACTOR GmbH, [christian.woegerer@profactor.at](mailto:christian.woegerer@profactor.at)
- Shirley A. Elprama, imec-SMIT, Vrije Universiteit Brussel, [shirley.elprama@vub.be](mailto:shirley.elprama@vub.be)
- Arjun Chaliyath, FARI AI for the Common good, [Arjun.Chaliyath@fari.brussels](mailto:Arjun.Chaliyath@fari.brussels)
- Oswald Bratu, PROFACTOR GmbH, [oswald.bratu@profactor.at](mailto:oswald.bratu@profactor.at)

## **WS 25 – Success through innovation: Norway’s journey forward**

### **Main questions to be answered**

- More information soon

### **WS Content**

Innovation Norway has supported thousands of companies on their path from promising ideas to impactful international successes. In this session, we explore how strategic support, collaboration, and mission-driven innovation accelerate growth across Norway’s technology and robotics ecosystem. Through concrete success stories, we highlight how Norwegian companies turn innovation into real-world value—economically, sustainably, and globally. Participants will gain insights into Innovation Norway’s mission, tools, and opportunities to strengthen their own innovation journeys.

### **WS Organisation**

More information soon

### **Intended outcome**

- Learn from real success stories of Norwegian companies that transformed innovative ideas into global impact.
- Understand Innovation Norway’s mission and how it translates into practical support for startups, scale-ups, and industry players.
- Discover funding opportunities and programs that can accelerate technology development and international expansion.
- Gain insights into collaboration pathways between research, industry, and public support systems—especially relevant for robotics and emerging tech.
- Get inspired by tangible examples of how innovation drives sustainable growth and competitiveness in Norway.

### **People actively involved (e.g. speakers, panelists, moderators)**

- More information soon

### **Main organiser mail**

Silje Brit Horrisland Whist, [silje.brit.horrisland.whist@innovasjon Norge.no](mailto:silje.brit.horrisland.whist@innovasjon Norge.no)

## WS 26 – Digital green tech and beyond: robotics for a cleaner planet

### Main questions to be answered

- Are the current robotic and AI technologies ready to address the current waste challenge?
- Are there any applications related to the topic of the workshop that have not yet been addressed by research?
- What are the three most critical barriers to market for real-world deployment and which might be possible business models for companies aiming to enter the robotics market for waste challenges?

### WS Content

The world has a waste problem. Over two billion metric tons of unsustainable, municipally generated waste are discarded globally every year, entering our environment, where it can end up in streams and rivers, ultimately reaching the seas and oceans. Since this threatens not only terrestrial and marine ecosystems but also human health, we must address the problem with innovative solutions. Robotic applications can play a crucial role here, yet traditional systems often struggle in dynamic environments. New concepts are under development that combine different robotic systems enhanced by digital tools and artificial intelligence, including advancements of generative AI, to form intelligent robotic ecosystems. Such interconnected networks of autonomous or semi-autonomous ground robotic systems, as well as drones, can operate collaboratively within a defined environment, often interacting with humans and natural elements. These systems are designed to perform complex tasks, gather data, and adapt to changing conditions, extending human capabilities and ensuring their safety, in various domains as well as in challenging environments. In this way, intelligent robotic ecosystems can enable monitoring, identifying, and collecting waste in both land and water environments, thereby removing pollutants to prevent further spread and potential damage, ultimately leading to a cleaner environment.

Invited experts will share insider perspectives on new technological developments in environmental robotics and discuss how they aim to address the waste problem and support sustainability and societal objectives. Starting with exciting spotlights on the applicability of intelligent robotic ecosystems for waste collection in land environments as well as in water environments, we invite you to discuss the opportunities and challenges that the presented robotic solutions face already or will face in the near future. It also includes exploring visions on swarms of coordinated robots on the ground and in the air, that along with AI tools and humans, will help develop a generic solution for various scenarios and needs. This will help to identify collaboration avenues among the various efforts and mutually complementary directions being explored in Europe.

We invite you to join an interactive brainstorming session to tackle technical and scientific challenges and identify market barriers. Following this, we discuss how the identified potentials and obstacles can be addressed at an early stage of development. This workshop brings together diverse communities, including robotics, Generative AI, sustainability, and End Users, to shape a better future for our planet and humanity.

### WS Organisation

#### Agenda

- 00:00 - 00:05 Introduction (Enrico Villagrossi – Consiglio Nazionale delle Ricerche (CNR), Italy)
- 00:05 - 00:40 Expert Spotlights on (1) waste collection on land (Prof. Dr.-Ing. Daniel Görges – RPTU University Kaiserslautern-Landau, Germany), (2) waste collection in water environments (Dr. Stefan Sosnowski – Technical University of Munich, Germany), industrial perspective on waste sorting (to be confirmed, Norway), hosted by Anne Gunkel, Project Management Agency Karlsruhe, Germany
- 00:40 - 00:50 Common Discussion on technological aspects of current robotic and AI technologies to address the waste challenge (Enrico Villagrossi – Consiglio Nazionale delle Ricerche (CNR), Italy)

- 00:50 - 01:10 Interactive World Café discussion on three different subjects such as more applications, critical barriers to market entry, and possible business models
- 01:10 - 01:20 Wrap up (Amit Kumar Pandey, Socients AI and Robotics, France)

The workshop will begin with a brief introduction by the organisers, followed by several spotlights from invited experts on new advances in environmental robotics that address the waste problem, thereby supporting sustainability and societal objectives. These spotlights will provide insider perspectives on technological developments e.g., intelligent robotic ecosystems, waste collection in land and water environments. You will gain an understanding of existing robotic solutions and robotic ecosystems for waste monitoring and collection, as well as their current applicability. For the second part of the workshop, we plan for having an interactive and lively discussion with you. Starting from exploring the technological aspects of current robotic and AI technologies to address the waste challenge together with our invited experts we would like you to share your experiences and visions or also concerns. We will then split up into three groups for discussing different subjects in so called thematic areas, which are (1) applications not yet addressed by research, (2) critical barriers to market for real-world deployment, and (3) possible business models for companies aiming to enter the robotics market for waste challenges. We will have two rounds of discussions to share knowledge, contribute thoughts, and identify common objectives. We would like to collect your input and ideas on potential next steps for implementing solutions, overcoming market barriers, and initiating suitable business models. Together, we can explore activities to advance technological innovations and bring solutions into practice. Furthermore, we aim to gather ideas for future collaborations and potential next steps in addressing the current challenges.

### **Intended outcome**

We explore possibilities for intelligent robotics and robotic ecosystems to support human societies in tackling environmental challenges like waste collection and discuss means to overcome market barriers for such solutions.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Anne Gunkel, Project Management Agency Karlsruhe, Germany
- Enrico Villagrossi, Consiglio Nazionale delle Ricerche (CNR), Italy
- Amit Kumar Pandey, Socients AI and Robotics, France
- Dr. Stefan Sosnowski, Technical University of Munich, TUM School of Computation, Information and Technology, Germany (SeaClear2.0 EU project)
- Prof. Dr.-Ing. Daniel Görge, RPTU University Kaiserslautern-Landau, Germany (DroneGripper DGT-project)

### **Topic Groups and/or Innovation Networks involved**

TG Sustainability  
 TG Socially Intelligent Robots and Societal Applications

### **Projects involved**

EU project SeaClear2.0: SEACLEAR2 | MARINE LITTER PREVENTION  
 German Research Call on Environmental Robotics: [www.digitalgreentech.de](http://www.digitalgreentech.de)

### **Main organiser mail**

- Saskia Ziemann, Project Management Agency Karlsruhe, [saskia.ziemann@kit.edu](mailto:saskia.ziemann@kit.edu)

## Co-organisers

- Anne Gunkel, Project Management Agency Karlsruhe, [anne.gunkel@kit.edu](mailto:anne.gunkel@kit.edu)
- Enrico Villagrossi, Consiglio Nazionale delle Ricerche (CNR), [enrico.villagrossi@cnr.it](mailto:enrico.villagrossi@cnr.it)
- Amit Kumar Pandey, Socients AI and Robotics, France, [amit.k.pandey@socients.ai](mailto:amit.k.pandey@socients.ai)
- Franziska Kirstein, Three Robotics, Denmark, [fk@three-robotics.com](mailto:fk@three-robotics.com)

## WS 27 – Nature’s New Allies: Robotics for Conservation

### Main questions to be answered

- What are the most promising applications for robotics in environmental monitoring and conservation, and under which ecological or geographical conditions do they make the biggest difference? How can they be designed and deployed to truly enhance environmental monitoring, especially in places and time-scales where traditional methods fall short, without adding new ecological risks?
- What ethical, governance, and data-ownership frameworks are needed to ensure that robotic monitoring supports conservation goals equitably, including the rights, knowledge, and participation of local communities?
- What interdisciplinary structures, standards, and capacity-building efforts will enable conservation practitioners, ecologists, and roboticists to effectively collaborate and scale responsible robotics in the field?

### WS Content

Rapid biodiversity loss and accelerating climate impacts are increasing the need for environmental monitoring that is continuous, wide-ranging, and accurate. Robotics offers new capabilities, accessing remote or hazardous ecosystems and enabling repeatable, high-resolution data collection to support conservation action. Yet deploying robots into unstructured natural environments remains technically challenging: autonomy, energy constraints, and the management of large, heterogeneous datasets can limit long-duration, reliable operations. At the same time, robotic presence may disturb wildlife or fragile habitats, raising concerns about environmental footprint and responsible system design.

Beyond technical and ecological considerations, broader adoption depends on addressing ethical and governance questions: ownership and benefit of collected data, privacy when human activity is captured, and equitable access to advanced technology across regions and communities. Effective integration into conservation practice also requires interdisciplinary collaboration and capacity building, ensuring robotics complements rather than replaces local expertise.

This workshop will explore how robotics can contribute to environmental monitoring and conservation responsibly, minimizing ecological disturbance, supporting ethical deployment, and ensuring inclusive and sustainable impact throughout the full life cycle of robotic systems.

### WS Organisation

- 00:00 - 00:05 Welcome and introduction
- 00:05 - 00:20 Impulse talks
- 00:20 - 00:50 Group Work
- 00:50 - 01:10 Presentation of group work
- 01:10 - 01:20 Conclusion & key takeaways

### Intended outcome

The results of the workshop will be shared, the best format (short summary paper, presentation, blogpost) will be decided after the workshop.

### Topic Groups and/or Innovation Networks involved

TG Sustainability

### Projects involved

WildDrone: <https://wilddrone.eu>

**Main organiser mail**

fk@three-robotics.com

**Co-organisers**

- Franziska Kirstein, Three Robotics, fk@three-robotics.com
- Jürgen Bund, Network & Innovation Manager / International Cooperation, GEOkomm juergen.bund@geokomm.de
- Ulrik Pagh Schultz Lundquist, University of Southern Denmark, ups@mmmi.sdu.dk

## **WS 28 – Human-centric robotics in Industry 5.0: designing for trust, human oversight, safety, and acceptance.**

### **Main questions to be answered**

- What are the latest advances on human-cobot collaboration in Industry 5.0 (i.e., practical use cases)?
- Why is trust becoming critical in robotics? Understanding the challenges and pathways to trustworthy human-robot collaboration
- How can human-centered robotics enhance ergonomics and support diverse physical needs while ensuring safety and inclusion?
- How can we design for meaningful human oversight in human-robot collaboration?
- How to enhance workers' acceptance of robots through human-centred design practices?

### **WS Content**

Industry 5.0 is redefining the relationship between humans and robots, placing collaboration, trust, and inclusion at the heart of innovation. This workshop will explore the latest advances in human-cobot interaction through practical use cases that demonstrate how robotics can enhance productivity while supporting human well-being. We will examine why trust is becoming a critical factor in robotics and discuss the challenges and pathways to achieving trustworthy human-robot collaboration. The session will also address how human-centered robotics can improve ergonomics, accommodate diverse physical needs, and ensure safety and inclusion. Furthermore, we will consider strategies for designing meaningful human oversight in collaborative environments and explore how human-centered design practices can foster worker acceptance and confidence in robotic technologies. Join us to uncover how these principles can shape a future where humans and robots work together seamlessly and responsibly.

### **WS Organisation**

How will you use the time in the workshop? What will the attendees do?

- 00:00 - 00:10 Introduction (Agata Suwala – MTC, United Kingdom)
- 00:10 - 00:40 Power pitches on trust (Dr. Gabriele Marchello – Istituto Italiano di Tecnologia, Italy), human oversight (Dr. Shirley Elprama, imec-SMIT, Vrije Universiteit Brussel & FARI, Belgium), safety (Elodie Hüsing - Institute of Mechanism Theory, Machine Dynamics and Robotics RWTH Aachen University, Germany), and acceptance (Dr. Milan Wolffgramm - Saxion University of Applied Sciences)
- 00:40 - 01:15 Panel Discussion (Agata Suwala - MTC, United Kingdom; Dr. Clara Wiederschwinger-Fischer – Joanneum Research Robotics, Austria; Alberto Landini – STAM, Italy; dr. Cecilia Scoccia – Università Politecnica delle Marche, ilabs, Italy; Dr. ir. Abeje Mersha – Saxion University of Applied Sciences, the Netherlands)
- 01:15 - 01:20 Wrap up (Agata Suwala – MTC, United Kingdom)

### **Intended outcome**

- Uniting professionals to discuss cobot-related issues to diversity, trust, human oversight, safety, and acceptance in Industry 5.0.
- Disseminating the latest insights and methods on cobots in Europe.
- Laying the groundwork for new European project consortia.

## **People actively involved (e.g. speakers, panelists, moderators)**

### Speakers

- Dr. Gabriele Marchello – Istituto Italiano di Tecnologia, Italy
- Dr. Milan Wolffgramm – Saxion University of Applied Sciences, the Netherlands
- Dr. Shirley A. Elprama – imec-SMIT, Vrije Universiteit Brussel & FARI, Belgium
- Elodie Hüsing – IGMR, RWTH Aachen University, Germany

### Panelists

- Dr. Cecilia Scoccia – Università Politecnica delle Marche, ilabs, Italy
- Dr. ir. Abeje Mersha – Saxion University of Applied Sciences, the Netherlands
- Dr. Clara Wiederschwinger-Fischer – Joanneum Research Robotics, Austria
- Alberto Landini – STAM, Italy

### Host / moderators

- Agata Suwala – MTC, United Kingdom

## **Topic Groups and/or Innovation Networks involved**

Not applicable.

## **Projects involved**

- RENEE: Flexible Remanufacturing Using AI and Advanced Robotics for Circular Value Chains in EU Industry - <https://renee-project.eu/>
- MASTERLY: Nimble Artificial Intelligence driven robotic solutions for efficient and self-determined handling and assembly operations - <https://www.masterly-project.eu/>
- euRobin <https://www.eurobin-project.eu/>
- SAFEIVERSE: Integrating diversity and inclusion into the design of safe human-robot collaboration - Project of JOANNEUM RESEARCH ROBOTICS (Austria) - <https://www.joanneum.at/robotics/en/projects/safeiverse/>
- Bridges 5.0: Towards a Human-Centred, Sustainable and Resilient Economy, <https://bridges5-0.eu/>
- IIDEA - Inklusion und Integration durch Cobots auf dem ersten Arbeitsmarkt (translated from German: Inclusion and Integration through Cobots into first labor market) <https://www.iidea.rwth-aachen.de/go/id/badhmp/>
- PNRR (VITALITY): Innovative system for sustainable manufacturing in the living environment industry

## **Further information (e.g. links, references)**

WS LinkedIn Page: <https://www.linkedin.com/groups/10009247/>

## **Main organiser mail**

- [m.r.wolffgramm@saxion.nl](mailto:m.r.wolffgramm@saxion.nl)

## Co-organisers

- Dr. Shirley A. Elprama (imec-SMIT, Vrije Universiteit Brussel, FARI, AI for the Common Good Institute), shirley.elprama@vub.be
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- Dr. Clara Wiederschwinger-Fischer (JOANNEUM RESEARCH ROBOTICS), clara.fischer@joanneum.at
- Dr. Gabriele Marchello (Istituto Italiano di Tecnologia (IIT)), gabriele.marchello@iit.it
- Agata Suwala (MTC), agata.suwala@the-mtc.org
- Elodie Hüsing (Institute of Mechanism Theory, Machine Dynamics and Robotics (RWTH Aachen University)), HuesingE@igmr.rwth-aachen.de
- Alberto Landini – STAM, Italy, a.landini@stamtech.com
- Dr. Cecilia Scoccia (Università Politecnica delle Marche (UNIVPM)), c.scoccia@staff.univpm.it

## **WS 29 – How can the European robotic industry cope with planetary boundaries and resource depletion?**

### **Main questions to be answered**

- Do you think robotics can play a role in the future of our planet?
- Do you believe the robotics industry needs to adapt to the fast environmental changes currently at play?
- Do you want to take part in the writing of a happy post-growth industrial scenario?

### **WS Content**

Since its invention, robotics has pursued two goals: economic progress and social progress. While those have been aligned for many years, it has become hardly sustainable to meet both.

The International Panel on Climate Change has demonstrated the negative impact of advanced technologies on the planet. In 2025, 7 out of 9 planetary boundaries for a safe operating space have already been exceeded. Robotics is now part of the problem. How can it become part of the solution?

One approach is to rethink industrial trajectories. In industry, robotics has long been framed as a driver of productivity and sustained growth; beyond factories, it has been portrayed as a tool for human emancipation, often inspired by science fiction. Yet growth-centred strategies increasingly ignore planetary limits and resource constraints.

A more sustainable path requires complementing growth narratives with frugality, doing better without more, through low-tech solutions, creativity, and stronger software innovation, and sobriety, collectively deciding which uses, developments, or ambitions to renounce to preserve what is essential, including de-growth or post-growth perspectives.

As resources become scarce and shortages begin to affect the robotics industry, the need for such a shift becomes concrete. This workshop aims to bring together academia and industry to explore the narrow path between technophobia and techno-solutionism, and to define conditions under which robotics can remain viable and responsible within planetary boundaries, while maintaining Europe's distinct position between the USA and China.

Contributions are expected on (non-exhaustive) topics such as: Refuse, Reduce, Re-use, Repair, Recycle, and Return safely to Earth.

Industrial and academic perspectives are welcome from the robotics community as well as from climate, Earth and life sciences, economics, sociology, anthropology, and related fields. Concepts for unified verification methods of contributions to the UN SDGs will be presented and discussed, alongside opportunities for future labeling of robots and companies complying with ESG principles.

### **WS Organisation**

- Introduction by the organisers
- Invited talk 1 - Robotics vs. planetary boundaries (Adrien Escande, INRIA, Grenoble, FR)
- Invited talk 2 - The Spiral Economy: Physical Constraints for Sustainable Industry (Luis Frólén Ribeiro, IPB, Bragança, PT)
- Invited talk 3 - Increasing European Competitiveness: How Robotics Can Support (and Not Undermine) Industrial Sustainability

(Beata Kviatek, Hanze, Groningen, NL)

- Invited talk 4 - European Robotics Industry
- Panel discussion with invited speakers
- Conclusion: wrap-up and definition of next actions

## **Intended outcome**

The workshop will engage participants in the co-development of robotics-relevant frugality and post-growth scenarios, while creating a space for networking and initiating collaborations that can extend beyond the event.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Nicolas Andreff, Université Marie et Louis Pasteur
- Tamas Haidegger, Obuda University
- Franziska Kirstein, Three Robotics
- Adrien Escande, INRIA, Grenoble, FR
- Luis Frólén Ribeiro, IPB, Bragança, PT
- Beata Kviatek, Hanze, Groningen, NL

## **Topic Groups and/or Innovation Networks involved**

TG Sustainability

## **Projects involved**

Thematic Interest Group on Sustainable Industry - STARS EU alliance  
[starseu.org/tig-sustainable-industry/](http://starseu.org/tig-sustainable-industry/)

Action Prioritaire “Robotique et Sobriété”, GdR Robotique, CNRS [https://www.gdr-robotique.org/actions\\_prioritaires/](https://www.gdr-robotique.org/actions_prioritaires/)  
300

## **Main organiser mail**

Nicolas Andreff, Université Marie et Louis Pasteur, [nicolas.andreff@umlp.fr](mailto:nicolas.andreff@umlp.fr)  
Tamas Haidegger, Obuda University, [haidegger@irob.uni-obuda.hu](mailto:haidegger@irob.uni-obuda.hu)

## **Co-organisers**

- Franziska Kirstein, Three Robotics, [fk@three-robotics.com](mailto:fk@three-robotics.com)

## WS 30 – Automating humans or humanizing production? - 13th Hybrid Production Systems Workshop

### Main questions to be answered

- What are the latest projects and emerging technologies shaping Human-centred Production Systems (HPS), including robotics, AI, human factors, human–robot collaboration/interaction, and flexible production processes?
- Which new or emerging research directions in HPS can be identified, and how can they be effectively mapped to current and future industrial applications?
- How can advances in robotics, AI, and human-centric technologies be translated into tangible industrial benefits, and what barriers still hinder their adoption?
- What visions, lessons learned, and practical experiences do leading experts from industry and academia bring, and what do they reveal about current trends, open challenges, and future opportunities in HPS?

### WS Content

The workshop content, addressed through keynote speeches, impulse talks, and a moderated round-table discussion, will focus on the following themes:

- Current R&D trends in Robotics and AI for Human-centred Production Systems (HPS), with emphasis on industrial needs for flexibility, adaptability, and scalability.
- Learning, upskilling, and reskilling paradigms for next-generation robotic and AI technologies, enabling sustainable deployment of advanced automation in manufacturing environments.
- AI-enabled robot cognition and decision-making, including the use of Large Language Models (LLMs) and Vision-Language Models (VLMs) for task allocation, robotic skills development, and intuitive human–robot interaction.
- Perception, simulation, and digital environments as cognitive enablers, supporting versatile product handling, remanufacturing, disassembly, and reconfigurable robotic skills in hybrid production systems.
- Safe, adaptive, and collaborative robot behaviour in hybrid workplaces, addressing human safety, flexibility, and trust in industrial Human–Robot Collaboration (HRC).
- Human-in-the-loop methods and immersive technologies (VR/AR) for robot programming, demonstration, and validation in collaborative manufacturing scenarios.

This structure ensures a balanced coverage of technological advances, industrial use cases, and open challenges, fostering active discussion between academia and industry on the future of AI-enabled HPS.

### WS Organisation

- 4 Mins Introduction of Workshop and recap of HPS activities (George Michalos / LMS)
- 8 Mins Keynote 1: Learning, upskilling and reskilling for new robotics and AI technologies (Alfio Minissale / COMAU)
- 20 Mins: 5 Impulse talks
- AI enabled manipulation for remanufacturing use cases (Jon Ander Iriondo / TEKNIKER)
- VLMs for robotic skills and interaction with humans - (Urko Esnaola / TECNALIA)

- Task Allocation Optimization in Hybrid Production Environments via Large Language Models (Nikos Dimitropoulos / LMS)
- Reconfigurable robotic skills in Hybrid Production Systems for collaborative product disassembly - (Christos Gkournelos / LMS)
- VR/AR assisted robot programming by demonstration in human-robot collaborative scenarios - (Juan Francisco Blanes Noguera/UPV)
- 40 Mins Round Table with industrial representatives (Fernando Ubis / Visual Components, Baptiste Gradousof / CEA), Engagement with the Audience through online interactive tools and live discussion, Conclusion of session

### **Intended outcome**

Speakers attending the HPS workshop will experience it as follows:

- We identified several companies currently investing or investigating HPS to achieve flexible production
- We witnessed demonstrations of robotics, mechatronics, AI etc. solutions working together with humans in several sectors.
- We now understand why it is challenging to deploy such systems and what needs to be done in the coming years
- We know who to contact in order to further collaborate and contribute in the development of AI enabled HPS systems

### **People actively involved (e.g. speakers, panelists, moderators)**

Speakers

Alfio Minissale - COMAU, Italy  
 Fernando Ubis - VISUAL Components, Finland  
 Nikos Dimitropoulos – LMS, Greece  
 Christos Gkournelos – LMS, Greece  
 Urko Esnaola - TECNALIA, Spain  
 Jon Ander Ruiz - TEKNIKER, Spain  
 Juan Francisco Blanes Noguera - UPV, Spain Baptise Gradousof - CEA, France

Moderators

- Sotiris Makris – LMS, Greece
- George Michalos – LMS, Greece

### **Topic Groups and/or Innovation Networks involved**

- HPS projects cluster - [www.hybrid-production-systems.eu/](http://www.hybrid-production-systems.eu/)
- AI in Manufacturing, Testing and Experimentation Facilities Network for European industries (AI-Matters)  
 - AI Matters : AI in Manufacturing for EU industries

### **Projects involved**

CONVERGING - Home | CONVERGING | EU Funded Project

JARVIS - JARVIS – Advancing human-robot collaboration in a user-centric manner

RENEE - Home - RENÉE

ROB4GREEN - Rob4Green

## Further information (e.g. links, references)

- ERF2014 - Hybrid Production Systems: <http://www.eu-robotics.net/cms/upload/euRobotics\Forum\ERF2014\pre01\ERF2014\Hybrid\Production\systems\2014 - 03 - 14.v.1.02.pdf>
- ERF2015 - Hybrid Production Systems: <http://www.erf2015.eu/presentations/HybridProduction.zip>
- ERF2016 - Hybrid Production Systems: <http://www.project-leanautomation.eu/index.php?id=96&tx\tnews\>
- ERF 2017 – Hybrid Production Systems: <https://sites.google.com/view/hybridproductionsystems/erf2017?authuser=0>
- ERF 2018 – Hybrid Production Systems: <https://sites.google.com/view/hybridproductionsystems>
- ERF 2019 – Hybrid Production Systems: <https://sites.google.com/view/hybridproductionsystems/erf2019?authuser=0>
- ERF 2020 – Hybrid Production Systems: <https://sites.google.com/view/hybridproductionsystems/erf2020?authuser=0>
- ERF 2021 – Hybrid Production Systems:

<https://sites.google.com/view/hybridproductionsystems/erf2021?authuser=0>

- ERF 2022 – Hybrid Production Systems:

<https://www.hybrid-production-systems.eu/?page\id = 257>

- ERF 2023 – Hybrid Production Systems:

<https://hybrid-production-systems.eu/erf-2023/>

- ERF 2024 – Hybrid Production Systems:

<https://hybrid-production-systems.eu/erf-2024/>

- ERF 2025 – Hybrid Production Systems:

<https://hybrid-production-systems.eu/erf-2025/>

## Main organiser mail

Sotiris Makris, Laboratory for Manufacturing Systems and Automation (LMS), [makris@lms.mech.upatras.gr](mailto:makris@lms.mech.upatras.gr)

## Co-organisers

- George Michalos (Laboratory for Manufacturing Systems and Automation (LMS))
- Inaki Maurtua (TEKNIKER)

## WS 31 – AI and Robotics in Construction: From Perception to Action

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- What is the current state of Robotics in Construction, covering all aspects such as perception, navigation, mapping, action, manipulation?
- What are the main challenges for adoption of robots in construction?
- What opportunities are presented by AI for digital twins of buildings and construction robots

Some suggested answers to these questions will be provided through the invited presentations from different projects at different completion levels. In addition, insights will be collected from the use of interactive tools from the audience during the panel and discussion session.

### WS Content

The workshop "AI and Robotics in Construction: From Perception to Action" is the continuation of a workshop series that has been organized since ERF 2023. The workshop will cover a multitude of topics related to the use of robots in construction and the role of AI in advancing autonomy for this sector. Covered topics will include navigation and 3D mapping, multi-sensor setups for perception, digital twins, tasks planning and autonomous action and hybrid physics-AI systems for challenging terrains. The workshop will showcase Horizon Europe projects such as RobetArme, Beeyonders, DISCOVER and XSCAVE. The workshop organization is a joint effort between the EuRobotics Topic Group "Construction" and the Tech4Construction project cluster. The workshop agenda includes project overview and specific technical presentations as well as a panel discussion addressing the future of construction robotics.

### WS Organisation

Horizon project presentation, invited keynotes, and a panel discussion session. An online QA option will be added to increase interaction.

Preliminary schedule – 80mins total time

- Welcome and Intro (3mins)
- Invited Talk – EuRobotics Topic Group Construction (7 mins) – Project TARGET-X, Excellence Cluster CARE: Climate-Neutral and Resource-Efficient Construction – Sigrid Brell-Cokcan (RWTH Aachen)
- Closing Project Presentation – RobetArme (Dimitrios Giakoumis, CERTH), Beeyonders (Antonio Alonso Cepeda, ACCIONA) (6+6 mins)
- Ongoing Project Presentation – DISCOVER (David Caballero Flores, UPC) (5 mins)
- Ongoing Project Presentations – XSCAVE (Viktor Wiberg, Algoryx) (5+5mins)
- New project presentation – ShieldBOT (Sara Mata, IDEKO) (5 mins)
- Q/A Session and Panel Discussion with audience participation and interaction (using interactive tools such as Mentimeter) (38mins)
  - Panelists: Sigrid Brell-Cokcan, Dimitrios Giakoumis, David Caballero Flores, Antonio Alonso Cepeda, Martin Servin
  - Moderator: Jason Rambach

### Intended outcome

Participants should be able to obtain a clearer picture of the current state-of-the-art and ongoing activities and challenges in the area of construction robotics. It will also serve as an opportunity for networking and synergy building between ongoing Horizon Europe projects in construction.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Jason Rambach (DFKI SSMP) – organizer, moderator, speaker
- Sigrid Brell-Cokcan (RWTH Aachen) – speaker, panelist
- Dimitrios Giakoumis, CERTH – speaker, panelist
- David Caballero Flores, UPC – speaker, panelist
- Antonio Alonso Cepeda, ACCIONA – speaker, panelist
- Viktor Wiberg, Algoryx – speaker, panelist
- Martin Servin, Umea University - panelist

## **Topic Groups and/or Innovation Networks involved**

Topic Group Construction

Tech4Construction cluster

## **Projects involved**

RobetArme, <https://www.robetarme-project.eu/>

Beeyonders, <https://beeyonders.eu/project/>

DISCOVER, <https://discover-horizon.eu/project/>

XSCAVE, <https://www.xscave.eu/>

ShieldBOT

TARGET-X, <https://target-x.eu/>

## **Further information (e.g. links, references)**

<https://eu-robotics.net/construction-robotics-topic-group/>

<https://humantech-horizon.eu/tech4euconstruction-cluster/>

<https://tu-dresden.de/tu-dresden/profil/exzellenz/exzellenzcluster/care>

## **Main organiser mail**

Jason.Rambach@dfki.de

## **Co-organisers**

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Viktor Wiberg, viktor.wiberg@algoryx.com

Fredrik Nordfeldth, fredrik.nordfeldth@algoryx.com

Antonio Alonso Cepeda, antonio.alonso.cepeda@acciona.com

Dimitrios Giakoumis, dgiakoum@iti.gr

Ali Muhammad, almu@mmmi.sdu.dk

## **WS 32 – From Lab to Fab: Advanced Control Strategies, RL, and Interfaces for Industrial Robotics**

### **Main questions to be answered**

- What to be considered when automating a process
- When accuracy is key – how to solve it?
- Impact of AI – benefits in a robot cell.
- Grip it – but how ?
- From simulation to factory floor: solving accuracy, safety, and real impact of AI in robotics

### **WS Content**

The workshop explores three complementary strands of industrial robotics. First, it addresses end-of-arm applications from a requirements-driven perspective: starting with pick, move, and lift tasks, it outlines how to select and size grippers and/or vacuum components based on material properties, surface conditions, payload, and cycle constraints, and discusses integration with robot and cobot arms with implications for reliability and maintainability. Second, it examines how Reinforcement Learning can be applied in production settings by training in realistic simulations and refining policies with real-world data, explicitly confronting challenges such as sim-to-real transfer, data efficiency, safety, and process constraints, with the goal of informing a practical roadmap for future adoption on the shop floor. Third, it presents a robotic control approach that shifts the reference from individual motors to the robot's center of mass and tool position, naturally compensating for axis interactions to reduce unwanted oscillations, improve motion quality, shorten development time and lower costs, while enhancing precision and stability in applications that demand high trajectory fidelity.

### **WS Organisation**

Festo (Tobias Lidén) will present how to solve end-of-arm applications starting from the premise that a robot/cobot arm must pick, move, or lift material, guiding users in selecting suitable grippers and/or vacuum components. Adeptic Reply (a Reply group company) will show how Reinforcement Learning (RL) can be applied in industrial contexts, training robots in realistic simulations and refining them with real-world data, while addressing challenges such as sim-to-real transfer, data efficiency, and safety to inspire reflections on future integration into industrial processes and a potential application roadmap. Part of those features have been developed in the content of IPCEI-CIS program in which Adeptic Reply is actively involved.

Comau will introduce a new robotic control method that shifts the reference from individual motors to the robot's center of mass and tool position, naturally compensating for axis interactions; this reduces unwanted oscillations, improves motion quality, lowers development time and costs, and enhances precision and stability, especially in applications requiring high trajectory fidelity. To deepen the exchange, the session will conclude with a moderated fishbowl discussion: the three speakers remain on stage with one or two empty chairs; audience members are invited to take an empty chair to ask their question or make a point, then return to the audience to free the seat for the next participant—keeping the dialogue focused, dynamic, and inclusive.

### **Intended outcome**

- Technical checklist for selecting grippers and vacuum systems based on material, surface, payload, and cycle constraints.
- Insights on the challenges and opportunities of Reinforcement Learning (RL) in industrial robotics, including elements for a realistic adoption roadmap.
- Exploration of a new robot control method (center-of-mass & tool-based), highlighting benefits in motion quality, stability, and cost reduction.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Simone Voto, Roboverse Reply
- Giuliano Giampietro, Adeptic Reply
- Giuseppe Parlato, Comau
- Tobias Lidén, Festo
- José Saenz, Fraunhofer IFF (Moderator)

## **Topic Groups and/or Innovation Networks involved**

Industrial Robotics

## **Projects involved**

Adeptic Reply: <https://www.8ra.com/projects/cloud-computing-edge-for-data-network-service-over-fttx-oran-and-asp4agv/>

## **Main organiser mail**

s.voto@reply.it

## **Co-organisers**

- Tobias Lidén, Festo, [tobias.liden@festo.com](mailto:tobias.liden@festo.com)
- Giuseppe Parlato, Comau, [giuseppe.parlato@comau.com](mailto:giuseppe.parlato@comau.com)
- José Saenz, Fraunhofer IFF, [jose.saenz@iff.fraunhofer.de](mailto:jose.saenz@iff.fraunhofer.de)

## WS 33 – Additive Manufacturing in Robotics

### Main questions to be answered

- What emerging trends (e.g., AI-driven robotics, multi-material AM) and cross-sector partnerships will redefine robotics-AM innovation in the next 5 years?
- What are the main limitations of current robot systems compared to CNC machines?
- How do you think 3D printing could revolutionize the way we design and manufacture complex objects, and what do you see as the main challenges to overcome?

### WS Content

This workshop brings together experts to explore the next wave of innovation at the intersection of Robotics and Additive Manufacturing (AM). As robotics applications grow more complex, the demand for lightweight, high-performance, and functionally integrated components, such as advanced end effectors, is increasing. AM enables the creation of customizable, efficient, and application-specific parts to meet these needs. At the same time, robotic systems are revolutionizing AM itself by enabling precise, scalable, and adaptive manufacturing processes. The workshop will highlight this two-way synergy and its potential across sectors like aerospace, healthcare, energy, construction and material processing.

While industrial robots are affordable and provide excellent repeatability, their accuracy is not comparable to CNC machines. Emerging software-driven approaches are now addressing this gap by introducing optimized motion planning, direct G-code processing, and automatic program generation, which together simplify workflows and eliminate the need for manual programming. Offline trajectory simulation further enhances reliability by identifying potential issues early, reducing commissioning time and material waste.

By combining advanced manufacturing capabilities with robotic flexibility, and by providing intuitive interfaces that make complex tasks more accessible, robotics and AM are set to reinforce each other, unlocking new opportunities for innovation in both industrial and research domains.

### WS Organisation

- 30 Minutes for Keynote Presentations: Renowned experts share insights into advancements in both "AM for Robotics" and "AM with Robotics," focusing on current projects, challenges, and future trends
- 40 Minutes for Interactive Group Discussions: Attendees are divided into thematic groups to address the workshop's core questions. Facilitators guide the discussions to encourage knowledge exchange and outline pathways for collaborative innovation
- 10 Minutes for Plenary Session: Group findings are presented to the entire audience, fostering a collective understanding and ensuring all participants benefit from the discussions. Outcomes will be documented as a foundation for future initiatives

Comau (Keynote) will present Accurate Continuous Processes (ACP) software solutions that enhance industrial robot accuracy and usability for complex tasks for 3D printing and material processing. ACP introduces optimized robot motion planning and automatic program generation eliminating the need for manual programming.

### Intended outcome

Outcome of the WS:

- Establish clear goals for forming consortia targeting EU funding opportunities.
- Lay the groundwork for creating a euRobotics Topic Group on AM in robotics, enabling sustained discussions and collaborations.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Mathias Brandstötter, ADMiRE Research Center, Carinthia Univ. of Applied Sciences
- Giuseppe Parlato, COMAU SpA
- Sigrid Brell-Cokcan, RWTH Aachen
- Requested but still open: Roboze, CEAD, Krauss Maffei, Prima Additive, Titomic

### **Topic Groups and/or Innovation Networks involved**

TG Industrial Robotics

### **Further information (e.g. links, references)**

<https://www.comau.com/en/our-offer/products-and-solutions/robotic-control-and-software/precision-driven-robotics-with-high-accuracy-software/>

### **Main organiser mail**

M.Brandstoetter@fh-kaernten.at

### **Co-organisers**

- Giuseppe Parlato, COMAU SpA [giuseppe.parlato@comau.com](mailto:giuseppe.parlato@comau.com)
- Lakshmi Srinivas Gidugu, ADMiRE Research Center, Carinthia Univ. of Applied Sciences

## WS 34 – Coupling Mobile Robotics & Manipulation

### Main questions to be answered

- What are the latest breakthrough research results in coupling mobile robots with manipulators ?
- What are the real industry needs and market trends driving the adoption of mobile manipulators ?
- How can we bridge the gap between academic innovation and industrial application to accelerate the deployment of mobile manipulation ?

### WS Content

Mobile robots and manipulators are well established technologies in different applications, including autonomous guided vehicles in warehouse logistics, fixed and mobile manipulators in production line assembly, and service robots in healthcare and household domains. More recently, the potential of combining both systems into a more capable robot has attracted attention from both the academic world and industries. This growing interest is driven by several factors: a) hardware is becoming increasingly affordable, even for small businesses, b) human labor in logistics and on production floors is getting more scarce in Europe (and elsewhere), c) the demand for household robotics is becoming real, d) logistics are becoming more and more automated, and e) faster product cycles require faster changing production lines making statically mounted manipulators less cost-effective.

This workshop will bring together researchers from the academic world to present their break-through research results on the coupling of mobile robots and manipulators and industry representatives to lay out their technological needs and applications for mobile robots. Topics discussed will include (depending on the speakers) robot perception and localization in changing environments, motion planning, task assignment and scheduling and mobile robot and manipulator synergies.

### WS Organisation

Room: Synesvar den, Time: 25.03.2026, 11:10 - 12:30

The workshop schedule should encourage the exchange between the academic world and the industries, and will be divided in two sessions:

- 11:10 - 11:50: Speech from industry and research (40 minutes, 3+3Talk)
- Organizers: Marco Rosa, Lei Wan
- This session will bring together a cluster of research projects on mobile manipulators across various application domains.
- Two to three industry representatives will give 6-7 minute talks highlighting the main challenges of deploying mobile robots and manipulators in industrial environments.
- These talks will highlight the contrast between industrial practice and current academic research directions in mobile robotics, thereby highlighting potential gaps.
- 11:50 - 12:30 Panel Discussion Session (40 minutes) (ask for the room early)
- Organizers: Max Spahn, Lei Wan
- The panel will bring together all previous speakers for a joint discussion, moderated by Max Spahn, running for approximately 30 minutes and followed by an audience Q&A.
- Panel discussion and audience Q&A focused on:
  - Mobile Robots and Manipulators: expectations and reality
  - The new market trends in the field of Mobile Robots and Manipulators

## **Intended outcome**

Outcome 1: We established the "European Mobile Manipulation Alliance" - a cross-sector community uniting academic EU projects and industry stakeholders.

- We will bring together all European robotics stakeholders in mobile manipulation, creating a formal network that connects EU-funded sister projects with industry leaders from logistics, manufacturing, and service robotics
- Participants will collaboratively develop a comprehensive market landscape overview, documenting current deployment scenarios, technological readiness levels, and emerging opportunities across different sectors
- Result: "At ERF2026, we founded the European Mobile Manipulation Alliance with 20+ organizations committed to regular exchange and joint roadmap development"

Outcome 2: We produced the "Academia-Industry Gap Assessment & Action Plan" - a concrete framework for bridging research and practice

- Through structured dialogue between researchers and industry panel members, we will systematically identify and prioritize the specific gaps preventing academic innovations from meeting industrial requirements
- For each identified gap, we will define actionable steps, assign responsible parties (research projects or industry partners), and establish measurable milestones for closing these gaps
- Result: "At ERF2026, we created a practical blueprint showing exactly how to transform mobile manipulation research into industry-ready solutions, with clear commitments from both sides"

## **People actively involved (e.g. speakers, panelists, moderators)**

- Christoph Bik, ABB AG
- David Fertig, Roche Diagnostics
- Francesco Ferro, PAL Robotics
- Richard Duro, Universidad de Coruna
- Gianluca Palli, University of Bologna
- Giorgio Cannata, Università di Genova

## **Topic Groups and/or Innovation Networks involved**

- Topic Group "Industrial Robots" (TG-IR)
- Topic Group "ARTIFICIAL INTELLIGENCE AND COGNITION IN ROBOTICS" (AICoR)
- Topic Group "PERCEPTION"

## **Main organiser mail**

- Lei Wan, XITASO GmbH, lei.wan@xitaso.com

## **Co-organisers**

- Max Spahn, ABB AG, max.spahn@de.abb.com
- Marco Rosa, PAL Robotics, marco.rosa@pal-robotics.com

## **WS 35 – Humanoids at Work: Defining Strategic Priorities for Real-World Deployment**

### **Main questions to be answered**

- What are the current and emerging capabilities of humanoid robots that are relevant in workplace environments?
- How can different structural and design approaches, including tensegrity-inspired and tendon-driven architectures, contribute to creating more robust, adaptable and safe humanoid systems?
- Which workplace applications seem most realistic in the short and long term, and what steps are required in terms of research and development to achieve this?

### **WS Content**

This workshop examines the capabilities of humanoid robots in workplace settings, addressing both their technological maturity and their realistic application horizons. Four invited speakers will each present a distinct perspective:

- Current state of humanoid robot capabilities for workplace tasks
- Structural and mechanical design for safe interaction with human, featuring tensegrity-inspired robotics
- Evaluation of practical considerations for integrating humanoids into operational contexts towards a broader concept of practicability

Following the four talks, the session concludes with a short moderated discussion to synthesize perspectives and identify near-term research priorities, setting the stage for an interactive prioritization exercise.

### **WS Organisation**

The workshop will begin with four expert pitches, each addressing one of the following core themes: (1) the current and emerging capabilities of humanoid robots; (2) structural and mechanical design approaches, including tensegrity-inspired and tendon-driven architectures; and (3) practical considerations in workplace environments, situating humanoid workplace applications along a technology Hype Cycle, relate application demands to humanoid functionalities, and frame integration challenges such as safety, robustness, interaction, and organisational constraints.

After the presentations, attendees will take part in open discussions. In a plenary session, participants will discuss with the panel along with prepared leading questions. Participants will be encouraged to distinguish between short-term and long-term application perspectives, supported by an interactive prioritisation or voting format (e.G., PractiFy-style polling). These insights will then be consolidated by the moderator into a concise, collaboratively formulated set of strategic priorities for future research and development.

By combining expert input with active collective synthesis, structured reflection on technological maturity and practicability, the workshop enables attendees to contribute directly to the creation of shared, actionable outcomes.

### **Intended outcome**

Attendees will leave the workshop having jointly produced the following:

- a shared understanding of the current capabilities of humanoid robots, particularly in workplace contexts; and
- a concise statement of strategic priorities outlining the most promising near-term application areas and the development steps required to achieve them.

Participants will be able to say afterwards: 'We mapped out where humanoid robots stand today, distinguished realistic short-term workplace applications from longer-term ambitions, and identified practical priorities for bringing humanoids into real workplaces.'

### **People actively involved (e.g. speakers, panelists, moderators)**

- Dr. Patricia Rosen, Federal Institute for Occupational Safety and Health (BAuA), rosen.patricia@baua.bund.de (Moderator)
- Lars Dalgaard, Danish Technological Institute (DTI), ldd@teknologisk.dk (Speaker)
- Francesco Ferro, PAL Robotics, francesco.ferro@pal-robotics.com (Speaker)
- Takeru Nemoto, Siemens AG, takeru.nemoto@siemens.com (Speaker)
- Dr. Sascha Wischniewski, Federal Institute for Occupational Safety and Health (BAuA), wischniewski.sascha@baua.bund.de (Speaker)

### **Topic Groups and/or Innovation Networks involved**

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### **Projects involved**

/

### **Further information (e.g. links, references)**

/

### **Main organiser mail**

- Marco Rosa, PAL robotics, marco.rosa@pal-robotics.com
- Francesco Ferro, PAL Robotics, francesco.ferro@pal-robotics.com

### **Co-organisers**

- Dr. Sascha Wischniewski, BAuA, wischniewski.sascha@baua.bund.de
- Takeru Nemoto, Siemens AG, takeru.nemoto@siemens.com
- Marco Rosa, PAL robotics, marco.rosa@pal-robotics.com

## WS 36 – AI and marine robotics: an end-user perspective on new technologies

### Main questions to be answered

- Which is the state of the art of AI and in particular AI from a marine robotics perspective?
- Which are the technologies most useful from an end-user standpoint?
- How is the new technological Revolution impacting on the end-users?

### WS Content

The technological evolution of the last decades has made the use of marine robots a reality. In the next years, thanks to the advances in autonomy and Artificial Intelligence (AI), these systems are expected to become more and more popular in real-world applications.

While it is important to analyse the challenges which remain to be fully solved, it is time to explore in depth the end-users' perspective. This aspect, often overlooked in scientific conferences, is of primary importance to transition marine robots from labs to the real-world.

This WS, which will bring together researchers, companies and end-users, will discuss and try to provide answers to the following questions: which are the functionalities required by end-users? Do end-users really need full autonomous systems? Which are the technologies most useful to end-users today? How is the new technological Revolution impacting on the end-users approach to marine robotics?

After two talks, one describing the state of the art of LLM from a marine robotics perspective and one focused on the end-user needs, we will have a round-table, in which the public is invited to participate.

### WS Organisation

00:00-00:10 Introduction to the workshop and TG activity presentation by the organizers

00:10-00:20 Overview of AI and LLM from a marine robotics perspective - Barbara Arbanas Ferreira, CoE MARBLE, Croatia

00:20-00:30 AI and marine robotics: an end-user perspective, Walter Caharija, Siemens Energy

00:30-00:75 Roundtable

00:75-00:80 Conclusion

### Intended outcome

A better understanding of the opportunities offered by AI, in particular LLM, to marine robotics.

An overview of the perspective of marine robotics end-users on the use of AI: an answer to the question what do they really need?

A roundtable involving international experts to allow the audience to intervene and to clarify topics of interest for the general public.

### People actively involved (e.g. speakers, panelists, moderators)

- Gabriele Ferri, NATO STO CMRE - moderator and speaker to the introductory talk
- Enrico Simetti, University of Genova (Italy) - moderator
- Barbara Arbanas Ferreira, CoE MARBLE (Croatia) - speaker, panelist
- Walter Caharija, Siemens Energy (Norway) - speaker, panelist
- Jan Christian Torvestad, Equinor (Norway) - speaker, panelist
- Fausto Ferreira, University of Zagreb Faculty of Electrical Engineering and Computing/CoE MARBLE (Croatia) - panelist
- Federico Celi, NATO STO CMRE, panelist

## **Topic Groups and/or Innovation Networks involved**

Marine Robotics TG

## **Projects involved**

MARBLE - Centre of Excellence in Maritime Robotics and Technologies for Sustainable Blue Economy

## **Main organiser mail**

- Gabriele, Ferri, NATO STO-CMRE [gabriele.ferri@cmre.nato.int](mailto:gabriele.ferri@cmre.nato.int)

## **Co-organisers**

- Enrico Simetti, University of Genova, [enrico.simetti@unige.it](mailto:enrico.simetti@unige.it)
- Federico Celi, NATO STO CMRE, [federico.celi@cmre.nato.int](mailto:federico.celi@cmre.nato.int)
- Fausto Ferreira, University of Zagreb Faculty of Electrical Engineering and Computing/CoE MARBLE, [fausto.ferreira@fer.hr](mailto:fausto.ferreira@fer.hr)

## **WS 37 – Innovation and Developments in Robotic GNSS-Denied Localisation for Inspection & Maintenance**

### **Main questions to be answered**

- What are the latest advancements and future trends in GNSS denied localization?
- Can AI-driven approaches help traditional localisation methods address real-world deployment challenges while maintaining the robustness needed for operational environments?
- How do we achieve reliable, auditable localisation for I&M missions (indoor, offshore, underground, urban canyons) when GNSS is denied or degraded—using today’s deployable tech?

### **WS Content**

This workshop brings together researchers, technology providers, and end users to explore how reliable localisation can unlock autonomous inspection and maintenance (I&M) in GNSS-denied environments such as ship interiors, offshore facilities, tunnels, and industrial plants. In these settings, navigation is not just a technical challenge but a mission-critical enabler of safety, compliance, and repeatability.

The session will combine concise, field-based presentations with an interactive discussion to identify best practices and future priorities.

TODO: should we discuss dual use also? I feel like the pull for gnss denied tech is really coming from the defence sector, so it would be relevant to maybe have dual use as a discussion topic?

### **WS Organisation**

Overall program (80 minutes)

- (5 min) Welcome and short introduction by the organisers.
- (40 min) Four invited presentations (10 minutes each) highlighting recent advances and field experiences in GNSS-denied localisation and inspection.
- Topics include ship-interior mapping, offshore and confined-space localisation, multi-robot cooperation, and safety/acceptance aspects.
- (30 min) Open round-table discussion led by the organisers, engaging speakers and participants on future directions, cross-sector collaboration, and standardisation needs.
- (5 min) Wrap-up and summary of key takeaways.

The session encourages audience interaction throughout, with emphasis on exchanging concrete experiences and identifying actionable next steps for robust, real-world GNSS-denied navigation.

### **Intended outcome**

The workshop aims to deliver concrete insights into how localisation technologies can be reliably deployed for inspection and maintenance in GNSS-denied environments. Participants will gain:

- A clearer understanding of the current technological readiness and integration pathways for visual, inertial, and semantic localisation methods in real operations.
- Shared identification of high-impact use cases and the main technical, regulatory, and operational challenges that must be addressed to reach robust field deployment.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Magnus Bjerkeng, SINTEF Digital — Lead organiser & moderator presenting GNSS denied localisation using cellphone towers and semantic understanding
- Øystein Skotheim, ScoutDI — Confined-space drone inspection
- Uğur Dinçer, HKTM, Turkey & Ahmed Mohammed, SINTEF, Norway — Ship Interior Mapping Using 3D Point Clouds and Unstructured Data for Localization and Hazardous Material Detection (Case study: dense ship interiors as GNSS-denied environments; integration of semantic 3D reconstruction and hazard detection workflows.)
- Fausto Ferreira, University of Zagreb Faculty of Electrical Engineering and Computing/Centre of Excellence MARBLE, Croatia - GNSS-denied navigation for autonomous surface vessels

## **Topic Groups and/or Innovation Networks involved**

TG inspection and maintenance  
Innovation Network RIMA Alliance

## **Further information (e.g. links, references)**

The preparations of the workshop has been supported by the euRobotics I&M topic group, the RIMA Alliance euRobotics Innovation Network, the ADRA topic group on I&M

## **Main organiser mail**

Magnus.Bjerkeng@sintef.no

## **Co-organisers**

- Fausto Ferreira, University of Zagreb Faculty of Electrical Engineering and Computing/Centre of Excellence MARBLE, Fausto.Ferreira@fer.hr
- Abeje Y. Mersha, Saxion UAS, a.y.mersha@saxion.nl

## **WS 38 – Nuclear Applications of Intelligent Robots**

### **Main questions to be answered**

- How can new technologies and AI increase effectiveness and safety of robotic applications in nuclear industry ?
- Where in nuclear industry can be successfully applied intelligent robots ?
- What specific requirements should developers of new robotic systems accept to be successful in nuclear applications ?

### **WS Content**

The workshop will showcase successful applications of intelligent robotics in the nuclear industry, presented by leading experts from both industry and academia. They will explain how the integration of multi-sensor systems, IoT, data processing, and AI into nuclear robotics can improve the effectiveness and safety of work, with or without a human in the loop.

Following the keynotes, there will be an interactive Q&A session where participants can engage directly with the speakers. The workshop will conclude with a panel discussion featuring experts and industry leaders, focusing on future directions for robotics and AI in nuclear applications. Finally, the upcoming activities of the TG on Harsh Environment Robotics will be discussed.

### **WS Organisation**

- 0-15 min keynote presentation (CEA)
- 15-30 min keynote presentation (Vattenfall)
- 30-45 min keynote presentation (Uni Birmingham)
- 45-70 min panel discussion
- 70-80 min TG's next activities planning

### **Intended outcome**

This workshop will inspire roboticists to improve their systems, making them more intelligent and effective in the nuclear industry. It will also highlight areas within nuclear robotics where they can find new and challenging applications for their products.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Ladislav Vargovcik, Technical university of Kosice
- Rustam Stolkin, University of Birmingham
- Nicklas Tjernlund, Vattenfall
- Christophe Leroux, CEA

### **Topic Groups and/or Innovation Networks involved**

TG Harsh Environment Robotics

### **Projects involved**

-

**Main organiser mail**

ladislav.vargovcik@tuke.sk

**Co-organisers**

- Ladislav Vargovcik, Technical University of Kosice, ladislav.vargovcik@tuke.sk
- Rustam Stolkin, University of Birmingham, R.Stolkin@bham.ac.uk

## WS 39 – Infrastructure resilience through next-gen I&M robotics

### Main questions to be answered

- How can IoT and robot enabled-data be integrated to predict future faults and potentially prevent and fix them?
- How are robots used for intervention in I&M in the industry and public sector?
- What are the next high-value use cases for the above-mentioned topics in I&M, and which key tech, regulatory and business challenges need to be met?

### WS Content

This workshop brings together stakeholders from industry, public sector and research to explore how robotics, AI, and IoT can transform inspection and maintenance (I&M) into a proactive force for infrastructure resilience. With a focus on real-world challenges—such as the 2025 blackout in Spain—we will discuss how to move beyond inspection to enable robotic intervention, real-time sensing, and predictive maintenance. Through expert talks from SPRINT Robotics, Quasset, Equinor, SDU, Aker BP, Hibot and SINTEF, and interactive discussions, we will identify high-value use cases, integration strategies for sensor and robot-enabled data, and the regulatory and business hurdles that must be overcome to scale these technologies.

### WS Organisation

Overall program (80 minutes)

- (ca. 5 min) Short introduction by the organizers.
- (ca. 45 min) Short pitches, including preliminary Q&A, addressing the key questions of the workshop and highlighting insights from real use cases and relevant technologies.
- (ca. 30 min) Active plenary discussions among all workshop participants (speakers and attendees). In parallel, we use online tools such as Slido or Google Drive to gather inputs on the key questions for the workshop.

5-min pitches

- Tjibbe Bouma, SPRINT Robotics and Quasset
- Key take-aways from using robots in Equinor's operations. Svein Ivar Sagatun, Equinor
- High voltage line maintenance using a hybrid robotic system, Thor Kamp/Emad Samuel Malki Ebeid, SDU
- Leveraging combined IoT and robotics in Remote offshore I&M. Jone Sæbbø, Aker BP.
- Robotic Solutions for Intervention in Critical Infrastructure, Michele Guarnieri. Hibot
- Technology Infrastructures for European Leadership in Inspection and Maintenance, Aksel Transeth, SINTEF.

More speakers may be announced. The program can change without notice.

## **Intended outcome**

We target the following main outcomes for end-users, suppliers, and researchers attending the workshop:

- Insights into how robotics, AI, and IoT can be integrated to enable predictive maintenance and robotic intervention, contributing to infrastructure resilience.
- Identification of high-value use cases and key challenges - technical, regulatory, and business-related - that must be addressed to scale next-generation I&M solutions across sectors.

We will produce a summary of the workshop and share presentations where possible. The inputs gathered during the plenary discussion and via interactive tools (e.g., Slido, Google Drive) may serve as contributions to strategic initiatives within euRobotics, the RIMA Alliance, and other relevant networks and projects.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Aksel Transeth, SINTEF
- Emad Samuel Malki, Ebeid, SDU
- Svein Ivar Sagatun, Equinor
- Tjibbe Bouma, SPRINT Robotics and Quasset
- Jone Sæbbø, Aker BP.
- Further speakers will be announced

## **Topic Groups and/or Innovation Networks involved**

TG inspection and maintenance  
Innovation Network RIMA Alliance

## **Projects involved**

Robots4Green - Transforming high-voltage line maintenance using advanced robotic systems  
JARVIS - Advancing human-robot collaboration in a user-centric manner  
RINVE - Norwegian industry network on automation and autonomous systems for inspection and maintenance  
Nemonoor - Nemonoor European Digital Innovation Hub (one of Norway's two EDIHs)

## **Further information (e.g. links, references)**

The preparations of the workshop has been supported by the euRobotics I&M topic group, the RIMA Alliance euRobotics Innovation Network, the ADRA topic group on I&M, SPRINT Robotics, the RINVE network, the Nemonoor EDIH, and the Naine network. An EU-project called JARVIS (101135708) and Robots4Green support the organization of the workshop.

## **Main organiser mail**

aksel.a.transeth@sintef.no

## **Co-organisers**

- Aksel Transeth, SINTEF, aksel.a.transeth@sintef.no
- Emad Samuel Malki, Ebeid, SDU, esme@sdu.dk

## **WS 40 – Drones for difficult and challenging applications in labs, healthcare, inspection and maintenance**

### **Main questions to be answered**

- What has currently been successful with drones for lab, healthcare and I&M applications?
- What is currently still challenging from the technology perspective for drones to be deployed in commercial spaces within healthcare and I&M?
- Considering GNSS denied locations, what are the technology challenges for drones? Are there any alternative and emerging solutions?

### **WS Content**

Drones are being popularly trialled in logistics applications for the last mile delivery to the customer and there are some successful implementations already. There is a lot more potential for drone technology in other industries and applications. In this workshop we like to bring actors from different sectors and application areas together, highlight some early successful research demonstrations, discuss further use cases and challenges in the current state-of-the-art that needs further explorations.

Drones in labs and healthcare applications both indoor and outdoor and in inspection and maintenance applications in GNSS-denied locations will be the main focus. We also like to extend the discussion during the panel to other aerial and agri use cases too.

### **WS Organisation**

First half

- Introduction
- Speakers sharing insights from pilot demonstrations and experiments

Second half

- Panel to discuss the Questions and also take some questions from the audience
- Slido questions for audience to answer while the panel is ongoing

### **Intended outcome**

- Bringing together robotics and end-user communities from different sectors into one room to discuss common challenges - Lab, Inspection, Aerial
- Roboticists working with drones they can take away the common challenges in drone applications in different sectors

### **People actively involved (e.g. speakers, panelists, moderators)**

Speakers

- Presenter: Prof (Emeritus) Karl Arne - University of Oslo - case study Carrying biologic samples in drones - Title: Evaluating Time Gains with Drones in Healthcare: Efficiency or Illusion?
- Presenter: Aksel A. Transeth, Title: Automated planning for inspection and monitoring (examples from Airspecter and Testudo), SINTEF

- Presenter: Francisco Javier Pérez Grau - Title: Drones in the dark: localization in challenging GNSS-denied environments - BEEYONDERS HE project

#### Panellists

- Karl Arne, Prof (Emeritus), U of Oslo
- Aksel A. Transeth, senior research scientist, SINTEF
- Francisco Javier Pérez Grau, Head of Perception & AI, CATEC
- Svein Ivar Sagatun, Head of Robotics and Drones (Equinor)

#### **Topic Groups and/or Innovation Networks involved**

TG Laboratory Robotics

TG Inspection and Maintenance

TG Aerial Robotics (a link with the TG to propose panellists for the session and also invite their TG members)

#### **Main organiser mail**

- Radhika Gudipati, ARIA, radhika.gudipati@aria.org.uk

#### **Co-organisers**

- Patrick Courtney, SiLA, tec-connection, patrick.courtney@tec-connection.com
- Aksel Transeth, SINTEF, Aksel.A.Transeth@sintef.no

## **WS 41 – Dual-Use Robotics: bridging robotics and defence innovation**

### **Main questions to be answered**

- Where does the euRobotics community stand on dual-use technologies—awareness, acceptance, and concerns? What technologies and use cases are currently being developed?
- How can robotics solutions be engineered to support civil defence and resilience, including rapid scaling of production and deployment under crisis conditions?
- What challenges and integration opportunities exist for companies aiming to apply their robotics innovations in defence-oriented contexts?

### **WS Content**

This workshop, co-organised by Łukasiewicz - PIAP and Saxion University of Applied Sciences explores the current role of robotics in the defence domain within the euRobotics community. It focuses on mapping ongoing activities, industrial engagement, and emerging opportunities—not only in direct defence applications, but also in related areas such as civil applications, response to hybrid threats, and resilience-building through scalable production and rapid deployment of innovations during armed conflicts or natural disasters. Rather than shaping future strategies, the workshop provides a snapshot of current developments, aligned with the “Robotics for a Changing World” Task Force.

### **WS Organisation**

The workshop will be structured as an interactive session combining panel presentations and audience participation. It will start with brief introductions from the panelists, who will present their background and highlight relevant defence-related robotics activities, technologies, and opportunities. Following this, the discussion will transition to an interactive “hot-chair” format: audience members are invited to join the panel to ask questions, provide insights, or share their own experiences.

Throughout the session, a live mind-map will be created—using either a digital whiteboard or physical sticky notes—capturing ongoing activities, use cases, industrial engagement, and opportunity areas. The moderator will organize and connect contributions in real time, ensuring a clear, visual representation of the current landscape and emerging opportunities in defence robotics.

### **Intended outcome**

- a mind-map of current defence-related robotics activities within the euRobotics community, highlighting technologies, use cases, and active players.
- identified concrete opportunity areas where robotics can strengthen defence and civil resilience, from hybrid threat response to rapid innovation deployment.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Abeje Y. Mersha, Professor - Saxion University of Applied Sciences, co-organizer and moderator
- Jakub Główka, Łukasiewicz - PIAP / Head of Department, co-organizer and panelist
- Ferri Gabriele, NATO CMRE / Research Scientist and Manager, panelist
- Karol Janik, MTC / Technology Manager, panelist
- Raul Rikk, Milrem / Capability Development Director, panelist

**Main organiser mail**

[jakub.glowka@piap.lukasiewicz.gov.pl](mailto:jakub.glowka@piap.lukasiewicz.gov.pl)

**Co-organisers**

- Abeje Y. Mersha - [a.y.mersha@saxion.nl](mailto:a.y.mersha@saxion.nl)

## **WS 42 – Unlocking Resilient Telerobotic Operations for Critical Maritime Infrastructure and Port Automation**

### **Main questions to be answered**

- How can telerobotics make port operations safer and more flexible while maintaining efficiency under variable conditions?
- What robotic technologies are currently feasible for monitoring, maintaining, and protecting critical maritime infrastructure, and how can they be deployed in harsh environments?
- How can collaboration between industry, academia, and operators accelerate the adoption of resilient maritime robotics, and what lessons can be drawn from real-world deployments?

### **WS Content**

Maritime domains present highly dynamic and safety-critical conditions where robotic technologies can unlock new efficiencies and resilience. In port environments, telerobotics offers a pathway to increase safety for dock workers by enabling remote handling of hazardous operations. At the same time, critical maritime infrastructures such as offshore platforms or subsea pipelines require robust robotic solutions that can ensure continuity of operations under harsh and unpredictable conditions. By integrating autonomy with reliable teleoperation, robots can secure and maintain assets in both cases while reducing idletime and human exposure to risks. This workshop will bring together perspectives from industry and research to highlight current challenges, emerging technologies, and real-world business opportunities. Key topics will include resilient system design, human-robot interaction under uncertain conditions, and shared autonomy strategies. A roundtable discussion will address regulatory and societal implications of deploying robotic systems in the two environments, where participants will gain an overview of the state of the art as well as insights into future directions that can strengthen safety and resilience at sea.

### **WS Organisation**

The workshop will combine short impulse presentations with a panel-style discussion. After a brief introduction, the invited experts will present their views before engaging in a moderated exchange. Audience interaction will be encouraged through a Miro board with live polls. The structure is designed as a dialogue rather than a sequence of stand-alone presentations.

Schedule:

- 0–5 min: Welcome (hosts)
- 5–15 min: Impulse talk plus Q&A, Marie-Elisabeth Makohl
- 15–25 min: Impulse talk plus Q&A, Antonio Vasilijević
- 25–35 min: Impulse talk plus Q&A, Prof. John Potter
- 35–45 min: Impulse talk plus Q&A, TBD, Regulatory Body
- 45–75 min: Moderated panel with integrated audience interaction via a Miro board
- 75–80 min: Wrap-up and summary of outcomes (hosts)

### **Intended outcome**

Things that attendees will say afterwards:

- “I didn’t know that port automation is such an uncovered field!?”
- “I didn’t even know that these maritime infrastructures even exist!?”
- “Both problems have high potential for robotics!”

## **People actively involved (e.g. speakers, panelists, moderators)**

- Hosts: Daniel Leidner (SEAL Robotics) and Barbara Arbanas Ferreira (MARBLE)
- Speakers / Panelists: Marie-Elisabeth Makohl (CEO, SEAL Robotics), Antonio Vasilijević (NTNU), Prof. John Potter (NTNU), NN from a regulatory body, two additional panelists to be invited
- The workshop aims to involve academic researchers, industry representatives, and practitioners working in maritime robotics and infrastructure.

## **Topic Groups and/or Innovation Networks involved**

TG on Teleoperation and Telerobotics

## **Projects involved**

MARBLE; Centre of Excellence for Maritime Robotics, funded by European Union

FLIP-R: Flexible Pin-Handling Robot, funded by German Ministry of Research, Transfer, and Space

## **Further information (e.g. links, references)**

[www.marble.eu](http://www.marble.eu)

[www.seal-robotics.com](http://www.seal-robotics.com)

## **Main organiser mail**

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## **Co-organisers**

- Daniel Leidner | SEAL Robotics | [daniel@seal-robotics.com](mailto:daniel@seal-robotics.com)
- Barbara Arbanas Ferreira | MARBLE | [barbara.arbanas@marble.eu](mailto:barbara.arbanas@marble.eu)

## **WS 43 – Robots Among the Stars: AI Revolutionising the Next Era of Space Robotic Missions and Services**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Can AI be trusted to autonomously support high-cost, high-risk space robotic missions?
- When space robots face the unexpected, can AI reliably improvise beyond pre-programmed behaviour?
- Which orbital and planetary missions and services are mature enough today for AI to take a leading operational role?
- How do limited data, communication delays, and constrained onboard computing shape the design of AI for space robotics?
- How do gaps in standards, AI assurance frameworks, and regulatory barriers limit the deployment of AI-driven space robotics and how can the community address them?

### **WS Content**

This workshop will explore how advances in artificial intelligence — already transforming terrestrial sectors such as manufacturing, logistics, autonomous driving, and critical infrastructure inspection — can be responsibly translated to space robotics. On Earth, AI-enabled robots routinely operate in uncertain environments, adapt to dynamic conditions, and optimise complex operations in real time. The workshop will examine how similar capabilities can unlock new levels of autonomy and efficiency in In-Orbit Servicing, Assembly and Manufacturing (ISAM), In-Space Operations and Services (ISOS), and lunar and planetary exploration. Use cases will include autonomous Rendezvous and Proximity Operation (RPO), active debris removal, maintenance and refuelling, in-orbit assembly and inspection of very large high-value infrastructures, in-space manufacturing, cooperative robotic systems, surface mobility and manipulation, and science-driven exploration under extreme environmental constraints, to name a few. By reducing reliance on continuous ground control, AI-enabled autonomy can increase mission robustness, extend operational lifetimes, reduce costs, and enable missions that are currently infeasible due to latency, complexity, or scale.

Further, this workshop will critically examine the barriers to the adoption of AI in high-risk, high-value space missions. Space robotics faces fundamental constraints in data availability, communication bandwidth and latency, and onboard computing, which challenge conventional data-driven AI approaches. Moreover, the absence of mature standards for AI-enabled autonomy, limited assurance and verification methods, and unclear regulatory and certification pathways undermines trust in deploying AI for mission-critical functions. Through expert discussion and cross-sector stakeholder insights, the workshop will examine how assurance, validation, and governance frameworks — that have successfully emerged in terrestrial domains — can be adapted for space. The goal is to identify practical pathways toward trustworthy, standardised, and scalable AI autonomy that can safely support the next generation of complex space robotic missions and services.

### **WS Organisation**

Introduction by the organizers (10min)

Impulse talks on topic (20min)

Panel discussion/Group work

Closing

### **Intended outcome**

We expect to create a shared understanding of the real bottlenecks for AI adoption in space robotics. Also, we want to spark a paradigm shift from “Can we use AI?” to “How do we enable trustworthy AI autonomy in space?”

### **People actively involved (e.g. speakers, panelists, moderators)**

- Prof. Dr. Miguel Olivares-Mendez, UNIVERSITÉ DU LUXEMBOURG
- Prof (Hon) Dr. Mini Rai, Director - Orbit Rise Ltd, UK
- Dr Manu Nair, Assistant Professor, University of Manchester

### **Topic Groups and/or Innovation Networks involved**

TG Space Robotics

### **Main organiser mail**

Prof. Dr. Miguel Olivares-Mendez, UNIVERSITÉ DU LUXEMBOURG, miguel.olivaresmendez@uni.lu

### **Co-organisers**

- Prof (Hon) Dr. Mini Rai, Director - Orbit Rise Ltd, UK, *dr<sub>m</sub>inicrai@orbitrise.co.uk*
- Dr Manu Nair, Assistant Professor, University of Manchester, manu.nair@manchester.ac.uk
- Carlos J. Pérez del Pulgar Mancebo, Space Robotics Lab, University of Malaga, carlosperez@uma.es

## **WS 44 – Software Engineering in Robotics and Automation – Configuration, DevOps & Runtime Adaptation**

### **Main questions to be answered**

- How can transparency, adaptability, and DevOps-inspired practices enable more efficient and scalable automation solutions?
- How to utilize AI-driven approaches for configuration, deployment and runtime adaptation in today's production environments?
- What are your current challenges, needs, wishes and priorities?

### **WS Content**

This workshop explores how transparency, adaptability, and DevOps-inspired practices can enable more efficient and scalable automation solutions. We discuss possibilities to utilize AI-driven approaches for handling configuration, deployment, and runtime adaptation in today's flexible, high-mix, low-volume production environments. Starting with a series of short teaser talks, we will focus on real-world examples and we discuss with the audience to gain insights into current demands, developments and practical applications.

Teaser talks to give perspectives on Software Engineering in Robotics and Automation from Academia and Industry. Mentimeter is used to gather insights from the audience about current challenges, needs, wishes and priorities, etc. Panel discussion with community involvement (adapted format of a fish bowl conversation).

### **WS Organisation**

- 5 min Welcome and Introduction
- 25 min 3 Teaser Talks
- Christian Schlegel [Academia, Technische Hochschule Ulm]
- Andreas Schoob [Industry: voraus robotik GmbH]
- Andreas Wiedholz [Industry: XITASO GmbH]
- (possibly supplemented by industry partners)
- 20 min Mentimeter insights gathering from the audience
- 30 min Fish bowl discussion with the audience, moderated by
- Andreas Angerer (XITASO GmbH)
- Andreas Schoob (voraus robotik GmbH)
- Christian Schlegel (Technische Hochschule Ulm)

### **Intended outcome**

- Ratings, topics and priorities collected from the community
- Input for short-term and mid-term roadmapping

### **People actively involved (e.g. speakers, panelists, moderators)**

- Christian Schlegel, Technische Hochschule Ulm
- Julian Öltjen, voraus robotik GmbH
- Andreas Schoob, voraus robotik GmbH
- Andreas Angerer, XITASO GmbH
- Andreas Wiedholz, XITASO GmbH

### **Topic Groups and/or Innovation Networks involved**

TG “Software Engineering, System Integration and Systems Engineering”

### **Further information (e.g. links, references)**

- Software Engineering, Systems Integration and Systems Engineering | euRobotics
- Software Engineering, Systems Integration and Systems Engineering
- <https://www.robotics-portal.eu/Software/stream/about>

### **Main organiser mail**

- Christian Schlegel, Technische Hochschule Ulm, [Christian.Schlegel@thu.de](mailto:Christian.Schlegel@thu.de)

### **Co-organisers**

- Julian Öltjen, voraus robotik GmbH, [julian.oeltjen@vorausrobotik.com](mailto:julian.oeltjen@vorausrobotik.com)
- Andreas Schoob, voraus robotik GmbH, [andreas.schoob@vorausrobotik.com](mailto:andreas.schoob@vorausrobotik.com)
- Andreas Wiedholz, XITASO GmbH, [andreas.wiedholz@xitaso.com](mailto:andreas.wiedholz@xitaso.com)

## WS 45 – Robot Systems Engineering and Robotic Systems Integration

### Main questions to be answered

- What insights can we gain from social-media popular (science) videos on social media in our effort to integrate robotic systems into human-centric sectors?
- How can Europe leverage its strength in systems engineering and integration to build a globally competitive industry? And more broadly, what could become Europe's unique selling point in the global robotics landscape?
- How can the robotics engineering and research community actively shape public perception and accelerate responsible development and adoption of robotic systems?

### WS Content

LinkedIn feeds and other social media platforms are filled with videos of robots performing impressive feats: filling dishwashers, breakdancing, boxing, unloading groceries and helping out on the factory floor. Yet, in our day-to-day life robots remain a rare sight. Aside from a few delivery robots out in the open (if at all), some autonomous agricultural machines and our vacuum cleaners. Is it purely time that is holding back these breakdancing humanoids from entering our homes and workplaces? Is it "simply" a matter of time?

This workshop will explore these trends and the challenges they present from the perspective of Systems Engineering and Systems Integration. This perspective combines various ways of thinking such as holistic design approach, multi-disciplinary collaboration, systems-of-systems-thinking to find what is missing before robotic systems can make a profound societal impact by deployment in real-world applications.

We believe that approaching these challenges from Systems Engineering and Systems Integration-perspective might be Europe's unique selling point. It offers strategic answers to questions that surround the: availability of data, human-robot collaboration and integration of robotics into complex human-centric sectors. Most importantly, it may be the key to securing Europe's competitive advantage in the global robotics landscape.

### WS Organisation

The aim of this workshop is to collaboratively explore answers to the main questions posed before and identify best practices in our design, development and integration of robotic systems in human-centric sectors. Collaboration during this workshop should be understood as the combination between:

- participants: the workshop will be highly interactive, encouraging active engagement from all that attend,
- speakers: we will invite experts that know the field well and that focus on systems engineering, software engineering,
- end-users: we will invite users of robotic systems to share their best practices and/or fantastic fails in the integration of the systems in their applications,

### Intended outcome

By combining these perspectives, the workshop aims to generate concrete recommendations and foster a shared understanding of how Europe can lead in the deployment of robotic systems in human-centric sectors.

Concretely, people should leave the session with a renewed vision on the videos that pass by in their feeds alongside recommendations, best practices for designing, developing, research and/or integrating robotic systems into their real-world applications.

### People actively involved (e.g. speakers, panelists, moderators)

- Hala Elrofai (moderator), Eindhoven University of Technology
- Wouter Kuijpers (panelist), Eindhoven University of Technology

- Rich Walker (panelist), Shadow Robot Company
- Carlos Calleja (panelist), IKERLAN
- Shirley Elprama (panelist), imec-SMIT & Vrije Universiteit Brussel
- Arne Nordmann (panelist), Neura Robotics GmbH

### **Topic Groups and/or Innovation Networks involved**

Topic Group Software Engineering, Systems Integration & Systems Engineering

### **Projects involved**

Testing and Experimentation Facility AI-Matters

### **Main organiser mail**

Hala Elrofai, Eindhoven University of Technology, h.b.h.elrofai@tue.nl

### **Co-organisers**

Wouter Kuijpers, Eindhoven University of Technology, w.j.p.kuijpers@tue.nl

## **WS 46 – From Awareness to Action: Co-Creating the euRobotics Diversity Initiative**

### **WS Content**

- Welcome and introduction (5 - 10 minutes)
- Why Diversity Matters in Robotics
- Where We Stand: Diversity in euRobotics,
- Goal WS: This is not a WS about diversity — it's a session to help shape what euRobotics will actually do next.
- Interactive Poll based on the outcome of the Diversity Survey
- Where do you see the biggest diversity bottleneck in robotics
- "What surprised you most about the poll results?"

### **WS Organisation**

How will you use the time in the workshop? What will the attendees do?

### **Intended outcome**

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards "We did X at ERF2025".

### **People actively involved (e.g. speakers, panelists, moderators)**

Moderator

Speakers

### **Main organiser mail**

Inge Rehorst Inge.rehorst@eu-robotics.net

Franziska Kirstein franziska.kirstein@gmail.com

### **Co-organisers**

- Hala Elrofai hala.elrofai@eu-robotics.net
- Aurelie Clodic aurelie.clodic@gmail.com and aurelie.clodic@laas.fr
- Anne Delettre anne.delettre@percipio-robotics.com

Logistical Requirements

I would like to have

- 4 flipcharts to attach A1 poster to
- If flipcharts are not available we can use wall/ windows to stick posters to and we need removable tape
- Post-its 4 different colours
- Pens

## WS 47 – 6G empowering Future Multipurpose Robotics

### Main questions to be answered

- Fleet Management & Multi-Robot Operations: What design patterns, key performance requirements (KPIs), and reference architectures are needed for multipurpose robots, fleet management and multi-robot operations in factories, warehouses, inspection, logistics, harsh environments, to specify clear connectivity requirements and influence 6G standards and deployments?
- AI-Native Architecture & Real-Time Digital Twins: Which parts of the robotic autonomy stack (perception, planning, control, learning) can realistically benefit from AI-native 6G architectures and real-time digital twins? How should robotics researchers structure their software and data pipelines to exploit edge offloading without compromising safety and explainability?
- Network-as-a-Sensor & CPS: How can future 6G-enabled network-as-a-sensor capabilities (radio-based localisation, integrated sensing and communication) and cyber-physical systems integration improve perception, safety, and situational awareness for real robotic systems, from mobile manipulators and autonomous mobile robots (AMRs) to aerial and field robots?
- Multipurpose robots in multi-domain operations: How can future 6G-enabled networks support both ground and aerial operations (below 120m above ground)? What is the impact of the 6G network infrastructure to ensure Quality of Service (QoS) metrics in both air and ground for future autonomous robotics operations (edge computing, high bandwidth, low delay, etc.)?

### WS Content

The workshop aims to highlight three key points: 1) To announce the establishment of the new Connected Robotics Topic Group (TG). 2) To emphasise the partnership between euRobotics and one6G in the area of connected robotics, which will include the release of the new whitepaper in the "6G Empowering Robotics" series. 3) To share a platform for discussions around the five pillars of the Connected Robotics Topic Group: Network-as-a-Sensor, AI-Native Architecture, Real-Time Digital Twins, Fleet Management & Multi-Robot Operations, and Cyber-Physical Systems. For each pillar, participants will discuss concrete robotic scenarios, required connectivity and sensing properties, and lessons learned from existing networked robotic deployments, including private 5G and advanced Wi-Fi systems. It provides a forum where robotics experts can present and stress-test their applications (industrial, logistics, healthcare, inspection, aerial, field) against the emerging capabilities of 6G-enabled connected robotics.

This workshop builds on the ERF2025 WS52 "6G Empowering Future Robotics" and the insights from the previous one6G whitepaper. A key highlight is the official release of the new release of the euRobotics and one6G "6G empowering robotics" whitepaper series, focusing on connected robotics architectures and use case requirements. The workshop will present the key messages and use the discussions to collect inputs for future iterations and to form a task force with workshop organisers, speakers and participants to work across the supporting topic groups towards the defined questions in this workshop.

### WS Organisation

8:30 - 8:35: Introduction Recap the ERF2025 and introduce the Connected Robotics five pillars.

8:35 - 8:45: Provocation 1 Present the robotic perspective with clear examples tagged by each pillar.

8:45 - 8:55: Provocation 2 Provide the communication perspective with explanations based on the same pillars.

8:55 - 9:00: Whitepaper Spotlight Discuss joint eurobotics/one6G whitepaper key messages and its cross-cutting themes.

9:00 - 9:35: Breakouts Participants will work in groups on 1-2 Connected Robotics TG pillars, producing 2-3 scenarios and requirements sets that feed directly into the TG and whitepaper.

9:35 - 9:45: Breakout sessions insights Highlight active audience contributions and summarize the learning outcomes.

9:35 - 9:50: Conclusion and future activities Summarize the workshop learning outcomes and share connected Robotics future activities

9:50 : Group picture to include in the ERF 2026 report

### **Intended outcome**

The intended outcomes are:

- A concise, workshop-generated set of pillar-based scenarios, requirements, and design patterns to be integrated into Connected Robotics Topic Group work items and the whitepaper series.
- A short list of joint follow-up actions (testbeds, standardisation inputs, and potential project ideas) with clear ownership within euRobotics Topic Groups and one6G Work Items.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Francisco Javier Pérez Grau (CATEC, Advanced Center for Aerospace Technologies)
- Joseph Eichinger (Huawei Technologies) [Role: Breakout session lead- PoC & Testbed],
- Juan Francisco Blanes Noguera( UPV,
- Person 3, name and affiliation

### **Topic Groups and/or Innovation Networks involved**

- Connected Robotics Topic Group (TG) (cross-cutting, five-pillar architecture focus)
- Telerobotics TG
- Standards TG
- Aerial Robotics TG (Confirmed)
- Inspection & Maintenance TG

### **Projects involved**

one6G Association, particularly WG1 (6G & Robotics), WG2 (6G empowering robotics), WG3 (Dissemination), and WG4 (Testbeds & Demos).

### **Further information (e.g. links, references)**

· euRobotics Connected Robotics Topic Group Position paper: Connected Robotics: Evolution and Significance for Europe | euRobotics·

· ERF2025 WS52 – “6G empowering future robotics” description and outcomes: <https://erf2025.eu/workshops/ws52-6g-empowering-future-robotics/> & : <https://one6g.org/erf-workshop-52-showcases-6g-empowering-future-robotics/>

· one6G “6G & Robotics” Whitepaper – current volume and series: <https://eu-robotics.net/wp-content/uploads/one6G\Robotics\jun24\v1.2-1.pdf> & <https://one6g.org/resources/publications/>

· euRobotics Connected Robotics Topic Group (five pillars): <https://eu-robotics.net/connected-robotics-topic-group/>

### **Main organiser mail**

mona.gassemian@huawei.com & ajardon@ing.uc3m.es

## Co-organisers

- Alberto Jardon Huete, UC3M, [ajardon@ing.uc3m.es](mailto:ajardon@ing.uc3m.es)
- Mona Ghassemian, Huawei, [mona.ghassemian@huawei.com](mailto:mona.ghassemian@huawei.com)

## **WS 48 – Safety in Robotics - Limits and Perspectives**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- What are the key safety challenges in heterogeneous environments and different domains for robotics?
- In what ways can understanding a robot's intentions enhance safety and build trust in robotic systems?
- What strategies and tools can be implemented to enhance personal safety in different industrial contexts?

### **WS Content**

The workshop will focus on the challenges and solutions related to robot safety in heterogeneous environments. We will discuss current issues such as the lack of advanced perception systems for understanding intentions, the importance of trust and interaction patterns, as well as the availability of planning tools and safety sensors, including the associated costs. Additionally, we will explore the challenges that can be addressed now, as well as those that are likely to emerge in the future. The aim is to examine both current and future perspectives, collecting ideas on how to enhance safety in robotics immediately while preparing for upcoming challenges.

Our discussions will specifically focus on the heterogeneous nature of safety challenges in real industrial environments, allowing participants to engage in brainstorming sessions on how to solve these issues. We will consider what ideal solutions should look like to move beyond the limitations of current standards and regulations, which are often only reflective of the state of the art and lag behind technological advancements. This approach will encourage innovative thinking and collaborative problem-solving in the context of real-world applications.

### **WS Organisation**

The workshop will be structured with 3-4 industry experts each presenting for 10-12 minutes on specific aspects of robot safety. Following the presentations, there will be a fish bowl discussion session focusing on potential solutions and strategies. Participants will be encouraged to ask questions and share their own experiences.

### **Intended outcome**

The primary intended outcome of the workshop is to compile and post the results online, including key insights, strategies, and discussions that emerged during the sessions, while fostering ongoing collaboration among participants on the discussed topics. The participants should be able to say that in the workshop, we brainstormed on actionable steps that can be taken immediately to enhance safety in robotics in the near future, while also establishing a collaborative approach to ongoing challenges in the field.

### **People actively involved (e.g. speakers, panelists, moderators)**

Speakers:

- Robert Scharping, Fraunhofer IFF, "Safety challenges for mobile robots in public spaces"
- Yury Brodskiy EIVA A/S "Safety in the context of maritime robotics"
- Erik Mollbach, SICK AG, "Assumptions and Reality in Risk Management"

Moderators

- Natalia Ogorelysheva, TU Dortmund
- Magnus Albert, SICK AG (TG Safety Coordinator)
- José Saenz, Fraunhofer IFF (TG Safety Deputy)

### **Topic Groups and/or Innovation Networks involved**

TG Safety

### **Further information (e.g. links, references)**

rokit project: <https://public-robots.de/ueber-projekt-rokit/>

### **Main organiser mail**

Jose Francisco Saenz, Fraunhofer IFF, [jose.saenz@iff.fraunhofer.de](mailto:jose.saenz@iff.fraunhofer.de)

### **Co-organisers**

- Magnus Albert, SICK AG
- Nico Hochgeschwender, Universität Bremen, Robotics Institute Germany
- Matthias Propst, Profactor
- Natalia Ogorelysheva, TU Dortmund, [natalia.ogorelysheva@tu-dortmund.de](mailto:natalia.ogorelysheva@tu-dortmund.de)

## WS 49 – Bringing Soft Robotics to Application

### Main questions to be answered

- How can we bridge the gap between laboratory prototypes and reliable soft robotic systems suitable for real-world applications?
- How can academia, industry, and regulatory bodies effectively collaborate to establish shared validation methods, safety standards, and open innovation frameworks that support the certification and large-scale adoption of soft robotic technologies?
- How can end-user needs and real-world testing environments drive the co-design of soft robotic systems, ensuring their usability, reproducibility, and long-term impact in healthcare and industrial applications?

### WS Content

Soft robotics is rapidly gaining traction as a promising approach to building compliant machines capable of safely interacting with complex environments, with potential applications across a wide range of sectors. Despite significant research efforts and scientific advances in recent years, the field still faces critical barriers that hinder its transition from the lab to real-world deployment. Challenges remain in areas such as materials, control strategies, scalability, durability, and integration into industrial processes. This workshop will focus on identifying these key gaps that currently limit commercialisation, while also highlighting innovation opportunities. The format will combine short impulse talks, panel discussions, and interactive breakout sessions. The goal is to produce a community-driven roadmap and white paper that outlines the scientific and technological priorities needed to accelerate the widespread adoption of soft robotics.

### WS Organisation

Each speaker will give a short presentation of about five minutes to introduce their research or company activities. The goal is to create a balanced mix of academics, SMEs, and end-users, fostering cross-sector dialogue on the translational aspects of soft robotics. Most of the session will be dedicated to an open panel discussion among the speakers and with the audience, encouraging the exchange of experiences, challenges, and future perspectives.

### Intended outcome

The workshop aims to identify the key technological, regulatory, and translational challenges that currently limit the deployment of soft robotic systems outside the laboratory. By bringing together experts from academia, SMEs, and end-user communities, the session will outline actionable strategies for improving system reliability, validation, and integration into real-world contexts. The discussion is expected to foster new collaborations and define a shared roadmap toward the wider adoption of soft robotics across medical and industrial applications.

### People actively involved (e.g. speakers, panelists, moderators)

- Dr. Florian Hartmann - Max Planck Institute for Intelligent Systems
- Dr. Francesco Stella and Dr. Armin Avaei - Embodied AI
- Dr. Martina Maselli and Dr. Niccolò Pagliarani - Capio Robotics
- Prof. Matteo Fumagalli - Technical University of Denmark
- Dr. Gernot Kronreif - Austrian Center for Medical Innovation and Technology

**Projects involved**

MAPWORMS - Mimicking Adaptation and Plasticity in WORMS: <https://www.mapworms.eu/>

**Main organiser mail**

- Dr Linda Paternò - Sant'Anna School of Advanced Studies; [linda.paterno@santannapisa.it](mailto:linda.paterno@santannapisa.it)

**Co-organisers**

- Prof. Matteo Fumagalli - DTU Orbit; [mafum@dtu.dk](mailto:mafum@dtu.dk)
- Dr. Gernot Kronreif - Austrian Center for Medical Innovation and Technology; [gernot.kronreif@acmit.at](mailto:gernot.kronreif@acmit.at)
- Ilaria Cedrola - Sant'Anna School of Advanced Studies; [ilaria.cedrola@santannapisa.it](mailto:ilaria.cedrola@santannapisa.it)

## **WS 50 – Mechatronics and Tactile Sensing for Advanced Robot Dexterity and Grasping**

### **Main questions to be answered**

- What are the application needs that current dexterity and grasping capabilities cannot address?
- What are the current technological (mechatronic) barriers in advanced robot dexterity and grasping?
- What emerging actuation and tactile sensing technologies can advance this area?

### **WS Content**

Truly dexterous grasping and manipulation of objects remains one of the greatest unsolved challenges in robotics. In many application fields, solving this challenge is key to making robots useful and economically viable solutions. Human grasping and manipulation ability demonstrates a significant level of physical intelligence, even in the absence of perception, and especially, an adaptability not paralleled by robotics. The human hand is a marvel in its complexity, capability and robustness, employing both highly complex and redundant actuation as well as full surface tactile sensing. While mechatronic designs have often reproduced certain aspects of the human hand, many lead to high mechanical and control complexity. Conversely, application-specific grippers can feature both simplicity and high performance, but lack the generalisability and dexterity of (robotic) hands.

This workshop addresses the challenges and opportunities of gripper design, with an emphasis on actuation and tactile sensing. It brings together both industry and academic experts on these topics, which will present the challenges and opportunities from different perspectives. The first half of the workshop serves as a primer, with the speakers presenting their viewpoints. In the second half, the full panel will engage in a moderated discussion, together with the audience, in which we will identify the most promising paths forward in solving the challenges of grasping and manipulation.

### **WS Organisation**

00-30 min: Plenary talks

- Rich Walker: Collision is the requirement - grasping and tactile sensing challenges
- Giorgio Cannata: Large area ProxyTactile sensing for safe human robot interaction
- Werner Friedl: Challenges for tactile sensors include flexible objects and simultaneous multiple object grasping

30-40 min: Flash talks

- Guggi Kofod: A fully electric soft robotic actuator that compares with biological muscle
- Zaki Hussein: How to give robots the power of human touch

40-80 min: Interactive discussion with panel

- Supported by mentimeter/slido or comparable.

### **Intended outcome**

The main intended outcome of this workshop is a fruitful discussion for the participants, inspiring new paths forward in the development of robotic grippers. Where possible, new collaborations will be sought.

## **People actively involved (e.g. speakers, panelists, moderators)**

### Speakers/panelists

- Rich Walker (Shadow Robot, UK)
- Giorgio Cannata (University of Genova, IT)
- Werner Friedl (German Aerospace Center (DLR), DE)
- Guggi Kofod (Pliantics, UK)
- Zaki Hussein (Touchlab, UK)

### Moderators

- Navvab Kashiri (Leonardo, IT)

## **Topic Groups and/or Innovation Networks involved**

- Topic Group on Mechatronics
- ARIA (Advanced Research and Invention Agency) - 'Robot Dexterity' programme

## **Projects involved**

- GRIT: Generalisable Robot Intelligence in Tactile scenarios - Lead: Touchlab
- Romex: Robot Muscles as Dexterous Linear Actuators - Lead: Pliantics

## **Main organiser mail**

w.roozing@utwente.nl

## **Co-organisers**

- Wesley Roozing, University of Twente, NL, w.roozing@utwente.nl
- Navvab Kashiri, Leonardo, IT, navvab.kashiri@leonardo.com
- Radhika Gudipati, ARIA, UK, radhika.gudipati@aria.org.uk

## **WS 51 – Bio-inspired intelligence and technology for next-generation industrial robotics**

### **Main questions to be answered**

- What are current trends at the intersection of neuroscience, embodied AI, and robotics?
- How can we overcome the challenges of applying bio-inspired robots to industrial use cases?
- How can bio-inspired robots and materials drive sustainable innovation?
- What is the industry's perspective, and how can we reduce existing gaps with academia?

### **WS Content**

This workshop explores how bioinspired approaches can help to solve current societal challenges, provide new solutions, and open new markets. Experts from academia and industry will present their perspectives and discuss them with the audience. Topics discussed will include:

- Current trends at the intersection of neuroscience, embodied AI, neuromorphic computing, and robotics
- Challenges in applying bio-inspired AI and cognition in industrial robotics
- Automated acquisition of diverse robot behaviors: from simulation to reality
- Bio-inspired robots and materials for sustainability: leveraging nature's designs to create resource-efficient, durable, and environmentally aligned technologies
- Bridging the gap between the industry and academia

A panel and moderated discussion involves the audience and will address questions such as how to benefit from the current trends in artificial intelligence to bridge physical/hardware and brain/software parts through bioinspiration.

### **WS Organisation**

00:00 – 00:10 Opening comments by the organizers (Florian)

00:10 – 00:45 3 impulse talks on:

- Current trends at the intersection of neuroscience, embodied AI, and robotics (Nicolai)
- Overcoming challenges of applying bio-inspired robots to industrial use cases (Takeru)
- Bio-inspired robots and materials driving sustainable innovation (Fotios)

00:50 – 01:15 Panel discussion; focus: bridging the gap between the industry and academia + questions by audience

01:15 – 01:20 Concluding remarks by the organizers (Franziska, Nicolai)

### **Intended outcome**

- Understand the state of the art of neuro/biorobots and identify new opportunities
- Networking in brain-inspired AI and biorobotics between academia and industry
- Identifying the gap between research and the application of available technology
- Identifying collaboration partners for future projects
- Identifying ideas/pathways for integrating bio-inspired design principles into sustainable robotics development and material innovation

### **People actively involved (e.g. speakers, panelists, moderators)**

- Florian Röhrbein, TU Chemnitz
- Takeru Nemoto, Siemens AG
- Nicolai Waniek, NTNU
- Fotios Konstantinidis, ICCS
- Franziska Kirstein, Three Robotics

### **Topic Groups and/or Innovation Networks involved**

TG bio-inspired robotics, TG Robotics for Sustainability

### **Main organiser mail**

- Prof. Dr. Florian Röhrbein, Neurorobotics, TU Chemnitz, [florian.roehrbein@informatik.tu-chemnitz.de](mailto:florian.roehrbein@informatik.tu-chemnitz.de)
- Takeru Nemoto, Siemens AG, [takeru.nemoto@siemens.com](mailto:takeru.nemoto@siemens.com)

### **Co-organisers**

- Dr. Nicolai Waniek, Norwegian University of Science and Technology (NTNU), Norway, [nicolai.s.waniek@ntnu.no](mailto:nicolai.s.waniek@ntnu.no)
- Franziska Kirstein, Three Robotics, [fk@three-robotics.com](mailto:fk@three-robotics.com)

## **WS 52 – Parallel-Kinematic Robotics – new products and application experiences**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Parallel Kinematic Machines - what are they?
- The history of PKMs
- What are the applications for PKMs - case studies

### **WS Content**

Based on how Parallel Kinematic Machines can transform industrial automation by capitalizing on their unique mechanical properties, participants are to explore emerging applications where PKMs' lightweight design, high precision, and superior stiffness-to-weight ratio create competitive advantages over traditional solutions. The workshop addresses the positioning of PKMs in the automation landscape, bridging conventional tooling and industrial robotics, while examining programming paradigms and software architectures needed for effective deployment.

### **WS Organisation**

The outline of the workshop is

- Introduction in general, of content and participants.
- The history of PKM
- Presentations
- Moderated discussion among all participants
- Next steps, such as a white-paper and an additional meeting during this ERF.

### **Intended outcome**

Short initial presentations and video posters form input to formed working groups that at end present on flip-charts. Final discussion and a summary aims at a white-paper.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Torgny Brogårdh, ex ABB.
- Geir Hovland, HOKAROB
- Klas Nilsson, Cognibotics
- Christoph Martin, Fraunhofer IPA

### **Topic Groups and/or Innovation Networks involved**

Topic Group Industrial Robotics

### **Projects involved**

Attendees are welcome to provide references to PKM projects.

**Further information (e.g. links, references)**

Example products and applications:

- <https://www.cognibotics.com/en/products/sigmatau>
- <https://www.hokarob.com/>

**Main organiser mail**

klas.nilsson@cognibotics.com

## WS 53 – Advanced Robot Manipulation of Deformable and Fragile Objects

### Main questions to be answered

- What are the key challenges in deformable and fragile object manipulation?
- What are some of the main solution approaches in terms of methodologies and hardware design?
- What are collaboration opportunities in this area?

### WS Content

The workshop tackles the challenges of deformable and fragile object manipulation. Today, such objects exist in a variety of application fields ranging from textiles to food items. The workshop will provide an overview of recent methodological, hardware and networking-focussed efforts in this domain.

### WS Organisation

The workshop will combine 6 invited presentations of 8 minutes each, without questions, followed by a panel where the attendees will have the opportunity to ask detailed questions about the presented content, or general questions about the topic of manipulation of deformable and fragile objects. The panel will be composed of all the workshop presenters and it will be moderated, so all panel members will be given a chance to speak.

### Intended outcome

The WS covers three aspects of the field of handling of fragile objects and deformables: low TRL level research from EU projects (1st part), medium to high TRL level applications (second part) and networking and mapping activities in the field (third part). The attendees will see progress and activities in all three aforementioned aspects of handling of deformables and fragile objects.

### People actively involved (e.g. speakers, panelists, moderators)

- Florian T. Pokorny, KTH Royal Institute of Technology, Sweden
- Mahesh Dissanayake, MTC - Manufacturing Technology Centre, UK
- Andrej Gams, Jozef Stefan Institute, Slovenia
- Guillem Alenyà, CSIC-UPC, Spain
- Jelizaveta Konstantinova, Ocado, UK
- Manuel Catalano, IIT, Italy

### Topic Groups and/or Innovation Networks involved

N/A

While no formal TG is currently involved, we are in the process of creating a network and consequently a TG on robot handling of deformables, which will be presented at the WS.

### Projects involved

SoftEnable: [softenable.eu](http://softenable.eu)

ROMANDIC: [project-romandic.eu](http://project-romandic.eu)

FelxCycle: <https://www.flexcycle.eu/>

**Main organiser mail**

fpokorny@kth.se

**Co-organisers**

- Florian T. Pokorny, KTH Royal Institute of Technology, fpokorny@kth.se
- Andrej Gams, Jozef Stefan Institute, andrej.gams@ijs.si
- Mahesh Dissanayake, MTC - Manufacturing Technology Centre, UK, Mahesh.Dissanayake@the-mtc.org

## WS 54 – 3D Perception as a Key Enabler for AI-Based Robotics

### Main questions to be answered

- How does 3D perception enable robust AI-based robotic skills for handling known and unknown objects, while unlocking greater flexibility, autonomy, and economic value in dynamic production and logistics environments?
- What are the key technical challenges and solution approaches for deploying 3D perception in real-world robotic applications such as bin-picking, kitting, and assembly?
- How can federated data ecosystems improve the development, sharing, and scalability of AI perception models across different robots, factories, and applications?
- Would a federated data space increase your willingness to share and jointly use data? If not, why not?

### WS Content

The topic of this workshop is 3D Perception as Key Enabler for AI-based Robotics. AI-based perception skills for known and unknown objects and their integration with federated data ecosystems to enable new applications and business models will be discussed along use cases from agile production and logistics such as bin-picking, kitting, assembly, and packing.

### WS Organisation

Interactive tools will be used to assess questions, user needs and expectations, which will be discussed in a panel session. 40\

### Intended outcome

The expected outcome is a better understanding of how federated data spaces can help to deploy and continuously improve AI-models over several stakeholders from enablers, solution builders to end-customers.

### People actively involved (e.g. speakers, panelists, moderators)

- Michael Suppa, Roboception, moderator, speaker and panelist (confirmed)
- Lukas Solbach, VDMA, speaker and panelist (confirmed)
- Florian Toeper, Mercedes-Benz, speaker and panelist (invited, tbc)
- Nestor Garcia, Eurecat, speaker (Invited, tbc)
- Julian Gleissner, Xitaso, speaker (invited, tbc)

### Topic Groups and/or Innovation Networks involved

Perception (main contribution), Additional TGs: AI and Cognition, Industrial Robotics, Logistics and Transport

### Projects involved

RoX: <https://www.project-rox.ai/>

SMARTHANDLE: <https://www.smarthandle-project.eu/>

**Further information (e.g. links, references)**

Information on the TG perception can be found here: <https://eu-robotics.net/perception-topic-group/>. More information on the federated ecosystems can be found here: <https://www.8ra.com/>. The workshop will be presented on the following webpage: <https://roboception.com/workshop-at-erf-2026/>.

**Main organiser mail**

michael.suppa@roboception.de

## WS 55 – Blockchain, Data and Robotics for Smart Cities

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Q1 What are the distributed ledger (a.k.a. blockchain) technologies
- Q2 Why the blockchain matters for robotics, smart cities, smart secure supply chains
- Q3 Can this technology merged with AI, open source and robotics help restore European digital sovereignty?

### WS Content

This workshop will address core issues in AI, DATA and Robotics with a strong focus on the ongoing digitalization of the European economy and the development of a human centered 'made in Europe' physical AI.

It will give the participants insights on the blockchain technologies and their relevance to AI and robotics in the context of smart cities, smart lands, smart logistics and in general smart X.

It will allow us to discuss how it could be possible to develop open, privacy preserving, distributed and scalable digital architecture for the digital society and economy of the future, strongly relying on AI, DATA and Robotics. Alternative approaches to European digital sovereignty will be discussed.

### WS Organisation

Short (10-15') TED-Style Talks, some invited some coming from an open call

Topics will include:

- Current technology and applications in robotics
- The emerging economy of robots
- Robot-as-a-service
- The AI Act
- AI DATA and Robotics
- EU Digital sovereignty
- Smart cities and smart X

Interactive discussion based on tools like mentimeter and pol.is to collect feedback and facilitate dialog

### Intended outcome

A 5 pages white paper about Blockchain and other Data technologies in AI and Robotics with a one page executive summary, about societal and economic needs that could be addressed, available technologies, opportunities and risks for the future.

### People actively involved (e.g. speakers, panelists, moderators)

- F. Bonsignorio — University of Zagreb FER (Croatia) & Heron Robots (Italy), Why Blockchain matters
- E. Castello-Ferrer — IE University & MIT, (Spain), Security in Robotic Swarms
- Andrea Bertolini, SSSA, Italy, The AI Act
- EU Commission representative
- ADRA representative
- ....

## **Topic Groups and/or Innovation Networks involved**

This is of interest for all TGs and INs

## **Projects involved**

This is of interest for all projects in the ADRA space.

## **Further information (e.g. links, references)**

Pentland, A., Lipton, A. , Hardjono, T. (2021). Building the New Economy: Data as Capital, MIT Connection Science & Engineering,

Buterin, V. (2013). Ethereum white paper. URL <https://ethereum.org/en/whitepaper/>. [Online; accessed: 11 December 2024]

Merkle, R. (1982). US4309569A US Patent. URL <https://patents.google.com/patent/US4309569A/en>. [Online; accessed: 11 December 2024].

Bonsignorio, F., Zereik, E. (2021) Merging BSP based swarm dynamics and distributed ledger technologies for smart marine infrastructures, IFAC-PapersOnLine 56 (2), 6716-6723

Berman, I., Zereik, E., Kapitonov, A., Bonsignorio, F., Khassanov, A., Oripova, A., Lonshakov, S., and Bulatov, V. (2020). Trustable environmental monitoring by means of sensors networks on swarming autonomous marine vessels and distributed ledger technology. *Frontiers in Robotics and AI*, 7.

Castello Ferrer, E. (2019). The blockchain: a new framework for robotic swarm systems. In *Proceedings of the Future Technologies Conference (FTC) 2018: Volume 2*, 1037–1058. Springer.

Kapitonov, A., Lonshakov, S., Berman, I., Castello-Ferrer, E., Bonsignorio, F., Bulatov, V., and Svistov, A. (2019). Robotic services for new paradigm smart cities based on decentralized technologies. *Ledger*, 4.

## **Main organiser mail**

fabio.bonsignorio@gmail.com (Fabio Bonsignorio, University of Zagreb Faculty of Electrical Engineering and Computing and Heron Robots)

## **Co-organisers**

- Fabio Bonsignorio, University of Zagreb Faculty of Electrical Engineering and Computing and Heron Robots, [fabio.bonsignorio@ gmail.com](mailto:fabio.bonsignorio@gmail.com), [fer.unizg.hr](http://fer.unizg.hr), [heronrobots.com](http://heronrobots.com)

## WS 56 – Data Spaces Beyond the Basics: Toward Operational AI and Robotics

### Main questions to be answered

- Which advanced cross-domain applications are emerging through Data Spaces in Mobility, Industrial, and Healthcare domains, and what new interoperability and scalability challenges need to be addressed to support real-world AI- and robotics-driven solutions?
- What are the key AI-related challenges, such as trustworthiness, explainability, distributed learning, and data-efficiency, that must be tackled to fully leverage Data Spaces in real-world operational environments?
- How can Data Spaces accelerate innovation for AI developers, robotics providers, and end-users, and what concrete benefits and lessons learned can be drawn from early deployments and pilot implementations?

### WS Content

Building on the foundations established in last year's workshop, this follow-up session will dive deeper into the practical integration, deployment, and scaling of Data Spaces for AI- and robotics-driven solutions across the Mobility, Industrial, and Healthcare domains. The workshop will highlight how initial conceptual discussions have evolved into concrete architectures, maturing technical solutions, and cross-domain demonstrators reflecting the increasing readiness of Data Space technologies.

Participants will gain insights into advanced Data Space interoperability mechanisms, real-world implementation challenges, and the evolving role of trustworthy and resource-efficient AI within distributed data ecosystems. Special attention will be given to lessons learned from use case developments, emerging standards, and the alignment between technical enablers and market requirements.

Through contributions from domain end-users, technology developers, and the broader robotics community, the workshop will foster discussion on actionable pathways for adoption, opportunities for innovation, and the expanding market landscape enabled by Data Spaces. The session aims not only to showcase progress since last year, but also to identify the key steps toward large-scale operationalisation in Europe.

### WS Organisation

00:00 - 00:10 Introduction & Overview: Overview of workshop objectives and structure  
00:10 - 00:45 Impulse Talks  
00:45 - 01:15 Panel Discussion  
01:15 - 01:20 Conclusions

### Intended outcome

The aim of this workshop is to explore the evolving benefits and practical impact of Data Spaces for advancing AI and robotic applications in the Mobility, Industrial, and Healthcare domains. We aim to foster productive discussions, exchange lessons learned from early deployments, and share emerging use cases and success stories that can guide broader adoption.

### People actively involved (e.g. speakers, panelists, moderators)

- Dr. Dimitrios Giakoumis – ITI, CERTH, Greece
- Franziska Kirstein – Blue Ocean Robotics, Denmark
- Michael Suppa -

**Projects involved**

PLIADES (AI-Enabled Data Lifecycles Optimization and Data Spaces Integration for Increased Efficiency and Interoperability; funded by the European Union's Horizon Europe research and innovation programme under grant agreement No. 101135988)

**Further information (e.g. links, references)**

<https://www.pliades-project.eu/>

**Main organiser mail**

Franziska Kirstein, Blue Ocean Robotics, [fk@blue-ocean-robotics.com](mailto:fk@blue-ocean-robotics.com)

**Co-organisers**

- Kosmas Tsiakas (CERTH-ITI), [ktsiakas@iti.gr](mailto:ktsiakas@iti.gr)
- Dr. Dimitrios Giakoumis (CERTH-ITI)
- Ioannis Mariolis (CERTH-ITI)
- Christian Egebjerg (Blue Ocean Robotics)

## WS 57 – Industry Challenges for Robotics - Towards Co-Creating Solutions

### Main questions to be answered

- Learn about industrial real-world problems that might be solved by robotics technology

### WS Content

To increase the relevance of the ERF for industry, we'd like to address industries looking for solutions for specific challenges that might be solved together with participants from other industries or from research. The general idea is that several speakers from industry will have about 10 minutes to present their problem/challenge. Then participants from the audience are expected to provide feedback (solution ideas, similar tasks that have already been solved, contacts with research groups, etc.). At the end of the workshop, there may also be bilateral discussions to find a concrete way for getting a solution.

Industrial robotics is at a crucial technological turning point. There is great hope and expectation that AI-based robotics will be able to solve problems that were previously almost impossible to solve.

### WS Organisation

Attendees from industry will present real-world challenges that are not solved so far. The audience should discuss how to address them and as a second step approach the presenting companies and discuss a follow-up. This follow-up could be a direct B2B relationship, a common research project, or other means to continue.

### Intended outcome

Real-world challenges are known to the community and new collaboration opportunities are established.

### People actively involved (e.g. speakers, panelists, moderators)

- Johannes Kurth, Robuen, moderation

Tuesday, 24,3,26, 2:00 p.m. to 3:20 p.m

- Ralph Lange, Trumpf

Automation of the material flow in sheet metal processing requires flexible, "no-code" robotics solutions for tasks like machine tending, sorting, and palletizing, especially for SMEs lacking relevant robotics expertise. This necessitates robust perception systems capable of handling reflective surfaces and thin overlapping sheets. For autonomous operation of the equipment, domain-specific scene understanding and contingency handling techniques are required, taking into account that operators and service technicians demand explainability of decisions and actions.

Another challenge in the development of such solutions is the lack of standardized robotics software platforms. We are seeing a fragmentation of the market in AI-based industrial robotics: instead of building on common standards, many start-ups are investing in the development of their own proprietary platforms, which slows down the necessary evolution of a comprehensive ecosystem based on open source and commercial value-added services.

The advent of large AI models is challenging our existing architectural patterns. An important question for us is how to integrate these new approaches in such a way that system complexity remains manageable. When these highly flexible systems are implemented an often underestimated but essential requirement becomes apparent: determinism. Only if we manage to combine modern software engineering methods with strict real-time capability and deterministic behavior will the robotics of the future actually meet the high demands of industrial production.

- Fredrik Ore, Scania

Scania is a global leader in sustainable transport solutions, designing and manufacturing premium trucks, buses, and engines. Our mixed-model assembly lines require kitting of incoming parts to ensure correct material sequencing for each assembly station. Currently, the handling of parts, from pallets to sequenced fixtures and racks, is performed entirely manually by operators due to the high flexibility requirements. The next generation of kitting systems should utilise advancements in automation to enable automated kitting within this flexible environment.

- Tobias Trunk, John Deere

John Deere operates mixed-model assembly systems in a High-Mix-Low-Volume environment that demand highly flexible kitting processes. High variant diversity and frequent changes challenge conventional automation, which is typically designed for stable and standardized production. This creates a strong need for innovative, adaptive automation concepts that can combine flexibility, intelligence, and scalability in complex manufacturing environments

- Johannes Kurth, ROBUEN

Over the past 20 years, robotics research and its implementation in products have made great strides among manufacturers. Today, users can find the right robot for almost any task, from very fast delta robots and SCARA robots to 6-axis articulated robots with payloads exceeding one ton. Robot controllers and end effectors have become so functionally diverse and powerful that virtually all tasks can now be solved. Human-robot collaboration has further expanded the range of applications for robots.

The development of artificial intelligence is giving robotics research a new boost. The only question is whether the research focus is correctly chosen.

A very challenging step in automation is translating the requirements into a cell layout. For all subsequent steps such as design, programming, path-planning, vision, etc., there are many research projects. But without a cell layout, I cannot use these technologies.

The challenge, therefore, is to provide users with AI-supported tools for cell planning.

Tuesday, 24,3,26, 4:00 p.m. to 5:20 p.m

- Tino Krüger-Basjmeleh, KION Group

The increasing deployment of mobile robot fleets in industrial and service environments highlights limitations in current system architectures. While market demand continues to grow, most mobile robotic solutions remain project-based and centrally orchestrated, restricting scalability, adaptability, and long-term reuse. A key challenge arises in multi-robot traffic coordination, where dense operation leads to deadlocks, congestion, and reduced system efficiency. Centralized planning and static rule-based approaches struggle to cope with dynamic environments and large fleet sizes, motivating the need for decentralized deadlock detection and resolution mechanisms.

In addition, robot capabilities are typically developed and deployed in isolation, limiting the sharing of skills, experiences, and learned behaviors across robots and deployments. This prevents fleets from collectively adapting to new situations and improving performance over time.

The problem addressed is how to enable decentralized problem-solving for traffic management and skill sharing among mobile robots, in order to overcome project-centric execution models and support scalable, continuously evolving robotic systems.

- Tomas Vesely and Sigve Haugen, Lyse Lux AS

Lyse Lux operates approximately 85,000 streetlights in the southwest of Norway. Under agreements with local municipalities, all streetlights must be cleaned every four years.

Today, this is done manually. A field engineer uses a truck equipped with a lift, stops at each streetlight, and cleans the luminaire one by one. What we would like to challenge is whether there are robotic or drone-based solutions that could perform this task more efficiently, without the need for a lift truck at every pole.

The second use case concerns communication nodes mounted on top of the streetlight luminaire. As the 2G mobile network will be shut down by the end of 2026, several thousand streetlights will require replacement of their communication nodes. The node is installed by twisting it into place on top of the luminaire. Today, replacement requires a truck with a lift and a field engineer to twist off the old node and install the new one. Our challenge is to explore whether a robotic drone solution could perform this replacement without the use of a lift truck.

- Olav Marvik, IVAR

IVAR IKS Grødalaland has a significant value chain for receiving organic substrate for further biogas production. This food waste substrate is primarily delivered packed in plastic bags of 10–20 liters.

An important loss factor is that this mixture contains unwanted components—typically wooden logs, plastic buckets, and similar items—that must currently be removed manually. This results in losses, reduced operating time, and causes blockages and operational disturbances in the downstream facility. The desired solution is a robotized system which, in combination with cameras and AI based object recognition, can automatically remove these items.

- Jone Sæbbø and Terje Hammer Meling, AkerBP  
Waiting for description

### **Main organiser mail**

Johannes.Kurth@robuen.de

### **Co-organisers**

- Reinhard Lafrenz, euRobotics

## WS 58 – Rewriting the smart sustainable manufacturing playbook

### Main questions to be answered

- What is the current state and the way forward in terms of policies and strategies in Europe in sustainable manufacturing?
- What are the current challenges faced by the industry, and their needs in terms of sustainable manufacturing?
- How can we reconcile sustainability, economic competitiveness, and national priorities?

### WS Content

Sustainable manufacturing is central to Europe's industrial resilience and competitiveness. This workshop examines how European policies, industry needs, and circular economy goals intersect to shape a smarter, more sustainable production landscape. Through short impulse talks and interactive group discussions, participants will explore policy frameworks, industrial challenges, and strategies to balance sustainability, competitiveness, and national priorities in a changing geopolitical context.

As the first of two sessions on sustainable manufacturing, this workshop focuses on the “why”, the strategic and systemic drivers behind Europe's transformation, and sets the stage for Session 2, which will address the “how” through technological innovation and robotics.

### WS Organisation

Time: 11:10 to 12:30 on March 25

Introduction by the organizers 5 (or 10) min

Presentations to set the scene (Overarching theme: sustainability and circularity):

Impulse talk 1 on “Policies and strategies” 5-10min - This talk provides an overview of current policies and strategies at both national and European levels. It also highlights the broader geopolitical context shaping these developments.

Impulse talk 2 on “Industry View” 5-10min - This talk explores the realities and challenges faced by the industry, outlining key needs and constraints in relation to existing policies. It also examines the dynamics between large enterprises and smaller companies, linking these insights to manufacturing practices and practical implementation.

Impulse talk 3: Closing presentation on “sustainable and circular strategies” - The presentation will reflect on key insights from the session, outline future directions, and highlight how strategic actions today can support more resilient and responsible developments in the future.

Short Q&A

Break (10 min)

Interactive part (in groups) 40 min

Based on the scene set in the impulse talks, the moderator will split the room into groups that will be asked to start creating strategies together.

Discussion of group work results

Combination of all strategies - restitution

Conclusion and next steps

### Intended outcome

- Shared strategic directions for Europe's sustainable manufacturing future
- Connecting participants for future projects and discussions through group work

## **People actively involved (e.g. speakers, panelists, moderators)**

- Moderator: Assia Belbachir, Norce Research (assb@norceresearch.no)
- Facilitator: Abhimanyu Chakravorty, achakravorty@iswa.org
- Franziska Kirstein, Three Robotics

## **Topic Groups and/or Innovation Networks involved**

TG Sustainability

### **Projects involved**

iBot4CRMs

FundingBox

Tec Connection

PROFACTOR

Wood2Wood

KIRAMET - Kiramet: Home

SMARTCircuit - Cleaning up the manufacturing industry - Interreg Central Europe AI5innovation - AI5innovation

| European Digital Innovation Hubs

Zero3 - Zero3 | Zero defect Manufacturing for Sustainable Production.

### **Main organiser mail**

Abhimanyu Chakravorty, International Solid Waste Association, Ln, achakravorty@iswa.org

### **Co-organisers**

- Jose Uribe, International Solid Waste Association, juribe@iswa.org, page, Ln
- Abhimanyu Chakravorty, International Solid Waste Association, achakravorty@iswa.org
- Franziska Kirstein, Three Robotics, fk@three-robotics.com
- Oswald Bratu, Profactor GMBH, Austria, oswald.bratu@profactor.at
- Antonio Montalvo

# WS 59 – Sustainable Manufacturing Key Technologies and Challenges of Robotic Disassembly for a Circular Future

## Main questions to be answered

- How can robotic and AI-enabled disassembly systems efficiently identify, separate, and recover components from complex assemblies while ensuring traceability and reusability?
- What are the key robotic technologies and skills required for safe, effective, and adaptive disassembly?
- Which current approaches are working well, which need improvement, and which limitations are fundamental or unchangeable?
- How can reconfigurable and low-cost robotic systems be designed to enable flexible dismantling across different product types and manufacturing sectors?
- How can the transition from manual to robotic dismantling remain human-centered, supporting operator reskilling and acceptance? What role do we foresee for humans in the field of automated disassembly?

## WS Content

The workshop explores how robotics and AI can enable circular manufacturing by transforming current manual disassembly processes into intelligent, adaptable, and human-centered robotic systems. The session will highlight how robotic dismantling technologies contribute to material recovery, reusability, and system reconfiguration across diverse industrial sectors such as batteries, white goods, textiles and magnets. It will showcase ongoing advances from European research projects and industry applications, illustrating both technical progress and remaining challenges in achieving safe, cost-effective, and sustainable robotic disassembly.

The workshop aims to connect researchers, technology providers, and industry stakeholders to identify overlapping technological, social, and organizational barriers that hinder the adoption of robotic disassembly systems. Through sector-specific case studies and collaborative group work, participants will discuss what works well, what does not, and what can or cannot be changed when implementing AI- and robotics-based dismantling solutions. The goal is to distill cross-sector insights that can guide future developments toward scalable, human-centered, and circular robotic manufacturing practices.

## WS Organisation

Short introduction by Markus Schmitz (“From Why to How”, 5 min), setting the context for sustainable and circular manufacturing.

This will be followed by a series of technical stories (20 min) highlighting dismantling challenges and innovations across different sectors:

- Batteries: Markus Ikeda, PROFACTOR GMBH, Austria
- White Goods: Daniel Gossen/Markus Schmitz , di.monta@RWTH Aachen University, Germany
- Magnets: Iñaki Díaz, CEIT, Spain
- Textiles: Ilya Tyapin <ilya.tyapin@uia.no>

After a brief explanation of the group work (10 min) - Moderated by Inaki,

Participants will divide into three/four thematic groups (Batteries, White Goods, Magnets, Textiles) for a 30-minute collaborative session. Each group will identify key enabling technologies, assess what works well or not, and discuss persistent challenges using the “Liked, Learned, Lacked, Longed” reflection method.

The workshop will close with a summary and discussion (15 min), consolidating results across groups into shared conclusions and potential cross-sector synergies.

## **Intended outcome**

Consolidated cross-sector technology map or challenge overview  
Shared understanding of common enablers/barriers in circular robotics

## **People actively involved (e.g. speakers, panelists, moderators)**

- Markus Ikeda, PROFACTOR GMBH, markus.ikeda@profactor.at
- Daniel Gossen, di.monta and Markus Schmitz, di.monta schmitzm@igmr.rwth-aachen.de
- Iñaki Díaz, Male, CEIT, Spain , <idiaz@ceit.es>
- Ilya Tyapin, University of Agder, Norway <ilya.tyapin@uia.no>

## **Topic Groups and/or Innovation Networks involved**

Sustainability Topic Group; Industrial Robotics; Lab Robotics;  
AI5 Innovation;

## **Projects involved**

- RaRe2 EU Project, <https://raresquare.eu/>
- SOPRANO EU Project, <https://www.soprano-project.org/>
- REPRODUCE EU Project, <https://www.reeproduce.eu/>
- di.monta (Start-Up), <https://www.igmr.rwth-aachen.de/dimonta/>
- LIBRES (Norway): Battery disassembly project, 2018–2022
- RHINOCEROS (EU): Battery disassembly, WP3, 2022–2026 [www.rhinoceros-project.eu](http://www.rhinoceros-project.eu)
- RESTORE (EU): Battery disassembly work package, not yet started due to the bankruptcy of one project partner ISORTx (Norway): Textile recycling, 2023–2025, [www.norceresearch.no/en/projects/isortx-spectral-imaging-based-machine-vision-for-intelligent-automated-sorting-and-disassembly-of-textile-waste](http://www.norceresearch.no/en/projects/isortx-spectral-imaging-based-machine-vision-for-intelligent-automated-sorting-and-disassembly-of-textile-waste)
- CARM (Norway): Recycling of critical materials from discarded products and materials, 2025–2027, [www.norceresearch.no/prosjekter/carm](http://www.norceresearch.no/prosjekter/carm)

## **Further information (e.g. links, references)**

- iDEAR Project, <https://www.iff.fraunhofer.de/en/business-units/idear.html>

## **Main organiser mail**

Markus Schmitz, Male, di.monta | RWTH Aachen University (schmitzm@igmr.rwth-aachen.de)

## Co-organisers

- Sharath Chandra Akkaladevi, Profactor GMBH, Austria
- Iñaki Díaz, Male, CEIT, Spain (idiaz@ceit.es)
- Daniel Gossen, Male, di.monta | RWTH Aachen University, (gossen@igmr.rwth-aachen.de)
- Markus Schmitz, Male, di.monta | RWTH Aachen University (schmitzm@igmr.rwth-aachen.de)
- José Saenz, Fraunhofer IFF, Germany (jose.saenz@iff.fraunhofer.de)
- Patrick Courtney, tec-connection, UK (patrick.courtney@tec-connection.com)
- Ilya Tyapin, University of Agder, Norway <ilya.tyapin@uia.no>

## **WS 60 – Modular and Interoperable robotics future: Come join the workshop to Revolutionise the European Robotics Ecosystem**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

Are these some of your day to day robotics challenges?

- Q1 Robotics technology developers
  - proprietary vs open source
  - interface complexity
  - software abstraction
- Q2 System Integrators
  - Custom middleware development for several projects
  - Communication protocols mismatch
  - Safety and compliance testing complexity
- Q3 End-users
  - Limited scalability and interoperability in multi-vendor multi-robot collaboration
  - Need for skilled personnel to install, operate and maintain
  - Vendor lock-in requiring high investment
  - Challenges with cybersecurity and safety
  - Lack of standards and regulatory barriers

### **WS Content**

Details of the WS

Robotics remains fragmented and unsustainable due to persistent industry silos and inadequate past efforts to achieve Modularity and Interoperability.

Building on growing interest from euRobotics, ARIA, ADRA, and the European Commission, this workshop will unite stakeholders to share insights and shape strategies for adopting modular, interoperable robotics commercially.

### **WS Organisation**

<https://miro.com/app/board/uXjVJzLltMQ=/> - Miro Board from the TG Summit

How will you use the time in the workshop? What will the attendees do?

- Welcome & Introduction: 5mins
- Flash talks: 15mins

Three flash talks (5mins each) by experts working on 'Modularity & Interoperability of Robotics' in different industries.

- Robotics technology developer

- System integrator
- End-user
- Introduction to challenge/themes for group activity: 5mins

Introduction of 3-4 challenges/topics for group discussion. These challenges/themes will be identified based on the outcomes of the euRobotics TG summit workshop.

- Group activity: 40mins

15mins

- 3 activities in our work in robotics that resonate with challenge/theme - individuals writing on post-it notes
- Put them on the whiteboard and cluster them
- Choose 2 top clusters

20mins

- 3 suggest potential next steps/solutions for first cluster - individual work
- Put them on the whiteboards - see if any themes emerge
- Repeat for the second cluster

5mins

- Summarise for debrief
- Whole room: Debrief of the Group activity: 10mins
- Closure & Next steps: 5mins

### **Intended outcome**

Immediate next steps:

Report with summary from each subgroup and identified next steps

Follow-up steps:

- Prioritisation of the outcomes based on what is immediately useful for the robotics community to act on

### **People actively involved (e.g. speakers, panelists, moderators)**

- Person 1, name and affiliation
- Person 2, name and affiliation
- Person 3, name and affiliation

Sub-group moderators

- Karol Janik
- Elisabeth Schärfl
- Mini Chakravarthini Rai
- Franziska Kirstein

### **Further information (e.g. links, references)**

euRobotics Topic Group Summit Workshop: <https://www.robotics-portal.eu/TGSummit2025/event/2nd-day-30th-october-topic-group-summit>

AIRA Position Paper: <https://www.aria.org.uk/media/xnwais2c/aria-ta3-position-paper\m<sub>aster</sub>.pdf>

### **Main organiser mail**

Radhika Gudipati, ARIA, [radhika.gudipati@aria.org.uk](mailto:radhika.gudipati@aria.org.uk)

### **Co-organisers**

- Karol Janik, The MTC, [Karol.Janik@the-mtc.org](mailto:Karol.Janik@the-mtc.org)
- Mini Rai, OrbitRise, [dr\m<sub>inicrai</sub>@orbitrise.co.uk](mailto:dr\m<sub>inicrai</sub>@orbitrise.co.uk)
- Elisabeth Schärtl
- Adam Norton

## **WS 61 – Horizon Europe proposals - How to make reviewers say ‘yes!’, not ‘yawn’**

### **Main questions to be answered**

- How do I get started with the proposal process?
- What makes a Horizon Europe proposal stand out in the evaluation process?
- It’s less than three weeks to the submission deadline – what should my final steps and finishing touches be?

### **WS Content**

This workshop is organised by the Ideal-ist network of National Contact Points (NCPs) for the digital part of Horizon Europe Cluster 4. It will give you a brief introduction into the Horizon Europe proposal writing process, followed by tips and tricks from experienced NCPs and Horizon Europe evaluators on how to write good proposals for the calls in the programme part Cluster 4 “Digital, Industry and Space”. As the call deadline for 2026 in this programme part is approaching quickly, there will be a specific section dedicated to last-minute advice for your proposals. Participants are encouraged to contribute actively to this workshop, e.g. by asking questions and sharing their own experiences with Horizon Europe proposals.

### **WS Organisation**

A presentation will be given by Ideal-ist, followed by a Q&A with 1-2 evaluators. Participants are invited to discuss actively with one another as well as NCPs and evaluators, ask questions and share their own experiences.

### **Intended outcome**

Participants should take away a set of ideas and suggestions on how to improve their next Horizon Europe proposal.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Alrun Hauke, DLR Project Management Agency / Ideal-ist
- Eleni Bohacek, Innovate UK / Ideal-ist
- Marialena Vagia, SINTEF Digital
- Geir Horn, University of Oslo

### **Projects involved**

Idealist2027

### **Further information (e.g. links, references)**

<https://www.ideal-ist.eu/>

<https://bsky.app/profile/idealistic-digital.bsky.social>

<https://www.linkedin.com/in/idealisticproject/detail/recent-activity/>

### **Main organiser mail**

alrun.hauke@dlr.de

### **Co-organisers**

Eleni.Bohacek@iuk.ukri.org

## WS 63 – Success Stories from EU-Funded Projects

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Presentation of success stories from EU funded projects. What are the results and impact of these projects ?
- As a scientist, innovator or user, what can I exploit/re-use/learn from these projects?
- What are the ingredients that make a project successful?

### WS Content

Discover success stories and impact from EU funded projects, how they contribute to advancement in robotics, and the benefit they can bring to the user industry and society.

### WS Organisation

14:00 – 14:05 Introduction: Welcome and overview of workshop objectives, with an outline of the success stories of five EU-funded projects

14:05 – 14:55 Project presentations

14:55 – 15:20 Panel Discussion & Q&A:

An interactive discussion where the project speakers, accompanied by selected end-users, address questions on project execution, challenges, and the exploitation of results

### Intended outcome

Attendees will leave with practical takeaways on what makes an EU-funded project successful. They will gain inspiration, best practices, and networking opportunities to enhance the impact of their own robotics initiatives.

### People actively involved (e.g. speakers, panelists, moderators)

- Cécile Huet - DG for Communications Networks, Content and Technology, European Commission & Head of Unit Excellence in Artificial Intelligence and Robotics, European Artificial Intelligence Office
- Cem Gulec - DG for Communications Networks, Content and Technology, European Commission & Policy and Programme officer at the Unit Excellence in Artificial Intelligence and Robotics, European Artificial Intelligence Office
- Andrea Gasparri, Full Professor at Università degli Studi Roma
- Achim J. Lilienthal, Professor of Computer Science, Chair: Perception for Intelligent Systems
- Matteo Rucco, Data Science Manager, Biocentis
- Stefan Leutenegger, Associate Professor of Mobile Robotics at ETH Zurich
- Stefania Melandri, European Funding Development Operations Specialist at Tinexta Innovation Hub SpA

### Projects involved

Canopies

DARKO REXASI-PRO Digiforest | Digital Analytics and Robotics for Sustainable Forestry

SOMIRO | Soft milli-robots | Horizon 2020 EU funded project

**Main organiser mail**

cem.gulec@ec.europa.eu

**Co-organisers**

- Cécile Huet - DG for Communications Networks, Content and Technology, European Commission & Head of Unit Excellence in Artificial Intelligence and Robotics, European Artificial Intelligence Office
- Cem Gulec - DG for Communications Networks, Content and Technology, European Commission & Policy and Programme officer at the Unit Excellence in Artificial Intelligence and Robotics, European Artificial Intelligence Office

## WS 64 – Apply AI Strategy and Robotics

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Q1
- Q2
- Q3

### WS Content

Details of the WS

### WS Organisation

How will you use the time in the workshop? What will the attendees do?

### Intended outcome

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards "We did X at ERF2025".

### People actively involved (e.g. speakers, panelists, moderators)

- Person 1, name and affiliation
- Person 2, name and affiliation
- Person 3, name and affiliation

### Co-organisers

- Organiser\1 *firstname, lastname, affiliation, email(if you want to make it visible)*
- Organiser\2 *firstname, lastname, affiliation, email(if you want to make it visible)*
- etc.

## **WS 65 – Robotics to overcome labour shortages in hospitality and tourism**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Q1
- Q2
- Q3

### **WS Content**

Details of the WS

### **WS Organisation**

How will you use the time in the workshop? What will the attendees do?

### **Intended outcome**

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards "We did X at ERF2025".

### **People actively involved (e.g. speakers, panelists, moderators)**

- Person 1, name and affiliation
- Person 2, name and affiliation
- Person 3, name and affiliation

### **Co-organisers**

- Organiser\1 *firstname, lastname, affiliation, email(if you want to make it visible)*
- Organiser\2 *firstname, lastname, affiliation, email(if you want to make it visible)*
- etc.

## **WS 66 – Advancing AI-Powered Robotic Cognition, Deliberation and Learning for Real-World Applications**

### **Main questions to be answered**

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- How can AI-powered robots make autonomous decisions in the real world? Learn practical approaches to cognitive reasoning and deliberation that go beyond simulations.
- What are the most effective strategies for learning skills with the existing data-gap in robotics? Discover techniques for efficient dataset generation, data-efficient learning and robust Sim-to-Real transfer
- Where is the field heading, and how can you contribute? Help define a shared roadmap and potential position paper, shaping the future of cognitive robotics in Europe.

### **WS Content**

Building on the success of the 2025 edition, the workshop "Advancing AI-Powered Robotic Cognition, Deliberation and Learning for Real-World Applications" will explore cutting-edge approaches to robotic cognition, deliberation, and data-efficient learning, highlighting real-world use cases. Emphasis will be placed on autonomous decision-making, semantic perception, Sim2Real transfer, and robust skill acquisition in unstructured environments.

### **WS Organisation**

A mix of lightning talks and an open panel discussion will foster collaborative input on current challenges, technical enablers, and key requirements.

### **Intended outcome**

On top of knowledge sharing and insights, the expected outcome will be a shared roadmap and potential contributions to a future position paper on cognitive robotics.

### **People actively involved (e.g. speakers, panelists, moderators)**

- Person 1, name and affiliation
- Person 2, name and affiliation
- Person 3, name and affiliation

### **Topic Groups and/or Innovation Networks involved**

Industrial Robotics  
AI & Cognition

### **Projects involved**

<https://intelliman-project.eu/>  
<https://www.eurobin-project.eu/>  
<https://manibot-project.eu/>

### **Main organiser mail**

Néstor García, Eurecat Technology Center, [nestor.garcia@eurecat.org](mailto:nestor.garcia@eurecat.org)

## Co-organisers

- `Organiser\1`*firstname, lastname, affiliation, email(if you want to make it visible)*
- `Organiser\2`*firstname, lastname, affiliation, email(if you want to make it visible)*
- etc.

## **WS 67 – General Assembly in the RIMA Alliance (attendance by invitation only)**

### **Main questions to be answered**

-

### **WS Content**

This is a General Assembly for the RIMA Alliance - an euRobotics Innovation Network. Please contact Aksel.A.Transeth@sintef.no if you are interested in joining the RIMA Alliance.

The General Assembly is by invitation only.

More information about the RIMA Alliance can be found here (general overview) and here (euRobotics community portal).

### **WS Organisation**

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### **Intended outcome**

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### **Topic Groups and/or Innovation Networks involved**

RIMA Alliance

### **Main organiser mail**

aksel.a.transeth@sintef.no

### **Co-organisers**

- Aksel A. Transeth, SINTEF, aksel.a.transeth@sintef.no
- Thomas Vögele, DFKI, thomas.voegele@dfki.de
- Ebert van Vonderen, TUKE, lambertus.a.w.van.vonderen@tuke.sk

## WS 69 – Scientific Track

### Main questions to be answered

This should explain to an attendee why they should come to your workshop rather than the other ones on at the same time

- Q1
- Q2
- Q3

### WS Content

Research on the applications of Robotics and AI to the industrial scenario is leading to a very fast-growing innovation in Europe. Thus, it is more and more important to foster discussion between researchers and industry to create a synergy that will drive the future of research and industrial innovation.

At the ERF 2025 in Rimini, Italy, an industrial scientific track for strengthening the scientific component of ERF was introduced. Thanks to the success of the scientific track both in 2024 and 2025, it will be continued at ERF 2026.

The scientific track is composed of peer-reviewed papers, which will subsequently be published in a Springer book. To foster the discussion between researcher and industry, the contributions of the scientific track will be presented in an “oral” or a “pitch and poster” format, depending on the content of the paper.

For the 2026 edition, two main areas have been identified:

- Robotics Subject Area: This subject area focuses on ocean and space robotics topics
- AI for Robotics Subject Area: This subject area addresses AI solutions specifically designed for ocean and space robotics applications

More information will follow after the submitters have been informed about acceptance which is planned for 2026-01-15

### WS Organisation

How will you use the time in the workshop? What will the attendees do?

### Intended outcome

We don't expect a long list of outcomes or a set of presentation slides - we want one or two results that attendees will say afterwards “We did X at ERF2025”.

### People actively involved (e.g. speakers, panelists, moderators)

- Person 1, name and affiliation
- Person 2, name and affiliation
- Person 3, name and affiliation

### Co-organisers

- Organiser\1 *firstname, lastname, affiliation, email(if you want to make it visible)*
- Organiser\2 *firstname, lastname, affiliation, email(if you want to make it visible)*
- etc.

## **WS 70 – Renaud Champion Entrepreneurship Award**

### **Main questions to be answered**

Who will be the 2026 winner of the euRobotics Renaud Champion Entrepreneurship Award?

### **WS Content**

Watch the shortlisted candidates pitch their companies and products to win the prestigious euRobotics Renaud Champion Entrepreneurship Award for the best European robotics startup in 2026.

We invite all entrepreneurs and potential entrepreneurs in the robotics field to join the competition for the euRobotics Renaud Champion Entrepreneurship Award. The Award is given out each year at the European Robotics Forum (ERF) to the most promising robotic start-up as judged by a jury of robotic entrepreneurship pioneers and experts. Entrants to the competition stand the chance to gain interest in their company from the robotics and investment community.

Attending the pitch competition with five promising European robotics startups, chosen by an expert jury, offers a unique glimpse into cutting-edge innovations in the industry.

Attendants will gain insights into the future of robotics and be inspired by the transformation of groundbreaking ideas into viable businesses.

Whether you're a robotics enthusiast or an aspiring entrepreneur, this event provides valuable inspiration and knowledge.

### **WS Organisation**

- Opening comments by the organisers
- Pitches by award finalists
- Conclusion

### **Intended outcome**

Gain insights into cutting-edge technologies, learn how bold ideas transform into successful businesses, and connect with fellow enthusiasts and entrepreneurs. Don't miss this chance to be inspired and grow your network in the robotics community!

### **People actively involved (e.g. speakers, panelists, moderators)**

Moderator

- Troels Oliver Pedersen – Odense Robotics, Denmark

Finalists

- Finalists will be announced shortly before the ERF

### **Topic Groups and/or Innovation Networks involved**

TG Entrepreneurship

### **Further information (e.g. links, references)**

See the call for applications here: [Entrepreneurship Award | euRobotics](#)

### **Main organiser mail**

Troels Oliver Pedersen (Odense Robotics), [trp@odensrobotics.dk](mailto:trp@odensrobotics.dk)

## Co-organisers

- Franziska Kirstein (Three Robotics), [Franziska.Kirstein@gmail.com](mailto:Franziska.Kirstein@gmail.com)
  - Jon Agirre Ibarbia (Tecnalia), [jon.agirre@tecnalia.com](mailto:jon.agirre@tecnalia.com)

## **WS 71 – Georges Giralt PhD Award**

### **Main questions to be answered**

Who will be the 2025 winner of the euRobotics George Giralt PhD award?

### **WS Content**

The euRobotics George Giralt PhD award finalists will present their PhD thesis work.

### **WS Organisation**

- Presentation by the award's chair (10 minutes)
  - Presentations of the finalists

### **Intended outcome**

Stay up to date on theses that were deemed worthy of making it to the finals

### **People actively involved (e.g. speakers, panelists, moderators)**

Finalists

Moderator

### **Topic Groups and/or Innovation Networks involved**

All Topic group

### **Further information (e.g. links, references)**

More information here: [Georges Giralt PhD Award | euRobotics](#)

### **Main organiser mail**

Mr. Paolo Robuffo Giordano (FR, CNRS Senior Scientist)

## WS 72 – euRobotics TechTransfer Award 2026

### Main questions to be answered

Which collaborations between research and industry have been the most successful in creating impactful robotics solutions in recent years?

### WS Content

Presentations by Technology Transfer Award 2026 Finalists

### WS Organisation

Welcome Remarks by Jury (Werner Kraus)

Finalist Pitches (in random order)

- Machine Tool Robot for milling tempered steel (Fraunhofer IFAM, autonox, Siemens)
- TR4CE-Weld – Tracing in Realtime 4 Cobot-Enhanced Welding (Fraunhofer IPA, TRUMPF, LORCH)
- Revolutionizing robotic actuation through gearbox technology (VUB, AILOS)
- PhiCube – the robotic playstation for habilitation (Rehabilia Technologies)

### Intended outcome

The Technology Transfer Award highlights cutting-edge innovation. By attending the 2026 session, you'll discover what makes successful technology transfer, learn about current market trends, and see the latest advancements in robotics. You'll also have the chance to network with leading experts in the field.

### People actively involved (e.g. speakers, panelists, moderators)

Finalists

- Machine Tool Robot for milling tempered steel (Fraunhofer IFAM, autonox, Siemens)
- TR4CE-Weld – Tracing in Realtime 4 Cobot-Enhanced Welding (Fraunhofer IPA, TRUMPF, LORCH)
- Revolutionizing robotic actuation through gearbox technology (VUB, AILOS)
- PhiCube – the robotic playstation for habilitation (Rehabilia Technologies)

Jury Members

- Rainer Bischoff - Intrinsic, an Alphabet Company, Germany
- Herman Bruyninckx - KU Leuven & TU Eindhoven & Flanders Make, the Netherlands
- Fariba Khatami - VDMA Robotics + Automation, Germany
- Werner Kraus - Fraunhofer IPA, Germany
- Nicola Tomatis - BlueBotics SA, Switzerland
- Georg von Wichert - Siemens, Germany
- Claus Risager - REGASIR ApS, Denmark

### Topic Groups and/or Innovation Networks involved

All TG

### Further information (e.g. links, references)

More information on the euRobotics TechTransfer Award 2026 here: [TechTransfer Award | euRobotics](#)

**Main organiser mail**

Werner Kraus (Fraunhofer IPA) and Rainer Bischoff (Intrinsic/Alphabet company)  
TechTransferAward@eu-robotics.net

## WS 73 – Sustainability Leadership Recognition in Robotics 2026

### Main questions to be answered

By hearing directly from shortlisted candidates and engaging in focused discussions, participants will gain concrete insights they can apply in their own organizations.

- What does sustainability leadership in robotics look like today, and who are the shortlisted candidates?
- How can sustainability be meaningfully integrated across the robotics lifecycle, from design and development to deployment and end-of-life?
- What lessons, patterns, and transferable practices can the wider robotics community adopt now?

### WS Content

Robots have significant potential to support sustainability, contributing to efforts such as combating climate change, improving recycling, reducing manufacturing waste, and transforming social applications. As demand for robotics grows, it becomes essential to ensure that their production and disposal are aligned with sustainable practices. Addressing the long-term sustainability of robotic technologies is complex and requires careful consideration to avoid negative environmental impacts. Sustainability, as defined by the 1987 Brundtland Report, emphasizes intergenerational equity—ensuring that current generations meet their needs without compromising future generations’ ability to do the same. It also stresses the importance of balancing three core elements: economic growth, environmental protection, and social inclusion. These principles are foundational to the United Nations’ 17 Sustainable Development Goals (SDGs), which address pressing global challenges and aim to create a more sustainable future for all. Integrating sustainability into robotics can drive innovation and contribute to a healthier planet and a more equitable society.

The “Sustainability Leadership Recognition in Robotics” initiative has been launched to highlight and celebrate sustainability efforts within the robotics community. This session aims to inspire others by recognizing innovations that address sustainability challenges through robotics and acknowledging those who are leading the way in integrating sustainable practices into the development and deployment of robotic technologies.

### WS Organisation

The workshop content focuses on showcasing and critically reflecting on concrete sustainability efforts within the robotics community.

Introduction and framing: Overview of the Sustainability Leadership Recognition in Robotics initiative, including its motivation, scope, and sustainability dimensions.

Presentations by shortlisted nominees: Short presentations by the shortlisted organizations or teams, highlighting:

- The sustainability challenge addressed
- The role of robotics in contributing to sustainability goals
- Achieved impact, lessons learned, and remaining challenges

Thematic panel discussions: Moderated panel discussions with the shortlisted candidates, structured around key sustainability themes such as lifecycle thinking, social impact, scalability, governance, and trade-offs between performance, cost, and sustainability.

Audience engagement: Interactive Q&A and guided discussion to allow attendees to explore how the presented approaches and insights could be transferred to other application areas or organizational contexts.

## **Intended outcome**

Rather than producing slides or rankings, the workshop aims to achieve two concrete outcomes at ERF 2026:

- Visible recognition of credible sustainability leadership in robotics, setting concrete reference points for what “good” looks like in practice.
- A shared set of key insights and takeaways that attendees can directly apply when developing, deploying, or evaluating robotic technologies from a sustainability perspective.

The workshop also aims at establishing connections for future collaborations around sustainability in robotics.

## **People actively involved (e.g. speakers, panelists, moderators)**

- Sharath Chandra Akkaladevi, ProFactor GMBH, Austria
- Franziska Kirstein, Three Robotics, Denmark
- Shortlisted candidates will be published shortly before the ERF

## **Topic Groups and/or Innovation Networks involved**

TG Sustainability

## **Main organiser mail**

- Franziska Kirstein, Three Robotics, Denmark

## **Co-organisers**

- Sharath Chandra Akkaladevi, ProFactor GMBH, Austria

## **WS 78 – Award Ceremony**

### **Main questions to be answered**

- Which outstanding achievements and contributions are shaping the future of European robotics?
- Who are the individuals, teams, and initiatives driving excellence, innovation, and impact within the euRobotics community?
- How do these award-winning efforts contribute to Europe's leadership in robotics research, industry, and societal impact?

### **WS Content**

The Award Ceremony recognises and celebrates outstanding contributions to European robotics. The session will present the following euRobotics awards and recognitions to individuals and/or organisations that demonstrate excellence in research and innovation:

- Renaud Champion Entrepreneurship Award
- Georges Giralt PhD Award
- TechTransfer Award
- Sustainability Leadership Recognition in Robotics

### **WS Organisation**

- Welcome and introduction by the moderator (Steve Doswell)
- Presentation of 3 awards and 1 Recognition
- Introduction of the award and jury
- Presentation of finalists as a video prepared by euRobotics
- Announcement of winners (for awards with a single winner)
- Distribution of certificates and trophies
- Group picture taken by euRobotics photographer
- Closing remarks and outlook towards future ERF editions

### **Intended outcome**

Recognition of excellence in different fields within European Robotics

### **People actively involved (e.g. speakers, panelists, moderators)**

- Moderator: Steve Doswell
- Award presenters: euRobotics Award and Recognition organisers, euRobotics Board members and/or ERF General Chair
- Award recipients: Selected individuals or organisations (to be announced)

## **Topic Groups and/or Innovation Networks involved**

TG Entrepreneurship  
TG Sustainability

## **Further information (e.g. links, references)**

Awards | ERF2026

## **Co-organisers**

- Troels Oliver Pedersen, Odense Robotics, [trp@odenserobotics.dk](mailto:trp@odenserobotics.dk)
- Jon Agirre Ibarbia, Tecnalia, [jon.agirre@tecnalia.com](mailto:jon.agirre@tecnalia.com)
- Franziska Kirstein, [franziska.kirstein@gmail.com](mailto:franziska.kirstein@gmail.com) & [fk@three-robotics.com](mailto:fk@three-robotics.com)
- Sharath Chandra Akkaladevi, [Sharath.Akkaladevi@profactor.at](mailto:Sharath.Akkaladevi@profactor.at)
- Rainer Bisschoff [bischoffr@intrinsic.ai](mailto:bischoffr@intrinsic.ai)
- Werner Kraus [werner.kraus@ipa.fraunhofer.de](mailto:werner.kraus@ipa.fraunhofer.de)
- Paolo Robuffo Giordano [prg@irisa.fr](mailto:prg@irisa.fr)

## **WS 79 – Feedback Session**

### **Main questions to be answered**

- What worked well at ERF 2026 and should be continued in future editions?
- Which aspects of the forum can be improved, from programme content to organisation and format?
- What new ideas, formats, or topics would the community like to see at future European Robotics Forums?

### **WS Organisation**

- Welcome and introduction from moderator (Rich Walker)
- ‘Floor open’ for participants to share their experiences, opinions, and suggestions regarding the European Robotics Forum
- Wrap up and closing

### **People actively involved (e.g. speakers, panelists, moderators)**

- Moderator: Rich Walker [rw@shadowrobot.com](mailto:rw@shadowrobot.com)
- Minutes: Inge Rehorst [inge.rehorst@eu-robotics.net](mailto:inge.rehorst@eu-robotics.net)
- Microphone handling 1: volunteer 1
- Microphone handling 2: volunteer 2

### **Topic Groups and/or Innovation Networks involved**

- Not applicable

### **Main organiser mail**

[rw@shadowrobot.com](mailto:rw@shadowrobot.com) and [inge.rehorst@eu-robotics.net](mailto:inge.rehorst@eu-robotics.net)

### **Co-organisers**

- Not applicable