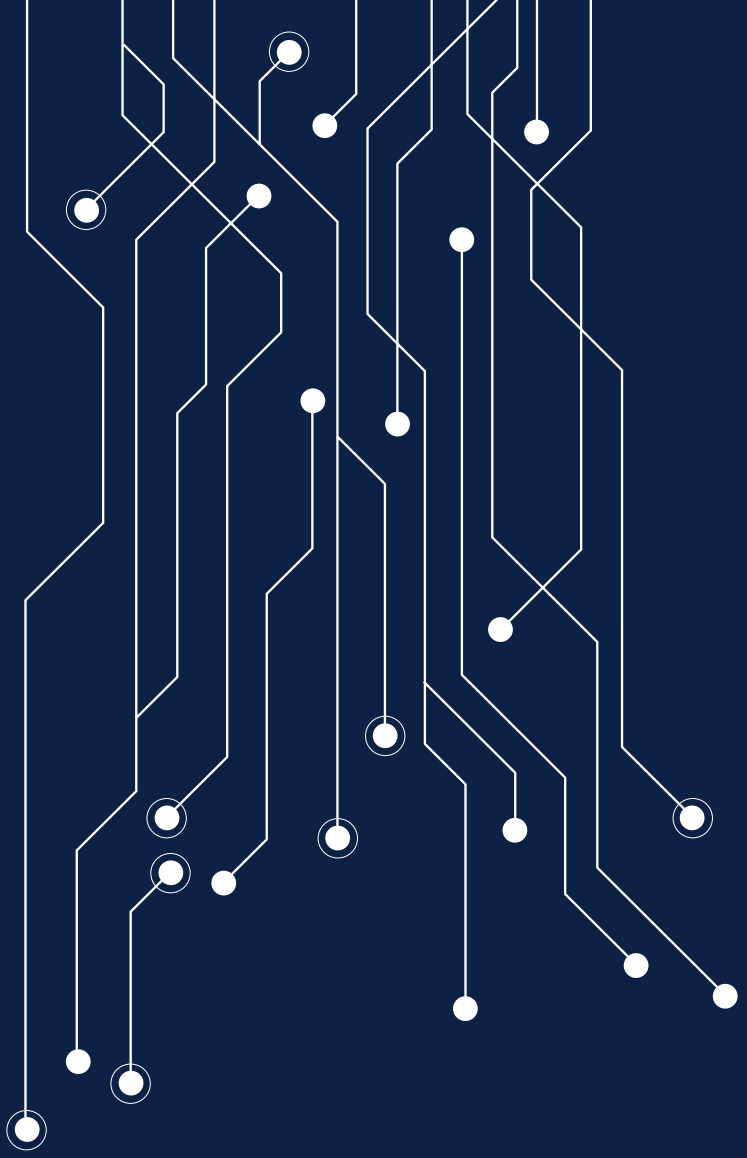
AI REDGIO 5.0

DIDACTIC FACTORIES BOOKLET

Open Testing and Experimentation Facilities, extending the services of the Learning Factory towards the materialization of "test before invest", helping organizations and students innovate

Funded by the European Union

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101092069



AI REDGIO 5.0

AI REGIO 5.0 promotes the adoption of Artificial Intelligence (AI) and Edge Computing technologies in the Manufacturing sector, particularly in small and medium-sized enterprises (SMEs). By creating alliances between regional authorities and Digital Innovation Hubs (DIHs), AI REDGIO 5.0 supports the development and implementation of AI solutions at the edge of the network.

The aim is to increase the competitiveness of European industry in the context of Industry 5.0, which refers to the integration of advanced technologies, such as AI, IoT, and automation, into the manufacturing sector. The project is supported by the European Commission and was launched in January 2023.

Within the project, the Didactic Factories (DF) Network, which initiallly started in the AI REGIO project and successfully continued in AI REDGIO 5.0, embodies a thriving ecosystem spanning 35 facilities across Europe, fostering collaboration in knowledge exchange and skill development. AI REDGIO 5.0's Didactic Factories Network helps Didactic Factories along in three pillars: (1) acquisition and increasing the DF's visibility to potential customers, (2) collaboration within the network and access to over 50 different services that all DFs offer together, possibilities for partnerships and cooperating on creating new or improving services, and (3) inspiration through interaction and knowledge sharing, keeping each other up-to-date on the latest trends and innovations.

This booklet is the outcome of the acquisition and visibility efforts within the AI REDGIO 5.0 Didactic Factories Network.

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AI REDGIO 5.0

OVERVIEW OF THE DIDACTIC FACTORIES NETWORK

Map of the Network (Status March 2025)

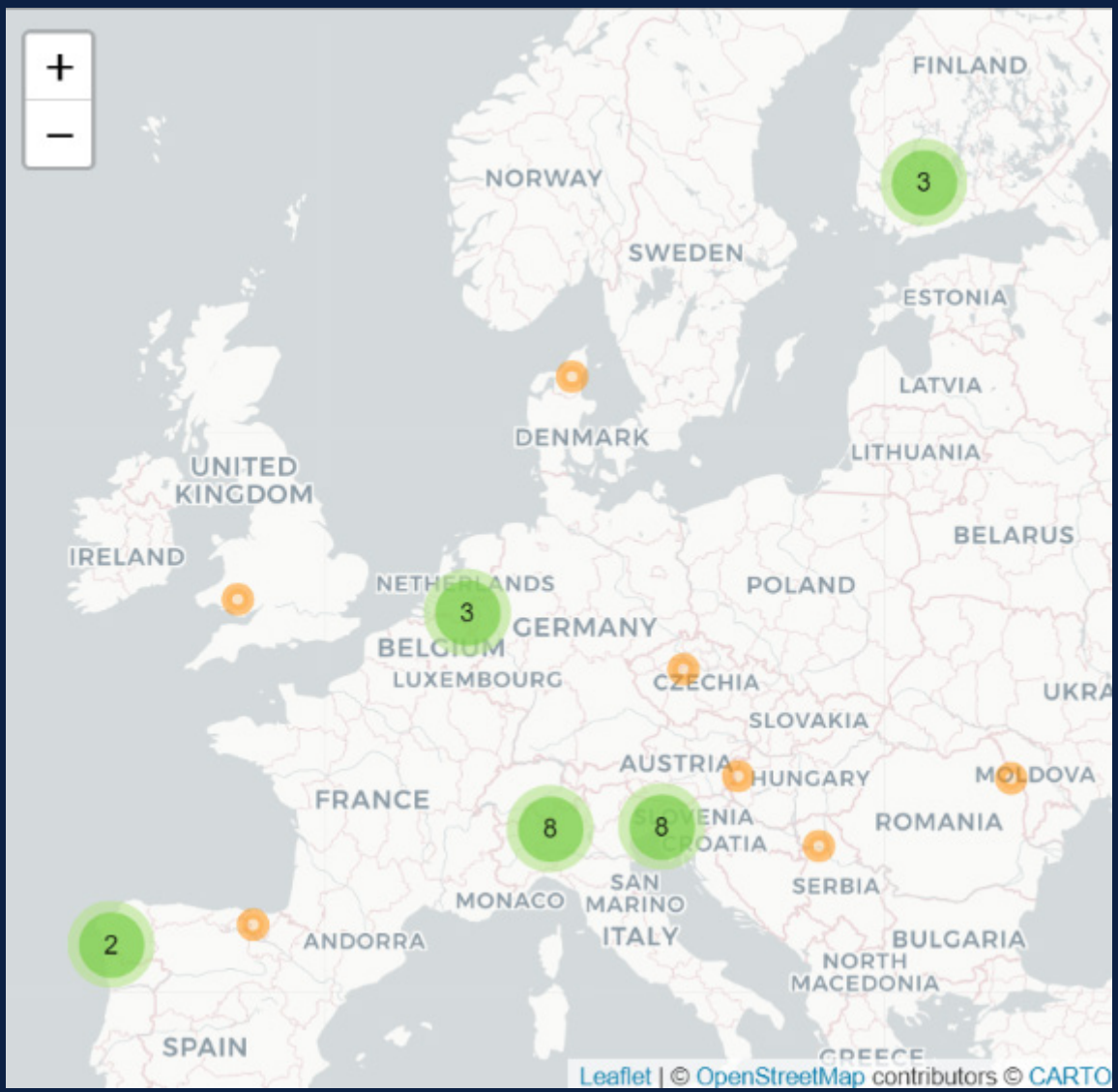

Figure 1: AI REDGIO 5.0 DF Network

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WHAT WILL YOU FIND IN THIS BOOKLET?

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FACTORY I4.0

About Factory I4.0

The aim of the Mini-Factory is to create a platform where researchers, students and industries meet, develop and empower the transfer of knowledge. They have the chance to experience both classical automation topics, as well as advanced technologies, typical of the most advanced smart-factories. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

SUPSI's Factory 4.0 's focuses on industry 4.0, IIoT, collaborative robotics, digital twins, smart and distributed automation, modular and flexible automation for remanufacturing, and artificial intelligence for manufacturing. The factory functions as a pilot production system for research and applied industrial projects, on the top of which applications and technologies are developed, tested and integrated. Industrial requirements are taken up directly and transferred into application-oriented research.

Economic Sectors

Factory 4.0 is located in Lugano (CH), and it is mainly active in the manufacturing and EdTech domains relevant to Switzerland and Europe..

Current Experiments and Field Labs

SUPSI's Factory 4.0 strives to keep innovating, their current experiments and field labs are aimed at predictive maintenance systems, vision technology and integrating automated and mutualistic and adaptive human-robot collaboration in production systems.

Foreseen challenges

Identify new industrial applications; maintain flexibility and adaptability to meet evolving industry needs; ensure resilience and precision of automated systems.

Interests and requirements for collaboration

Find SMEs interested in adopting Factory 4.0's technologies in industrial applications and developing R&I initiatives and activities with other innovation labs.

Are you interested in hearing more about Mini-Factory I4.0, their experiments or collaboration possibilities?

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SWISS SMART FACTORY

About Swiss Smart Factory

The goal of Swiss Smart Factory (SSF) is leading the way toward smart, sustainable, human-centred and resilient manufacturing industry. SSF represents an active ecosystem of partners from industry and research, working together by sharing knowledge and driving innovation. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

SSF's focus lies within Industry 4.0 related technologies: ERP, MES, PLM/Digital Twins, Control Systems, Sensors, Actuators, OT/IT Gateways and Security, Cloud, Edge, AGV/AMR, Robotics, Logistic, Work assistance, AR/VR, AI, data analytics.

Economic Sectors

SSF operates in Switzerland, Europe, and beyond, serving as a pioneer in smart manufacturing and driving innovation on a global scale.

Current Experiments and Field Labs

As Mini-Factory continues to drive innovation, SSF current experiments and field labs include the Lighthouse Project Industry 4.0 (showcasing a realistic lot-size-one manufacturing scenario), a test-before-invest platform, prototyping, proofs of concept, training and workshops (e.g., Digital Lean, Big Data & Machine Learning, Low-Code, Chatbots), and digital maturity assessments. In addition, SSF hosts leading international events in new manufacturing technologies, such as the International Smart Factory Summit and the International Humanoid Forum, bridging the gap between research and industry.

Foreseen challenges

Business Model Expansion, overcoming language barriers between members of SSF and to reach end-users.

Interests and requirements for collaboration

SME support activities, setting up cross-sector and cross-country collaboration.

Are you interested in hearing more about Swiss Smart Factory, their experiments or collaboration possibilities?

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LEAN EXPERIENCE FACTORY

About Lean Experience Factory

Lean Experience Factory (LEF) helps transform and digitize businesses by offering an experiential training centre. LEF helps create innovative skills and retrain staff, provide partnership and accelerating successful lean and digital transformation processes. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

LEF's expertise is in Artificial Intelligence (e.g., robotics, computer vision, automation), Cyber-Physical Systems (e.g., smart industry, IoT) advanced digital skills (big data analytics, forecasting, AR/VR etc), and 3D-printing.

Economic Sectors

LEF supports all industries and sectors within Italy and Europe, and is mainly focused in the mechatronics, wood, automotive, public, health, transport and education industries.

Current Experiments and Field Labs

Current Experiments evolve around providing digital maturity assessments, experimentation infrastructures, trainings and educating programs.

Foreseen challenges

The demographic change and ageing of population is seriously impacting the availability of skilled workforce, Supporting and mentoring SMEs in the digitalization of established (but chaotic) processes ("Digitalization of the chaos"), and the uptake of (new) technologies.

Interests and requirements for collaboration

Expanding the European network for collaboration and SME support activities, as well as cross sectoral collaboration.

Are you interested in hearing more about Lean Experience Factory, their experiments or collaboration possibilities?

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TAMPERE ROBOTICS DF

About Tampere Robotics Didactic Factory

The Tampere Robotics Didactic Factory at Tampere University is a lab for robotics education and R&D. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Tampere Robotics DF focuses on robotics, HRC, machine and computer vision, discrete production automation, AI in robotics and manufacturing, CPS (e.g. digital twins), and advanced digital skills (Projector based AR, AR/VR, VR Safety Training).

Economic Sectors

Tampere Robotics DF mainly operates within research and education sectors, manufacturing and assembly, machine building, automation, and mobile working machines.

Current Experiments and Field Labs

Current Experiments evolve around education programs, thesis, trainings, experimentation infrastructure, prototyping, ideation, and trend scouting.

Foreseen challenges

Foreseen challenges that the Tampere Robotics DF is working on, include lack of multi-skilled persons, time constraints within target groups, and visibility throughout SMEs.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, expanding the EU-network for collaboration, and SME support activities.

Are you interested in hearing more about Tampere Robotics, their experiments or collaboration possibilities?

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LASIM DIDACTIC FACTORY

About LASIM Didactic Factory

The LASIM Didactic Factory, located at the Faculty of Mechanical engineering, University of Ljubljana, provide large range of expertise on R&D as well as education and training. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Smart factories, digital LEAN, digital twins, simulation and real-time optimisation of production processes and logistics, distributed systems and edge computing, agile and modular production systems, AGV/AMR, advanced handling and assembly, robotics, 5G, IIoT, RFID, AR/VR, Lean Production Management, AI, data analytics, monitoring and visualisation, AI-based control, energy management.

Economic Sectors

Agile Manufacturing and Logistics, Pharmaceutical and Automotive industry.

Current Experiments and Field Labs

Design of smart factories, I4.0 KETs demonstration and implementation, Edge Computing integration and compatibility, 5G testing/evaluation, Digital twins of manufacturing processes and logistics, Stochastic and heuristic modelling, Agile and reconfigurable modular manufacturing, Robotic and Cobotics in assembly and handling, RFID and event based material tracking, Smart real-time worker guiding, AI process control, prediction of systems behaviour, Industry 4.0 communication protocols and interfaces, monitoring and visualization, test before invest, experimentation, education, training.

Foreseen challenges

Limited availability of skilled personnel, IT security and data privacy concerns.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, expanding the EU-network (matchmaking, SMEs, competence centres), EU-project collaboration.

Are you interested in hearing more about LASIM Laboratory, their experiments or collaboration possibilities?

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AALTO FACTORY OF THE FUTURE

About Aalto Factory of the Future

The Aalto Factory of the Future is a facility for innovation and education of future industrial automation, Industry 4.0, 5.0. They aim to achieve high sustainability and improve the wellbeing of the workers by introducing data-driven models that enable human-centric real-time workflow optimization. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Aalto FotF's focus lies with distributed industrial automation, applied AI, collaborative robotics, digital twinning, industrial IoT, and immersive technologies (e.g., AR/XR).

Economic Sectors

Aalto FotF mainly operates in the agnostic sector, the manufacturing and process industry, the pharmaceutical, Food, agriculture, forestry, wood processing industry, and energy.

Current Experiments and Field Labs

As Aalto University aims to keep innovating, their current experiments and field labs are aimed at flexible manufacturing systems, distributed automation , dependability and resiliency.

Foreseen challenges

Challenges anticipated include language barriers, access to target groups, building trust with relevant stakeholders , slow adoption of new technologies by stakeholders , lack of will by local stakeholders to invest in testing and piloting new technologies and solutions (despite the proven potentials from past piloting and demonstration).

Interests and requirements for collaboration

Cross country collaborations, joint R&D projects, R&D service offer, and SME support activities (support in access to funding for pilot and testing).

Are you interested in hearing more about Aalto Factory of the Future, their experiments or collaboration possibilities?

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LASIM DIDACTIC FACTORY

About FAST-Lab

The Future Automation Systems and Technologies Lab aims to integrate seamless knowledge of humans and machines to create smart environments by capitalising the advancements of Information and Communication Technologies. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

FAST-Lab specialises in Research related to the fields of Factory Automation, AI, Robotics, Digital Twins, Cyber-physical Systems, Industrial informatics, Human-Robot Interaction, Advance robotic manipulation, Data integration and optimization.

Economic Sectors

FAST-Lab is located at Tampere University and is mainly active in Manufacturing, Healthcare, Food & Agriculture, Smart mobility and Smart Cities within Finland and Europe.

Current Experiments and Field Labs

As FAST-Lab strives to keep innovating, their current experiments and field labs are aimed at Flexible manufacturing, Artificial intelligence, experimentation facility, trainings, education programs, and Technology development (AI, ML, Human-AI etc)..

Foreseen challenges

Access to target groups and Data privacy.

Interests and requirements for collaboration

Collaborative projects, Collaborative proposal preparation, Expanding the EU-network for collaboration and SME support activities.

Are you interested in hearing more about FAST-Lab's experiments or collaboration possibilities?

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SMART MANUFACTURING INNOVATION CENTRE - SMIC

About Smart Manufacturing Innovation Centre - SMIC

Smart Manufacturing Innovation Centre – SMIC is dedicated to seamlessly integrating advanced digital technologies into Serbia's productive sector and the wider Western Balkans region. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

SMIC's focuses on Automation, Digital Twin, Smart Industry, Industry 4.0, IIoT, Robotics, Technology scouting and consulting.

Economic Sectors

SMIC is located in the Novia Sad, Serbia and is mainly active in Automotive industry, Software industry (embedded systems), Process industry, Manufacturing, and EdTech in Europe.

Current Experiments and Field Labs

As SMIC strives to offers strategic partnerships to further enhance a global network of global exchange and innovation, their current experiments concern Prototyping, Product Development, Smart Factory, Artificial Intelligence, Data Analytics, and Digital Twins.

Foreseen challenges

Impact creation, business model, and limited availability of skilled personnel.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, shared projects, and EdTech cooperation.

Are you interested in hearing more about SMIC, their experiments or collaboration possibilities?

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LABTOP

About Laboratory for Factories of the Future

The Laboratory for Factories of the Future is where we demonstrate smart production technologies, focusing on Industry 4.0 and 5.0. With advanced equipment and a multidisciplinary approach, the laboratory combines knowledge and technologies to develop and test innovative production solutions. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

LabTOP boasts Automation, Smart Industry, Industry 4.0, IIoT, Robotics, Extended reality, Electrical energy management, and 3D technologies.

Economic Sectors

LabTOP is located in the Novo Mesto, Slovenia and is mainly active in Automotive industry, Manufacturing, and EdTech in Europe.

Current Experiments and Field Labs

As LabTOP allows testing of different scenarios, their current experiments concern Prototyping, Product Development, Smart Factory, Artificial Intelligence, Data Analytics, and ERP.

Foreseen challenges

Impact creation, limited availability of skilled personnel.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, shared projects, and EdTech cooperation.

Are you interested in hearing more about LabTOP, their experiments or collaboration possibilities?

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AIMEN TECHNOLOGY CENTRE

About AIMEN Technology Centre

AIMEN Technology Centre, Smart and Sustainably Factory is highly specialized in materials and advanced manufacturing, especially joining technologies and laser technologies applied to materials processing, robotics and automation. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Data sharing along the product lifecycle, IoT and data acquisition (e.g., digital twins, process monitoring, process control loops), Data models (e.g., Asset Administration Shell), Flexible robotics, extended Reality (AR, MR, projection solutions…), Data platforms (e.g., data connectors, software architecture and components), Data Analytics (e.g., Decision Support and development, Data Analytics, Frugal AI, Collaborative Intelligence) for high-mix/low-volume production and human-centric manufacturing.

Economic Sectors

AIMEN is mainly active in Manufacturing, Electronics, Automotive, Shipbuilding, Oil&Gas, Aerospace, Logistics, Building & Construction in Spain and Europe.

Current Experiments and Field Labs

At AIMEN, the current experiments and field labs entail Flexible Manufacturing, Additive Manufacturing, Assembly and manufacturing of large-components, batteries disassembly and revalorisation methodologies for consumer electronic components..

Foreseen challenges

Data traceability and connectivity from different sources. Trustworthiness of data-driven models. Human-centricity and workers acceptance on the digital technologies.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, expanding the EU-network for collaboration and technology development, maturation and testing & experimentation, with an especial focus on SME support activities (e.g. showcasing, de-risking, etc.).

Are you interested in hearing more about AIMEN, their experiments or collaboration possibilities?

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MADE COMPETENCE CENTER

About MADE Competence Center

MADE is a Competence Center that simulates a digital factory, created to carry out orientation, training, and finalization of technology transfer projects with Italian companies, particularly SMEs, on Industry 4.0 issues. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

MADEcc's focus lies within AI, Big Data, Collaborative Robotics, 5G, Digital Twin and Virtual Commissioning, Operator 5.0, Industrial IoT, Digital Backbone, and Cybersecurity.

Economic Sectors

MADEcc is mainly active in Manufacturing and Industry X.0, within Italy and Europe.

Current Experiments and Field Labs

MADEcc's current experiments and field labs include: (1) Virtual Design and New Product Development, (2) Digital Twin and Virtual Commissioning, Lean Manufacturing 4.0, Logistics 4.0, (3) Collaborative robotics and intelligent worker assistance systems, (4) Quality 4.0, Product traceability and additive manufacturing, (5) Smart monitoring and control of industrial processes, Smart energy monitoring and control, Smart maintenance, and (6) Industrial Cyber Security and Big Data Analytics.

Foreseen challenges

Different technologies require different skills (limited availability of skilled personnel), Data access, Ever increasing demand for AI (but challenges with the trustworthiness/robustness of AI solutions) and Build cross-sector synergies.

Interests and requirements for collaboration

Expanding the EU-network for collaboration and SME support activities (EDIH corridors) as well as Shared-projects.

Are you interested in hearing more about MADE Competence Center, their experiments or collaboration possibilities?

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INDUSTY4.0LAB

About Industry4.0Lab

Industry4.0Lab is a tangible physical entity, located at the School of Management of Politecnico di Milano, to carry out research and teaching activities in a real-like Industry4.0 environment.. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Industry4.0Lab's expertise includes Artificial Intelligence applied to robotics, operations management, maintenance and internal logistics; Cyber-Physical systems exploited in data analysis, and digital twins; Asset Administration Shell; Data Spaces; as well as Upskilling and reskilling.

Economic Sectors

Industry4.0lab is mainly active in Manufacturing and Process Industry of Italy and Europe.

Current Experiments and Field Labs

Industry4.0lab focuses its current research and experimental activities over a wide set of areas in the domain of manufacturing and process industries. Currently, main topics investigated refer to data-related technologies for the aforementioned industries, including the design and development of customised architectures of software for the extraction of knowledge from production assets, as well as the study of the human behaviour in production tasks throughout the analysis of biological signals, and limitations and mitigation measures of data-driven tools.

Foreseen challenges

Challenges foreseen include regulatory grey areas for the data exploitation, and lack of trust by companies towards new data-related technologies.

Interests and requirements for collaboration

Industry4.0Lab is happy to collaborate on SME support activities and research projects.

Are you interested in hearing more about Industry4.0Lab, their experiments or collaboration possibilities?

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DIGITAL MANUFACTURING INNOVATION HUB WALES

About DMIW

The Digital Manufacturing Innovation Hub Wales (DMIW) supports and strengthens business in Wales as a non-profit, by providing access to innovative solutions, supporting the commercialisation of innovative technologies to create resilience in the manufacturing industry. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

DMIW has technical expertise on the topics including AI (robotics, computer vision, automation), CPS (digital twins, smart industry, IoT), Control Systems, Interoperability and industrial process improvement.

Economic Sectors

DMIW is located in the South-Wales in the UK and is mainly active in Manufacturing and Process Industries, technology developers and industrial entrepreneurs within Wales, the UK and Europe.

Current Experiments and Field Labs

DMIW has current experiments running on IWOK (Industreweb Operational Knowledgebase) prototype for self-healing production, Automated inspection system, AI Driven Operator Safety systems, Interoperability and Data Integration testbeds.

Foreseen challenges

Providing adequate technical and digital skills to equip future engineers and encouraging the development of affordable technologies.

Interests and requirements for collaboration

Expanding collaboration with other DIH / EDIHs and participation in commercial / research projects across the European region.

Are you interested in hearing more about DMIW, their experiments or collaboration possibilities?

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AM-LAB

About am-LAB

am-LAB is a research, development, and training laboratory focusing on application of digitalization in manufacturing and product development. It provides a holistic physical environment to meet unique business needs with cutting-edge technology. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

The technological focus of am-LAB lies within Automation, Digital Twin, Smart Industry, Industry 4.0, IIoT, AR/VR/MR, Data Analytics, Machine Vision, Computer Vision, and Robotics.

Economic Sectors

am-LAB mainly operates in the in Manufacturing and EdTech Industries within Hungary and Europe.

Current Experiments and Field Labs

As am-LAB actively support innovation, their current experiments and field labs include Prototyping, Product Development, Smart Factory, Artificial Intelligence, Data Analytics, and Digital Twins.

Foreseen challenges

Gaining and retaining access to target groups, lack of multi-skilled personnel, and cyber security challenges.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, and SME support activities.

Are you interested in hearing more about am-LAB, their experiments or collaboration possibilities?

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BRAINPORT INDUSTRIES EXPERIENCE CENTRE FACTORY OF THE FUTURE

About Brainport Industries

Brainport Industries is the leading network of high-tech suppliers in the Netherlands, and supports high-tech suppliers with projects on the themes of (international) cooperation, sustainability, digitalisation & technology and human capital. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Brainport Industries' expertise lies in Smart Industry, Industry 4.0 and 5.0, Additive Manufacturing, Predictive Maintenance, Digitalization and data sharing in high-tech supply chains, Artificial Intelligence, Asset Administration Shell, Data Spaces, IIoT, cybersecurity, digital twins, Vision Technology, Quality Control, AR/VR for high-complex, low-volume and high-mix applications.

Economic Sectors

Brainport Industries is mainly active in the in High-Tech Manufacturing, Semiconductors, MedTech, Agri-Food and Chemical Industries within The Netherlands and Europe.

Current Experiments and Field Labs

As Brainport Industries, with the Experience Centre Factory of the Future, works to strengthen the competitive position of the Dutch high-tech sector internationally, their current experiments and field labs include Flexible Manufacturing, Multi-Material 3D printing, AI Implementations, High Tech Software Cluster, SCSN (Data Space and Data sharing along the supply chain), Prototyping, Digital Twins, Quality Control, Digital Product Passport, FutureTec (e.g., educational content) and more.

Foreseen challenges

Gaining and retaining access to target groups, limited availability of skilled personnel, slow adoption of new technologies by stakeholders, cyber security, and data privacy challenges.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, shared regional, national or EU-projects, and SME support activities.

Are you interested in hearing more about Brainport Industries, their experiments or collaboration possibilities?

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SMART PRODUCTION LAB DENMARK

About Smart Production Lab Denmark

The Aalborg University (AAU) Smart Lab a wireless playground for the manufacturing industry. The objective of the research centre is to investigate how manufacturing industries can benefit from wireless communication and robotics and automation as emerging technologies. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

AAU's Smart Lab's main expertise lies within Sensor Technology, AI (e.g. robotics, computer vision, automation), CPS (e.g. digital twins, smart industry, IoT), and advanced digital skills (big data analytics, forecasting, AR/VR etc).

Economic Sectors

AAU Smart Lab is mainly active in the Manufacturing Industry and Education within Denmark and Europe.

Current Experiments and Field Labs

The current experiments and field labs include Prototyping, Smart Factory, Artificial Intelligence, Data Analytics, IoT, and Robotics.

Foreseen challenges

Gaining and retaining access to target groups is the main challenge for AAU's Smart Lab.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, and SME support activities.

Are you interested in hearing more about Aalborg University Smart Lab, their experiments or collaboration possibilities

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E2MECH: UNIBO-ACTEMA

About E2Mech

Taking the cue from the paradigms of Cyber-Physical Systems (CPS), the ACTEMA research group develops methods and technologies in the field of control, monitoring and diagnosis of innovative mechatronic and automation systems. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

The main expertise of the ACTEMA research group at E2Mech lies within Applied advanced control for automation and mechatronics, mixed physics and data-driven modelling and AI methods for control, condition monitoring, and diagnostic/prognostic methods.

Economic Sectors

E2Mech is mainly active in the Manufacturing and Process Industries in Italy and Europe.

Current Experiments and Field Labs

The main experiments/activities currently running are: (1) Flexible mechatronics prototype to deploy advanced control (e.g. repetitive iterative learning, internal model control paradigms) and condition monitoring algorithms based on mixed analytical and data-driven approaches to be combined with Bayesian inference approaches and Markov models for achieving complete predictive maintenance functionality. (2) Control-oriented mechanical design and optimization (stiffness and mass of flexible elements) to minimize torque/energy required for motion. (3) Design and development of custom HW/SW embedded platforms, based on heterogeneous multicore processors, oriented to high-performance edge computing for control, monitoring, and diagnostic applications..

Foreseen challenges

Sharing of data for other applications (continual/transfer learning) could pose data ownership/ privacy challenges.

Interests and requirements for collaboration

Expanding collaboration with other DIH / EDIHs and participation in research projects across the European region.

Are you interested in hearing more about E2Mech, their experiments or collaboration possibilities?

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IJS SYSTEMS AND CONTROL LAB

About IJS Systems and Control Lab

The mission of the Systems and Control Lab of the Jožef Stefan Institute is to perform technologically oriented research, transfer the knowledge and results to practical applications and in this way contribute to the progress of Slovenia. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Technological focus includes in the topics of Modelling Complex Dynamic Systems, Advanced Control, Prognostics and Health Management, Special Hardware and Software Modules for Control Systems Implementation, AI Solutions, and Industry 4.0.

Economic Sectors

IJS's Systems and Control Lab mainly operates in the Manufacturing and Process Industries, Clean Energy, and Hydrogen-Based Energy Conversion Solutions in Slovenia and Europe.

Current Experiments and Field Labs

The experiments and field labs currently active are Prototyping, Ideation, Proof of Concept Solutions, and Experimentation Infrastructures.

Foreseen challenges

The availability of skilled personnel and building trust.

Interests and requirements for collaboration

Interest for collaboration originates in cross-sector and cross-country collaborations, and joint R&D projects.

Are you interested in hearing more about IJS Systems and Control Lab, their experiments or collaboration possibilities?

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ADVANCED MANUFACTURING CENTRE

About Advanced Manufacturing Centre

The Fraunhofer Innovation Platform for Advanced Manufacturing at the University of Twente (FIP-AM@UT) is an innovation centre that is committed to the advancement of the manufacturing industry for the enrichment of our society. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

FIPAM@UT's main expertise includes Artificial Intelligence & Decision support, Cyber-physical systems, Digital twins, Internet of Things, Robotics, Sensors & Vision Processing Systems, Simulation engineering and modelling, and AR/VR.

Economic Sectors

FIP-AM@UT is mainly active in the Energy, Automotive, Food, Agriculture, Semiconductor Industries within The Netherlands, Germany and Europe.

Current Experiments and Field Labs

Current Experiments include Prototyping, proof of concept, digital maturity assessment, experimentation infrastructure, trainings, and education programs.

Foreseen challenges

Accessibility of new technologies to target groups.

Interests and requirements for collaboration

Interest for collaboration originates in cross-sector and cross-country collaborations, and SME support activities.

Are you interested in hearing more about FIP-AM@UT, their experiments or collaboration possibilities?

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4.0ILAB

About 4.0iLab

The 4.0iLab Open Platforms and Enabling Technologies for the Internet of Things (OpenIoT) Research Unit focuses its research activities on IoT infrastructures and platforms. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

The expertise of FBK 4.0iLab mainly lies within Edge AI and IIoT, Data Analytics and Processing.

Economic Sectors

DF 4.0iLab is mainly active in the Manufacturing Industry, Smart Industry, Energy, Agriculture, and Industrial Automation in Italy, and on a broader scope, Europe.

Current Experiments and Field Labs

Experiments as currently running are prototyping, ideation, and providing experimentation infrastructures.

Foreseen challenges

Challenges as experienced and expected include the integration of diverse hardware/software, real-time data processing, scalability, and latency management.

Interests and requirements for collaboration

FBK's 4.0iLab is actively looking for partnerships for edge AI development, access to industrial data, cross-sector and cross-country collaborations, as well as shared projects.

Are you interested in hearing more about 4.0iLab, their experiments or collaboration possibilities?

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FLANDERS MAKE

About Flanders Make

Based on high-tech research from three co-creation centres and core labs at the five Flemish universities, Flanders Make offers active support to companies in the manufacturing industry to develop and optimise their products and production processes. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Flanders Make's technological focus is trifold; (1) Smart modelling, simulation and digital twins, (2) Innovative artificial intelligence in manufacturing: digital work instructions, AR, and (3) Human robot interaction: (safety in) collaborative robots.

Economic Sectors

Flanders Make has a broad experience in the discrete manufacturing sector with an intense network of companies including SMEs. More concretely, in the vehicle industry, mechanical engineering and production environments of multiple sectors (manufacturing, food, pharma, logistics, marine, etc).

Current Experiments and Field Labs

Smart Maintenance, Machine Upgrading 4.0, Smart Connectivity, Smart Farming 4.0, Collaborative Work Cell 4.0, Drones in building and agriculture, AR/MR in lab and process environments, Technology for Workable Work, Manufacturing Execution Systems for SMEs, Flanders AI Initiative, etc.

Foreseen challenges

Getting the right companies inspired and motivated to engage in the digital transformation process, time constraints within these target groups, and data access are expected to be the main challenges in the years to come.

Interests and requirements for collaboration

As coordinator of the European Digital Innovation Hub DIGITALIS, aimed at the manufacturing industry and has the above-mentioned technological focus (including cybersecurity, photonics, digital twins, connected systems/5G), we are open to connect with other hub(s) combining multiple collaborations (DIH-World, EDIH's, local initiatives) on how they keep that organized towards their ecosystem.

Are you interested in hearing more about 4.0iLab, their experiments or collaboration possibilities?

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DIGITAL INNOVATION ZONE

About DIZ

«Gheorghe Asachi» Technical University of Iasi (TUIASI) is among the oldest and best-known higher education institutions in Romania, with an important tradition in engineering, scientific and cultural education and a thriving presence on the international scene. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

DIZ focuses on the fields of AI for Quality Assurance in Manufacturing, IoT, Additive Manufacturing Electronics, Smart Transportation, Traceability, 5G, Prototyping, Cybersecurity, VR/AR, and Digital Twins.

Economic Sectors

The Manufacturing, Automotive, Textiles, Healthcare, Industrials, ESG and Semiconductor Industries in Romania and Europe.

Current Experiments and Field Labs

DIZ's current experiments and field labs include Energy monitoring sensors, 5G for Smart Transportation, Artificial Intelligence and Crowd Monitoring.

Foreseen challenges

Challenges foreseen are the lack of State-of-the-Art Infrastructure, and the Lack of Attractiveness for PhD Students Enrolment.

Interests and requirements for collaboration

TUAISI's DIZ is looking for Cross-sector and Cross-country Collaborations, as well collaborating on SME support activities, shared projects for I3 calls, and Horizon Europe for our SMEs.

Are you interested in hearing more about DIZ, their experiments or collaboration possibilities?

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CIIRC CTU TESTBED FOR INDUSTRY 4.0

About CIIRC CTU Testbed for Industry 4.0

The CIIRC CTU became the centre of support for industry 4.0 and the headquarters of the National Centre for Industry 4.0. Within this centre, the first extensive Testbed for Industry 4.0 is being developed primarily for the advanced development and transfer of technologies and solutions for Czech small and medium-sized companies. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Testbed for Industry 4.0 is mainly active in Artificial intelligence, robotics, automatic control and optimization, computer graphics, computer vision and machine learning, automatic decision-making, software, decision-making and diagnostic systems, bioinformatics, biomedicine and assistive technology.

Economic Sectors

The Manufacturing, Healthcare and Energy Industries in the Czech Republic and Europe.

Current Experiments and Field Labs

Current experiments and field labs are based in Quality management, flexible production, robotic 3D scanning and printing, machining and hybrid processes, weld print technology, collaborative robots, industrial robots, robotic laser cell, laser machines, experimentation infrastructure, trainings, education programs, data analytics, digital maturity assessment.

Foreseen challenges

Challenges foreseen are Impact creation, access to target groups, and the limited availability of skilled personnel.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, expanding the EU-network for collaboration and SME and public institutions support activities (e.g. matchmaking), conducting a TERESA, shared projects.

Are you interested in hearing more about Testbed for Industry 4.0, their experiments or collaboration possibilities?

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SMILE

About the SMILE lab of Intellimech

Intellimech is a private consortium composed of small, medium and large enterprises, aimed at interdisciplinary research in the mechatronic field. Smart Lab is the Experience Centre, laboratory and showroom by Intellimech, used for project testing and experimentation. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Smart Lab, from Consorzio Intellimech, mainly operates in Smart Industry, ICT systems, AI, Computer Vision, Robotics and human-robot interaction, and AR/VR.

Economic Sectors

The main economic sectors include Manufacturing and Mechatronics in the Italy and Europe.

Current Experiments and Field Labs

Smart Lab's current experiments and field labs include the fields of Generative and Explainable AI, Flexible Manufacturing, Asset virtualization and virtual training, and Knowledge Management.

Foreseen challenges

Challenges foreseen include supporting the partners and the local ecosystem of Consorzio Intellimech in the innovation towards more efficient, resilient and sustainable industries.

Interests and requirements for collaboration

Smart Lab actively seeks collaboration in connect their partners and local industries with EU networks, promoting cross-sector and cross-country collaborations.

Are you interested in hearing more about Smart Lab, their experiments or collaboration possibilities?

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SMILE

About SMILE – Smart Manufacturing Innovation Lab for Enterprises

The SMILE laboratory, Smart Manufacturing Innovation Lab for Enterprises, inaugurated last September 2019 at Kilometro Rosso, is an innovative space available to the territory to experiment with advanced training models on technologies in the Industry 4.0 field. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

SMILE's focus lies within Smart Industry, including: Automation, Robotics, IoT, 3D printing, Digital Twin, and Extended Reality (AR/VR).

Economic Sectors

SMILE mainly operates in Industry4.0 Technologies in the Industrial sectors of Italy and Europe.

Current Experiments and Field Labs

Current experiments running are: Innovative spaces to experiment advanced training models with Industry 4.0 technologies. It is aimed at secondary school students, teachers, and workers, and it offers Upskilling and Reskilling courses with the support of Servizi Confindustria Bergamo.

Foreseen challenges

SMILE expects a challenge in fostering the integration between the world of business and education.

Interests and requirements for collaboration

Cross-sector and cross-country collaborations, as well as promoting training opportunities and students' secondment.

Are you interested in hearing more about SMILE, their experiments or collaboration possibilities?

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AM PILOT FACTORY

About AM Pilot Factory

The AM Pilot Factory is established through a collaboration between GRADIANT, AIMEN and GAIN, aiming to synchronize efforts and propose a unified strategy and vision in the region of Galicia. The AM pilot facility is leveraged on AIMEN's physical manufacturing infrastructure and driven by GRADIANT's technical expertise in the field of AI and orchestration at the Edge. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Focus lies within the technological areas of large-format composite additive manufacturing, collaborative robotics and laser manufacturing, on AIMEN's side. On GRADIANT's side, on AI/ML architectures for advanced monitoring, predictive and prescriptive quality control, predictive maintenance, energy efficiency, Smart Industry, Advanced Data Analytics, IoT and Edge-Cloud.

Economic Sectors

Located in Galicia, Spain, the AM Pilot Factory mainly operates in Smart Manufacturing within Spain and Europe.

Current Experiments and Field Labs

The Field Labs' experiments currently include Demonstrators, Experimentation Infrastructures, and Technology Concept Development / Proof of Concept (PoC) Development.

Foreseen challenges

Challenges foreseen include the start-up of a Didactic Factory in the form of a synergy and collaboration between the two Galician RTOs, Access to target groups and impact creation, Building trust, and Generalization of demonstrators.

Interests and requirements for collaboration

AM Pilot Factory is interested in collaborating on cross-sector and cross-country collaborations, and shared projects.

Are you interested in hearing more about AM Pilot Factory, their experiments or collaboration possibilities?

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INNOVALIA METROLOGY I4.0 LAB

About Innovalia Metrology I4.0 Lab

Innovalia Metrology I4.0 Lab offers metrology solutions that integrate traditional metrology with the latest technological developments, from laboratories to production line. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

Innovalia Metrology is mainly active among the areas of Industrial IoT & CPPS, Metrology 4.0, Zero-Defect Manufacturing, Business Digitization, Big Data & 3D Mobile Visualisation, Cybersecurity and Digital Trust.

Economic Sectors

Main economics sectors served by Innovalia Metrology I4.0 Lab are the Automotive, Aeronautic and Metalworking sectors of Spain and Europe.

Current Experiments and Field Labs

Current experiments are focused in new product/service design and technology concept (Proof of Concept) development, Specialized trainings regarding digital skills, Knowledge transfer and dissemination, Digital transformation strategy consulting, Business model development and market assessment, and Access to specialized infrastructures and equipment.

Foreseen challenges

Innovalia foresees challenges in data access and Strategic Service Promotion.

Interests and requirements for collaboration

Innovalia Metrology I4.0 Lab actively seeks collaboration in cross-sector and cross-country collaborations, expanding the EU-network for collaboration and SME support activities.

Are you interested in hearing more about Innovalia Metrology I4.0 Lab, their experiments or collaboration possibilities?

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CONSORZIO MUSP

About Consorzio MUSP

The MUSP Consortium aims to provide support to local companies in the development of innovative solutions that foster competitiveness in the international context, expand collaborations between universities and companies in the mechanical sector, the creation of research activities located in the territory, and support the teaching and qualification of studies in Mechanical Engineering at the Piacenza Campus of the Polytechnic. For more information, please consult their website and the AI REDGIO 5.0 Deliverable 3.3.

Technological Focus

MUSP is mainly focuses on the technological fields of Digital and autonomous manufacturing applying advanced technologies and solutions like robotics, machine vision, edge supervision for monitoring and control of processes, digital twins, automatic path planning for robots and cobots,etc.

Economic Sectors

Located in Piacenza Italy, Consorzio MUSP is active in Manufacturing, remanufacturing, machine and machine tool builders, packaging, automation, automotive industry, and the oil & gas industry.
Current Experiments and Field Labs
Prototyping, robotic machining and 3D printing, technology scouting, manufacturing process monitoring and control infrastructure. Remanufacturing ecosystem and digital tools.

Foreseen challenges

Possible challenges include knowledge loss in manufacturing companie, limited availability of expert operators in the manufacturing world, intelligent use and reuse of resources in the EU, and the application of the Digital Product Passport in remanufacturing.

Interests and requirements for collaboration

MUSP is interested to collaborate on cross-sector and cross-country collaborations, EU shared projects on digital manufacturing and remanufacturing and SME support activities.

Are you interested in hearing more about Consorzio MUSP, their experiments or collaboration possibilities?

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AI REDGIO 5.0

CLOSING SENTIMENTS

Thank you

This concludes the AI-REDGIO 5.0 Didactic Factory Booklet, with a great thank you to all of our partners and didactic factories in the network.
We aim to retain the valuable and intensive collaboration between didactic factories strong over time, extend the network with more didactic factories and other relevant networks in the European Region.

Do you have any questions about the AI REDGIO 5.0 project, the Didactic Factory Network or this Booklet? Please feel free to let us know:

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AI REDGIO 5.0

AI REDGIO 5.0 is an ambitious EU-funded project, stemming from the Made in Europe Partnership, leading the digital transformation of European manufacturing SMEs through Artificial Intelligence at the Edge. Bringing together 43 partners from 18 countries, the project extends the successful legacy of Horizon 2020's I4MS and AI REGIO initiatives, which empowered SMEs to embrace Industry 4.0 technologies.

AI REDGIO 5.0 has been advancing these achievements toward Industry 5.0, where technology serves people, sustainability, and resilience. By connecting regions, European Digital Innovation Hubs (EDIHs), and manufacturing SMEs, the project creates a powerful ecosystem fostering innovation across Europe.

At its core, the project focuses on experimentation and collaboration. Three types of experiments are conducted. SME-driven experiments demonstrate real-world AI applications improving productivity and agility in factories. Test-before-invest experiments, performed within Didactic Factories, Technology and Regulatory Sandboxes for AI (TERESAs), and Virtual Factories, refine AI tools and assess their ethical, regulatory, and human-centric dimensions. Through Open Calls, 20 additional SMEs are funded to develop cutting-edge solutions in AI-at-the-Edge, circular manufacturing, and sustainable production.

By accelerating the adoption of AI and fostering cross-regional cooperation, AI REDGIO 5.0 paves the way for a smarter, greener, and more inclusive European manufacturing landscape — one where people and technology thrive together.

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