

Regions and (E)DIHs alliance for AI-at-the-Edge adoption by European Industry 5.0 Manufacturing SMEs

**Manufacturing Partnership Day
Brussels, 7-8 May 2024**



Gabriella Monteleone, Sergio Gusmeroli (POLIMI)

AI REDGIO 5.0 in a nutshell



AI REDGIO 5.0

Regions and (E)DIHs alliance for AI-at-the-Edge adoption by European Industry 5.0 Manufacturing SMEs

Project ID: 101092069

Call: HORIZON-CL4-2022-TWIN-TRANSITION-01

Topic: HORIZON-CL4-2022-TWIN-TRANSITION-01-06

Type of action: HORIZON-IA

Service: HADEA/B/02

Starting date: 1 January 2023

Duration: 36 months

Total Costs: € 9 363 060,00

EU contribution: € 7 462 614

Coordinator: Politecnico di Milano

44 partners from 18 Countries

 United Kingdom

 Sweden

 Belgium

 Netherlands

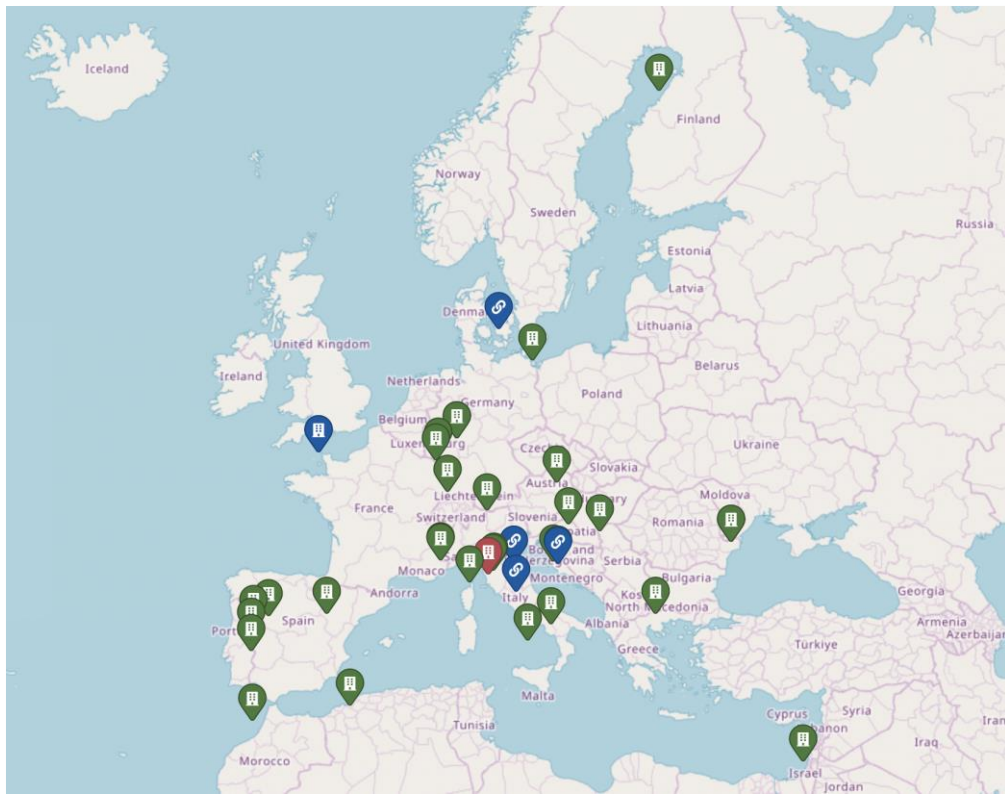
 Germany

 France

 Italy

 Spain

 Portugal



 Luxembourg

 Denmark

 Austria

 Slovenia

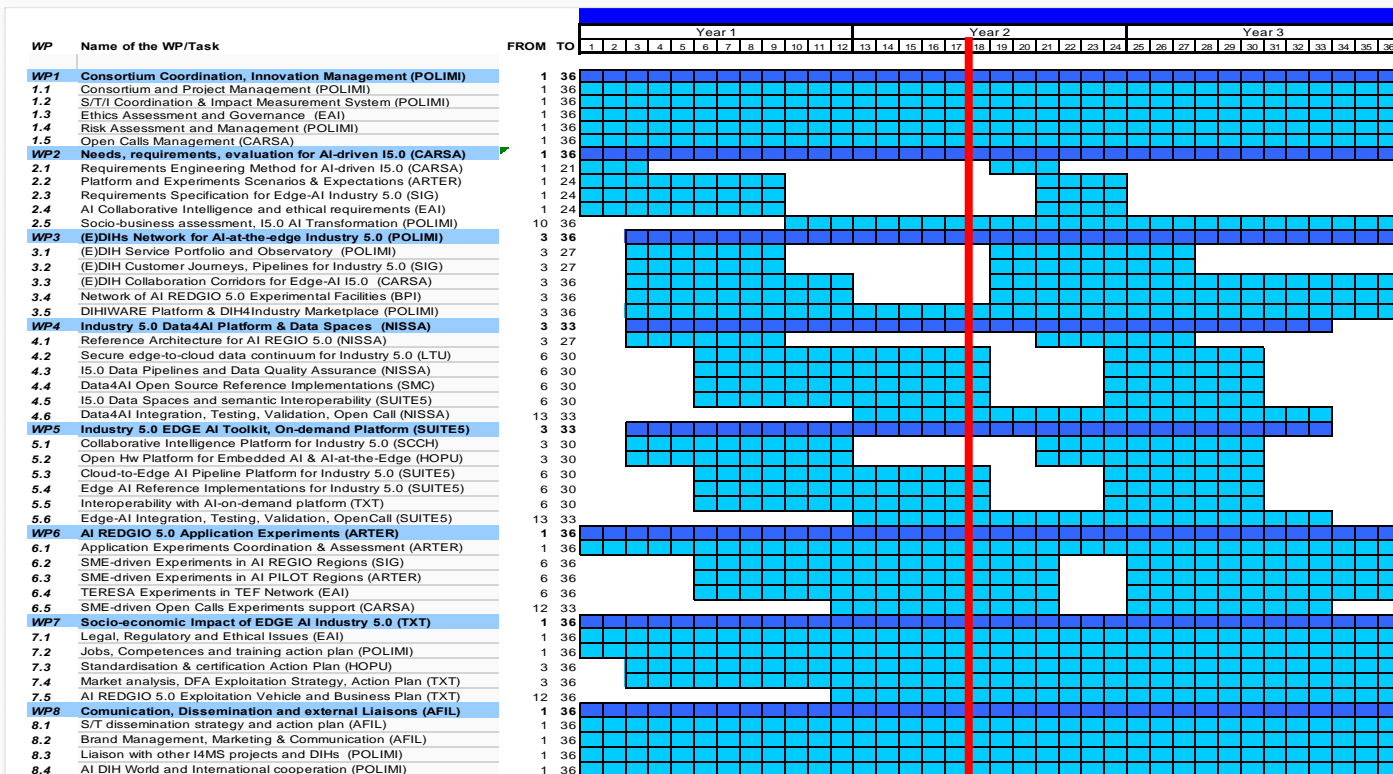
 Serbia

 Hungary

 Romania

 Czechia

 Cyprus



01 The Context

HORIZON-CL4-2022-TWIN-TRANSITION-01-06: ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (Made in Europe Partnership) (IA)

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of between EUR 4.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 30.00 million.
<i>Type of Action</i>	Innovation Actions
<i>Technology Readiness Level</i>	Activities are expected to start at TRL 5 and achieve TRL 7 by the end of the project – see General Annex B.
<i>Procedure</i>	<p>The procedure is described in General Annex F. The following exceptions apply:</p> <p>To ensure a balanced portfolio covering all technology areas, grants will be awarded to applications not only in order of ranking but also to at least one project per technology area, provided that the applications attain all thresholds.</p>
<i>Legal and financial set-up of the Grant Agreements</i>	<p>The rules are described in General Annex G. The following exceptions apply:</p> <p>Beneficiaries may provide financial support to third parties. The maximum amount to be granted to each third party is EUR 60 000.</p> <p>The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.</p>



Artificial Intelligence in Manufacturing for Sustainable Applications at SMEs.

The AIRISE project will support European SMEs in the uptake of Artificial Intelligence applied to manufacturing, with a specific focus on the use of AI-enabled applications at the edge.



White-label shop for digital intelligent assistance and human-AI collaboration in manufacturing.

WASABI aims at providing SMEs with the tools and knowledge to improve workers capacities and performance, providing advanced user interfaces for continuous augmented hybrid-decision-making.



Circular and Dynamic Manufacturing Supply Chain Orchestration and Optimisation.

CIRCULOOS aims to deliver circular manufacturing tools which orchestrate and continuously optimise the supply-chain end-to-end and comprehensively integrate planning and execution.

The AI REGIO H2020 Innovation Action

AI REGIO - Regions and DIHs alliance for AI-driven digital transformation of European Manufacturing SMEs

GRANT AGREEMENT: 952003 (Innovation Action)

START DATE: 1 OCTOBER 2020

DURATION: 36 MONTHS

TOTAL FUNDING: 8 Millions EUR

CONSORTIUM: 36 FULL BENEFICIARIES

COORDINATOR: Politecnico di Milano (Sergio Gusmeroli)



REGISTER NOW!

AI REGIO FINAL EVENT

September 27, 2023
Blue Point Venue, Brussels



AI REGIO

FREE OF CHARGE



VANGUARD INITIATIVE
New growth through smart specialisation

SUMMIT SYMPOSIUM
**Regional Innovation and Manufacturing Industry:
the role of AI in European SMEs Digital Transformation**
Efficient and Sustainable Manufacturing Pilot

September 25th, 2023
Lombardy Delegation Office
Place du Champ de Mars, 2 -1050 – Brussels.
[REGISTRATION IS MANDATORY](#)

The AI REGIO four KEYWORDS

REGIO DIH AI SME

8

REGIONAL Authorities



VANGUARD INITIATIVE

NEW GROWTH THROUGH SMART SPECIALISATION

13

VANGUARD Regions and



4+19

TECHNOLOGY Platform



The AI Data Robotics Association



17+3+18

DIH and SME EXPERIMENTS + FSTP



36

FULL BENEFICIARIES from 11 countries

8

WORK PACKAGES beyond State-of-the-art



SERVICE PORTFOLIO for (E)DIH in Manufacturing



D

Data

Data ecosystem building inside and among companies and data spaces

R

Remotization

Provide services that can be managed remotely

B

Business

Business planning and access to financial pools

E

Ecosystem

Structuring relations, communication, community building

S

Skills

Skills for ecosystem building, technology and business enhancement

T

Technology

Hardware/Software solutions



The 6Ps DT model at a glance



TECHNICAL
PILLARS

PRODUCTS



Digital Smart Products and
Services

PROCESS



Digital Factories and
Production Processes

PLATFORM



Digital Manufacturing
Platforms



SOCIO-BUSINESS
PILLARS

PEOPLE



Digital Skills and
Professions

PARTNERSHIP



Digital Ecosystems and
Innovation Hubs

PERFORMANCE



Digital Business
Models

Each Pillar is made of 6 dimensions of analysis
with 5 levels of maturity (from 1-INITIAL to 5-EXPLOITED)



AI REGIO

02 Objectives & Achievements

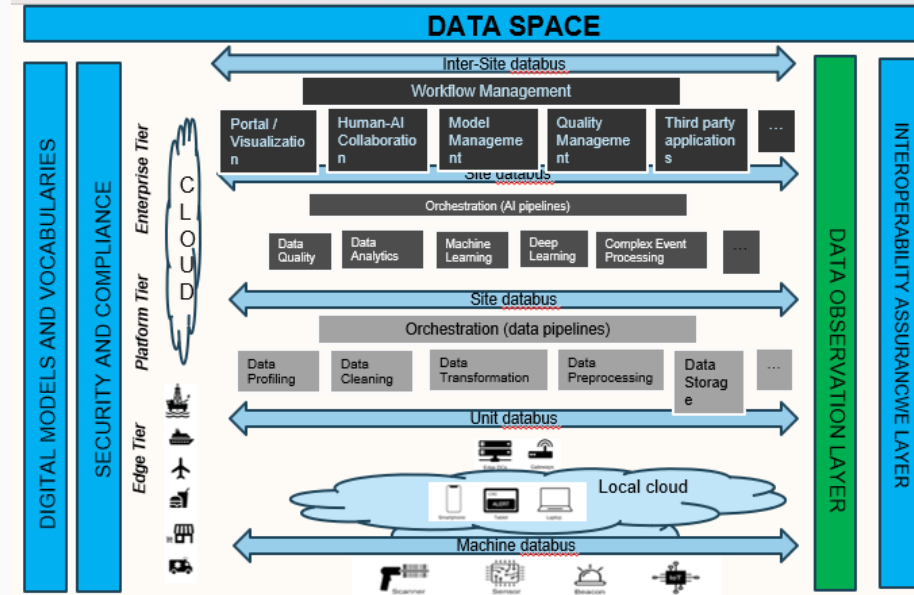
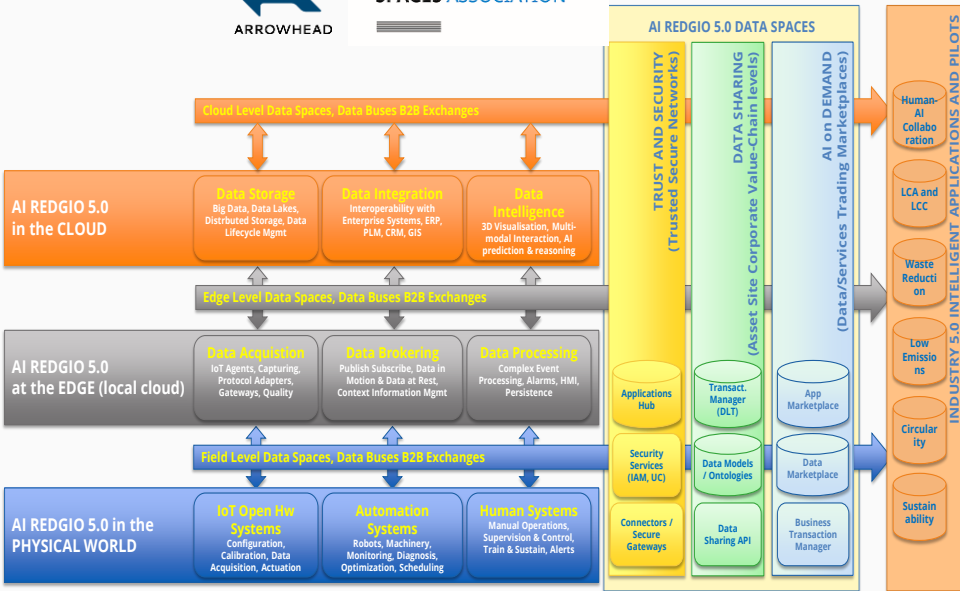
**Regions and
(E)DIHs alliance for
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adoption by
European Industry
5.0 Manufacturing
SMEs**

1

CONCEPTUAL FRAMEWORK AND REFERENCE ARCHITECTURE FOR AI-AT-THE-EDGE INDUSTRY 5.0 APPLICATIONS AND EXPERIMENTATIONS



INTERNATIONAL DATA SPACES ASSOCIATION



2

SECURE AND TRUSTWORTHY EDGE-TO-CLOUD CONTINUUM DATA AND COMPUTATIONAL SPACE FOR HIGHLY DISTRIBUTED AI APPLICATIONS



EUCloudEdgeIoT.eu

About ▾ Members ▾ Task Forces ▾ Pol



Building the European Cloud, Edge & IoT Continuum for business and research



AGENDA:

- 14:00 Setting the scene: Innovations in Manufacturing Industry
 - Welcome and opening remarks, *Maria Giuffrida*, Senior Researcher, Trust-IT
 - UNLOCK-CE's overview & Cloud-Edge-IoT market trends in manufacturing, *Galboa Pourabdolkhan*, Consulting Manager, European Government Consulting, DC
 - Service requirements for leveraging the data-driven value streams in manufacturing sector, *Marieke Rohde*, Scientific Consultant for Computer Science and Artificial Intelligence, VDI/VDE Innovation + Technik
- 14:25 Presentation of the Cloud-Edge-IoT Manufacturing use cases
 - AerOs use case, *Eneko Rada*, R&D Project Manager, Innovaia
 - FluidOS use case, *Guillem Gari*, R&D Engineer, Robotnik Automation SL
- 14:55 Panel discussion: Empowering Cloud-Edge-IoT in Manufacturing
 - Guillem Gari, R&D Engineer, Robotnik Automation SL
 - Ignacio Lacalle, Researcher, Universitat Politècnica de València
 - Eneko Rada, R&D Project Manager, Innovaia
 - Clara Pezuela, VP Funded Programs, Fiware
 - Maria Rossetti, MADE Competence Center
 - Alissa Zaccorria, EU Projects Manager, Intellimech
- 15:20 Wrap-up and closure



EUCloudEdgeIoT.eu

Cloud-Edge-IoT Innovations in Manufacturing: Unveiling Market Insights and Use Cases

In collaboration with M4E05 Projects

Save the date
10th July 2023 14:00 - 15:30 CEST

Supported by the European Union



EUROPEAN BIG DATA VALUE

27 October, 11:30 - 12:30

Accelerating the Adoption of Manufacturing Use-Cases through Computing Continuum and Data Spaces

abovf.eu #EEDV23

INCODS CEJ AI REDGIO 5.0

3

INTEROPERABILITY BY DESIGN WITH THE PAN-EU AI-ON-DEMAND PLATFORM AND ITS ECOSYSTEM OF H2020 & HEP INNOVATION ACTIONS

Strengthening Digital Innovation Hubs with the European AI-on-demand platform: Recommendations White Paper

What precisely will be the nature of the relationship and interactions between the pan-European on-demand platform and the regional (E)DIHs? What value can they offer one another? And how will they work together to serve the interests of the respective and sometimes overlapping stakeholders?

(E)DIHs joining forces to harness the benefits of AI



MARIA ROCA
DIHs Lead
@FundingBox

SERGIO GUSMEROLI
DIHAI Project Coordinator
@ Politecnico di Milano

SUSANNE KUEHRER
Project Lead
@ EIT Digital

MARIA ROSSETTI
Programme Manager
@ MADE – CC Industry 4.0

Powered by 

AIoD, (E)DIHs and TEFs in the AI Ecosystem of Excellence.
Open calls and SMEs experiments in ICT49 cluster



[Sergio Gusmeroli] [PCLIM DIHAI]

[Angelika Karkaleksi] [Demokritos AICapeximco]

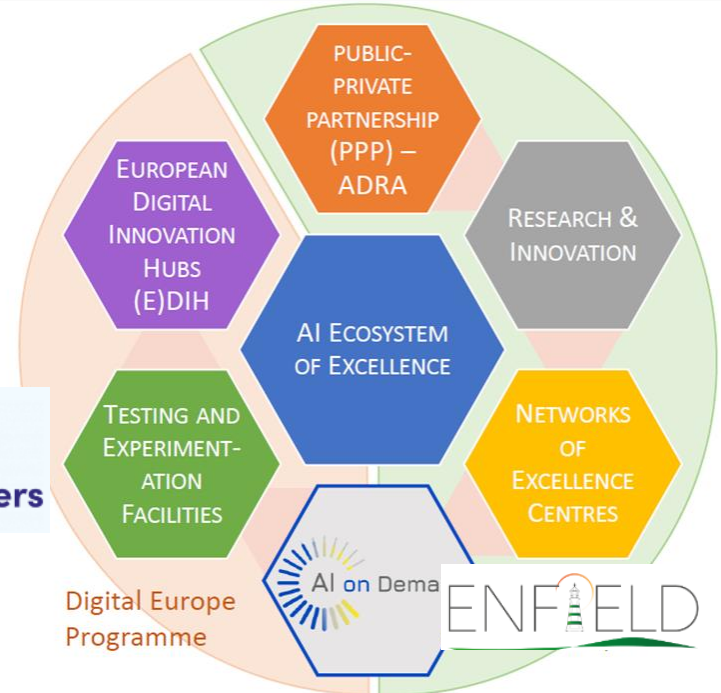
[Philipp Fournard] [BLUE SIGHT]

[Maria Rossetti] [MADE Comp Center]

[Nassos Alexandridis] [OMIKRON]

[Juzsika Sober] [FUNDINGBOX]

Powered by 



4

SUPPORTING THE EUROPEAN WAY TO AI FOR MANUFACTURING BY GENUINE EU OPEN SOURCE FRAMEWORKS, IMPLEMENTING EU VALUES AND ETHICAL PRINCIPLES IN TERESA SANDBOXES



«Mini Factory» TERESA

- Switzerland, connection with SUPSI
- **Human-robot collaboration** through different small experiments dedicated to Collaborative Robotics and Human-centred Production Systems, with **different scenarios** where a cobot and humans work together in **various tasks** (assembly, screwdriving) and with varying **degrees** of collaboration (separated and independent, sequential, synchronous, etc.)



«BIC – Factory of the Future Experience Center» TERESA

- **The Netherlands**, connection with BI
- Fast, flexible and faultless **assembly of different products**, with multiple experiments such as operator support system in a manual assembly workplace and handling machine data, production processes and information exchange along the chain



«SMILE@Lab» TERESA

- Italy, connection with Intellimech
- **LUISA - nLp** for troubleshooting System interAction: **computer-based troubleshooting system** that, starting from symptoms, determine the causes of the product or process **malfunctioning**. It includes dialogue with the operator (Speech-to-Text & Text-To-Speech Technologies), Automatically find fault component/failure mode, Understand the meaning of operator report Automatically Update questions & probability dataset

-  Well-being, Comfort and Acceptance
-  Inclusion and special categories of workers
-  Safety of the worker
-  Ergonomics and improving working conditions

5

MANAGE AND GOVERN THE TRANSITION FROM REGIONAL DIHS TO A NETWORK OF EDIHS IN AI FOR MANUFACTURING

Speakers



MARIA ROCA
Senior Project Manager | EC evaluation expert @ FundingBox



YOLANDA MORENO
Project Manager @ FundingBox



SERGIO GUSMEROLI
DIH4AI Project Coordinator @ Politecnico di Milano



ANDREA MICHELI
Coordinator @ Alplan4EU







This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No.101015949 No.101017742 No.101028574

DATA SPACE 4.0



European Digital Innovation Hubs Network

Thematic Working Group "Data in Manufacturing"

17th May 2023

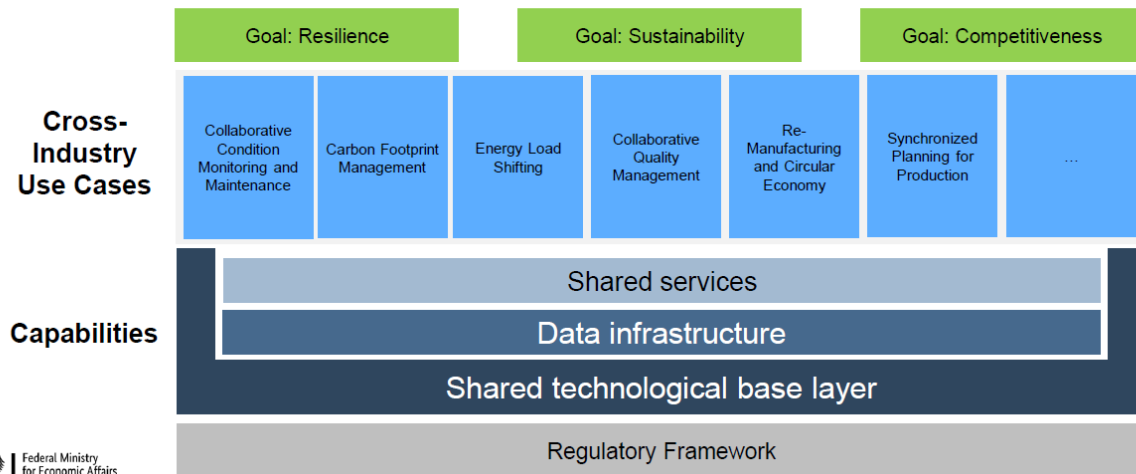
Section 1 – Welcome and Motivation	
<ul style="list-style-type: none"> Present the motivation behind the creation of a common Thematic Working Group (TWG) to support the needs of the EDIHs network in the area of Digital transformation, Data & Manufacturing 	
10:00 – 10:10	Welcome (Oscar Lazaro, Matthias Kuom)
10:10 – 10:20	Digital Europe Context (Matthias Kuom)
10:20 – 10:40	TWG Context & Initial Mission (Oscar Lazaro,
Section 2 – EDIHs representatives' presentation	
<ul style="list-style-type: none"> Tour de Table of EDIHs joining the Thematic Working Group: Hubs Moderator: Maria Rossetti 	
10:40-11:00	EDIH pitches – motivation (ALL)
Section 3 – Data Space 4.0 presentation	
<ul style="list-style-type: none"> Introduction to Data Space Support Centre (DSSC) & Data Space 4.0 preparatory action 	
11:00 – 11:15	Designing and deploying global data value networks for manufacturing (Oscar Lazaro)
Section 4 – TWG operational procedures	
<ul style="list-style-type: none"> Initial vision for the joint activities of the TWG to be carried out, outcomes and how they will be delivered, tasks management and contacts 	
11:15 – 11:30	TWG collaboration and workplan co-creation process (Maria Rossetti)
Section 5 – Open discussion	
<ul style="list-style-type: none"> Participants insights, contributions and future outlook to shape the TWG 	
11:30 – 12:00	Priorities & first opportunities for collaboration (ALL)

6

TEST BEFORE INVEST EXPERIMENTS IN AI DIDACTIC FACTORIES AND TEF

Manufacturing-X Architecture

Manufacturing-X aims to implement important cross-industrial use cases on a common framework.



Objectives

7

VALIDATION AND EVALUATION IN SME-DRIVEN AI FOR **MANUFACTURING USE CASES**

1

REAL TIME MONITORING FOR CONTROL & DETECTION OF PRODUCTION SCAMM

2

AI AND DIGITAL TWINS FOR AGILITY IN MOULD MAKING PERNOUD

3

AI-BASED AUTONOMOUS MACHINE FOR SAFER FASTER AGRICULTURE GPALMEC

4

PREDICTIVE MAINTENANCE AND ZERO-DEFECT PRODUCTION OF MOULDS POLYCOM

5

AI-ENABLED DIGITAL TWINS FOR VIRTUAL COMMISSIONING QUESCREM

6

INTELLIGENT CONTEXTUALISED VISUAL SYSTEM FOR ERROR REDUCTION CAP

7

QUALITY ASSURANCE OF CLOTHING PRODUCTION KATTY FASHION

OPEN CALL #1

The first Open Call is launched at **December 2023** to support 10 SME-driven experiments. The call will be open for 3 months, while experiments should be completed in 8 months.

[Click here for more](#)

Site

- Fully automatic transfer lines for sheet metal working automation
- **Working stations (steps): 5+1**
- **Cycle time: 7 seconds**
- Automatic front dies changeover system
- **Dies** are designed and built in-house, starting from specific customer drawings

Motivation

- Periodic adjustments (e.g. lubrication) are commonly required but are performed only if the operators identify quality defects in the manufactured parts;
- If defects are highlighted, **operators act only on their experience**;
- Quality checks are performed on a **random basis: issues on the lines are identified late, leading to wasted production**;
- Final quality of the product is linked to process parameters only through empirical evidence, not by means of a quantitative analysis.

Objectives

- Strategically reposition the company in the post-Covid world market relying on digital technologies;
- Implement optimization and predictive tools for reconfigurable pressing lines exploiting AI algorithms to assess the **correlation between process parameters and final product quality**;
- Implement a **Knowledge Management System** to digitalize operators' technical knowledge, enabling the capitalization of historical data to solve production issues.



Industry 5.0 in Cheese Cream manufacturing

Concept

The idea is to use process **data** stored in Quescrem's systems and obtained from the production lines in order to **monitor** the **production process** and **prescribe** the **optimal parameters** that **minimize waste** (mainly permeate) and **increase quality** (e.g. homogenize cream cheese texture) as well as **efficiency**



Motivation

To **improve the quality** of the end-product (cheese cream) and **reduce waste** to improve **sustainability**

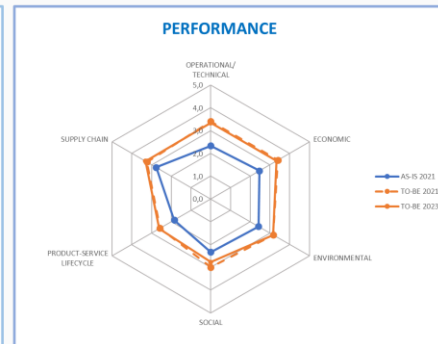
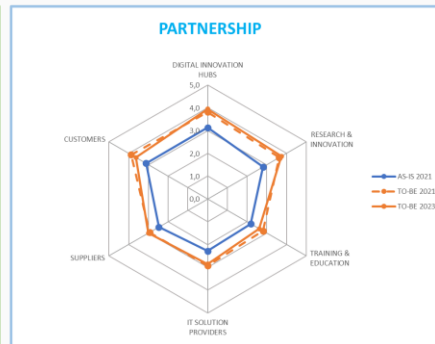
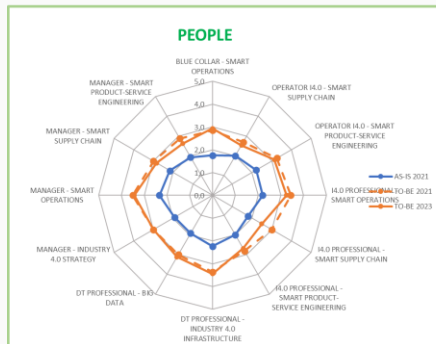
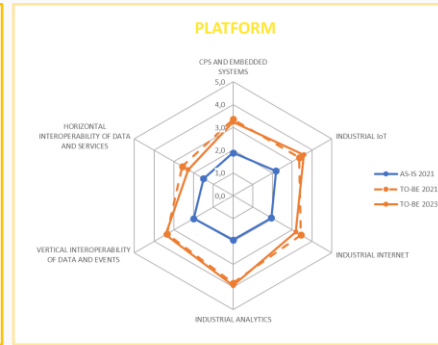
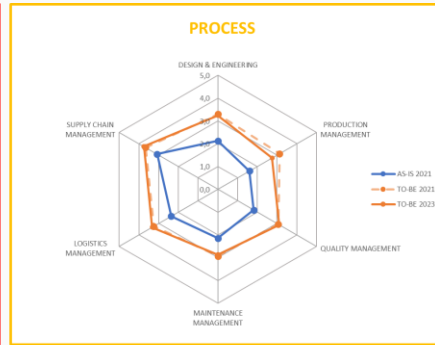
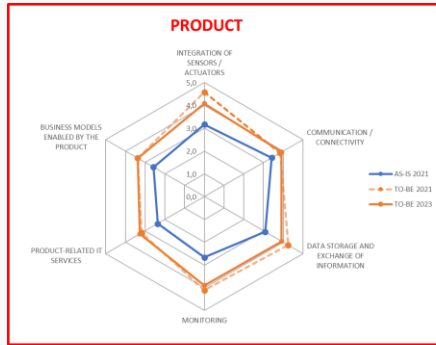
Site

Quescrem factory, located in **Galicia** (northwest Spain)



8

AI-DRIVEN 15.0 DIGITAL TRANSFORMATION METHODS AND TOOLS, MATURITY ASSESSMENT, 6Ps PATHWAY SPECIFICATION AND AI SKILLS FOR 15.0 DEVELOPMENT PROGRAM



9

SUSTAINABILITY, ECOSYSTEM DEVELOPMENT AND REPLICATION TO SMES



Alliance for IoT
and Edge Computing
Innovation



PORTABILITY

OBJECTIVE:
To support the replicability and the scalability of R&I project platforms to other industrial domains or larger scale

The 7° P: Portability



PRODUCT

How much have the enablers of Replicability and Scalability been taken into account in the design of your Smart Products (if any) ?



PROCESS

How much have Replicability and Scalability of the processes been taken into account in the design of your pilot ? (Processes: Production, Quality Control, Maintaining, Logistics...)



PLATFORM

How much have the enablers of Replicability and Scalability been taken into account in the design of the digital platform supporting your pilot ?



PEOPLE

How much have the enablers of Replicability and Scalability in the User dimension been taken into account when designing your pilot ?



PARTNERSHIP

To what extent the Replicability and Scalability features of the pilot will benefit external stakeholders and partners who took part to the project (such as DIH, R&D Centres, Universities, IT suppliers, commercial partners) ?



PERFORMANCE

In addition to the KPIs developed for the pilot, have you set up new KPIs, foreseeing its replication or scaling-up?

THANKS

Does anyone have any questions?



gabriella.monteleone@polimi.it
sergio.gusmeroli@polimi.it