AI in manufacturing: turning opportunity into strength for EU
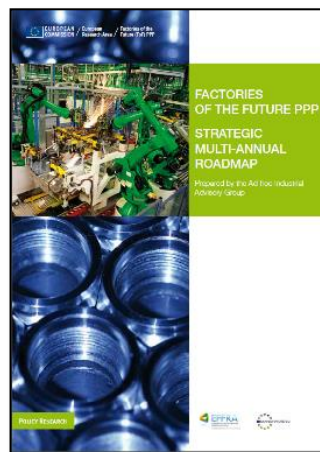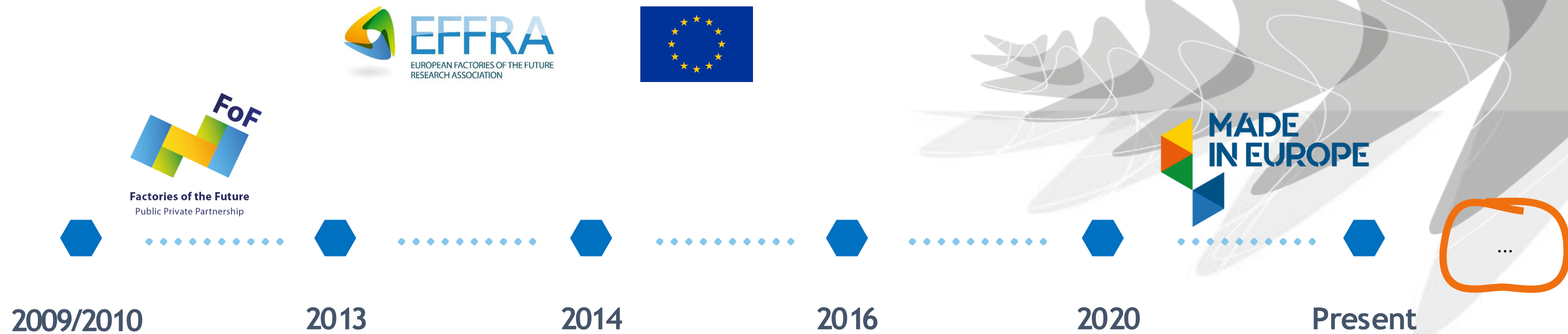
Chris Decubber, EFFRA

AIM-NET Networking Event

24 May 2023

Made in Europe Partnership story line

2009/2010 **2013** **2014** **2016** **2020** **Present**

FP7 FOF 2020 Factories 4.0 and Beyond

Call 2021

CL4-2021-TT-01-01: AI enhanced robotics system for smart manufacturing (IA)

CL4-2021-TT-01-02: Zero-defect manufacturing towards zero-waste (IA)

CL4-2021-TT-01-03: Laser-based technologies for green manufacturing (RIA)

CL4-2021-TT-01-05: Manufacturing technologies for bio-based materials (RIA)

CL4-2021-TT-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA)

CL4-2021-TT-01-08: Data-driven Distributed Industrial Environments (IA)

Call 2022

CL4-2022-TT-01-01: Rapid reconfigurable production process chains (IA)

CL4-2022-TT-01-02: Products with complex functional surfaces (RIA)

CL4-2022-TT-01-03: Excellence in distributed control and modular manufacturing (RIA)

CL4-2022-TT-01-04: Intelligent work piece handling in a full production line (RIA)

CL4-2022-TT-01-06: ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (IA)

CL4-2022-TT-01-07: Digital tools to support the engineering of a Circular Economy (RIA)

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Factories of the Future Partnership - Made in Europe Partnership

Mapped projects (376) **Mapped results (3)** Key content

<

FP7 - Factories of the Future →
(150) **(1)**

FP7-FoF-2010 →
(25)

FP7-FoF-2011 →
(36)

FP7-FoF-2012 →
(37)

FP7-FoF-2013 →
(52)

H2020 - Factories of the Future →
(177) **(1)**

H2020-FoF-2014 →
(29)

H2020-FoF-2015 →
(28)

H2020-FOF-2016 →
(37)

H2020-FOF-2017 →
(23)

H2020-FoF-2018 →
(18)

H2020-FoF-2019 →
(20)

H2020-FoF-2020 →
(29)

Made in Europe (MiE) →
(49) **(1)**

HORIZON-CL4-2021-TWIN-TRANSITION-01 →
(26)

HORIZON-CL4-2022-TWIN-TRANSITION-01 →
(23)

HORIZON-CL4-2023-TWIN-TRANSITION-01 →

HORIZON-CL4-2024-TWIN-TRANSITION-01 →

MiE SRIA R&I Priorities

🔗 Mapped projects (49)

Portfolio analysis – allocation of MiE call topics to SRIA R&I Objectives

‹

Specific Objective 1: Excellent, responsive and smart factories & supply chains →

🔗 (36)

> **R&I Objective 1.1: Data 'highways' and data spaces in support of smart factories in dynamic value networks** →
>
> 🔗 (3)

> **R&I Objective 1.2: Scalable, reconfigurable and flexible first-time right manufacturing** →
>
> 🔗 (14)

> **R&I Objective 1.3: Zero-defect and zero-downtime high-precision manufacturing, including predictive quality and non-destructive inspection methods** →
>
> 🔗 (10)

> **R&I Objective 1.4: Artificial intelligence for productive, excellent, robust and agile manufacturing chains - Predictive manufacturing capabilities & logistics of the future** →
>
> 🔗 (7)

> **R&I Objective 1.5: Advanced Manufacturing processes for smart and complex products** →
>
> 🔗 (8)

> **R&I Objective 1.6: Manufacturing for miniaturisation and functional Integration** →
>
> 🔗 (9)

Specific Objective 2: Circular products & Climate-neutral manufacturing →

🔗 (20)

> **R&I Objective 2.1: Ultra-efficient, low energy and carbon-neutral manufacturing** →
>
> 🔗 (6)

> **R&I Objective 2.2: De-manufacturing, re-manufacturing and recycling technologies for circular economy** →
>
> 🔗 (8)

> **R&I Objective 2.3: Manufacturing with new and substitute materials** →
>
> 🔗 (6)

> **R&I Objective 2.4: Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks** →
>
> 🔗 (5)

> **R&I Objective 2.5: Digital platforms and data management for circular product and production-systems life-cycles** →
>
> 🔗 (8)

Specific Objective 3: New integrated business, product-service and production approaches; new use models →

🔗 (8)

> **R&I Objective 3.1: Collaborative product-service engineering for costumer driven manufacturing value networks** →
>
> 🔗 (5)

> **R&I Objective 3.2: Manufacturing processes and approaches near to customers or consumers (including urban manufacturing)** →
>
> 🔗 (8)

> **R&I Objective 3.3: Transparency, trust and data & IP integrity, open systems and cyber security along the product and manufacturing life-cycle** →
>
> 🔗 (8)

Specific Objective 4: Human-centered and human-driven manufacturing innovation →

🔗 (14)

> **R&I Objective 4.1: Digital platforms and engineering tools supporting creativity and productivity of manufacturing development** →
>
> 🔗 (5)

> **R&I Objective 4.2: Improving human device interaction using augmented and virtual reality and digital twins** →

> **R&I Objective 4.3: Human & technology complementarity and excellence in manufacturing** →
>
> 🔗 (7)

> **R&I Objective 4.4: Manufacturing Innovation and change management** →

> **R&I Objective 4.5: Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs** →
>
> 🔗 (2)

EU-Japan.AI | Advancing Collaboration and Exchange of Knowledge Between the EU and Japan for AI-Driven Innovation in Manufacturing

01-01-2021 - 31-10-2022

🌱: 2

Show more information ▾

XMANAI | Explainable Manufacturing Artificial Intelligence

01-11-2020 - 30-04-2024

🌱: 9

Show more information ▾

ASSISTANT | leArning and robuSt deciSIon SupporT systems for agile mANufacTuring environments

01-11-2020 - 31-10-2023

🌱: 24

Show more information ▾

knowlEdge | Towards AI powered manufacturing services, processes, and products in an edge-to-cloud-knowlEdge continuum for humans [in-the-loop]

01-01-2021 - 31-12-2023

🌱: 29

Show more information ▾

TEAMING.AI | Human-AI Teaming Platform for Maintaining and Evolving AI Systems in Manufacturing

01-01-2021 - 31-12-2023

🌱: 17

Show more information ▾

STAR | Safe and Trusted Human Centric Artificial Intelligence in Future Manufacturing Lines

01-01-2021 - 31-12-2023

🌱: 27

Show more information ▾

AI-PROFICIENT | Artificial Intelligence for improved PROduction efFICIEncy, quality and maiNTenance

01-11-2020 - 31-10-2023

🌱: 11

Show more information ▾

MAS4AI | Multi-Agent Systems for Pervasive Artificial Intelligence for assisting Humans in Modular Production Environments

01-10-2020 - 30-09-2023

🌱: 17 | 👁: 2

Show more information ▾

COALA | COgnitive Assisted agile manufacturing for a LAbor force supported by trustworthy Artificial Intelligence

01-10-2020 - 30-09-2023

🌱: 37 | 👁: 4

Show more information ▾

ICT-38-2020 Artificial intelligence for manufacturing

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AI-PRISM | AI Powered human-centred Robot Interactions for Smart Manufacturing

01-10-2022 - 30-09-2025

Show more information ▾

Fluently | Fluently - the essence of human-robot interaction

FLUENTLY

01-06-2022 - 31-05-2025

Show more information ▾

CONVERGING | Social industrial collaborative environments integrating AI, Big Data and Robotics for smart manufacturing

CONVERGING

01-09-2022 - 31-08-2026

👁: 4

Show more information ▾

COGNIMAN | COGNitive Industries for smart MANufacturing (COGNIMAN)

01-01-2023 - 31-12-2026

Show more information ▾

HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing (IA) (4 projects)

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HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) (6 projects)

Toggle all information ▲

OPENZDM | Open Platform for Realising Zero Defects in Cyber-Physical Manufacturing

01-06-2022 - 30-11-2025

👁: 5

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) ✓ ✏️

🔗 EV battery production - APTIV Result description The vision systems will embody **AI**-based algorithms for defect detection and process characterization, which running on an edge device, equipped with a powerful GPU.

Platform-ZERO | Customizable AI-based in-line process monitoring platform for achieving zero-defect manufacturing in the PV industry

01-01-2023 - 31-12-2026

👁: 4

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) ✓ ✏️

Title Customizable **AI**-based in-line process monitoring platform for achieving zero-defect manufacturing in the PV industry
Description This includes four research centers and one university with a strong knowledge in the development of spectroscopic methodologies (IREC, HZB), imaging (AIT), device optoelectronic assessment (UPO), **AI** analysis

ENGINE | Zero-defect manufacturing for green transition in Europe

01-06-2022 - 31-05-2025

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) ✓ ✏️

Organisation AEONX **AI**

Examples of relevant past/ongoing projects

Toggle all information ▼

Circular TwAIn | AI Platform for Integrated Sustainable and Circular Manufacturing

01-07-2022 - 30-06-2025

👁: 3

Show more information ▼

s-X-AIPI | self-X Artificial Intelligence for European Process Industry digital transformation

01-05-2022 - 30-04-2025

👁: 1

Show more information ▼

AIDEAS | AI Driven industrial Equipment product life cycle boosting Agility, Sustainability and resilience

01-10-2022 - 30-09-2025

Show more information ▼

HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA)

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Examples of relevant past/ongoing projects

Toggle all information ▼

RE4DY | European Data as a PRoduct Value Ecosystems for Resilient Factory 4.0 Product and ProDuction ContinuitY and Sustainability

01-06-2022 - 31-05-2025

Show more information ▼

5G-TIMBER | Secure 5G-Enabled Twin Transition for Europe's TIMBER Industry Sector

01-06-2022 - 31-05-2025

Show more information ▼

Zero-SWARM | ZERO-ENABLING SMART NETWORKED CONTROL FRAMEWORK FOR AGILE CYBER PHYSICAL PRODUCTION SYSTEMS OF SYSTEMS

01-06-2022 - 30-11-2024

Show more information ▼

HORIZON-CL4-2021-TWIN-TRANSITION-01-08: Data-driven Distributed Industrial Environments (IA)

Examples

Toggle all information ▲

RE4DY | European Data as a PRoduct Value Ecosystems for Resilient Factory 4.0 Product and ProDuction ContinuitY and Sustainability

01-06-2022 - 31-05-2025

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-08: Data-driven Distributed Industrial Environments (IA)

Description core concept to facilitate the implementation of digital continuity across digital threads, data spaces, digital twin workflows and **AI**/ML/Data pipelines.

...

Toggle all information ▼

RE4DY | European Ecosystems for ProDuction Cont...

01-06-2022 - 31-05...

Show more information ▼

Zero-SWARM | Z... CONTROL FRAM... PRODUCTION SY...

01-06-2022 - 30-11...

Show more information ▼

Toggle all information ▲

ONE4ALL | Agile and modular cyber-physical technologies supported by data-driven digital tools to reinforce manufacturing resilience
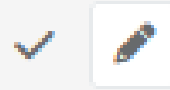
01-01-2023 - 31-12-2026

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing (RIA) ✓ ✎

Description In addition, the physical modules and the processes addressed by those will be replicated digitally through data-driven digital twins and controlled by a self-learning **AI**-based distributed and multidisciplinary

MARS | Manufacturing Architecture for Resilience and Sustainability

01-01-2023 - 31-12-2026

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing (RIA) ✓ ✎

Description The MARS project aims to remedy to both issues by enabling SMEs to access advanced European breakthrough innovations in the field of **AI**-driven digital manufacturing processes and enter into process chains

HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing (RIA) (4 projects)

ALICIA | Assembly Lines In CIrculAtion – smart digital tools for the sustainable, human-centric and resilient use of production resources

01-01-2023 - 31-12-2025

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy (RIA) ✓ ✏

Description The innovations behind ALICIA include a machine-readable ontology for mapping factory owner requirements, an **AI**-matchmaking engine for combining incumbent factory assets with second-hand assets coming

DiCiM | Digitalised Value Management for Unlocking the potential of the Circular Manufacturing Systems with integrated digital solutions

01-01-2023 - 31-12-2026

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy (RIA) ✓ ✏

Description to bring about the development of the full demonstrator of DiCiM, a set of integrated digital solutions that makes use of Internet of Things (IoT), Machine Learning (ML) based Artificial Intelligence (**AI**

DaCapo | Digital assets and tools for Circular value chains and manufacturing products

01-01-2023 - 30-06-2026

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy (RIA) ✓ ✏

Description These tools and services, focused on the creation of new digital assets, **AI**-based systems and the application of process and product Digital Twins, will greatly improve sustainability, efficiency, and

HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy (RIA) (5 projects)

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AI

Label ▾   Sort by

× Factories of the Future Partnership - Made in Europe Partnership

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MARS | Manufacturing Architecture for Resilience and Sustainability

01-01-2023 - 31-12-2026

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HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing (RIA)

Description The MARS project aims to remedy to both issues by enabling SMEs to access advanced European breakthrough innovations in the field of AI-driven digital manufacturing processes and enter into process chains

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COGNIMAN | COGNitive Industries for smart MANufacturing (COGNIMAN)

01-01-2023 - 31-12-2026

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing (IA)

Platform-ZERO | Customizable AI-based in-line process monitoring platform for achieving zero-defect manufacturing in the PV industry

01-01-2023 - 31-12-2026

👁: 4

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA)

Title Customizable AI-based in-line process monitoring platform for achieving zero-defect manufacturing in the PV industry

Description This includes four research centers and one university with a strong knowledge in the development of spectroscopic methodologies (IREC, HZB), imaging (AIT), device optoelectronic assessment (UPO), AI analysis

---

DiCiM | Digitalised Value Management for Unlocking the potential of the Circular Manufacturing Systems with integrated digital solutions

01-01-2023 - 31-12-2026

Show more information ▲

Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy (RIA)

Description to bring about the development of the full demonstrator of DiCiM, a set of integrated digital solutions that makes use of Internet of Things (IoT), Machine Learning (ML) based Artificial Intelligence (AI

ONE4ALL | Agile and modular cyber-physical technologies supported by data-driven digital tools to reinforce manufacturing resilience

01-01-2023 - 31-12-2026

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2022-TWIN-TRANSITION-01

HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing (RIA)

Description In addition, the physical modules and the processes addressed by those will be replicated digitally through data-driven digital twins and controlled by a self-learning AI-based distributed and multidisciplinary

---

CONVERGING | Social industrial collaborative environments integrating AI, Big Data and Robotics for smart manufacturing

01-09-2022 - 31-08-2026

👁: 4

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Factories of the Future Partnership - Made in Europe Partnership

Made in Europe (MiE)

HORIZON-CL4-2021-TWIN-TRANSITION-01

HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing (IA)

Title Social industrial collaborative environments integrating AI, Big Data and Robotics for smart manufacturing

Description Reason: Analyze the production system status and autonomously

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Call 2023

CL4-2023-TT-01-02: High-precision OR complex product manufacturing – potentially including the use of photonics (included reference to AI)

CL4-2023-TT-01-04: Factory-level and value chain approaches for remanufacturing

CL4-2023-TT-01-07: Achieving resiliency in value networks through modelling and Manufacturing as a Service

CL4-2023-TT-01-08: Foresight and technology transfer for Manufacturing As A Service

Call 2024

CL4-2024-TT-01-01: Bio-intelligent manufacturing industries

CL4-2024-TT-01-03: Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand

CL4-2024-TT-01-05: Technologies/solutions to support circularity for manufacturing

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CONNECTED FACTORIES

Pathways to digitalisation of manufacturing

🏠 HOME   ABOUT ⌄   CROSS-CUTTING FACTORS ⌄   PATHWAYS ⌄   SHARE CASES ⌄   MORE INFO ⌄

- PATHWAYS TO DIGITALISATION OF MANUFACTURING
- AUTONOMOUS & SMART FACTORIES
- HYPERCONNECTED FACTORIES
- COLLABORATIVE PRODUCT-SERVICE FACTORIES
- CYBERSECURITY PATHWAY
- DATA SPACE PATHWAY
- CIRCULAR ECONOMY PATHWAY
- AI FOR MANUFACTURING PATHWAY

Home ▸ AI for Manufacturing pathway

AI for Manufacturing pathway

The AI for Manufacturing pathway aims at developing a conceptual model a[nd] industrial cases in an evolutionary 5-levels framework related to the adopti[on] critical business processes.

Owing to the exceptional variety of AI technologies and of application case[s] to consider industrial cases using some (combination) of the following main six technological enablers:

i. Machine Vision and Robotics, very related to the Smart Autonomous Factory CF1 pathway
ii. Embedded AI in Products (Smart Products), very related to the Collaborative Product-Service CF1 pathway
iii. Machine Learning and Knowledge Discovery, very related to 5V Big Data repositories typical of the Hyperconnected Factories CF1 pathway
iv. AI Forecasting and Prediction, applicable to all CF1 pathways and related to the Foresee cluster of projects
v. AI Diagnosis and Maintenance, applicable to all CF1 pathways and related to the forZDM cluster of projects
vi. Recommendation and Decision Support Systems, applicable again to all CF1 pathways in the presence of Human users and related to the ICT-38 AI4Manufacturing cluster of projects

These enablers are not to be meant as horizontal rows of a matrix, but as inspiration examples on how AI can support manufacturing processes. Regarding the five levels of maturity, we decided to focus on one precise aspect of the adoption of AI in Manufacturing (focus on Smart Autonomous Factories of the Future): the level of autonomy in the Human-AI interaction. The reference model is the Level-0 Level-5 Model of Autonomy of

Artificial Intelligence for Manufacturing Pathway

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Artificial Intelligence for Manufacturing Pathway

1 — Humans in Control

No AI autonomous systems are available for decision making.

Workers, Engineers and Managers are iin full control of any critical business process

2 — AI Assistance

Workers supported by advanced AI apps on top of Industrial IoT Analytics. Complex Event Processing Diagnosis Systems

Engineers supported in generative design and assessment of options. Generative Design, Options Evaluation

SC Managers decision making supported by advanced configurable Personalized AI Interfaces

3 — AI Recommendation

Workers to consider AI enabled decisional knowledge from Plant Digital Twins, Dynamic Simulations.

Engineers get recommendations about best options. Product Digital Twin through the Lifecycle

SC Managers able to generate different Manufacturing as a Service options. SC Digital Twin capacity

4 — Collaborative AI

Workers interacts with machines, train explain sustain. Explainable AI

Engineers create mixed teams with AI systems and 3D Avatars. Human driven Collaborative AI

SC Managers able to collaborative with the value chain. Digital Personas / Twins rooms

5 — AI in Control

Smart Systems. Closed loop control. Embedded AI; AI enhanced robotics

AI-driven virtual decisional rooms. Role-based Human AI Systems

Optimization of value chain. Agent based distributed AI in value chain

Pathway to Energy Efficiency

For DENiM it is about defining the pathway for energy efficiency using digital technologies

01 Limited visibility of Energy Performance — *Awareness*

02 Process Level Energy Performance Monitoring — *Sense*
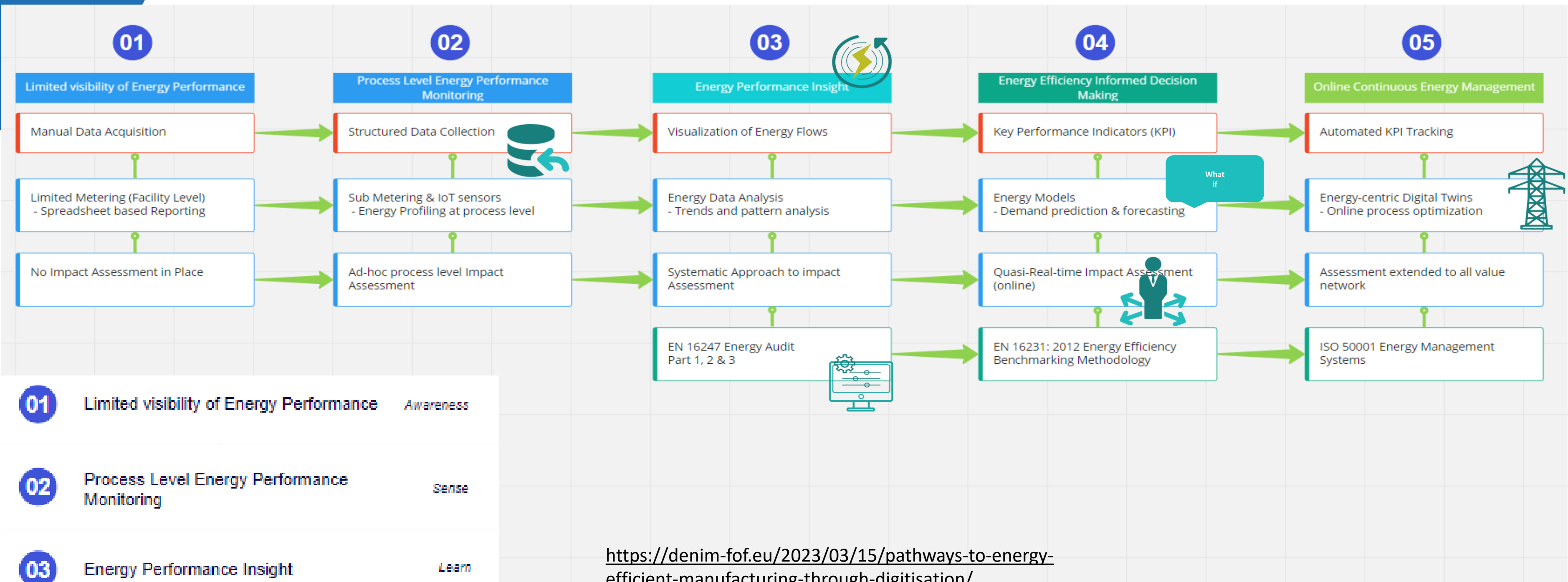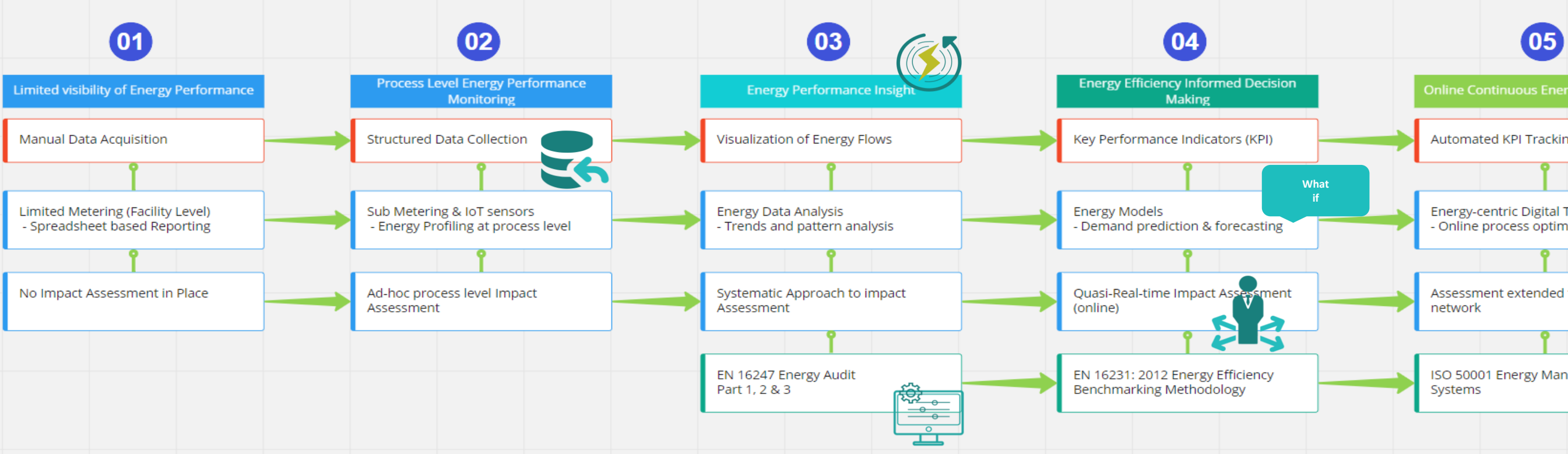
03 Energy Performance Insight — *Learn*

04 Energy Efficiency Informed Decision Making — *Act*

05 Online Continuous Energy Performance Management — *Operate*

EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

01 Limited visibility of Energy Performance	02 Process Level Energy Performance Monitoring	03 Energy Performance Insight	04 Energy Efficiency Informed Decision Making	05 Online Continuous Energy Management
Manual Data Acquisition	Structured Data Collection	Visualization of Energy Flows	Key Performance Indicators (KPI)	Automated KPI Tracking
Limited Metering (Facility Level) - Spreadsheet based Reporting	Sub Metering & IoT sensors - Energy Profiling at process level	Energy Data Analysis - Trends and pattern analysis	Energy Models - Demand prediction & forecasting	Energy-centric Digital Twins - Online process optimization
No Impact Assessment in Place	Ad-hoc process level Impact Assessment	Systematic Approach to impact Assessment	Quasi-Real-time Impact Assessment (online)	Assessment extended to all value network
		EN 16247 Energy Audit Part 1, 2 & 3	EN 16231: 2012 Energy Efficiency Benchmarking Methodology	ISO 50001 Energy Management Systems

What if

01	Limited visibility of Energy Performance	Awareness
02	Process Level Energy Performance Monitoring	Sense
03	Energy Performance Insight	Learn
04	Energy Efficiency Informed Decision Making	Act
05	Online Continuous Energy Performance Management	Operate

https://denim-fof.eu/2023/03/15/pathways-to-energy-efficient-manufacturing-through-digitisation/

For DENiM it is about defining the pathway for energy efficiency using digital technologies

https://denim-fof.eu/2023/03/15/pathways-to-energy-efficient-manufacturing-through-digitisation/

WP 25-27 EFFRA Consultation – Priorities - Made in Europe and inclusive productivity: doing better (creating more added value) with less

- **Excellent productive** and **flexible** Manufacturing **automation** for **open strategic autonomy**
- **Sustainable value network resilience** and competitiveness through robust and flexible production technologies
- Recovering and preserving the European leadership in **strategic and high value-added products**
- **Circular, connected** manufacturing **ecosystems**
- The next level of circular economy through **scalable, highly productive and zero-defect re-manufacturing technologies**
- **Manufacturing with new/ limited raw materials** availability
- Solutions for **energy-efficiency** for realising net-zero discrete manufacturing processes and value chains

- **Quick response service deployment** for **maintaining optimal manufacturing operations** using *trusted AI* and **digital twins**
- **Life-cycle management of manufacturing solutions** and associated services for flexible, **productive and sustainable** manufacturing industry
- **Data spaces and cloud/edge solutions** for **responsive and robust** manufacturing
- **Digitally enabled compliance and integration** of innovative manufacturing solutions
- **Understanding the transformation of the factory work and organisation**
- **Physical and cognitive augmentation of human capabilities** for **inclusive and socially sustainable** manufacturing
- **Digitally enabled upskilling, qualification and job transformation**

- **Bio-intelligent** Manufacturing

MADE IN EUROPE SRIA

MiE General objectives

Manufacturing competitiveness
Leadership & manufacturing excellence, generating new products and new markets

European Green Deal
Circular and climate-neutral manufacturing

An Economy that Works for People and SMEs
Attractive value added manufacturing jobs

A Europe Fit for the Digital Age
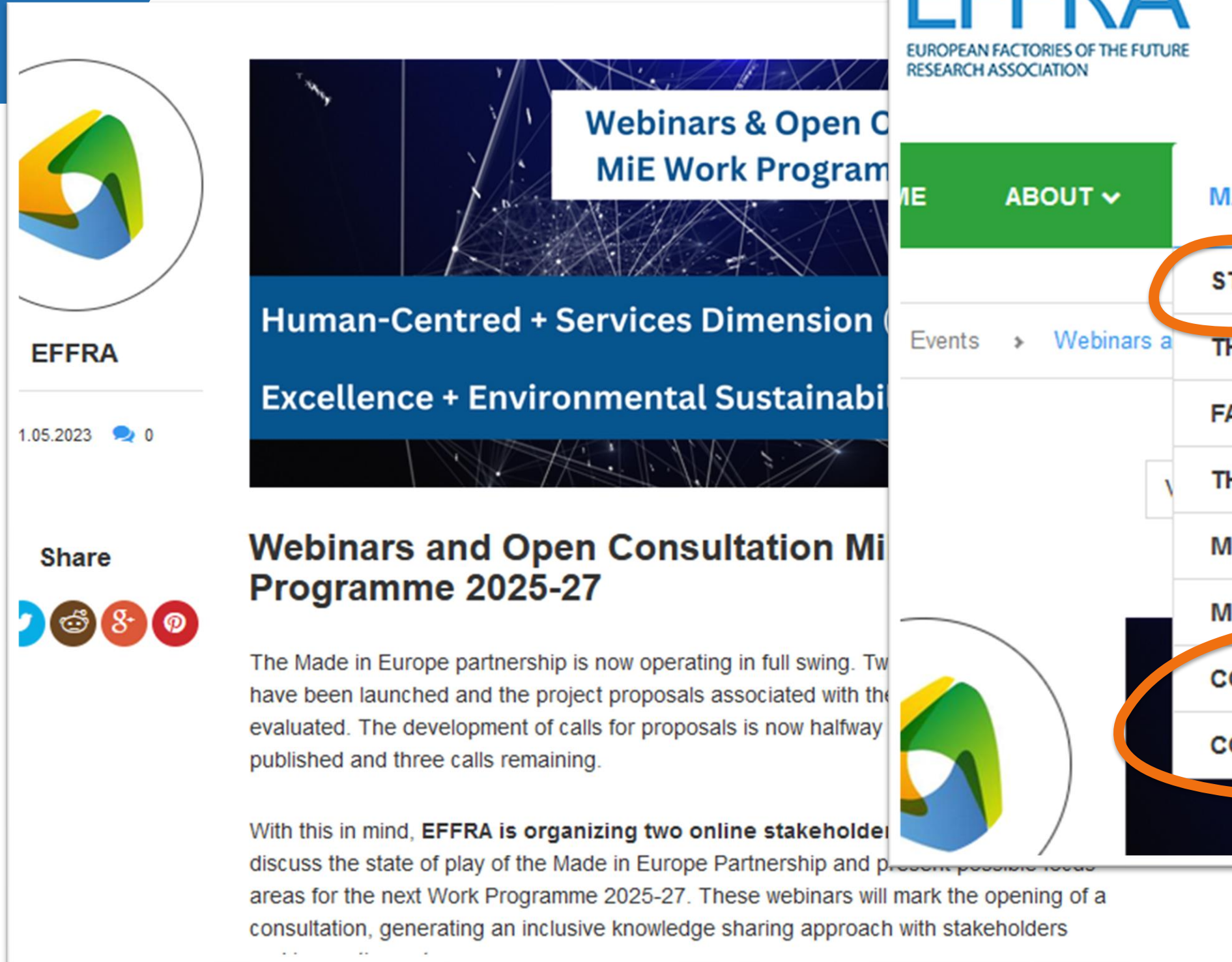*Digital transformation of manufacturing industry, trusted and robust*

MiE Specific Objectives

- **Excellent, responsive and smart factories & supply chains**

- **Circular products & Climate-neutral manufacturing**

- **New integrated business, product-service and production approaches; new use models**

- **Human-centered and human-driven manufacturing innovation**

MiE Key Technologies and Enablers

- **Advanced smart material and product processing technologies, and process chains**

- **Smart mechatronic systems, devices and components**

- **Intelligent and autonomous handling, robotics, assembly and logistic technologies**

- **De-manufacturing, recycling technologies, and life-cycle analysis approaches**

- **Simulation and modelling (digital twins) covering the material processing level up to manufacturing system, and factory and value network level from design until recycling.**

- **Robust and secure industrial real-time communication technologies, and distributed control architectures and standardized equipment protocols**

- **Data analytics, artificial intelligence, machine learning and deployment of digital platforms for data management and sharing**

- **New business and new organisational approaches, including links with regulatory aspects such as safety, data ownership, and liability**

- **Skilled workforce**

- **Standards**

How to contribute to the consultation

Consultation Made in Europe WP 25-27 - Expert/stakeholder perspective

This page concerns the **consultation on the Work Programme 25-27 of the Horizon Europe Programme** with respect to manufacturing research & innovation, **in particular with regard to the Made in Europe Partnership**.
More background to this consultation can be found here.
Please note that there is **also a consultation where feedback is requested from the perspective of past or ongoing projects** (see here).

Via this consultation, **you are invited as an experts/stakeholder to comment and rate (in terms of importance) the suggested priorities for the WP 25-27** that are described in this document.

Your prioritisation and comments would address observations such as:

- Which priorities are key for the work programme 25-27?   You can express the importance of the priorities by rating them from 0 to 100 in steps of 10.
- **Please add comments to explain why a priority matters** in order to generate impact on the competetiveness and sustainability of Manufacturing in Europe.
- If the R&I Objectives were only partially addressed in the past, **please describe which aspects should be addressed more specifically** in the next work programme.

Please also note that:

- For this consultation, **your answer to the consultation is publicly available via your profile page** on the EFFRA Innovation portal.
- You can edit and refine your input at any time. You just need to save the comments when you edit your response.   There is no 'final submission button'.

Access to the consultation:
First, please make sure that you are logged in on the EFFRA Innovation Portal (https://portal.effra.eu).

Consultation Made in Europe WP 25-27 - Projects' perspective

More background to the consultations in preparation of the Made in Europe Partnership can be found here. This page concerns the track that focusses on obtaining information from the **project's perspective**. The guidance regarding the **consultation from the expert/stakeholder perspective** can be found here.

The suggested priorities for the WP 25-27 that are described **in this document** have been included in a taxonomy list on the EFFRA Innovation Portal.

Project representatives are requested to provide the following feedback:

- **indicate the priorities to which your project has contributed most**.   Please only indicate the items that are really relevant (You can use the rating bar to indicate differences in the relevance)
- please add a comment that explains briefly:
  - **what the project has contributed essentially**
  - **which future developments are in particular necessary, drawing from the (expected) outcome of your project**

Please note that the information that is provided by the projects is made publicly available via the respective project pages on the EFFRA Innovation Portal. Also, you can add and edit feedback in several steps, the list and editing permissions will stay available.

If you wish to include and promote other projects (also national and regional projects) on the EFFRA Innovation Portal, then please let us know.

Please see the screenshot of a project page here below - the edit buttons are only available to these users that have editing permissions on the project.
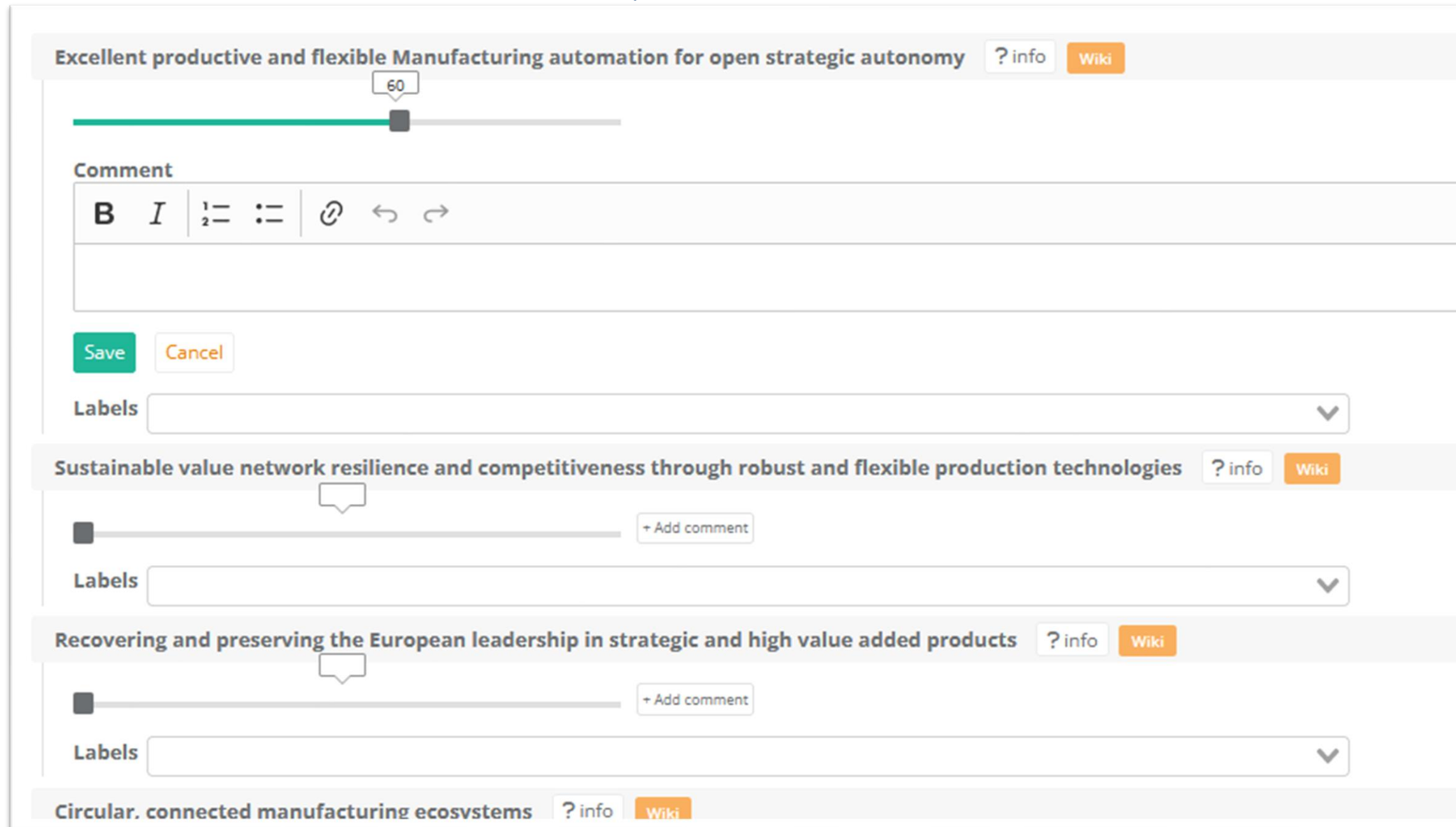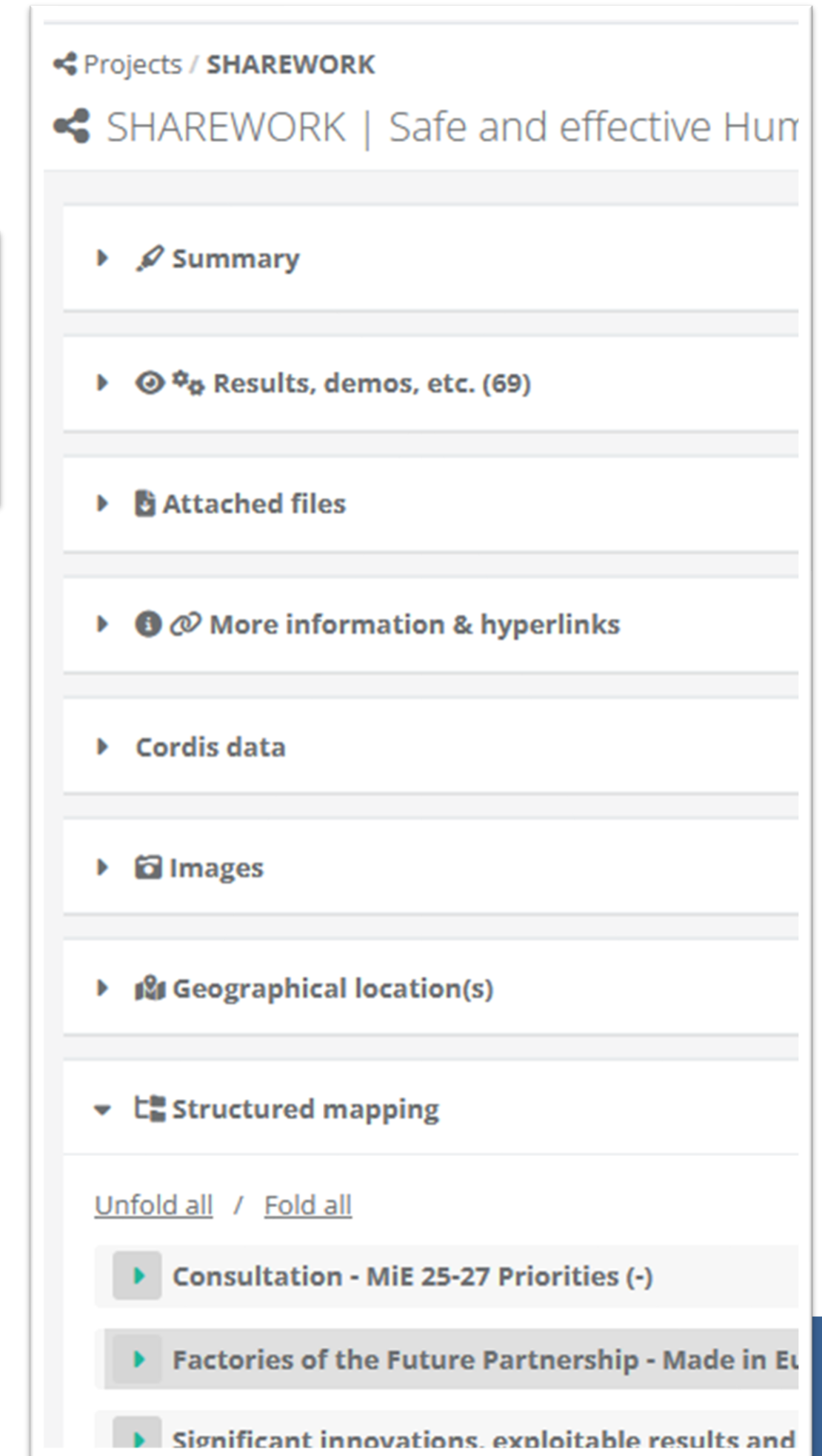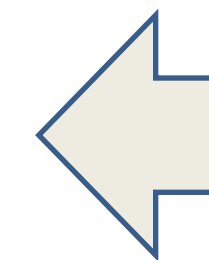
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Contribute via your profile or via your project

Profile ⌄

Your profile
Your organisation

▶ Consultation - MiE 25-27 Priorities (-) ✏️ Edit

Excellent productive and flexible Manufacturing automation for open strategic autonomy ? info Wiki

[slider: 60]

Comment

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Labels ⌄

Sustainable value network resilience and competitiveness through robust and flexible production technologies ? info Wiki

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Labels ⌄

Recovering and preserving the European leadership in strategic and high value added products ? info Wiki

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Labels ⌄

Circular, connected manufacturing ecosystems ? info Wiki

📁 Projects / **SHAREWORK**

🔗 SHAREWORK | Safe and effective Hum

▶ 🖋 **Summary**

▶ 👁 ⚙ **Results, demos, etc. (69)**

▶ 📑 **Attached files**

▶ ℹ 🔗 **More information & hyperlinks**

▶ **Cordis data**

▶ 🖼 **Images**

▶ 📍 **Geographical location(s)**

▼ ⧉ **Structured mapping**

Unfold all / Fold all

▶ **Consultation - MiE 25-27 Priorities (-)**

▶ **Factories of the Future Partnership - Made in Eu**

▶ **Significant innovations, exploitable results and**

THANK YOU

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