

Co-programmed Partnership “Made in Europe” and the role of EFFRA

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The 2030 vision of the manufacturing industry

“Ensuring competitiveness & sustainability and supporting resilient and adaptive manufacturing ecosystems, able to cope with external disturbances and rising environmental and social requirements”

“Europe to be the leading ‘solution provider’ in production technology, digitalisation, resource efficiency and circular economy implementation.”

Activities and investments need to focus on:

- Resilience of European Industry
- Sovereignty of European Industry
- Environmental sustainability of Europe Industry

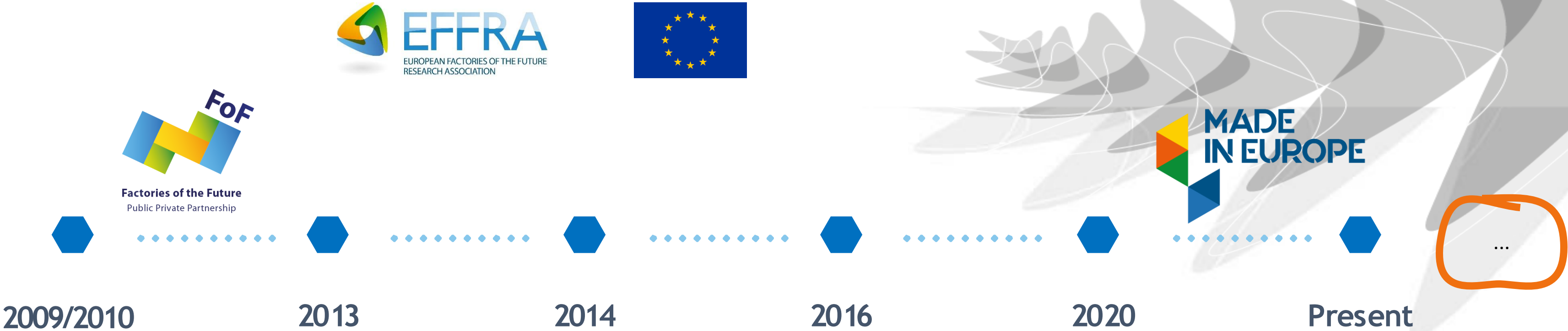


EFFRA

Examples of typical EFFRA members



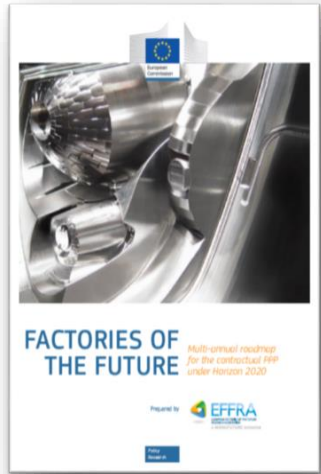
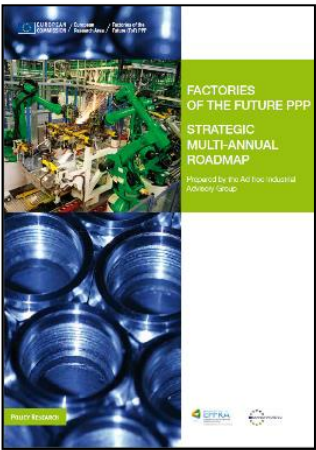
FoF/Made in Europe Partnership story line



FP7

FOF 2020

Factories 4.0 and Beyond





MIE General objectives

- Ensuring European leadership & manufacturing excellence; generating new products and markets
- Achieving circular and climate-neutral manufacturing
- Mastering the digital transformation of manufacturing industry
- Creating attractive added-value manufacturing jobs

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-centred and human-driven manufacturing innovation

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**

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**

Research & Innovation Objectives

1. Data highways and data spaces in support of smart factories in dynamic value networks
 2. Scalable, reconfigurable and flexible first-time right manufacturing
 3. Zero-defect and zero-downtime high precision manufacturing, including predictive quality and non-destructive inspection methods
 4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains - Predictive manufacturing capabilities & logistics of the future
 5. Advanced manufacturing processes for smart and complex products
 6. Manufacturing for miniaturisation and functional integration
-
1. Ultra-efficient, low energy and carbon-neutral manufacturing
 2. De-manufacturing, re-manufacturing and recycling technologies for circular economy
 3. Manufacturing with new and substitute materials
 4. Virtual end-to-end life-cycle engineering and manufacturing from product to production lines, factories, and networks
 5. Digital platforms and data management for circular product and production-systems life-cycles
-
1. Collaborative product-service engineering for customer driven manufacturing value networks
 2. Manufacturing processes and approaches near to customers or consumers
 3. Transparency, trust and data & IP integrity, open systems and cyber security along the product and manufacturing life-cycle
-
1. Digital platforms and engineering tools supporting creativity and productivity of manufacturing development
 2. Improving human device interaction using augmented and virtual reality and digital twins.
 3. Human & technology complementarity and excellence in manufacturing
 4. Manufacturing Innovation and change management
 5. Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs

Factories of the Future Partnership - Made in Europe Partnership

 Mapped projects (376)



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)

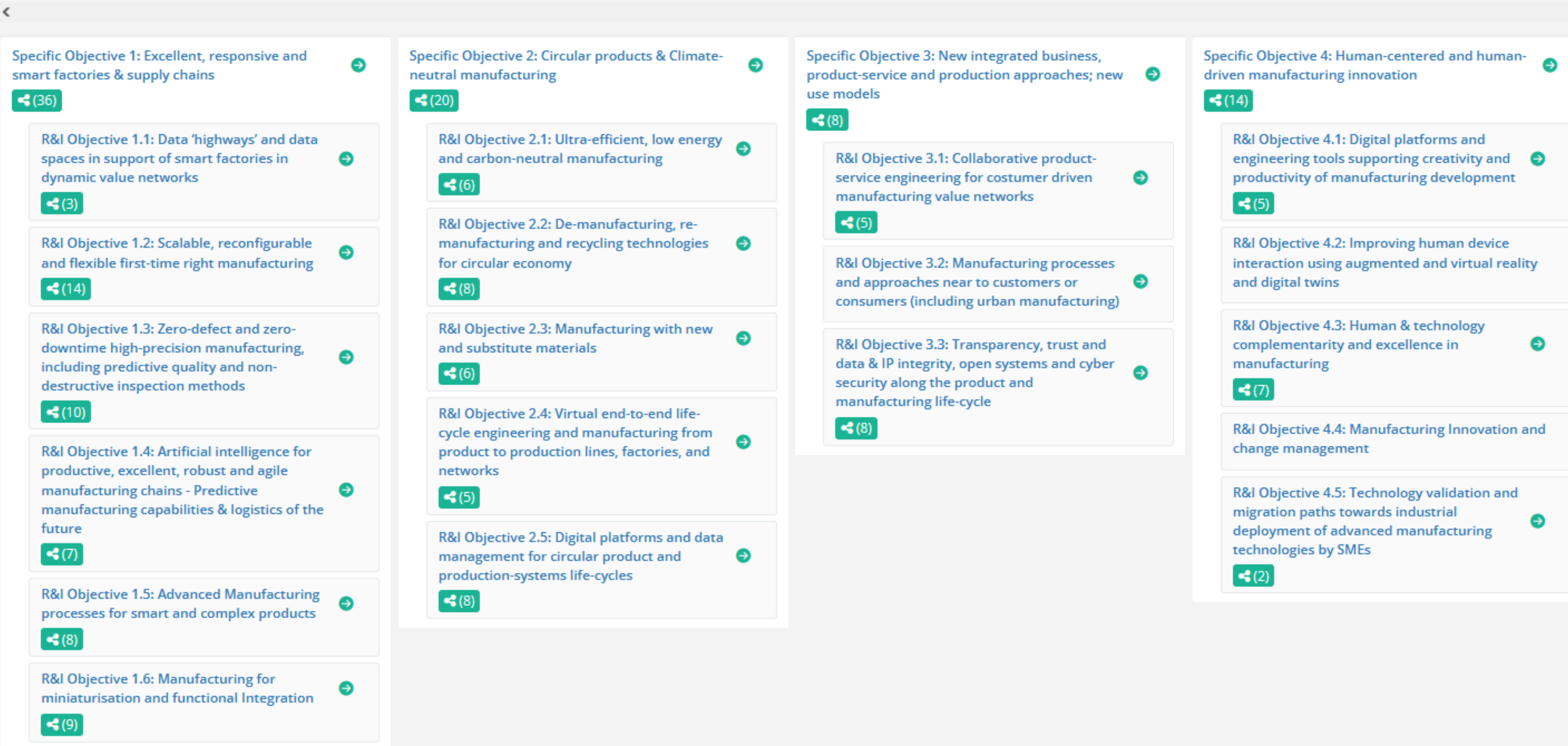
HORIZON-CL4-2022-TWIN-TRANSITION-01 

 (23)

HORIZON-CL4-2023-TWIN-TRANSITION-01 

HORIZON-CL4-2024-TWIN-TRANSITION-01 

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



Made in Europe Progress monitoring

Mapping demonstrators and project actions on MiE KPIs

Projects / CONVERGING / MiE KPIs

CONVERGING mapped on MiE KPIs


MiE KPI section - Impacts →


Demonstrating showcasing the realisation of new resilient value chains


Demonstrator showcasing the realisation of new innovative circular value chains


Demonstrator showcasing human and technology complementarity

Results:

 Autonomous tooling and inspection repair with mobile robots - FORD

 AI enabled dexterous assembly operations - ELECTROLUX

 Smart collaborative solutions for hazardous area inspection - IAI

 Human robot collaborative processing of Additive Manufactured produced parts - PRIMA

Demonstrator targeting the training the workforce in new technologies


Demonstrator showcasing digital platforms


MiE KPI section - Outcomes →

Demonstrator showcasing an increased uptake of green manufacturing

Reduced scrap rate through zero defect and zero downtime manufacturing - demonstrator showcases reduction by 20%


Results:


 Autonomous tooling and inspection repair with mobile robots - FORD

 AI enabled dexterous assembly operations - ELECTROLUX

Reduction of time needed for defect identification & finishing showcased by demonstrator (in % reduction)

Results:

 Autonomous tooling and inspection repair with mobile robots - FORD

 Smart collaborative solutions for hazardous area inspection - IAI

Demonstrator showcasing the uptake of de-manufacturing, re-manufacturing and recycling technologies for more efficient

MiE KPI section - Resources →

Knowledge-sharing and networking activity (Conference, event, workshop)

Support and engagement activities at national and local levels

Cooperation with other initiatives & partnerships

Promoting the demonstrators and exploitable technologies



23.03.2023 0

Share



Collaborative robotics land in European factories

Sharework and SHERLOCK are two projects funded through Factories of the Future, EFFRA's partnership with the European Commission on manufacturing. Together, they provide validated solutions for a safe fenceless implementation of robots working hand in hand with workers in industrial shopfloors

At its core and through its partnerships with the European Commission, [Made in Europe](#) and its predecessor [Factories of the Future](#), the European Factories of the Future Research Association (EFFRA) is tackling shared technological challenges such as collaborative robotics. Promoting precompetitive research and encouraging the collaboration between diverse international stakeholders at the industry and research levels, [EFFRA](#) is addressing all aspects of manufacturing, from sustainability and efficiency to digitalization and human aspects; many of these demonstrators, use cases, and exploitable results, can be consulted by accessing [EFFRA's Innovation Portal](#), where we encourage all innovation actors to promote their work.

Toggle all information ▲



SEAT S.A – Automotive Industrial Scenario - Operator collaborative support on assembling/disassembling car body heavy ...

Project: SHAREWORK

Type: /

Updated at: 01-02-2023

Show more information ▲

Project acronym **SHAREWORK**



CEMBRE – Metal Industrial Scenario - Human-Robot Collaboration (HRC) at the load/unload stations of logistic manufactu...

Project: SHAREWORK

Type: /

Updated at: 01-02-2023

Show more information ▲

Project acronym **SHAREWORK**



ALSTOM – Railway Industrial Scenario - Human-Robot Collaboration to improve trains' manufacturing processes

Project: SHAREWORK

Type: /

Updated at: 01-02-2023

Show more information ▲

Project acronym **SHAREWORK**



Goizper Group – Capital Goods Scenario - Human-Robot collaboration (HRC) for operator's assistance on intermittent ind...

Project: SHAREWORK

Type: /

Updated at: 01-02-2023

Show more information ▲

Project acronym **SHAREWORK**

Significant innovations, exploitable results and lessons learned, training aspects

[Mapped projects \(73\)](#) [Mapped results \(92\)](#) [Mapped demos \(52\)](#) [Key content](#)

Added value - impact - value proposition

[\(16\)](#) [\(19\)](#) [\(18\)](#)

Key exploitable Result(s)

[\(1\)](#)

Significant innovations and achievements

[\(48\)](#) [\(31\)](#) [\(14\)](#)

Significance of the results for SMEs

[\(20\)](#) [\(25\)](#) [\(6\)](#)

Lessons learned

[\(27\)](#) [\(47\)](#) [\(45\)](#)

Gaps and challenges that should still be addressed

[\(1\)](#)

Specific use case requirements

[\(20\)](#) [\(13\)](#) [\(4\)](#)

General information about pilots and demonstrations

[\(12\)](#) [\(5\)](#)

Requirements regarding skills, training and associated

[\(22\)](#) [\(11\)](#) [\(3\)](#)

Highlighting significant innovations, lessons learned...

UTC Pilot: On-the-job Learning



Project: Factory2Fit

Type:

Updated at: 04-10-2022

ion ▲

ns, exploitable results and lessons learned, training aspects

impact - value proposition



used solution, access to expert knowledge is granted to
registered to the platform. What is more, supervisors are
training courses to specific technicians for improving their

Prima Power Pilot - Social Media Platform - Engaging worker participation and knowledge sharing



Project: Factory2Fit

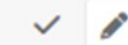
Type:

Updated at: 04-10-2022

Show more information ▲

Significant innovations, exploitable results and lessons learned, training aspects

Added value - impact - value proposition



Comment:

SoMeP emphasizes in improving collaboration and communication
between technicians and promotes knowledge sharing, and practices. In
the long-term SoMeP can be used both as a communication channel and
information exchange hub, but also as a valuable knowledge repository as
well as an educational system.

Prima Power F Dashboard - E well-being and



Show more information ▲

Significant innovations, exploitable results and

Added value - impact - value propos

Comment:

The proposed solution aims at raising
employees recognize their strengths.
In the long term, the application can
working habits.

Continental Pilot - Task Distribution Engine - Multi-criteria dynamic task prioritization and scheduling



Project: Factory2Fit

Type:

Updated at: 04-10-2022

ion ▲

ns, exploitable results and lessons learned, training aspects

impact - value proposition



generation of optimized production plans while the waiting

COMAU Pilot: Workplace optimization and operator mental support



Project: HUMAN

Type:

Updated at: 04-10-2022

Show more information ▲

Significant innovations, exploitable results and lessons learned, training aspects

Added value - impact - value proposition



Comment:

Thanks to the use of HUMAN technology, COMAU assembly lines are more
flexible to the anthropometric, physical and cognitive needs of the

SCM Use Case machines



Show more information ▲

Significant innovations, exploitable results and

Added value - impact - value propos

Comment:

The use of the INCLUSIVE HMI leads t
time required. For the second use ca

Made in Europe Partnership: New Call Topics

Work Programme 2023-2024

2023 Deadline: 20th April 2023	HORIZON-CL4-2023-TWIN-TRANSITION-01-02: High-precision OR complex product manufacturing – potentially including the use of photonics (IA)
	HORIZON-CL4-2023-TWIN-TRANSITION-01-04: Factory-level and value chain approaches for remanufacturing (IA)
	HORIZON-CL4-2023-TWIN-TRANSITION-01-07: Achieving resiliency in value networks through modelling and Manufacturing as a Service (RIA)
	HORIZON-CL4-2023-TWIN-TRANSITION-01-08: Foresight and technology transfer for Manufacturing As A Service (CSA)
2024 Deadline: 7th February 2024	HORIZON-CL4-2024-TWIN-TRANSITION-01-03: Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand (RIA)
	HORIZON-CL4-2024-TWIN-TRANSITION-01-05: Technologies/solutions to support circularity for manufacturing (RIA)
2024 (Two Stage Call) First deadline: 7 th February 2024 Second deadline: 24 th September 2024	HORIZON-CL4-2024-TWIN-TRANSITION-01-01 (Two stages): Bio-intelligent manufacturing industries (RIA)

HORIZON-CL4-2024-TWIN-TRANSITION-01-05:

Technologies/solutions to support circularity for manufacturing

Type of Action	Research and Innovation Actions
Expected EU contribution per project	Between 4 Million and 6 Million
Indicative number of projects to be funded	6
TRL	Activities expected to start at TRL 4 and achieve TRL 6 by end of project
Proposal Approaches	<ul style="list-style-type: none">Develop new approaches of Artificial Intelligence to forecast the environmental impact, considering also the quantity and state of products after their useDevelop innovative simulation and modelling software or build on existing solutions fostering new manufacturing capabilities with a view to a more efficient and more sustainable product designDevelop digital platforms/ tools built on existing interoperability architectures (such as the Asset Administration Shell), that will enable the manufacturers to implement the Digital Product Passport initiative. The proposals should focus on gathering relevant data, material and product tracking and tracing, certification protocols for secure re-used materials and components among sectorsEnhance the human involvement in the development of the circularity aspects and new technologies <p><i>Proposals to cover all four aspects.</i></p>

HORIZON-CL4-2024-TWIN-TRANSITION-01-03:

Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand

Type of Action	Research and Innovation Actions
Expected EU contribution per project	Between 5 million and 7 million
Indicative number of projects to be funded	5
TRL	Activities expected to start at TRL 4 and achieve TRL 6 by end of project
Project Approach	<ul style="list-style-type: none">• Easy access to flexible and decentralised manufacturing and remanufacturing capacities, especially for SMEs, reducing the required investments for manufacturers while enabling them to use more sustainable and circular facilities• Availability of automation, emerging and digital technologies for the servitisation of manufacturing assets assuring optimal performance, fast reconfiguration and upgrade with minimal downtime, remote monitoring and predictive maintenance via trusted, secure and interoperable cross-company data exchange.• Improved value chain integration through the availability of technologies and models for securely exchanging and leveraging life-cycle data of servitised manufacturing assets, also in view of the reuse or recycle of assets, components, and materials.

HORIZON-CL4-2024-TWIN-TRANSITION-01-01 (Two stages):

Bio-intelligent manufacturing industries

Type of Action	Research and Innovation Actions
Expected EU contribution per project	Between 4 Million and 5 Million
Indicative number of projects to be funded	5
TRL	Activities expected to start at TRL 4 and achieve TRL 6 by end of project
Proposal Approaches	<ul style="list-style-type: none">• Demonstrate the development of digital and green technologies (either advanced manufacturing techniques like additive manufacturing, extrusion, moulding, etc., or bio-intelligent production technologies, or both) that facilitate the upscaled manufacturing of bio-based or bio-intelligent products in one manufacturing value chain• Develop sustainable business models for production and recycling of products

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**

CONSULTATION MADE IN EUROPE WP 25-27 (EXPERT/STAKEHOLDER PERSPECTIVE)

CONSULTATION MADE IN EUROPE CONSULTATION WP 25-27 (PROJECT PERSPECTIVE)

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 competitiveness 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.

► Images

Examples of metrology manufacturing needs - work in progress

- Embedded metrological processes and devices as enablers of seamless measurement in the context of:
- zero-defect manufacturing, first time right approach, green manufacturing, safety on the production floor, the shift from time paced measurements of traditional quality control systems to massive data acquisition under ZDM requests not only robust and quick inspection but mainly an inspection at a lower cost. Devices are in most cases too expensive yet, according to the feedback we receive from our manufacturing industry community.
- Metrology in biomanufacturing - increased importance of biomanufacturing and investments in it raises a demand for innovative, precise, well adapted metrological system in a biomanufacturing environment
- Metrology innovations in energy consumption in manufacturing and environment protection
- Dimensional metrology innovations in additive manufacturing and 3D Printing
- AI tools in metrology for Industrial Inspection, Deep Learning for Industrial Applications
- Metrology accuracy in manufacturing environments and instrumentation ageing effect
- Wireless measurement signal transmission in industrial environment and big-data
- Metrology and virtual sensing for Digital Twinning
- Non-contact (photonics, US, etc.) measurement integration in the industry floor processes.
- Portable metrology to perform measurements in the field or on the shop floor - flexibility and faster response times in manufacturing environments

Examples of metrology manufacturing needs - work in progress

- *Intelligent Product Design*
 - Metrology for the full implementation of digital product design tools, including digital twins and artificial intelligence methods
- *Advanced Materials*
 - Innovative, precise, well adapted metrological system for biomanufacturing environments
 - Metrology and characterisation methods to fully exploit the innovation potential of advanced materials, while ensuring safety and environmental compatibility
- *Smart Manufacture & Assembly*
 - Embedded metrological processes and devices to enable seamless measurement in the aid of zero-defect, green manufacturing, safety on the production floor and the shift from traditional quality control systems to massive data acquisition
 - Dimensional metrology innovations in additive manufacturing and 3D Printing
 - Metrology accuracy in manufacturing environments and instrumentation ageing effect
 - Non-contact (photonics, US, etc.) measurement integration in the industry floor processes
 - Portable metrology to perform measurements in the field or on the shop floor
- *Quality Control & Testing*
 - Metrology for quality assurance in the whole life cycle of advanced manufacturing, applicable to products and measuring instruments.
- *Digitalisation & Vertical Metrology Integration*
 - AI tools in metrology for Industrial Inspection, Deep Learning for Industrial Applications
 - Wireless measurement signal transmission in industrial environment and big-data
 - Metrology and virtual sensing for Digital Twinning
 - Fast, accurate, reliable, flexible, and holistic metrology along the whole manufacturing chain supporting resource efficient, agile, transparent production and new process technologies
- *Standardisation*
 - Harmonisation in measurement and test methods to facilitate innovation and trade
 - Machine-readable standards, protocols and certificates for product conformance assurance
- *Environment, Health & Safety*
 - Metrology innovations for energy consumption in manufacturing and environment protection
 - Metrology requirements to enable safe, circular, traceable, more environmentally sustainable products and machining processes
- *Knowledge-transfer & accessibility*
 - Transfer of metrology knowledge and skills into industrial application through the publication of good practice guidelines and standards

THANK YOU

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