

FOF-12-2017 PROJECT - CONCEPT NOTE

This document does not constitute a full proposal. It includes the essential elements.

MAIN FEATURES

Project Acronym		tbd
Project full title		tbd
Types of action	IA Innovation action	X
	CSA Coordination and support action	
Budget		About 8M€
Topic targeted		For Europe's competitiveness in manufacturing, it is crucial that advances in ICT are taken up in engineering and manufacturing "at large" as soon as they have the appropriate maturity level. The topic will support fast adoption, and wide spread technology transfer of advanced ICT-based solutions for manufacturing across the business process chains – from "cradle to grave".

More information: <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/fof-12-2017.html>

COORDINATING BENEFICIARY

Coordinating beneficiary	
Name	
Type (Public body, NGO, SME...)	
Country	
Experience in previous EU projects?	

PRESENTATION OF THE PROJECT

RATIONALE OF THE PROJECT (BACKGROUND AND STAKES)

Industrial production accounts for 16% of Europe's GDP and is a key driver for innovation, productivity, growth and job creation. Manufacturing employs around 30 million people and twice as many in support activities such as logistics. In addition, 80% of the EU's exports are manufactured products. However, Europe's position as an industrial power house is eroding and its leadership in many important sectors is being challenged by global competitors, leading to a decline in employment in recent years.

The Factories of the Future initiatives aim at helping EU manufacturing enterprises to adapt to global competitive pressures by developing the necessary key enabling technologies across a broad range of sectors. It will help European industry to meet increasing global consumer demand for greener, more customised and higher quality products through the necessary transition to a demand-driven industry with less waste and a better use of resources. **New Technologies, including ICT, will play a key role in the leading manufacturing lines, increasing competitiveness and enhanced workstations. These technologies, available in the market, have to be adapted and integrated into the manufacturing lines.**

OBJECTIVES OF THE PROJECT (QUANTIFIED)

The project seeks to contribute to the adoption of **advanced technologies improving productivity** by fostering of the capacities of the factories designing process and integrating ICT features for the growth of their competitiveness. The project will increase the technological assets of EU manufacturing through the development and integration of enabling technologies, such as innovative technologies for adaptable machines, ICT for manufacturing, and novel industrial handling of advanced materials (3D printing ...). **Focus is on emerging innovative technologies and processes, which need to be customised, integrated, tested and validated before being released on the market. These new features and products, providing by innovative start-ups and laboratory centres, will reach the businesses of the factories to enable their production performance enhancement: facilities, tools, IT, ERP, ...** Moreover, the project aims to contribute to the **promotion of sustainable consumption of resources** by their better management and efficiency.

These innovation activities will strengthen Europe's industrial competitiveness and sustainability. The integration of the leading edge technologies in real life production lines across Europe will demonstrate the effectiveness of the Factories of the Future.

The main themes handle by the project are:

- high-tech manufacturing processes, including 3D printing, nano- and microscale structuring;
- adaptive and smart manufacturing equipment and systems, including mechatronics, robotics, photonics, contactless technologies;
- resource-efficient factory design, and data management for increased production performance;
- collaborative and mobile enterprises, networked factories linking dynamically supply chains to local production;
- human-centred manufacturing: designing the workplaces of the future;
- customer-focused manufacturing: linking products and processes to innovative services.

The initiative will further:

- help to address effectively new markets and consumer demands with customised products;
- facilitate optimum production with less resource use and waste;
- raise industrial investment in equipment and foster innovation;
- create attractive and safe workplaces and engage new talent;

The project will establish across Europe networks of multidisciplinary competence and manufacturing centres offering “marketplaces” for SMEs that want to experiment their digital technologies in manufacturing of discrete or continuous goods. Manufacturing centres will offer access to production lines and skills for developing and testing innovative technologies and applications. The manufacturing centres will take benefit by the potential use of these technologies. **The project will bridge suppliers (features providers) and users (factories) of the technology products.** The project will carry out a critical mass of cross-border experiments bringing together different technology key players along the full value chain to customise the technologies according to the requirements of the users. **The sharing of the experiment experiences in the different production lines will able to improve the enhanced manufacturing technology products, for improving their markets and deploying through the European manufacturing base.**

Driven by the requirements of first-time users, Application Experiments bring together the actors of the value chain and the experts necessary to enable new users to develop novel products or services and assist them in customising and applying these in their respective environments.

TECHNOLOGIES TARGETED

The project will cover the following four areas of technologies for adoption in manufacturing:

- **CPS and IoT:** Adoption and piloting of CPS/IoT in smart production environments, with special focus on scalable, modular and re-configurable automation systems across the process chain.
- **Robotics:** New robot systems that are cost effective at lower lot sizes, with the benefit of long-term improvements in productivity, the ability to work safely in close physical collaboration with human operators; and that are intuitive to use and adaptive to changes in task configuration. Key for fast adoption is the availability of flexible and easy to apply material feeding solutions. Step changes to at least two of the following abilities are therefore considered necessary: configurability, interaction capability, decisional autonomy in terms of context-awareness, and dependability.
- **Modelling, simulation, data mining and analytics:** HPC Cloud-based modelling, big data management, simulation and analytics services with special emphasis on sustained service models; on providing real-time support; and on addressing comprehensively security and privacy issues at all levels.
- **Digital design for additive Manufacturing:** Supporting the broad uptake of innovative additive manufacturing equipment and processes particularly focusing on the link between design tools and production, changes in business models, process chains and stakeholder relations.

MAIN ACTIONS ENVISAGED (OVERVIEW OF A PROVISIONAL WORK PROGRAMME)

The main action is to build a Factory of the Future, i.e. to build a production line containing major new technologies created by innovative start-ups, in real working conditions, to enhance manufacturing efficiency, and not a simulation or just part of a production line to demonstrate the technology. **Consequently, the core project is to design the assembly of existing technologies in one place, working in real and effective conditions.**

3 production lines on which are assembled technological components provided by technology providers will be the demonstrators of the manufacture enhanced by new technologies, making real the FACTORIES OF THE FUTURE. Each production line will integrate the same new technology solutions to improve competitiveness (about 10 features), allowing return of experiment sharing: benchmark, production indicators improvement, technologies/features validation and appropriation.

The project will therefore be developed on the production sites across Europe according to regional or national specialization, to apply these advanced solutions (ICT, IoT, smart objects, big data, data mining, simulation, automation, robotics ...)

This project mainly concerns SMEs, but does not exclude larger companies especially for the availability of the production lines used as demonstrators for SMEs. The larger companies will be able to offer an industrial environment for the POCs.

R&D for start-ups could therefore be limited to the adaptation and integration of existing products. Also, these POCs will enable them to sell their technology.

The project covers 3 main topics

- Internal flow : autonomous transport, contactless traceability, controlled flow, self-recognition
- Integrated logistics
- Transformation process management: follow-up of raw materials in the process, 3D modeling and additive manufacturing ...

PRODUCTIONS, RESULTS AND EXPECTED IMPACTS

The economic advantage is triple

- For the production line, to benefit from technology that will enhance performance and competitiveness that can be financed and made permanent;
- For the innovative start-ups, to support the application of new products and services, and therefore foster the emergence of new technology and business;
- For SME's, the opportunity to test technologies on real production lines.

Result 1: Improved sustainability and strengthened manufacturing efficiency.

The action will bring the improvement of sustainability situation in European manufacturing industry by the implementation of production enhanced by new technologies, enabling the implementation of more sustainable, efficient, eco-friendly and fair production processes.

Result 2: Development of new products based on new technologies ready to spread into manufacturing market.

The second result is the adaptation and integration of new technologies for manufacturing support applications. These applications and features will be able to improve the manufacturing efficiency. Tested and validated, these products will be ready to be introduced in the market accordingly to real achievements and added value demonstration.

Result 3: Methodologies and practices disseminated into European manufacturing for a global competitiveness upgrade.

The last result is the communication improvement and technology dissemination among stakeholders in the manufacturing industry, from big companies to SMEs, from processors to retailers, into all sectors. The project will give the need to develop supply chain relations that enable manufacturers' community to satisfy the demand for sustainable and quality products at the right cost and at the right time. This focuses on the development of the capacities and in the enhancement of communication of relevant actors.

PROJECT DURATION

36 Months

EUROPEAN ADDED VALUE

The project will allow getting 3 state-of-art production lines in Europe, worldwide benchmark for manufacturing leading global industry improvement, e.g. comparable to TSMC lines in microelectronics in far-east.

PERSPECTIVES FOR DEVELOPMENT AND EXPLOITATION

At Technique Level, production lines will increase the use of manufacturing assets in environmental-friendly technologies and practices by delivering better products at the right time and right cost. **Innovative tools** will enable the assessment of the production processes to identify less efficient production steps and the identification of productivity lost (Technological, Technical and Management practices). A range of innovative products from SMEs, helping productivity will be ready to be in the market.

At Economic effects, it will minimise **market risk** for new products and processes since the project will ensure **economic, social and environmental acceptability** of products by the consumers (factories). It will enhance the integration of SMEs into global supply chains by improving the environmental performance and the competitiveness of the European industry.

At Social effects, it will provide healthy and safe workstations into the production lines. Manufacturing employment will be preserved thanks to the productivity increase: sustainability of the industry by better competitiveness.

DEMONSTRATION CHARACTER

The concept of Factory of the Future is widely spread across Europe but more than a concept than a reality. A large scale of technology is now available, and the adoption of these technologies in the manufacturing sectors shall give a clear competitiveness advantage the European production of goods. The project will demonstrate the reality of the Factory of the Future, working as a benchmark and model for the European industrial community.

For achieving the expect results, the first activity will be the evaluation of the available technologies and features compared to manufacturing needs. Secondly, the work will focus on the identification and collection of the **Best Solutions** in the area of good processing and waste sustainability. The third activity will work on the analysis of the manufacturing performance results.

MAIN DISSEMINATION AND COMMUNICATION ACTIVITIES ENVISAGED

A large communication effort will be included in the project with the development of **dissemination materials** (manufacturing visits, user experience sharing, conferences, newsletters, guidelines, web site,...) and the organization of **dissemination events**: workshops, conferences, seminars, and demonstration activities and **Networking activities**. The right communication will help the technologies adoption by European manufacturing community.

We are looking for partners (solution providers, manufacturer) and optional project coordinator

More information

Vincent CIVITA - vincent.civita@arianormandie.com
Damaris LEVI-MILLER - damaris.levi-miller@pole-moveo.org