European Commission

# FACTS4WORKERS

*Worker-Centric Workplaces for Smart Factories*

## UNION EUROPEA - PROGRAMA H2020

**FACTS4WORKERS:** Worker-Centric Workplaces for Smart Factories.
**Duración Facts4Workers:** 2014-2018

# PRESENTACIÓN Y OBJETIVOS:

Production is moving constantly away from European high-wage countries to so-called “best-cost” countries or to locations with low energy cost. To fight this trend the European industry is challenged to develop intelligent added-value concepts for the field of production. The EU-commission wants to reverse “the shrinking role of the industry” and restore the “attractiveness of Europe as a production location”, says the responsible commissioner Antonio Tajani. With more investment in factories and research & development the amount the industry contributes to the European economic output should be increased from currently 15 to 20 per cent by 2020.

FACT4WORKER‘s objectives in terms of measureable indicators are:

- To increase problem-solving and innovation skills of workers participating in pilots at industrial partners’ factories, as measured by e.g. innovation capability test scores.
- To increase cognitive job satisfaction of workers participating in the pilots, as measured by an increased score on relevant factors on a Spector Job Satisfaction Survey (JSS) 8, and to improve their working conditions in terms of safety, work organisation and well-being.
- To increase average worker productivity by 10% for workers participating in pilots, as measured by a mix of proven and newly developed metrics enabled by the smart factory concept and the evolving role of the worker.
- To achieve TRL 5-7 on a number of worker-centric solutions through which workers become the smart element in smart factories, interacting by deploying a flexible smart factory infrastructure.

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We apply these measurable objectives to four specific integrated smart factory solutions, which will be piloted and validated inside the factories of our industry partners. In summary, we will develop these solutions according to four Industrial Challenges from our partners, which are generalizable to manufacturing in general:

- Customized augmented operator are workers using augmented reality (AR) tools through which they get an immediate, specific, visualized, and personalized provision of information at the shop-floor-level, which can be configured according to their needs, roles and preferences.

- Worked-centric rich-media knowledge sharing/management: ICT adopted in factories is neither successful in capturing knowledge, nor do they support social interaction and learning. Such KMS are usually developed for office environments, but shop-floor workers have different needs.

- Self-learning manufacturing workplaces are established through linking heterogeneous information sources from the worker's environment and beyond, and extracting patterns of successful production, transferring the result as decision-relevant knowledge to the worker.

- In-situ mobile learning in the production, will develop and demonstrate an on the job learning environment for shop floor workers using rich media through the KMS, which is especially valuable for SME.

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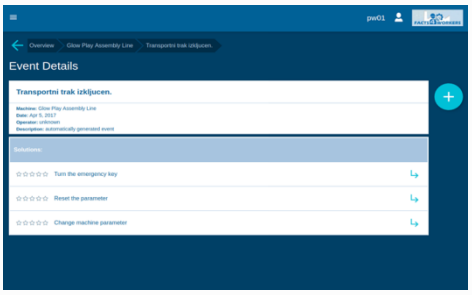
# EXPERIMENTO:

## *Defect and Solutions:*




The solution provide access to a repository of solutions for most of the issues that arise during production. The developed system is fed by the workers and act as a Knowledge Management System, able to support the sharing of knowledge among the workers. This solution will enable the definition of a collaborative environment where workers could support each other's by creating a common knowledge database. The management of roles will protect the workers from unfair activities, meaning those activities that are not within the capabilities and expertise of the worker. The workers could comment and describe defects and solutions by using media content (text, video, audio).

## Shared documents:

The access to shared documents on the spot will allows the workers to gain in autonomy and reduce their stress about missing information. The documents available in the on-line repository will include manuals, quality control sheets and all the required info to maintain a single component of the assembly line.


## Training:

The solution will provide a support for training acivities, that will enable the wokrrs to increase its skills and improve its competences. The training module will be based on the output of workers' activities and will be automatically tuned on the errors and competence gaps of the workers.

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# ENTIDADES PARTICIPANTES

## *Virtual Vehicle Research Center - VIF*

Area A - Information & Process Management

VIRTUAL VEHICLE is an international research and development center which deals with application-oriented vehicle development and future vehicle concepts for road and rail Currently, around 200 people are employed at the location in Graz, and their expertise enables the efficient development of affordable, safe and environmentally friendly vehicles.

## *Vienna University of Technology - VUT*

Institute for Engineering Design and Logistics Engineering

The Institute for Engineering Design and Logistics Engineering on the Vienna University of Technology has an internationally recognized expertise in a wide range of product development, from the methodological side (design methodology, Ecodesign) over the core application areas of machine elements up to the level of IT support in terms of virtual product development.

## *Hidria Tehnoloski Center - HID*

Hidria TC is an innovative industrial technology company and part of the Hidria Corporation, one of the biggest Slovenian industrial groups. Hidria TC designs, constructs and manufactures automation modules and automated manufacturing assembly lines.

## *Università degli Studi di Firenze - UFI*

Department of Industrial Engineering

The Università degli Studi di Firenze, Department of Industrial Engineering, is an institution active in the higher education and research sector. The staff consists of 180 people (professors, research

assistants and technical staff) that work in most of the fields of industrial engineering such as Manufacturing, Organization, Design, Energy, and Environment.

## *Thyssenkrupp Steel Europe - TKSE*

Thyssenkrupp Steel Europe is a globally operating corporation and one of Europe's largest flat-rolled steel producers. The central location for producing, processing, and finishing high quality flat-rolled steel is Duisburg. One of the most important customers of their products is the automotive industry, others include construction, electrical, and household appliances industries.

## *imec - IMI*

Imec is a world-leading R&D and innovation hub in nanoelectronics and digital technologies. As a trusted partner for companies, startups and academia it brings together brilliant minds from all over the world in a creative and stimulating environment. By leveraging its world-class infrastructure and local and global ecosystem of diverse partners across a multitude of industries, imec is accelerating progress towards a connected, sustainable future.

## *Sieva - SIA*

The SiEVA Development Centre is one of 17 so-called Development Centres of the Slovenian economy. The Centre came about as a result of a PPP Government sponsored programme that brought together the 9 biggest Slovenian companies from the automotive sector. SiEVA today operates as a network-based research hub with affiliates at its member companies and is also established as a body governed by public law.

## University of Zurich - UZH

Department of Informatics

The University of Zurich (UZH) with its 26,000 enrolled students is Switzerland's largest university.
The Institute for Informatics currently has 14 professors on all levels and has been continuously involved in EU projects for more than two decades.

## Thermolympic - THO

Thermolympic, is an Spanish SME founded in Zaragoza in 1991 although its origins go back to just one businessman who started up business in 1971.

They are around 50 high qualified professionals with a wide experience in the field of thermal plastic injection as well as in the design and construction of moulds.

## EMO-Orodjarna - EMO

EMO - Orodjarna is one of the leading Slovenian SME tool and die producers with more than 170 employees, most of which are highly experienced and well educated in the field of high tech tool production.

## Evolaris next level Gmbh - EVO

Evolaris is the leading competence centre for mobile communication and innovation in Austria and specializes in the prototypical development of mobile applications, especially in terms of convergence with other interactive and traditional media.

## *Instituto Tecnológico de Aragón - ITA*

The Instituto Tecnológico de Aragón is a non-profit Technology Centre whose main objective is to promote competitiveness in the industrial sector and to support the growth of business sectors by means of the development, acquisition, adaptation, transfer and diffusion of innovative technologies in a multi-agent collaborative framework.

## *Schaeffler Technologies GmbH & Co. KG - SCA*

Schaeffler develops and manufactures precision products for everything that moves – in machines, equipment, and vehicles as well as in aviation and aerospace applications – with its INA, LuK, and FAG brands. Schaeffler is a leading manufacturer of bearings worldwide and a renowned supplier to the automotive industry.

## *Lappeenranta University of Technology - LUT*

Lappeenranta University of Technology, established in 1969, is a Finnish national university of technology and economics. LUT has been active on several projects taking place on both national and international levels.

## *Hidria Rotomatika - HIR*

Hidria Rotomatika is an innovative industrial technology company from Slovenia and part of the Hidria Corporation, one of the biggest Slovenian industrial groups.

Hidria Rotomatika develops, produces, and markets aluminium components, special electric motors, fans, external rotor motors, laminations, rotors, and fine blanked parts.