Empowering a Human-Centric Industry for the Twin Transitions

Niki Kousi, Managing Director, EIT Manufacturing CLC Southeast - Project THOMAS and Human Robot Collaboration Cluster
Effective Industrial HRC Cluster Evolution

- Technology Challenges
  - Human Robot Collaboration
  - Intelligent handling
  - Safety and Perception
  - Artificial Intelligence

- Cluster Coordinator:

- Website:
  https://www.hybrid-production-systems.eu

Number of European Funded Projects:

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
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<tbody>
<tr>
<td>2014</td>
<td>8</td>
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<td>2015</td>
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THOMAS Project Solution

A reconfigurable factory ...

Mobile dual arm robot workers... Different workstations ...acting as assistants to humans

Different Operations

... enabled by a Smart Robot Control System

Digital Factory

World Model

Sensor

Robot

Tool

Human

Artificial Intelligence

Dynamic Task Re-organization

Human behaviour understanding

Robot Collision free trajectories

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Fully functional prototype - TRL 6

**Real Factory**
- Mobile Robot
- Human Operator

**Digital Factory**
- Real time factory status based on sensors
  - Environment understanding
  - Safety fields
  - Safety violation
  - Detected human

**Benefits**
- Reduce of production stoppages: -35%
- Increase human ergonomy
- Increase the number of models produced in the same system: +50%

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Validated in two industrial sectors

- **Automotive Pilot demonstration and validation**
  - From LMS Machine shop, Greece...
  - To STELLANTIS Mulhouse plant, France
  - Tested and validated by factory operators

- **Aeronautics Pilot demonstration and validation**
  - From TECNALIA, Spain...
  - To AERNOVA plant, Spain
  - Tested and validated by factory operators
The example of SHERLOCK

- Development and **deployment** of human-centric, hybrid production systems, following the **Industry 5.0 concept**
- 4 industrially validated demonstrators
  - Renewable energy
  - Contract manufacturing
  - Machine building
  - Aeronautics
- Demonstrated achievements:
  - Reduction of **maximum weight** manipulated by the operators
  - Employment operators with **special restrictions** / elimination non **ergonomic** tasks
  - Increase of **production system performance**
  - Reduction of **assembly errors** by operators

Awarded with 2nd place for the EC Industry 5.0 award → contribution in sustainability, human-centricity and resilience.

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https://www.sherlock-project.eu
What can be the next step?

Idea

Academic PoC

Research and Innovation

Industrial Prototype

Product

Fundamental Research

Research and Innovation

Innovation & Commercialization

Call topics such as Cluster 4 Call Topics

EIT Knowledge and Innovation Community on Manufacturing

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EIT Manufacturing Strategic Objectives

1. Put people at the centre of manufacturing innovation.
2. Accelerate green manufacturing.
3. Foster sovereignty and competitiveness.
Stimulate innovation and support manufacturing ecosystem by…

### Filling skills gaps
- Creating reskilling and upskilling contents and diffusion on Skills.Move
- 5 International Master programs on the topic of Industry 5.0 in cooperation with leading EU Universities

### Accelerating INNO time-to-market
- 2 open calls per year with a total budget of €10+ million
- Focusing on high impact potential and breakthrough innovations with sufficient maturity (TRL >= 7) and in need of extra push to be launched in the market

### Supporting start-up growth
- Coaching and supporting for start-ups in commercial expansion with BoostUp and RIS BC programmes
- “Connecting the dots” and introducing entrepreneurs to businesses and academia partners
Thank you for your attention!