

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

# COALA - AI-Based Digital Assistants in Smart Manufacturing

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**Brussels, 26 Sept 2023**



Horizon 2020  
European Union Funding  
for Research & Innovation

# General Information

**Topic** ICT-38-2020  
Artificial Intelligence for  
Manufacturing

**Type** RIA

**Duration** 36 Months

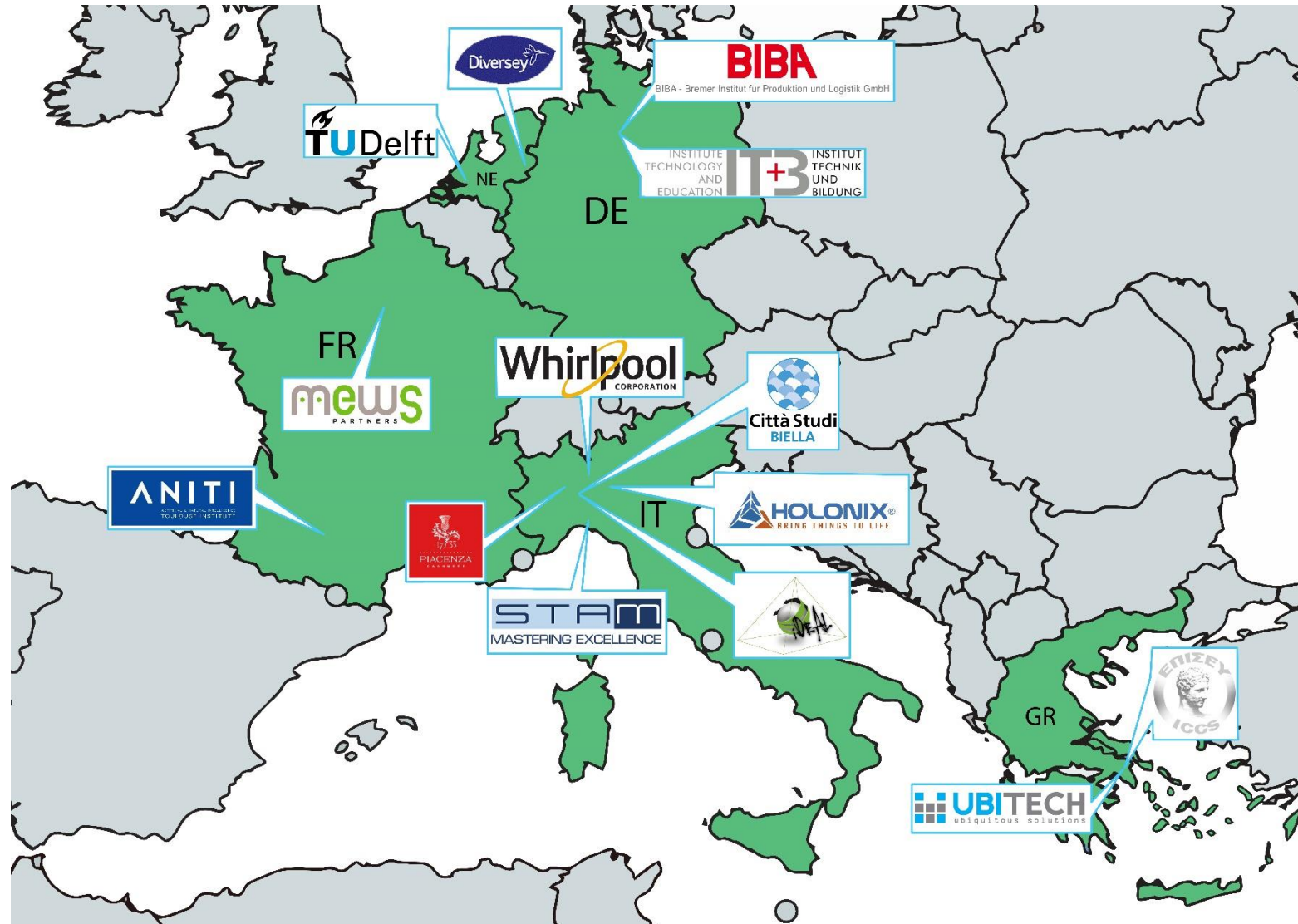
**Start** 01.10.2020

**End** 30.09.2023

**Total costs** € 5,706,726.25

**Max grant** € 5,706,726.25

**PO** Giacomo Cugnini




# COALA Vision

COALA provides a solution for **cognitive assistance** that consists of a composition of **trustworthy AI components** with a **voice-enabled digital intelligent assistant** as an interface.


The solution supports

- workers that need to use **analytics tools** and
- new workers that perform **on-the-job training**.




### Textile Production

- reduce the time and cost of machine operator trainings
- maintain the worker's autonomy vs. unquestioned execution of instructions
- exploit and spread the concept and solution



### White Goods Production

- adopt a predictive quality strategy
- link the quality control of the finished product with design stage and shop floor
- reconfigure its production line and facilitate root cause analysis



### Detergent Production

- increase efficiency of production and reduce change over time
- capturing the best practices and transferring them between manufacturing lines
- tacit line-manager knowledge capturing, formalizing, and transfer to co-workers

COALA business cases

# Context: The (EU) Factory of Today

- Long distances
- Narrow spaces
- Noisy
- Declining workforce
- Automated tasks
- “Smart” machines
- Sensors, IoT & APIs
- Still: Manual labor



Source: Whirlpool Corporation



Source: MiR / Whirlpool Corporation



Source: Diversey Netherlands Production Bv



Source: FRATELLI PIACENZA S.P.A.



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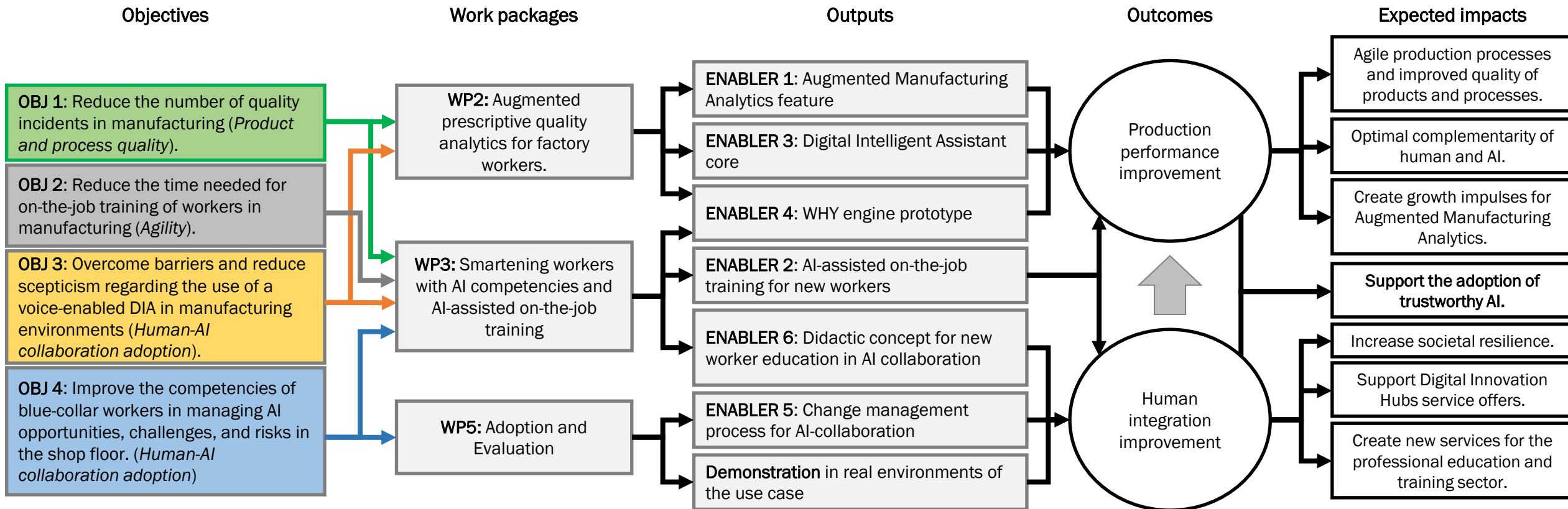
# Challenge: Knowledge Sharing in Factories

- Costly and time-consuming task to train new operators
  - Novice operators are paired with experts
  - Very few operators are experts
- Tacit knowledge: hard to express & share
- Hard to collect, connect and maintain organizational knowledge
  - Machine instructions
  - Quality reports
  - Product specifications
- Agile manufacturing: continuously re-configuring production lines



→ Paradigm shift: Industry 4.0 (smart manufacturing) → Industry 5.0 (human-centric manufacturing)

# Objectives and Expected Impacts



Augmented  
Manufacturing Analytics  
feature  
(ENABLER 1)

AI-assisted on-the-job  
training for new workers  
(ENABLER 2)

Change management  
process for AI  
collaboration  
(ENABLER 5)

Digital Intelligent  
Assistant core  
(ENABLER 3)

WHY engine prototype  
(ENABLER 4)

Didactic concept for  
new worker education in  
AI collaboration  
(ENABLER 6)

Technical solution

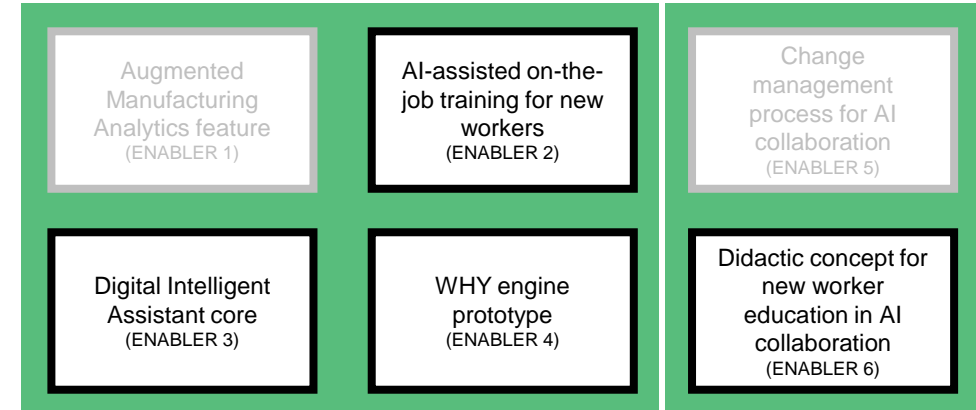
Services

- Cognitive assistance for on-the-job training

- Collect worker experiences through a conversational interface
- Give advice based on worker's experience; covers students, novices, and experts
- Adapt advising behavior with learning progress

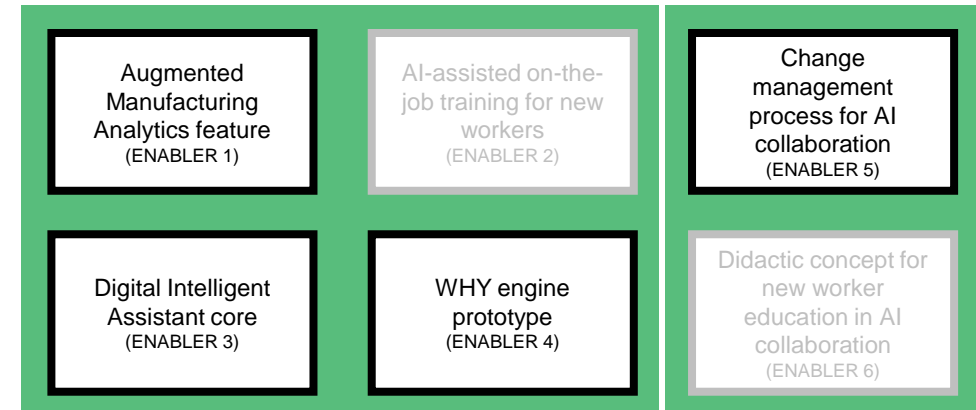
- Augmented manufacturing analytics

- Provide novel prescriptive quality analytics service
- Simplify access to analytics through a conversational interface
- Explain prescriptions to improve trustworthiness



Technical solution

Services

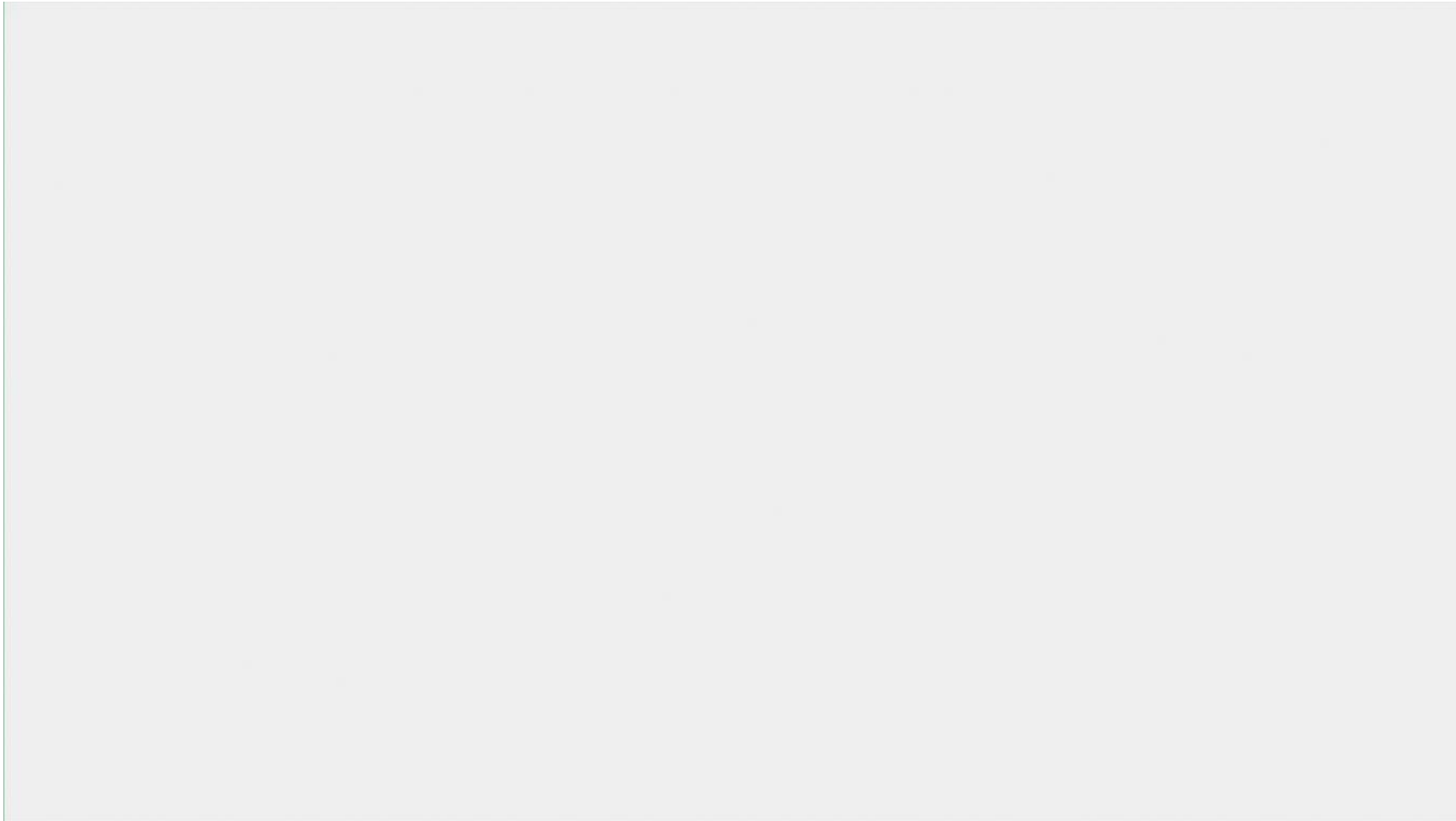


Technical solution

Services

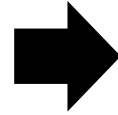


# Demo Video



## WASABI Horizon Europe IA (2023-2027)

- Refines COALA results
- Adds **Waste Inspector** skill
- Builds a TRL 7 **web shop** for digital assistance solutions
- And much more



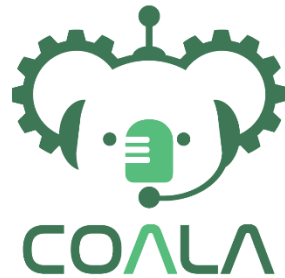
### **2.5 Million € for open calls**

Two rounds 2024 & 2025  
10 x small 12-month projects  
Focus on SMEs (1-3 partners)

Stay tuned & visit  
[wasabiproject.eu](https://wasabiproject.eu)

## Start-up activities

- Focus on voice assistance technology + development toolbox
- Focus on LLM-based cognitive assistance



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**Demo Space:** <https://demo.coala-h2020.eu>

**Website:** [www.coala-h2020.eu](http://www.coala-h2020.eu)

**LinkedIn:** [www.linkedin.com/in/coala-your-factory-assistant](http://www.linkedin.com/in/coala-your-factory-assistant)

**Youtube:** <https://www.youtube.com/@coala-yourfactoryassistant387/playlists>

**Twitter:** [twitter.com/coala4factory](https://twitter.com/coala4factory)

**Contact:** [info@coala-h2020.eu](mailto:info@coala-h2020.eu)

**Many more videos about the COALA assistant**

[www.coala-h2020.eu/index.php/videos](http://www.coala-h2020.eu/index.php/videos)

# THANK YOU!



*This project has received funding from  
the European Union's Horizon 2020  
research and innovation programme  
under grant agreement No 957296*

- ❑ **Objective: Artificial intelligence for manufacturing**
- ❑ **Topic: ICT-38-2020**
- ❑ **Call: H2020-ICT-2018-20**
- ❑ **Lead: BIBA – Bremer Institut für Produktion und Logistik GmbH**
- ❑ **Duration: 36 Months**
- ❑ **Start: 2020/10**

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