

# Partners



IK4-TEKNIKER  
(Coordinator)



RWTH Aachen University



Cranfield University



ENGINEERING  
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AIRBUS Operations SAS



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Ingeniería y Servicios de  
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KOMAT, S.L.



Compañía Española de  
Sistemas Aeronáuticos

# Contact us



Adaptive Automation in Assembly  
For BLUE collar workers  
satisfaction in Evolvable context

If you would like more information about the project, please contact us:

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# The Project

We are developing and evaluating a new generation of sustainable and adaptive workplaces dealing with the evolving requirements of manufacturing processes and human variability, through the following paradigms:

## ADAPTABILITY



Providing an open and secure adaptation management and assistance system (A4BLUE adaptive framework) that allows integration of heterogeneous hardware and software components and is able to adjust the behavior of workplace parts according to process variability and blue-collar workers' profile.



## INTERACTION

Providing a set of safe and easy to use human-automation interaction, which can be adapted to the individual operator and make the assembly task much easier.

## SUSTAINABILITY



Providing methods and tools to define the optimal degree of automation of the new assembly processes that combine and balance social and economic criteria to maximize long term worker satisfaction and overall performance.

# Industrial Pilots



## AIRBUS – Toulouse, France

### SCENARIO

Complex, manual hydraulic system assembly.

### WHAT

To optimise hydraulic system assembly through the usage of smart tools and Virtual/Augmented Reality.

### WHY

To evaluate the impact of an adapted AR Human-Machine Interface in terms of performance and error rate for different skilled groups of people and to enable full quality assurance approach and operators' performance thanks to traceability.



## CESA – Madrid, Spain

### SCENARIO

Landing gear retraction actuator assembly:

- ☉ Manual deburring operation
- ☉ Assembly process.

### WHAT

- ☉ To incorporate a robot to assist the worker in the deburring operation
- ☉ To incorporate AR based guidance based on operator's profile as well as supporting knowledge sharing.

### WHY

- ☉ To increase the quality, efficiency and ergonomics of the deburring process
- ☉ To reduce operators training time through AR; to reduce time for reviewing documentation; to increase confidence, participation, and internal communication among the personnel.

# Lab Pilots



## IK4-TEKNIKER – Eibar, Spain

### SCENARIO

Collaborative assembly in a fenceless environment.

### WHAT

To introduce active safety measures supporting Human-Robot collaboration; to support personalized ergonomic adaptation; to provide natural Human-Automation multi-channel interaction; to provide decision support dashboards for quality and maintenance.

### WHY

To evaluate trust, usability and worker satisfaction (in terms of safety, interaction, ergonomics, assistance).



## RWTH Aachen University – Aachen, Germany

### SCENARIO

Final assembly of electric vehicles.

### WHAT

To incorporate AR based guidance based on operator's profile and to provide the tools required for the assembly by means of an automated tool trolley.

### WHY

To improve worker satisfaction, to reduce training time, to improve process efficiency; to improve ergonomics; to validate a tool to determine the optimal degree of automation.