

PROJECT

SIMFAL

Assembly Planning and SIMulation of an Aircraft Final Assembly Line

Funding: European (Horizon 2020)

Duration: Feb 2017 - Jan 2020

Status: Complete

Total project cost: €563,986

EU contribution: €499,719



Call for proposal: H2020-CS2-CFP03-2016-01

[CORDIS RCN : 207657](#)

Background & policy context:

Many tasks in the assembly of an aircraft, such as the assembly of the interior components in the Cabin and Cargo areas, are performed manually, in non-ergonomic conditions, and with complex process chains. Recent advances in robotics enable the completion of tasks between robots and human worker. Thus, the future of assembly of interior components in these areas will benefit with these new technologies.

However, the planning of assembly tasks in which a human worker collaborates with a robot in a complex and many times narrow environment is extremely challenging. Many factors have to be analysed including the perception of different types of workers, logistic issues, addressing unexpected situation such as a malfunctioning robot, etc.

New technologies such as Virtual Reality (VR) allows the study of this problem in a safe and cost effective way. Meanwhile Augmented Reality (AR) allows the inclusion of relevant information obtained from computational sources (such as the state of the robot, or new assembly plans) in their real context.

Objectives:

The SIMFAL project proposes to develop new testing tools based on VR to help aircraft manufacturers plan and evaluate different assembly alternatives. The information obtained in the VR simulator will be analysed to obtain the main factors that affect its performance. As a result, the advantages and disadvantages of different strategies of collaboration between the robot and the human will be obtained. This tool will also generate support data for an AR-based assistance tool. The tool will provide information about the current assembly strategy, the current state of the system (including logistics, the robot, etc.) and maintenance information. It will also integrate a tool to help the worker to decide between alternative action plans under unexpected situations. A concept of middleware will be developed during the project to integrate the solution with the current design tools.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Asociacion Centro Tecnologico Ceit

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EU Contribution: €349,763

Partner Organisations:

Ct Ingenieros Aeronauticos De Automocion E Industriales SI

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EU Contribution: €149,957

Technologies:

Computer-aided design and engineering
Virtual reality simulation for production and assembly planning

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Safety/Security

Geo-spatial type: Other