

HAndling & Positioning of heavy Parts for assembly

HAPPY Project



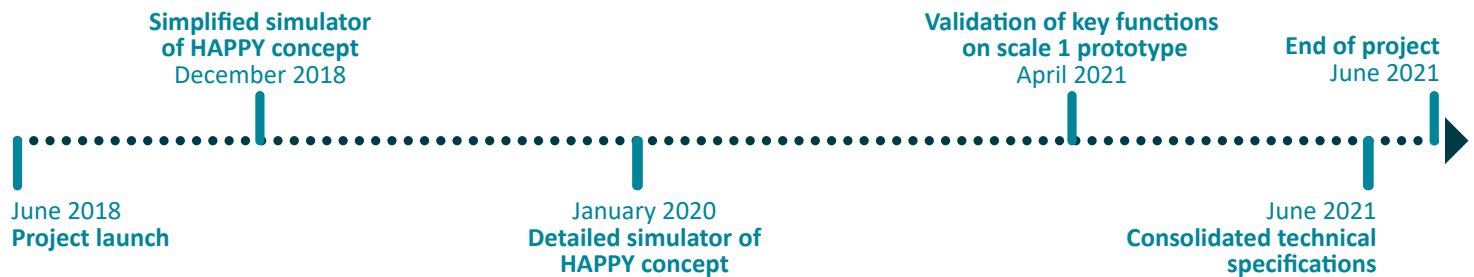
The project aims to develop and evaluate an aerostructure assembly line concept which is flexible regarding product variant and production rate evolution. The suggested system consists of positioners mountable on Automated Guided Vehicles and controlled by a closed-loop system based on local measurements provided by external sensors.

Technical and economic impacts

- ▶ Flexibility to product variant and production rates
- ▶ Non recurring cost reduction
- ▶ Enhanced reconfigurability of the workshop

Keywords

Robotics // Flexibility // Assembly // Sensor-based / closed-loop control



INDUSTRIAL CONTEXT

To stay competitive regarding quick market evolution, Airbus needs adaptable assembly lines capable of :

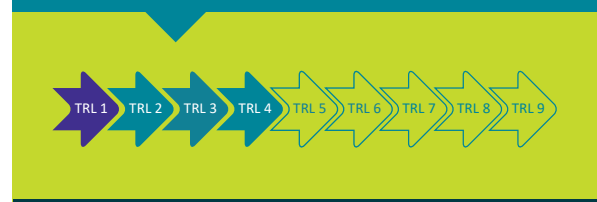
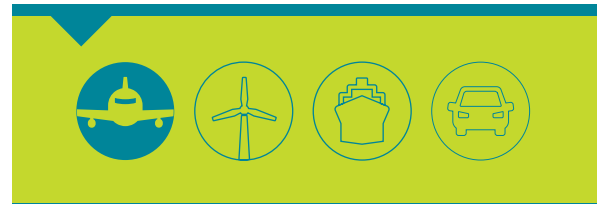
- offering flexibility in the production system (product variants & production rates),
- compatibility with modularisation,
- working without the use of gantry cranes, that are nowadays a real bottleneck,
- working with no fixed jigs on ground.

INNOVATIVE FEATURES

- ▶ Real-time consideration of mechanical flexibility of sub-assemblies and positioners to achieve relative positioning with the required accuracy.
- ▶ Implementation of a model-based design approach for robotic tools design.
- ▶ Development of a sensor-based control system based on local measurements for large parts assembly.

INDUSTRIAL APPLICATIONS

This flexibility need is also required for assembly of large structures in several other industrial sectors such as shipbuilding, boating or renewable energy. A dissemination strategy will be undertaken within this project to identify and assess similar use cases in other aeronautical activities (booster rockets, satellites, helicopter, missiles...) as well as in other sectors.



Partners

- ▶ IRT JULES VERNE
- ▶ AIRBUS
- ▶ ACSYSTEME
- ▶ CNRS (LS2N)
- ▶ IMT ATLANTIQUE
- ▶ INRIA

Budget

▶ 2 485 K€

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