



EURECA- Enhanced Human Robot cooperation in Cabin Assembly tasks

The EURECA project framework is dedicated to innovate the assembly of aircraft interiors using advanced human-robot collaborative solutions. A pool of devices/frameworks will be deployed for teaming up with human operators in a human-centered assistive environment, always ensuring safety requirements. Solutions are peculiarly designed for addressing both the working conditions and the management of the cabin-cargo installation process. EURECA aims at providing the following technologies:

1. Lightweight Mobile Arm (LMA), an actuated mobile platform equipped by a lightweight manipulator, will assist the assembly of light components. The LMA will perform autonomous tasks for assembly light and small components and it will cooperate with humans in handling and assembling large, light and flexible components, navigating autonomously in the cabin and supplying the different parts by a passive trolley (transporter).
2. Wearable upper arms exoskeleton will be used to assist the human operator in handling and assembling of heavy parts. The exoskeleton will improve the human ergonomics in handling heavy objects, allowing the execution of tasks where two or more people are necessary having a fast attach/detach interface.
3. Continuous update and adaptation of a map of the aircraft's cabin, including permanent/temporary obstacles (seats, exoskeleton structure, human operator moving, etc.) by RGB-D camera sensors mounted on the LMA.
4. A software platform, called Application Assistant, will enhance human-robot cooperation in all process phases, supporting the generation of programs and the issuing of commands/requests by the users. The Application Assistant will be a layered architecture that will provide the users with different services in creating, scheduling and executing applications. The Application Assistant will implement multi-modular interfaces to humans, as a projector beam to give feedback to the user about the operation status and the actions to be taken.

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