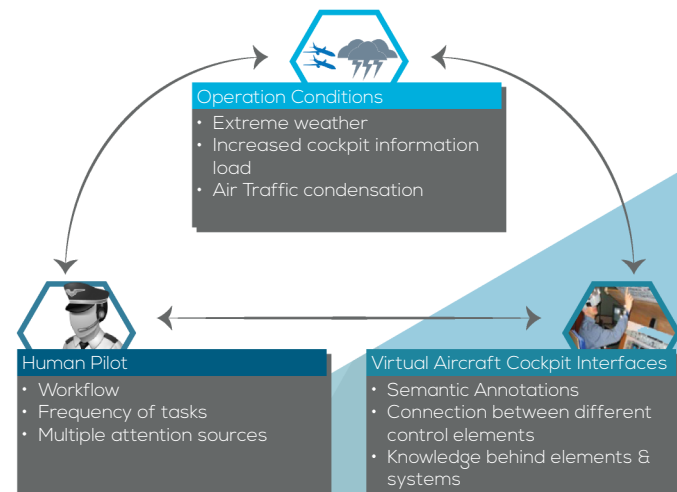


Motivation

Aeronautic and aerospace industries want to reduce product development times and costs but face a major obstacle: The need to build several physical prototypes for verifying various factors during the design process. Human factor considerations in the design process play a crucial role in the reliability and resilience of the systems involved, from an operational and error-tolerant point of view.

The application of human task and cognitive workload analysis are significant for system design purposes; however, in current systems the analysis and the analysed artefacts are decoupled and implemented as separate entities. Such separation leads to high manual effort for integration, while missing chances for automation and therefore cost reductions.

i-VISION will progress the current status of cognitive-human analysis of operations in aircraft cockpits using VR technologies, by advancing the methodologies with requirements from modern operating conditions.



Who we are



Laboratory for Manufacturing Systems & Automation
Coordinator



AIRBUS Group Innovations
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AIRBUS Group Innovations
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OPTIS



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EASN
Technology Innovation
Services

i-VISION project website



www.ivation-project.eu

This project is endorsed by the European Aeronautics Science Network



Designed by EASN-TIS



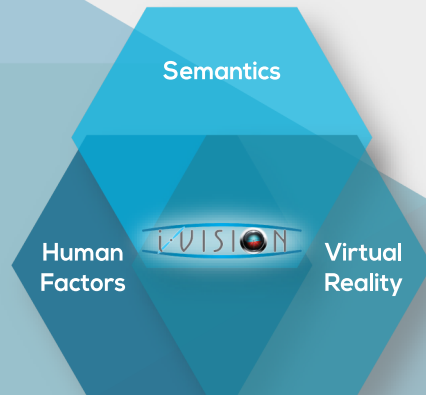
**Immersive Semantics-based
Virtual Environments
for the
Design and Validation of
Human-centred Aircraft Cockpits**



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 605550.

Aims & Objectives

The i-VISION project aims at supporting human factors design and validation activities in aircraft cockpits, during the early phases of the product life-cycle through knowledge-based immersive virtual reality technologies. The project has the following three distinct and complementary scientific and technological objectives:



Human-Cockpit Operations Analysis

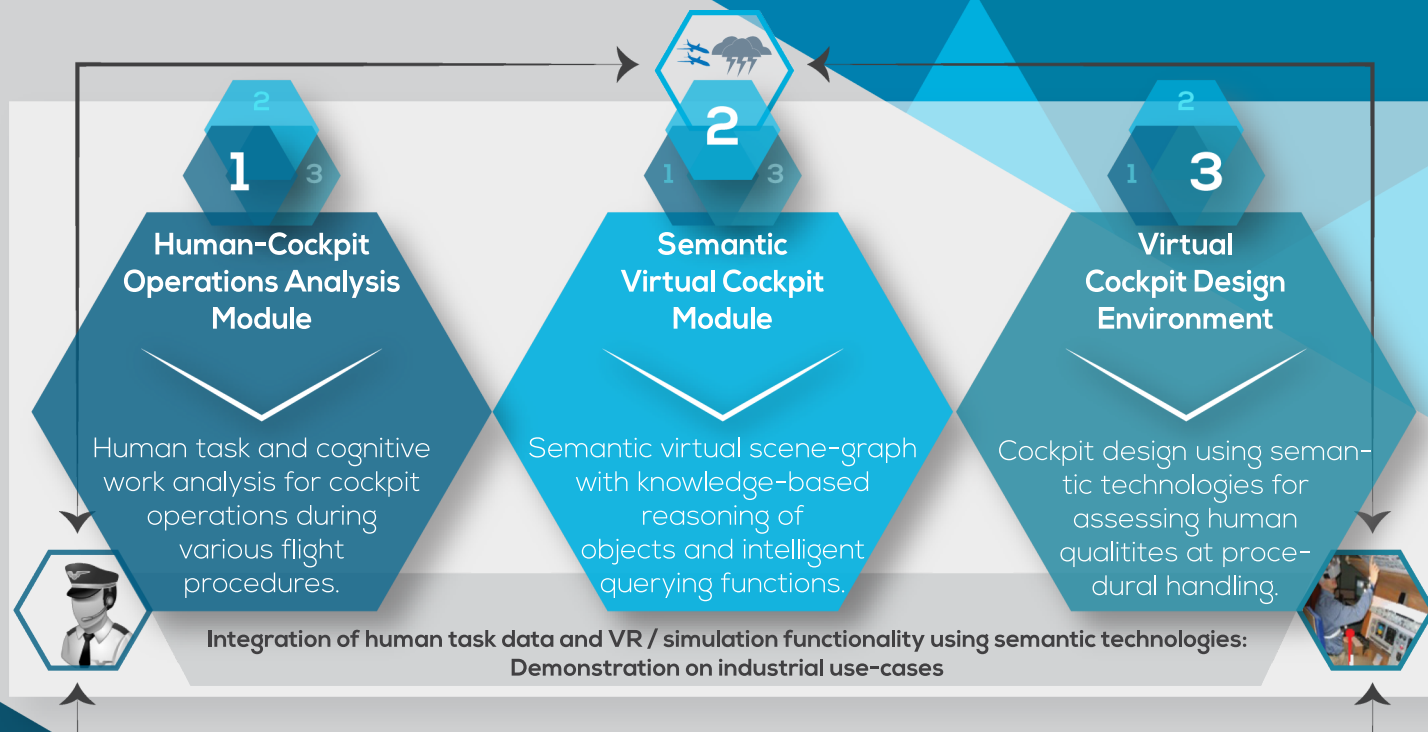
Advanced human factor methods for analyzing the human procedures and tasks during various phases and operating conditions in a virtual reality (VR) based aircraft cockpit.

Semantic Virtual Cockpit

Semantic technologies will be used so as to enable engineers and human factor experts to assess a virtual aircraft cockpit in a timely and cost-effective way.

Virtual Cockpit Design Environment

An advanced VR environment will serve as a reusable and low-cost simulation test bed for experimenting with various configurations and set-ups of virtual cockpits. It will allow the human-centered assessment of future cockpit architectures.



Expected Results

Outputs...

- i-VISION, through a unique combination of will act as the basis for the human task and research in the areas of human factors, semantics and cognitive workload analysis.
- The semantic virtual cockpit module will provide the semantic-based scene-graph and human task data processing and management engine.
 - The virtual cockpit design environment will be the advanced design environment for interactive and intuitive virtual prototyping of modern aircraft cockpits, facilitating knowledge-based simulation technologies.
- i-VISION will deliver three distinct technological components that are integrated and validated together with the industrial partners:
- The human-cockpit operations analysis module

... & Impact

The knowledge-based technologies of i-VISION will accelerate the design process through the systematic reuse of knowledge, while allowing for faster and more flexible prototyping of aircraft cockpits.

In addition, the analysis of human operations will result in highly competitive cockpits from the end-user's perspective and will increase the utilization of future aircraft by allowing human pilots to operate in extreme weather and traffic conditions.