PROJECT

MINIMA

Mitigating Negative Impacts of Monitoring high levels of Automation

Funding: European (Horizon 2020)
Duration: May 2016 - Apr 2018
Status: Complete
Total project cost: €582,780
EU contribution: €582,780

Call for proposal: H2020-SESAR-2015-1
CORDIS RCN : 202667

Background & policy context:

Assigning tasks, formerly executed by human operators, to automation can increase the performance in many aspects of ATM. However, the absence of automation errors can often not be guaranteed. Consequently a human operator is required to monitor the automation and to intervene in the rare cases of automation errors. It has been shown that this monitoring role of human operators results in negative effects like lack of attention, loss of situation awareness and – in the long term – skill degradation.

Objectives:

This project will develop solutions to mitigate these effects. As an example a highly automated arrival management task in which the aircraft follow their predefined 4D-trajectories will be investigated. As neither the automatic detection and resolution of all conflicts nor the ability of all aircraft to follow their trajectories with the required precision can be guaranteed all the time, a human operator is needed to monitor and handle situations in which automation fails.

Methodology:

New human-automation interaction design concepts for this task will be developed from scratch in three steps in this project: First, the task environment will be analysed to identify all the necessary tasks that can be assigned either to the human operator or the automation. Secondly, concept for different solutions will be developed considering the human performance envelope. This includes adaptive or adaptable automation with dynamic task distributions, tools to direct the operator attention, and suitable human-machine interfaces. In a third step, different human-automation design concepts will be evaluated.

Identifying how to apply higher automation to complex systems while mitigating the negative effects of monitoring tasks will allow benefiting from performance increases of higher levels of automation while keeping the human operator performance on a high level to ensure safe operations.

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:

Deutsches Zentrum Fr Luft Und Raumfahrt E.v
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**Partner Organisations:**

**Office National D' Etudes Et De Recherches Aérospatiales**

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**EU Contribution:** €174,041

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**Organisation Website:**
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**EU Contribution:** €192,000

**Technologies:**

- Aircraft operations and safety
- Automated systems

**Development phase:** Research/Invention

**STRIA Roadmaps:**

- Cooperative, connected and automated transport
- Network and traffic management systems

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Safety/Security

**Geo-spatial type:** Infrastructure Node