A Human Factors Approach to Self-Explanatory Automation for Fighter Aircraft

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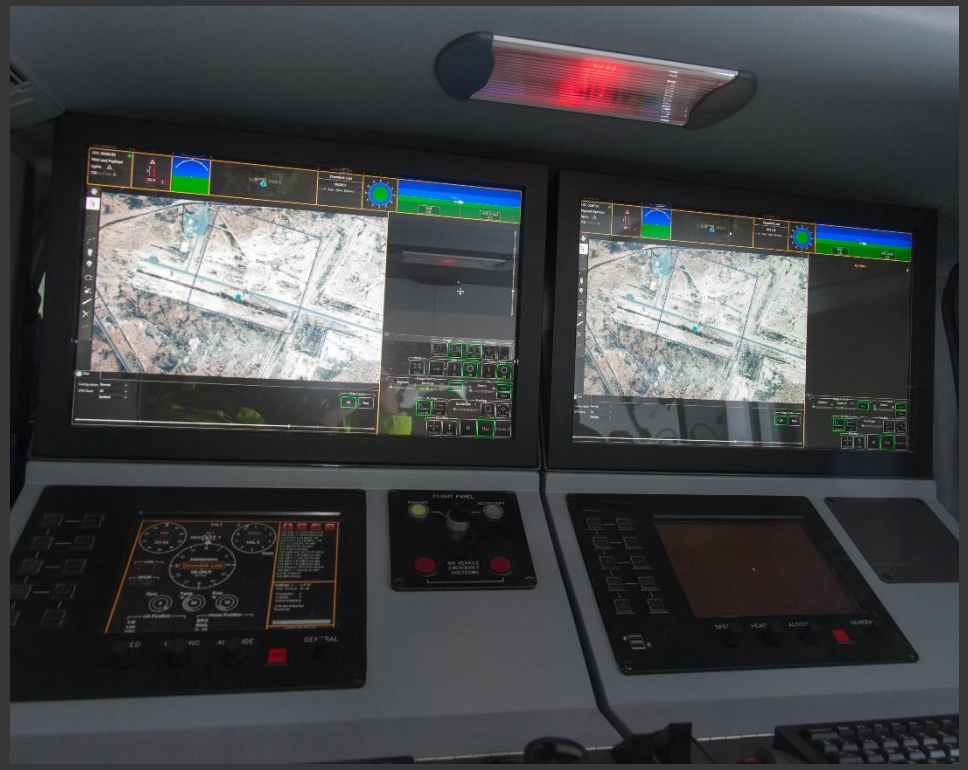
Background

- Advanced and sophisticated automation is increasingly being used to support pilots in safely and efficiently operating aircraft.
- In particular fighter pilots, and operators of unmanned aircraft, work in a highly automated environment, occasionally encountering information overload and extreme workload.

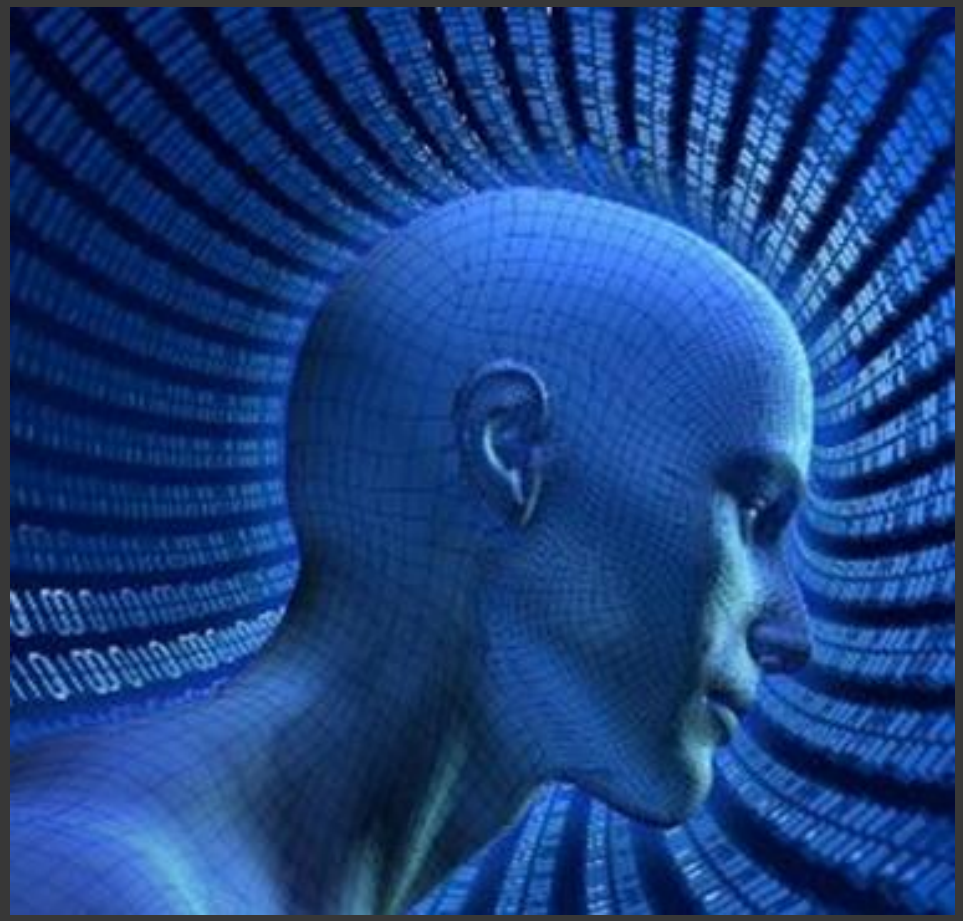
Interacting with automation

- Automation capacity and complexity, together with a high opacity (i.e. low visibility, hiding its inner workings), may hamper human-machine cooperation and result in the human being confused (**out-of-the-loop**), not able to understand (**automation surprises**) what the automation is doing and why.
- As such, it is essential to understand and support the unique aeronautical decision context in operators' interaction with automation to aid flight safety and to enhance mission effectiveness for fighter aircraft.



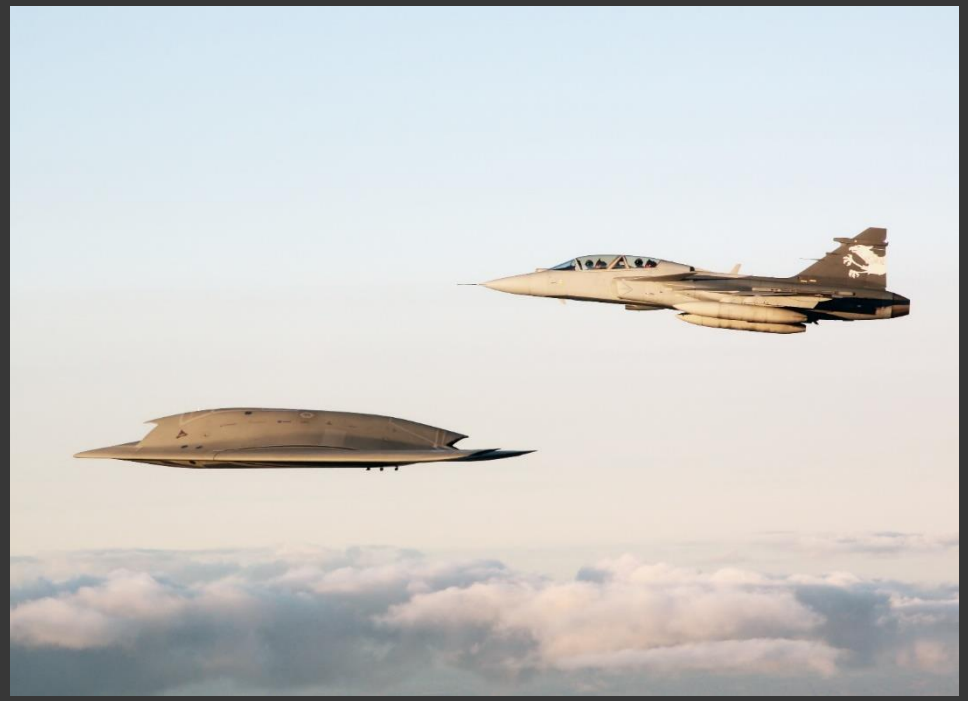
Project characteristics

- Industrial PhD student work at SAAB and Linköping University
- The project will yield knowledge and value for maintaining and supporting safe and efficient human-automation collaboration in future fighter aircraft systems:
  - In particular automation understanding and interaction, of operators such as fighter pilots and controllers of unmanned aircraft
  - Support the development of operators from novices to experts.



Applications

- Future applications include intelligent systems in aircraft and on the ground, mainly within the area of HMI and decision support for operators in complex scenarios, but also within the area of intelligent/autonomous systems.
- Self-explanatory automaton is expected to strengthening human-automation cooperation and teamwork, allowing the use of more sophisticated support systems.



Scenarios and simulations

- Important to identify and describe scenarios, use cases and situations for fighter pilots, also with relevance for manned-unmanned teaming:
  - Link loss
  - Handover
- The methodological approach is to identify, model, and simulate relevant critical situations where design principles for self-explanatory automation are empirically evaluated:
  - Simulations