

The value of Low Fidelity Simulations to Explore operational concepts

The use-case of pilot incapacitation in SPO

Ricardo Jose Nunes dos Reis (rjreis@embraer.fr), Ana Lidia de Almeida Castro, Gianmaria Mallozzi, Aurora De Bortoli Vizioli

EAAP34 Conference, 26th-30th September 2022, Gibraltar



Single Pilot Incapacitation

Safeland Operational Concept

Stakeholder interviews

Three Operational Concepts Alternatives

Task Analysis > Preliminar Concept

Real Time Simulation Validation Plan



Human Informed Risk Design

Low Fidelity Simulations

Immersive, Human-in-the-loop

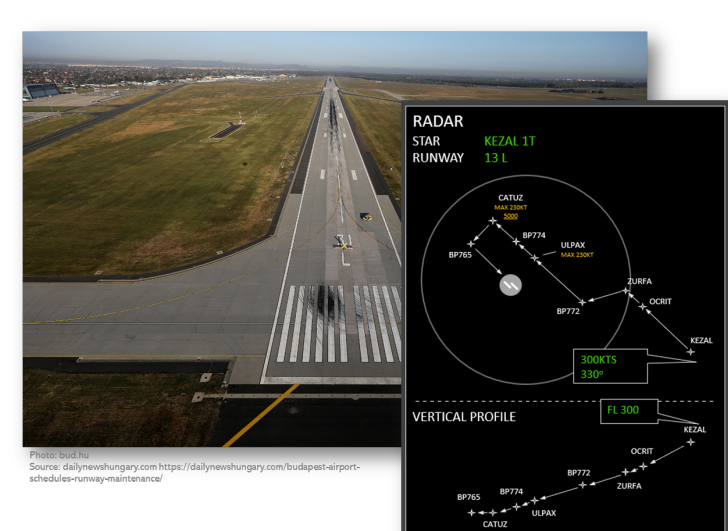
Low cost & quick

Operational representativity

Key Research Questions

Can the role be fulfilled?
Can GSP react properly to incapacitation?
Can GSP handle incapacitation during vectoring?
Are procedures clear, effective?
Workload ... ?
Situation Awareness ... ?
Communication ... ?

Realistic Scenario Design



STAR QUEZAL for Budapest
Workload
Situation Awareness
Communication
Teamwork

Set-up



3 scripts
3x ~50 slides ppt deck
1 ppt manual & video
Standardized questionnaire
Semi-structured debrief

Trials



7 runs/pilots
questionnaire
debrief
~20 hours
MS Teams

Reflexion Synthesis



SPO Insights

No major obstacles identified
Open issue: Ground Pilot in Nominal SPO, "active" or "passive"?
Phraseology needs standardization : "new CRM"
Advanced Automation specifics will impact feasibility
Real Time Simulation protocol was improved
Minor HMI adjustments suggested
Hazard mapping improved

LFS Insights

Overall feedback: very useful
Clear Boundaries & Goals: LFS must be cheap & quick
HPAP was a good questionnaire framework
Crucial: SME involvement in design
The building journey is itself valuable: improved operational understanding
Issues become explicit, promote discussion



The work described was performed in SAFELAND, a project that has received funding from the European Union's Horizon 2020 SESAR Research and Innovation action under Grant agreement No 890599 and, in SAFEMODE, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814961.

Get the details at

