

# ASTAIR

## Auto-Steer Taxi at Airport

Towards more automated airport ground operations

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ASTAIR aims at designing a support tool for fully automated ground operations supervision.

- Ensure better predictability.
- Foster Human – Automation Teaming.
- Greener ground operations.

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## Definition

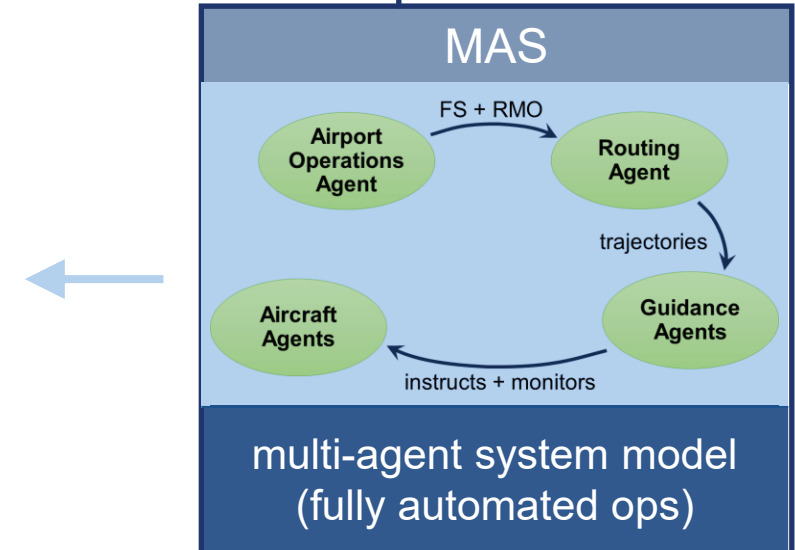
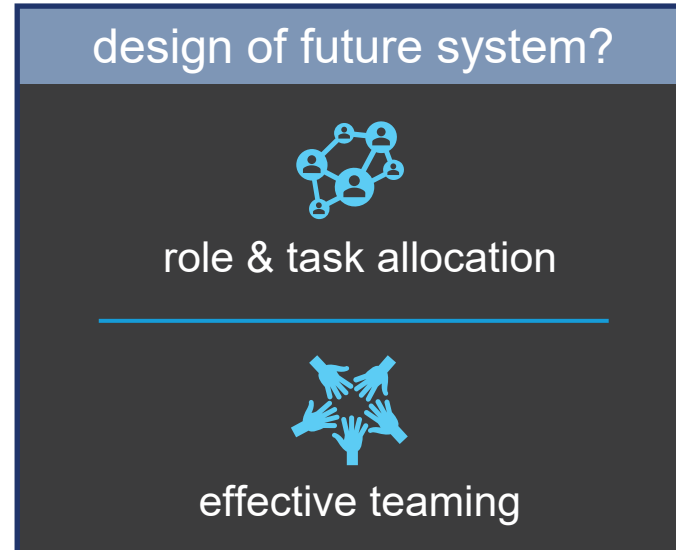
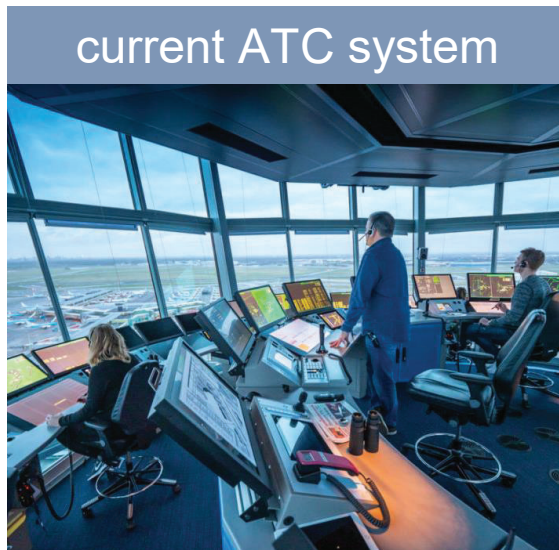
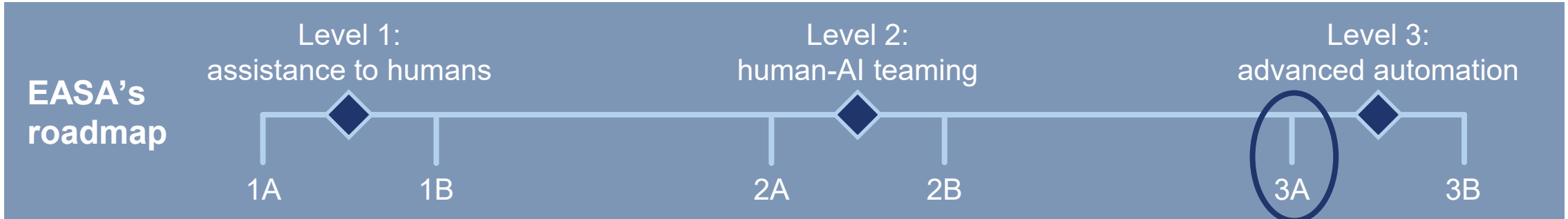
In the near future, aircraft may be able to automatically follow a given route, either they are equipped with autonomous taxi or they are towed engines off by a tug.

The ASTAIR project will explore use cases where humans and AI collaboration can bring safer and more predictable ground operations.

New paradigm for ground management with multiple actors collaborating with an AI.

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## Levels of automation



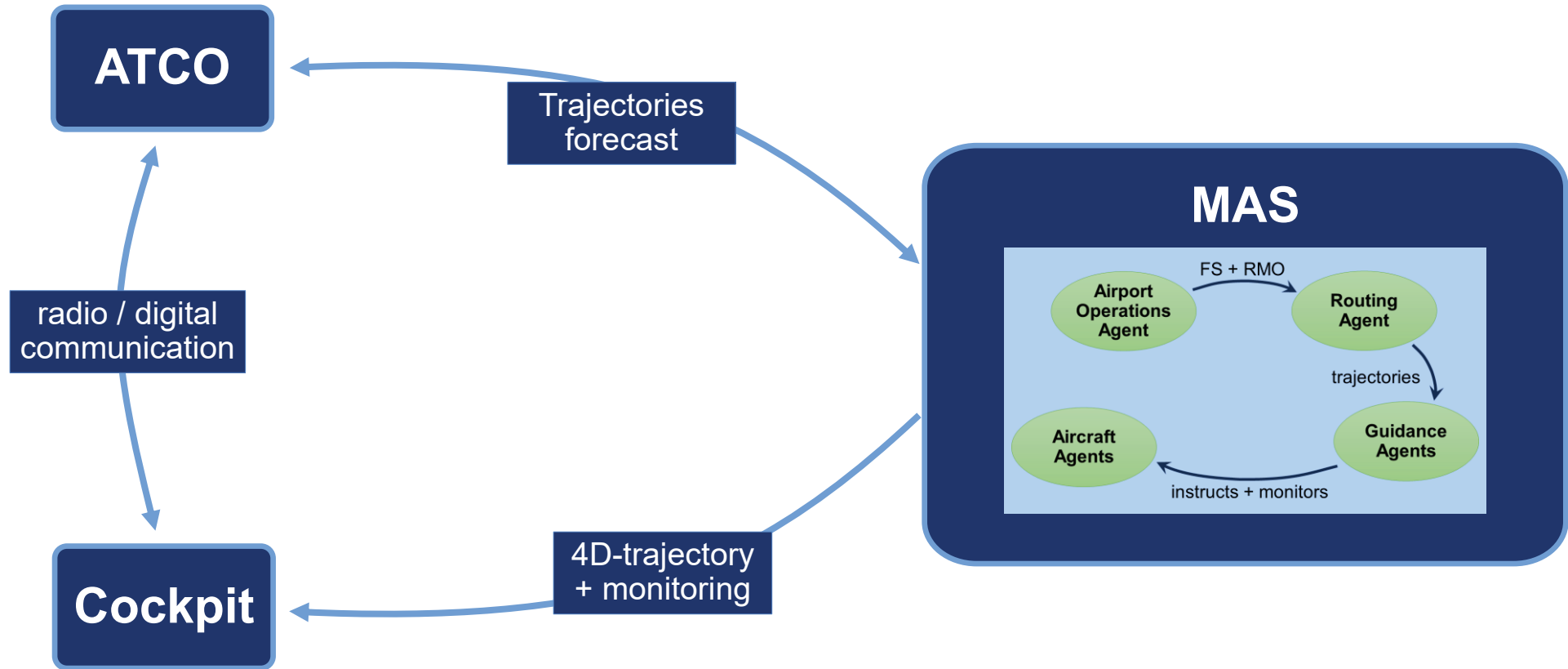
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## Multi Agent System

- Yes it is AI !
- MAS model over classical routing algorithms for scalability.
- No deep learning model is capable of managing so many features, and we cannot take the risk of AI hallucinations.
- We are looking at an automated system (whatever the embedded AI is)

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## MAS Definition



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## Human-AI Teaming



Human - AI collaboration enablers:

- AI results exploration is necessary for human operator understanding.
- Most AI regulations cannot be directly explained.
- AI decisions sometimes needs to be cross checked by human operator.
- AI cannot find solutions to all operational events, real time inputs from human operator could improve overall plan.

We need requirements that are across the entire system, from HMI to algorithm

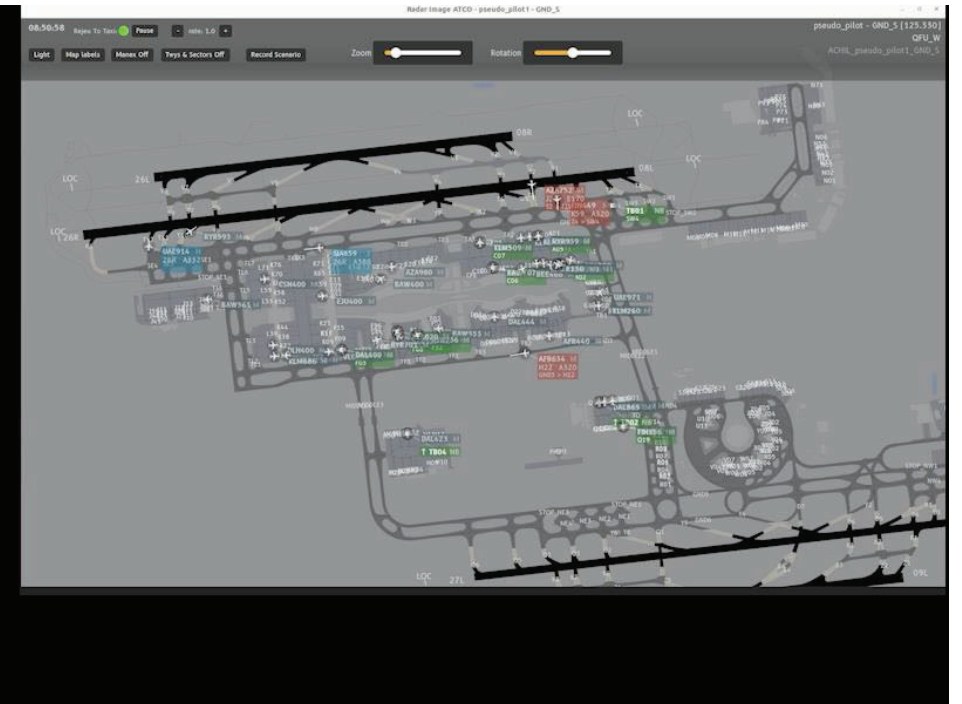


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## Working position setup



Automation supervision



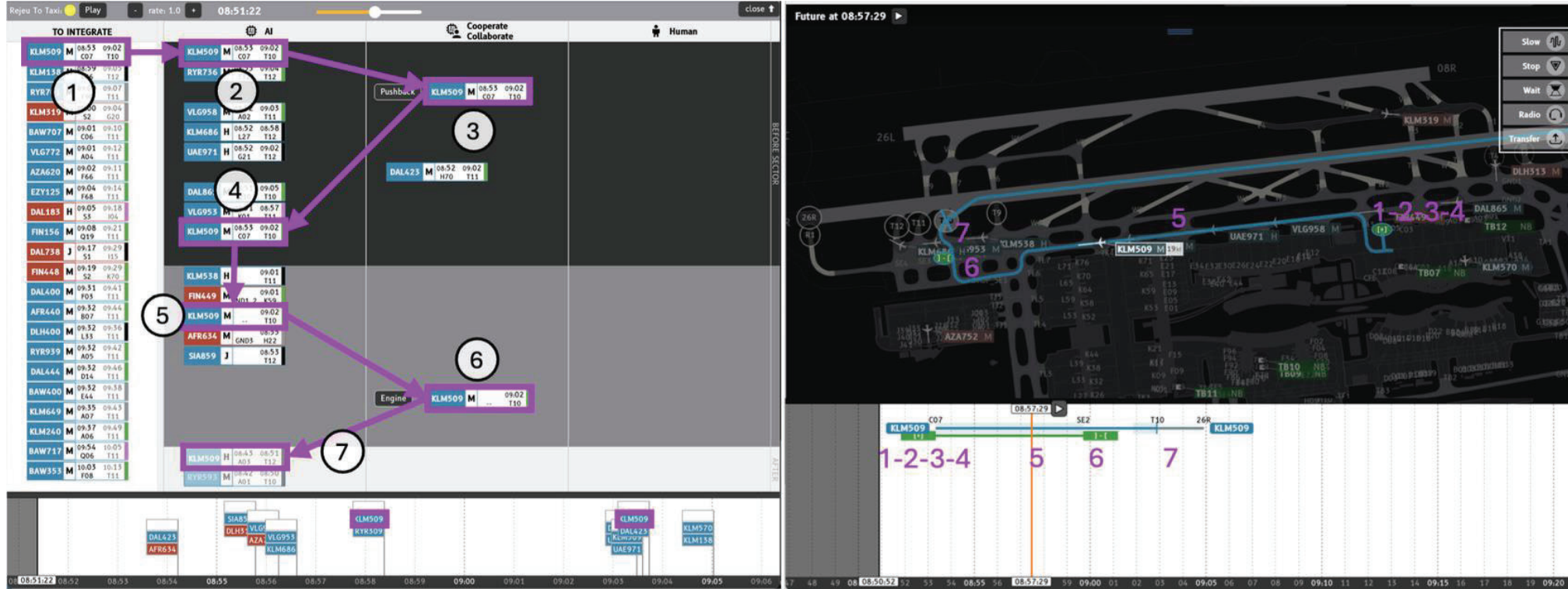
Real time ground radar image

AI collaboration

AI solution exploration

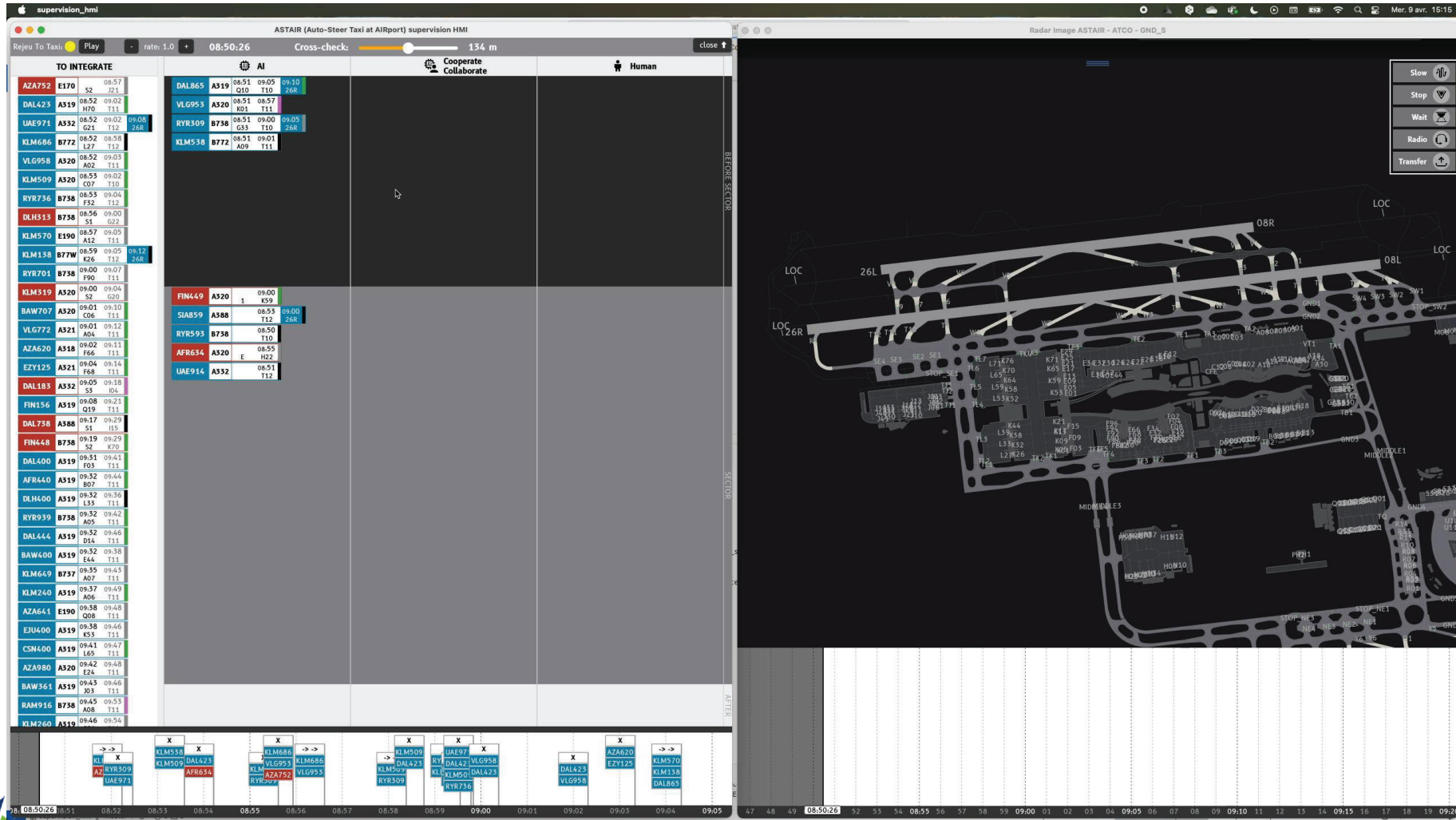
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## Normal workflow



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# Designs



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## Next challenges

- Deal with uncertainty in space and time.
- Degraded mode for automation failures.
- Computation times / What if.
- Blend into the larger ATM system.

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