



Integrated Airport Operations: Solutions implementation and integration in Hamburg

Markus Brachner (Markus.Brachner@sintef.no)

SINTEF

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Founding Members





- Headquartered in Norway
- Independent research organization founded in 1950 that conducts contract research and development projects
- 2000 employees from 75 countries
- Focus on aviation research since we joined the SESAR programme in 2008 via the North European ATM Industry Group (NATMIG)

Air Traffic Controller ...



What my friends think I do



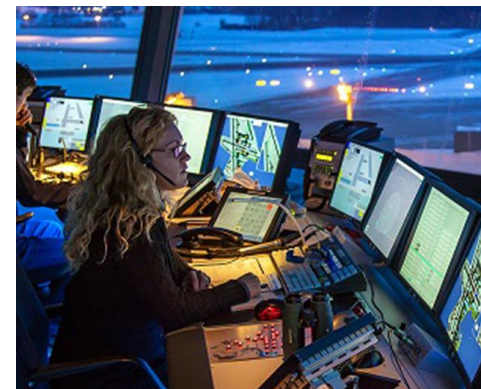
What my mum thinks I do



What the pilots think I do



What I think I do



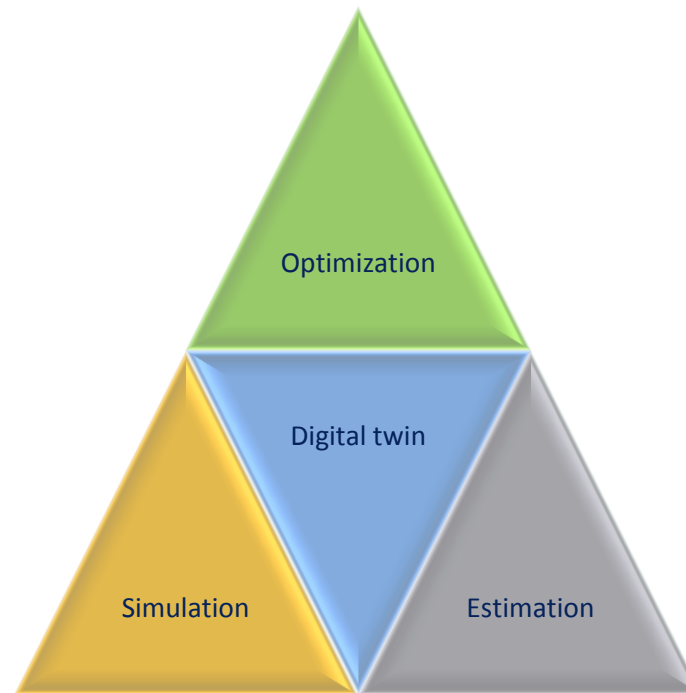
What I actually do

What SINTEF thinks I do



Solutions implemented using the SINTEF ATC Library

Building blocks for implementing ATC services



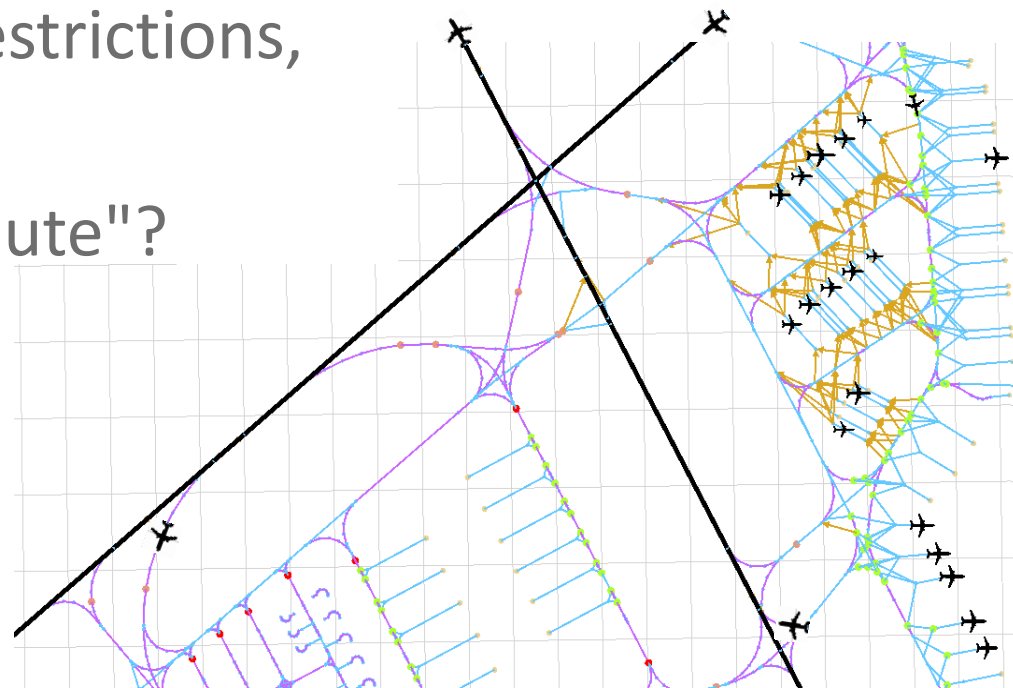
Service oriented design to easily integrate into existing systems

Facing reality in the VLD



Routing

- Make optimal routes from stand to runway and vice versa
- Taking into account constraints on aircraft class, turning restrictions, closed taxiways, etc.
- What is the "optimal route"?



Why do we actually need the digital route?

Solution #02
Airport safety nets

Solution #23
D-TAXI for the CPDLC application

Solution #26
Manual taxi routing function

Solution #47
Guidance assistance through AGL

Solution #53
Pre-departure sequencing supported by route planning

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Solution #22
Automated Assistance to Controller for Surface Movement Planning and Routing

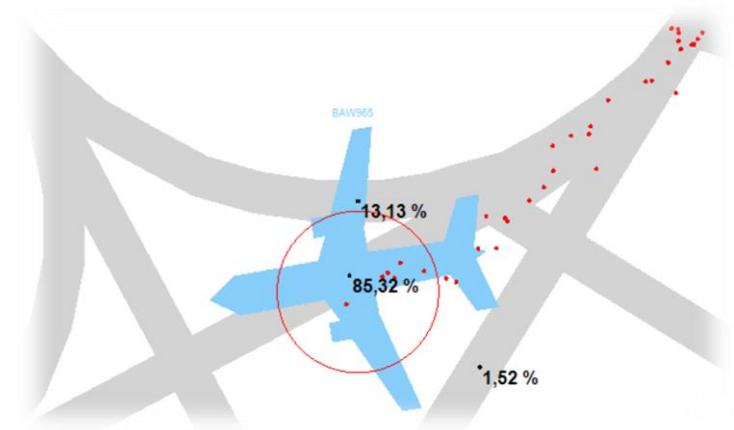
Pre-departure sequencing



- Routing coupled with DMAN
- Taxi times calculated from routes are used to plan the TSAT
- $TSAT = TTOT - EXOT$
- But:
 - AXOT is varying, so should it be the minimum EXOT, the average EXOT, or in between?
 - Effect on competing goals, e.g. runway throughput

Airport Safety Nets

- Accuracy and frequency of positional measurements is crucial
- Newly developed AI algorithm for probabilistic reasoning over time
- Context-awareness, taking different data sources and (e.g., information about airplane state and the network) into account



Other considerations



- Integration into an existing system
- Data accuracy and actuality (for example, airport layout)
- Giving the controller the necessary flexibility



Integrated Airport Operations (PJ28)

Questions?

Markus.Brachner@sintef.no



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