



Multiple Remote Tower – Challenges and Solutions

Validation Exercise with DFS
SESAR PJ.05.03

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Knowledge for Tomorrow



Validation Context PJ.05.03

- Which impact does Multiple Remote Tower have on...
 - Human Performance
 - Safety
 - Capacity
 - Cost Efficiency?



Set-Up EXE-05.03.V2-3.5 – DFS

Multiple Remote Tower module:

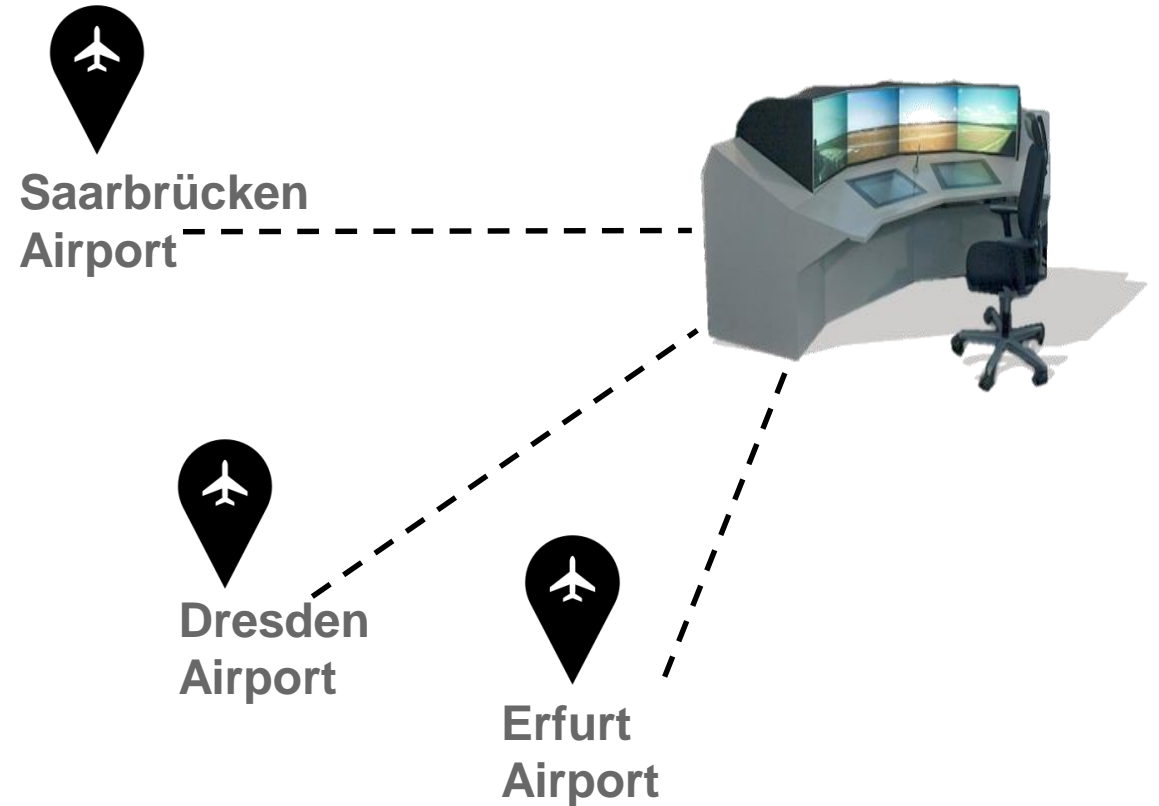
- ATS provided to 3 medium-sized airports
- DFS real-time simulation platform
- Frequentis smart strip planner prototype

Participants:

- 7 ATCOs from DFS

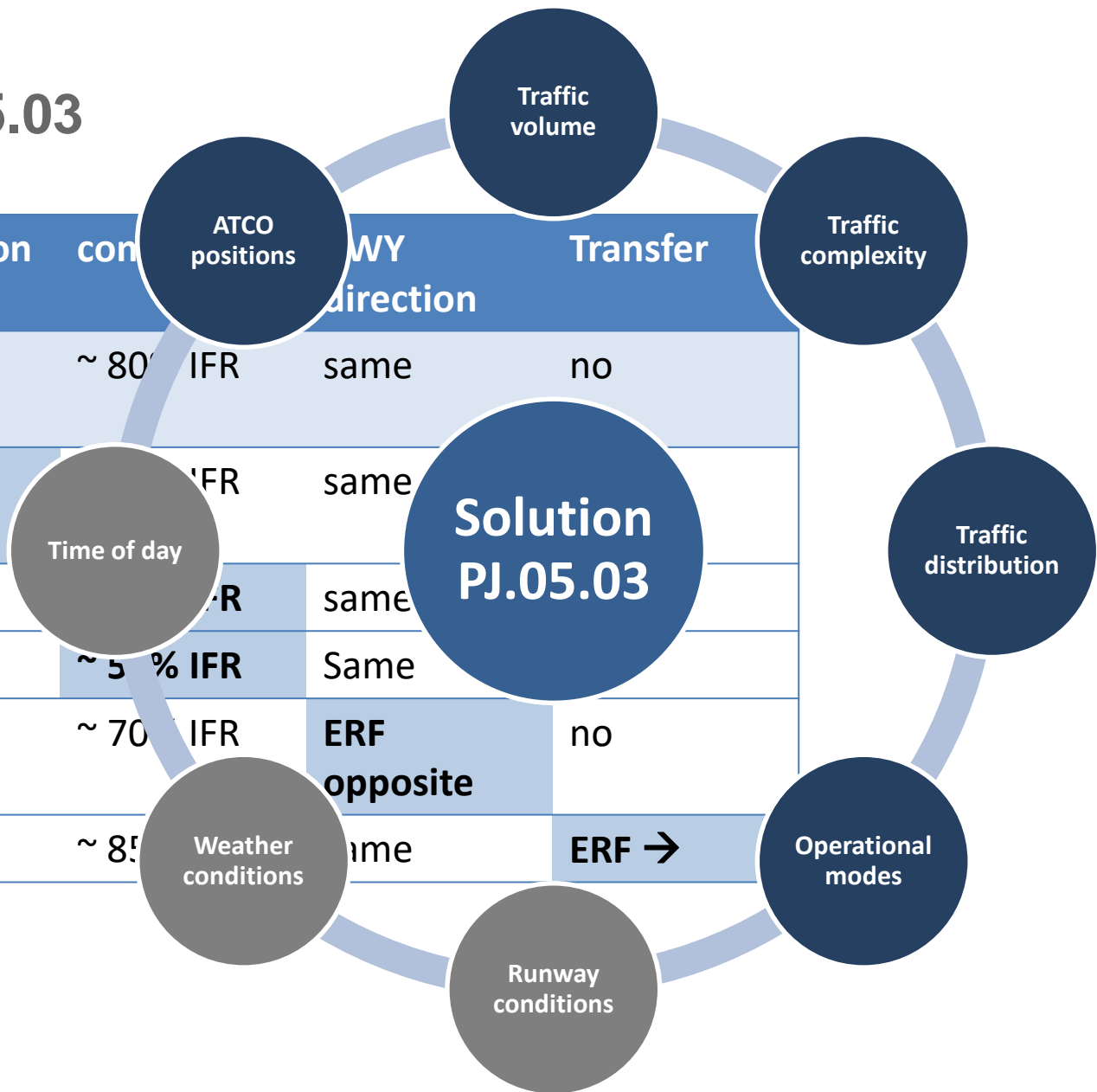
Design:

- 6 scenarios with different variables



Key Parameters for PJ.05.03

SCN	volume (mov/h)	distribution	conf	ATCO positions	RWY direction	Transfer
Baseline	24	even 8/8/8	~ 80%	IFR	same	no
Uneven	24	uneven 4/16/4		IFR	same	
VFR 1	24	even		IFR	same	
VFR 2	18	even	~ 5%	% IFR	Same	
RWY dir	24	even	~ 70%	IFR	ERF opposite	no
Transfer	32	even	~ 85%		same	ERF →



→ up to 6 simultaneous movements



Agenda for the Exercise Days

	Monday		Tuesday		Wednesday		Thursday		Friday		
	ATCO 1	ATCO 2	ATCO 1	ATCO 2	ATCO 1 / 3	ATCO 2 / 4	ATCO 3	ATCO 4	ATCO 3	ATCO 4	
08:00											08:00
08:30											08:30
09:00					Break	Run 3			Break	Run 2	09:00
09:30			Run 2	Break	Run 5	Break	Break	Training	Run 4	Break	09:30
10:00							Run 1	Break			10:00
10:30	Briefing		Break	Training	Break	Run 4	Break	Break	Break	Run 3	10:30
11:00	Briefing		Run 3	Transfer	Debriefing		Break	Training	Run 5	Transfer	11:00
11:30	Training	Observation			Debriefing		Run 2	Break	Lunch		11:30
12:00			Break	Run 1	Lunch				Lunch		12:00
12:30	Observation	Training	Lunch		Briefing		Break	Run 1	Debriefing		12:30
13:00			Run 4	Break	Briefing		Run 3	Break	End		13:00
13:30	Lunch				Training	Observation			Debriefing		13:30
14:00			Break	Run 2	Observation	Training	Break	Run 1	Debriefing		14:00
14:30	Training	Observation	Short Debriefing		Training	Observation	Run 3	Break	Debriefing		14:30
15:00			End		Training	Observation	Short Debriefing		Debriefing		15:00
15:30	Observation	Training			Briefing		End		Debriefing		15:30
16:00					Briefing		End		Debriefing		16:00
16:30	Run 1	Break			End		End		Debriefing		16:30
17:00					End		End		Debriefing		17:00
17:30	Short Debriefing				End		End		Debriefing		17:30
18:00	End				End		End		Debriefing		18:00



Questionnaire Data & Debriefing

Questionnaires after each scenario and after the simulation covering...



human performance



safety



capacity



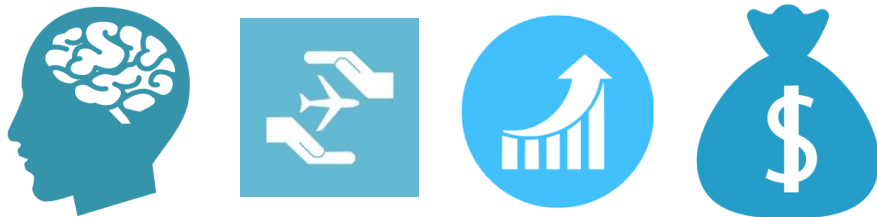
cost efficiency

ID	Question
PE01	I was generally able to perform the necessary ATC tasks.
PE02	My situational awareness was sufficient at any time.
PE03	I was generally able to prioritize tasks.
PE04	I was generally able to set up a traffic sequence (e.g. VFR into IFR; sequence on final).
PE05	I was able to identify all relevant aircraft.

... and additional debriefing interviews



Thank you for your attention!



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