

Airport Collaborative Decision Making

A-CDM in Germany

Presented by:

Adel Ramlawi

Regional Officer, Aerodromes, ICAO MID Regional Office Cairo

On behalf of:

Erik Sinz

Airport CDM and Total Airport Management, DFS Deutsche Flugsicherung, GmbH/German Air Navigation Services



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DFS Deutsche Flugsicherung

Content

- Motivation for Airport CDM in Germany
- Implementation basics – Definition / Process essentials
- Status of Airport CDM in Germany
- Results
- International

Motivation for Airport CDM

- Airports may become the „bottleneck“ in the ATM-System / No connection to the EnRoute phase
- No optimal use of Airport infrastructure and resources – Full picture is missing
- Not using all available data – “Sitting on Information” - Different definitions
- Being reactive rather than pro-active
- We have a blaming culture
- Operational processes at the airports require optimal adjustment between the different partners
- Airport Slots / Airport Schedule / EnRoute Slots are not respected
- The “First come first served” principle no longer applies
- Partner´s preferences and priorities are not always taken into account



Motivation for Airport CDM

Start and motivation of A-CDM in Germany

- It all started in the late 90's, after a very extreme adverse situation experience at Munich Airport
- Joint evaluation meeting was held to investigate what went wrong
 - Airlines; ATC; Airport Operations; Ground handling....
- One of the most surprising findings/conclusion was:



Motivation for Airport CDM

Start and motivation of A-CDM in Germany

- Despite the same language and although we operate at the same airport
.....**we do not understand each other**.....

- Abbreviations
- Definitions
- Partners needs
- Reactions
- Way of thinking
- Regulations and requirements
- Processes for problem solving



**different
or
unknown**

“If I had known this, I would have reacted differently...”

Motivation for Airport CDM

- So the very first idea of Collaborative Decision Making was born at Munich airport, with the main focus on:



- Common Situational Awareness
- General process during all kind of operations (regular/irregular)
- Coordinated execution of operational processes and decisions
- No Blame Culture
- Focus on the overall system “Airport”

Motivation for Airport CDM

- The main challenges and questions in this period were:
 - ➔ Convincing, convincing, convincing,
 - ➔ What is my benefit...
 - ➔ What is with my data...
 - ➔ What are the costs....
 - ➔ We have never done this.....
 - ➔ Can't we buy a tool....



Motivation for Airport CDM

- After a bumpy start of the first CDM attempt in the early 2000's the decision was taken to start an official ACDM@MUC project in 2004
- Main project partners:
 - Munich Airport Company
 - DFS (ATC)
- Permanent participation of other local partners ensured Airlines, GH, De-Icing Company, etc.
- Close co-operation during the project implementation between ACDM@MUC and Eurocontrol
 - Proof of concept for European Airport operation programme
 - Support of European harmonisation and standardization issues
 - Joint development of ATFM network connection



Implementation basics - Definition

- Airport CDM is an overall operational process supporting an optimized TurnRound at an airport for all stakeholder/partner
- Airport CDM is about people and processes, not just about tools
- Airport CDM partners are:



Process – Essentials

GROB

Adverse Conditions

Pre-departure Sequence

In- & Outbound flight updates
(ATFM/ATC)

Variable Taxi Time Calculation

The Milestones Approach

Airport CDM Information Sharing



Completes A-CDM for all kind of ops

Leads from FCFS to BPBS

Connection to the EnRoute phase,
Efficient TurnRound planing

Better planning

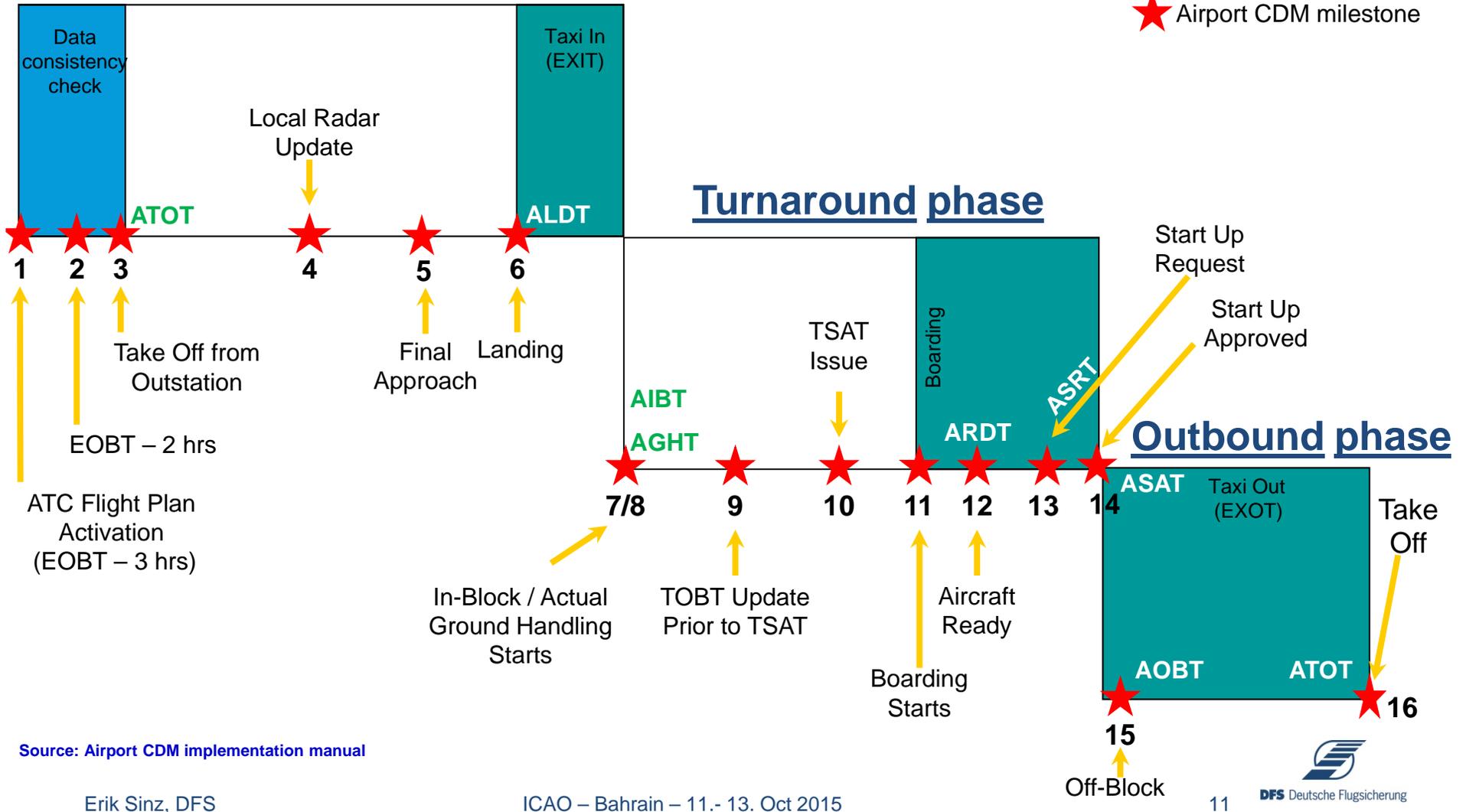
Key steps for the successfull
A-CDM process

Common Situational awarenes →
Baseline for all process parts

Implementation basics - Process - Essentials

- The original Airport CDM process has 16 defined process milestones

Inbound phase



Source: Airport CDM implementation manual

Implementation basics - Process - Essentials

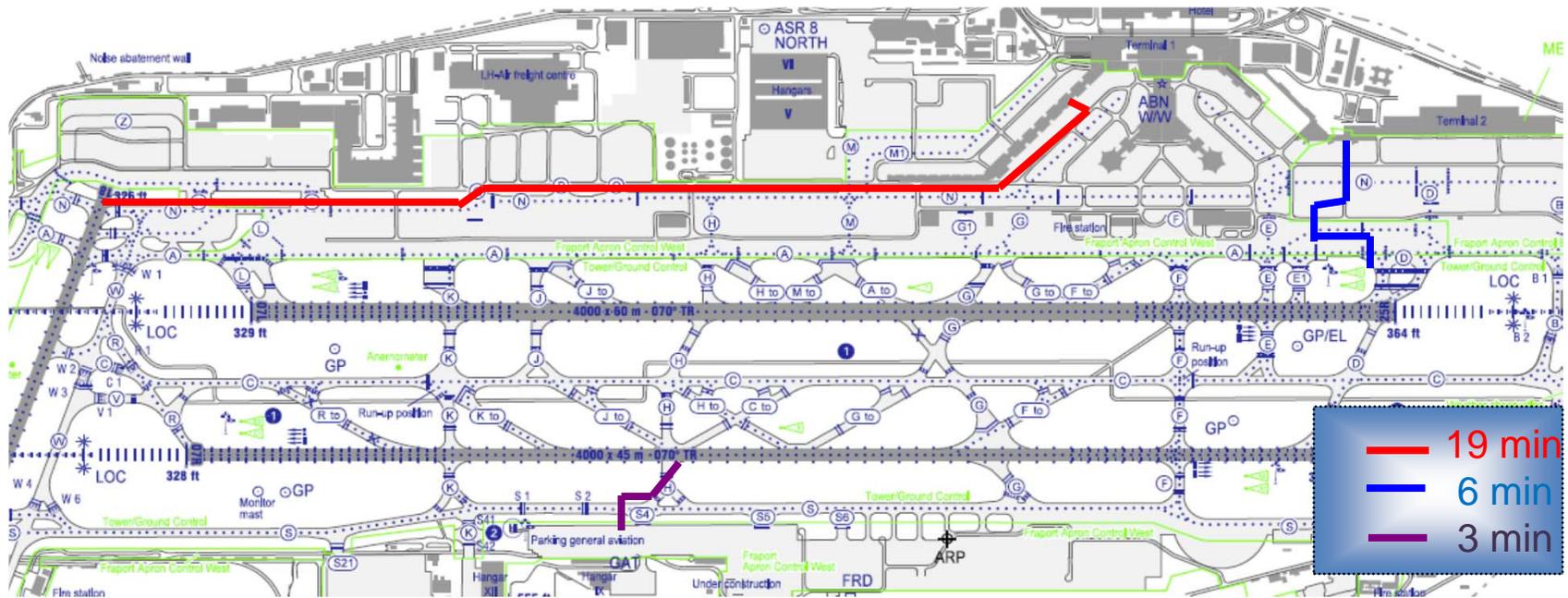
- Transparency and Information Sharing is the most important basic step to ensure „Common Situational Awareness“ for all partners



„The right information, at the right time, to the right people“

Implementation basics - Process - Essentials

- The use of Variable Taxi Times (VTT) replaces “NMOC Default Taxi Times” and ensures better prediction of Target Take of Times



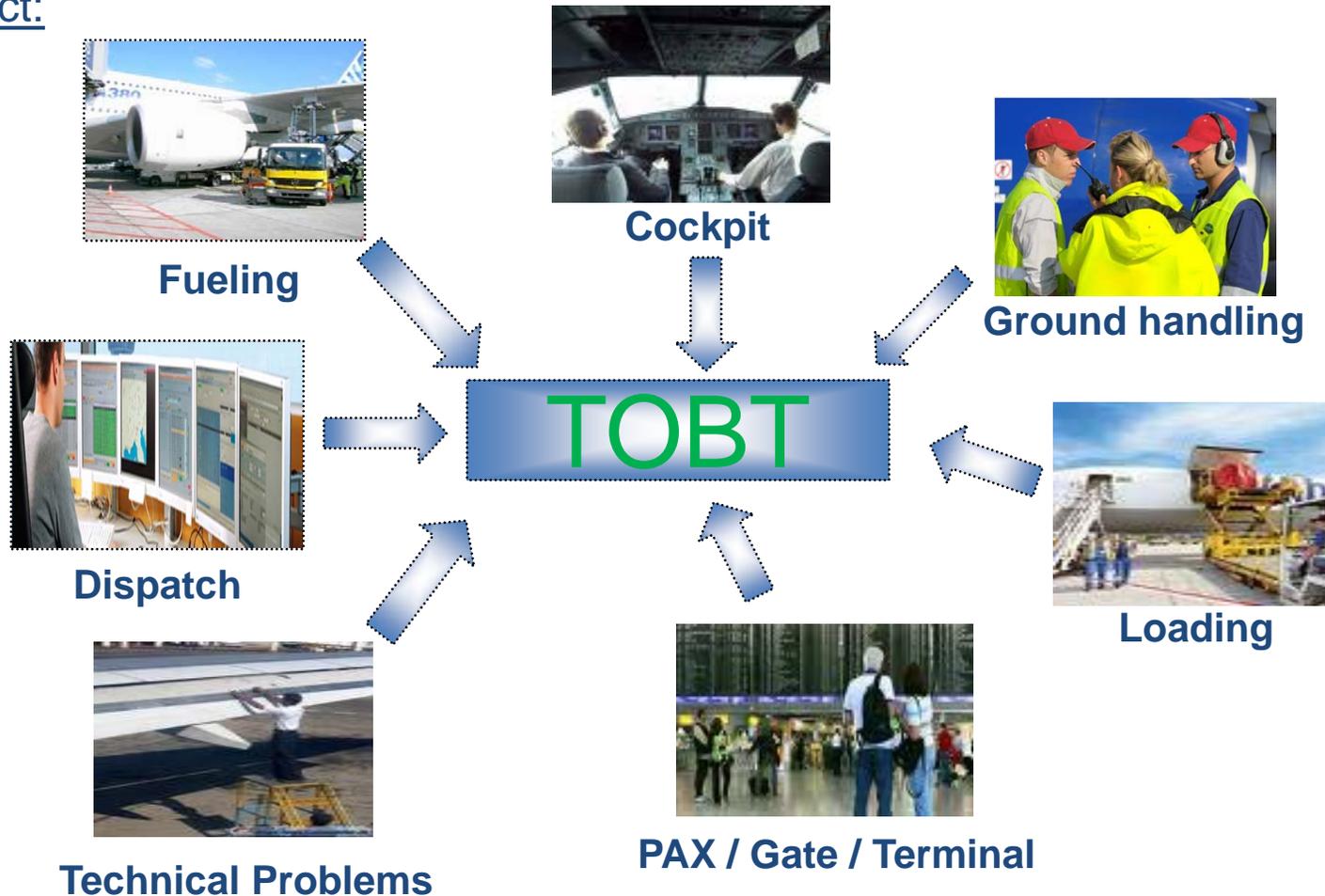
— 19 min
— 6 min
— 3 min

Average or default taxi time 15 min
 = lack of Take Off prediction quality (TTOT)
 = Non realistic CTOT for regulated flights

A-CDM variable taxi time considers:
 = Parking Position / Day / Hours / Rwy in Use
 = Optimized Pre Dep Sequencing (TSAT)
 = High quality of Take Off predictability (TTOT)
 = Realistic CTOT for regulated flights

Implementation basics - Process - Essentials

- The Target Off Block Time (TOBT), as the estimation of aircraft ready, is the Airline commitment to the A-CDM process
- Impact:



Implementation basics - Process - Essentials

- Target Start Up Approval Time TSAT is the Airport CDM commitment to the process
- Introduction of TSAT based on TOBT, VTT, CTOT and real operational capacity as driver for the „Pre Departure Sequence “
- Impact:



Weather situation



Traffic Demand



Infrastructural constraints



OPERATIONAL CAPACITY

NR	MAS	CSN	* TSAT	TOBT	CTOT	SID	EOBT	MDI
1	<	AFR1123	06:10	06:10*	07:01	GIV	06:10	
2	<	DLH826	06:35	06:35		GIV	06:35	
3		DHMI	06:38	06:35	07:50	GIV	06:45	
4	A	LNK298V	06:50	06:50*		MIQ	06:50	
5	<	DITAN	07:00	07:00*		RID	07:00	
6		DIOAK	07:01	07:00*	07:32	RID	07:15	
7		NDE309G	07:15	07:15*		MIQ	07:15	
8		DLI214	07:16	07:15		ANK	07:15	
9		NS180S	07:20			ANK	07:30	
10		DLH6UV	07:55			GIV	07:55	
11		DLH4YF	08:00	08:44		MIQ	08:00	
12	<	DLH7AF				MIQ	06:45	
13		BAG7102				MIQ	07:05	
14		BAG7082				GIV	07:10	
15		BAG10A				ANK	07:10	
16	>	DLH4HH			07:27	ANK	07:10	
17		BAG154G				GIV	07:15	
18		DLH8JK				EVI	07:15	
19		DLH6HV			07:56	GIV	07:20	
20		GvI7087				MIQ	07:20	
21		GvI081				GIV	07:30	
22		OLT631				EVI	07:40	
23		GvI308S				ANK	07:40	
24		LGL9722			08:30	RID	07:55	
25		DLH19H			09:33	GIV	07:55	



TOBT



De-Icing

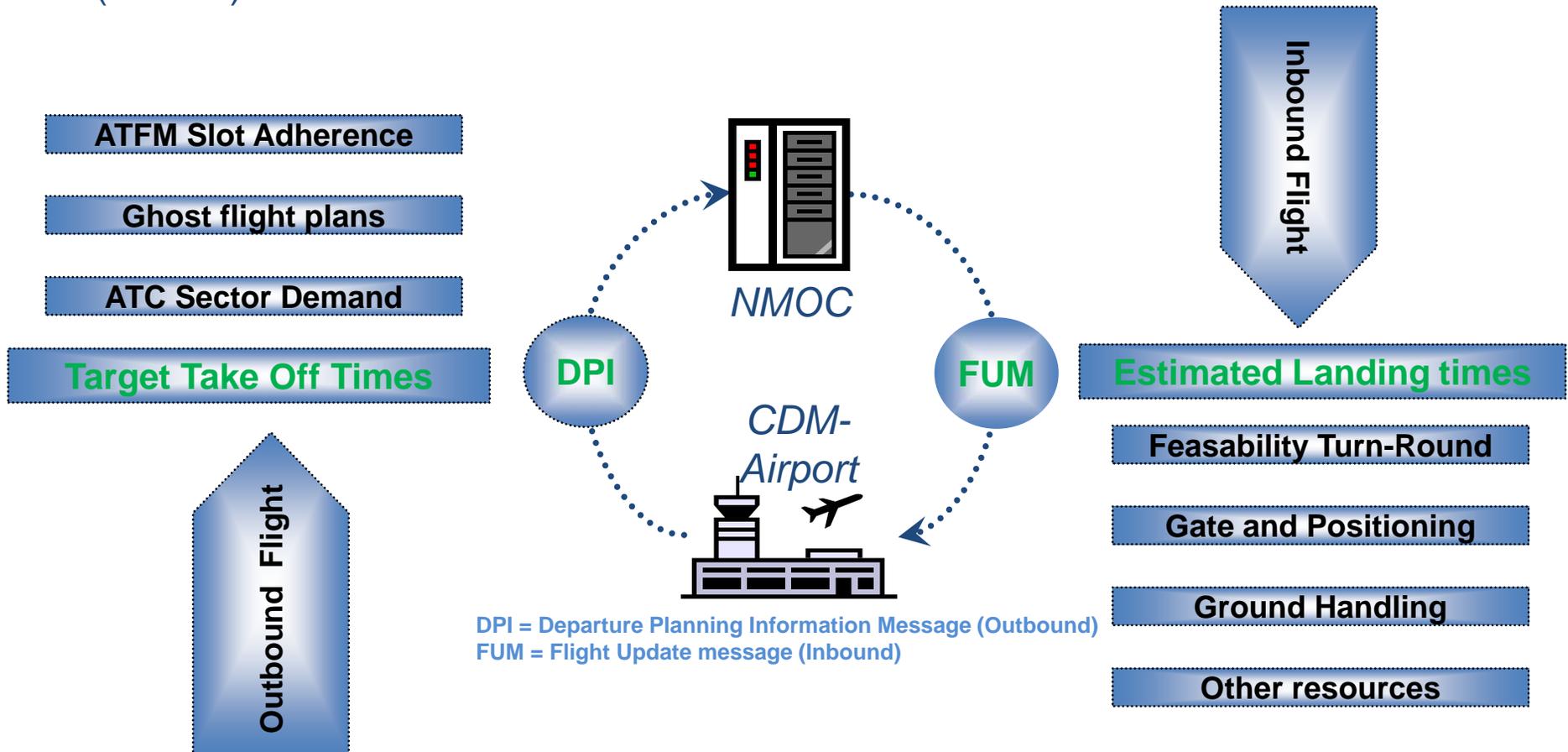


Taxitime

TSAT

Implementation basics - Process - Essentials

- Linking the airport into the European ATFM network by exchanging reliable In – and Outbound estimates/target times through automated Data exchange with ATFM (NMOC)“



- For countries or regions without C-ATFM – Connect your adjacent ATC units



Results

- Airport CDM at Munich Airport including local issues was successfully implemented in 2007
 - Foundation of European and German harmonisation/standardization
- Airport CDM projects started in FRA; DUS; BER; STR; HAM
 - Based on European and German harmonisation/standardization
- A German A-CDM harmonisation initiative group was founded

Objectives:

- Exchange of information and best practices between the different German CDM airports
- Achieve a common understanding of A-CDM in Germany and represent this understanding to the European Airport CDM harmonization process

“One face to the customer”

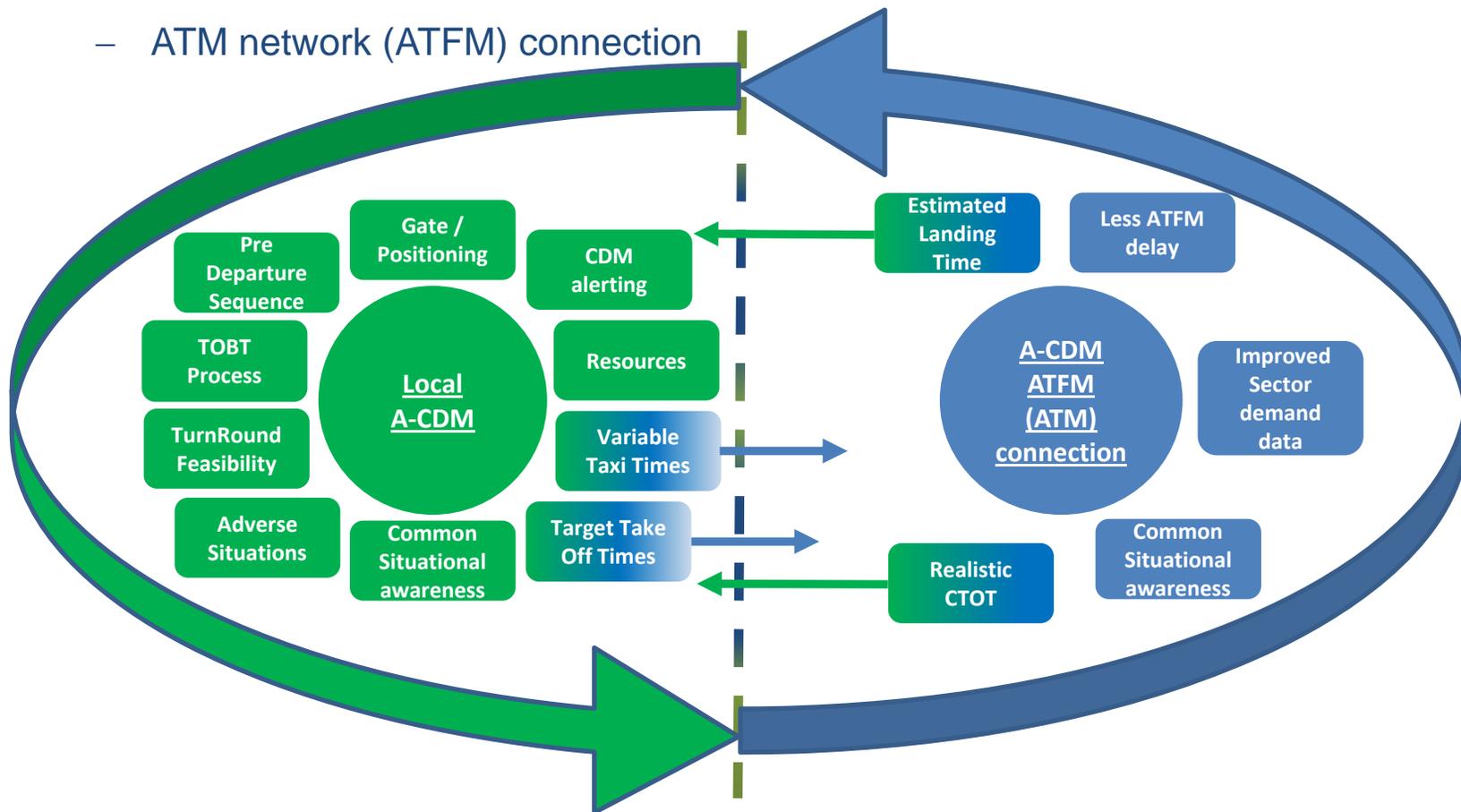
Results

	Munich	Frankfurt	Berlin	Düsseldorf	Stuttgart	Hamburg
DFS Project - Partner	FMG - Airport Company	Fraport - Airport Company	FBB - Airport Company	FDG - Airport Company	FSG - Airport Company	FHG - Airport Company
Movements	400.000	500.000	70.000	217.000	121.000	145.000
Runways	2	4	1	2	1	2
Project start	9/2004	8/2008	8/2009	7/2009	12/2009	9/2011
Project end	7/2007	2/2011	5/2014	4/2013	10/2014	Planned 12/2015
ATFM connection (NMOC)	Yes	Yes	Yes	Yes	Yes	Planned
Status	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Project phase



Components beneficial to Airport CDM

- There are two main components beneficial to a fully implemented A-CDM:
 - Local A-CDM process/implementation
 - ATM network (ATFM) connection



- Only a fully implemented A-CDM will lead to all following benefits

Results



Local results:

- Common Situational Awareness reached
- Very good involvement of all operational partners achieved
- Improved ground handling processes due to TOBT
- Reduction in controller workload
- No Blame culture due to a commonly shared A-CDM
- Local and ATFM network benefits measured and proven
- Improved programmability due to increased stability for all operational processes (Airlines, Airport; ATC) based on reliable target times (TOBT/TSAT/TTOT)
- Decrease in Taxi times
- Best use of available capacity
- A-CDM one of the key drivers for increasing the declared capacity

Results – Before / After Implementation



- Waiting time at the runway → decrease of approximately 2 min
- ATFM CTOT adherence → increase of approximately 20 %
- Airport Slot adherence → almost no flight without airport slot
- Late position/gate changes → reduced to a minimum (1%) due to better data and process quality
- Impact of arrival delay on departure flights → 80 to 90 % of arrival delay could be reduced or absorbed during the turnround process
- Taxi time → decrease of taxi time 10%
- Punctuality → 4,5% increase
- Less cancelled flights during adverse situations 5000 flights/y. → 0,5% decrease = 250 flights
- A-CDM one of the key drivers for increasing the declared capacity (1 to 4 movements per hour in average)

Conclusion

- Airport CDM:
 - Ensures an overall process for all stakeholder
 - Is not an IT-Tool – it just needs some supporting tools
 - Considers stakeholder´s needs
 - Requires cooperation of all stakeholder
 - Improves the operational efficiency at airports
 - Is „No-Blame-Culture“
 - Connects the airport to the ATM network (ATFM or ATC)
 - It is not cost intensive
 - Is not „rocket science“
 - Allows to being pro-active instead of reactive
 - Benefits are measured and proven
 - Means: „Best planned – best served“



Contact details



DFS Deutsche Flugsicherung

Erik Sinz
Senior Expert A-CDM / TAM / HUB / Capacity

DFS A-CDM national / international focal point

Chairman German A-CDM Harmonization Initiative

DFS Deutsche Flugsicherung GmbH
Am DFS Campus 10
63225 Langen

Telephone +49 (0) 6103 / 707 - 1573

Facsimile +49 (0) 6103 / 707 -1580

Email erik.sinz@dfs.de



DFS Deutsche Flugsicherung

Moritz Manzel
Consultant

Aeronautical Solutions
Sales and Consulting

DFS Deutsche Flugsicherung GmbH
Am DFS Campus 10
63225 Langen

Telephone +49 (0) 6103 / 707 - 2065

Facsimile +49 (0) 6103 / 707 - 4995

Mobile +49 (0) 173 / 6509968

Email moritz.manzel@dfs.de

