Airport CDM – General Concepts

ICAO SAM 3rd Workshop

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Lima, Peru
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EUROCONTROL

Airports:

1 nodes of the Network

2 bottlenecks to the Network

3 new/expansion very difficult

Airport Challenges for the Network

INFLUENCES

Airports performance **influences** Network performance

IMPACTS

Network performance **impacts** Airport performance

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Challenges for Airports Today

Improve common situational awareness

between the airport partners

Challenges for Airports Today

Enhance predictability

of airport operations

Challenges for Airports Today
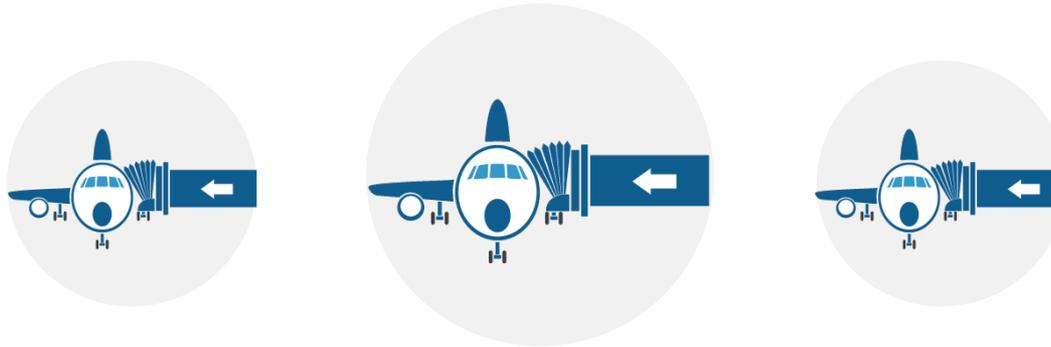
Optimise the utilisation

of airport resources

Challenges for Airports Today

Limit the environmental impact

of airport operations

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A-CDM – Main Partners

Network Operations

Airport Operations
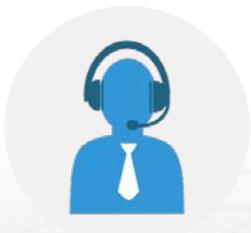
- Improve predictability
- Reduce ATFM slot wastage
- Improve on-time performance
- Optimize use of infrastructure & reduce congestion
- Reduce ground movement costs
- Flexible pre-departure planning
- Reduce apron & taxiway congestion

Air Traffic Control

Aircraft Operators

Ground Handling

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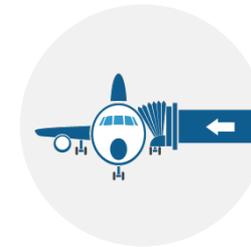
Information Sharing - Principle

Foundation for Airport CDM

The **right** information → To the **right** people → At the **right** time

A-CDM -Elements

Collaborative Management of Flight Updates

Variable Taxi Time Calculation

Collaborative Pre-Departure Sequencing

CDM in Adverse Conditions

Milestone Approach

Airport CDM Information Sharing

A-CDM –Information Sharing

Airport Operator

- Airport slot data
- Stand & gate allocation
- Special events
- Reduction in airport capacity

Network Operations

- Flight plan data
- ATFM departure slots
- Arrival information (Flight Status/ELDT)

ATC

- Real-time updates of LDG
- Taxi times & SIDs
- Runway operational capacity
- A-SMGCS data/radar information

AO/GH

- Flight plans
- Turn-round times
- Priority of flights
- Aircraft registration
- Aircraft movement data

Other service providers

- De-icing companies (de-icing times)
- Met office (met info)

Single Platform
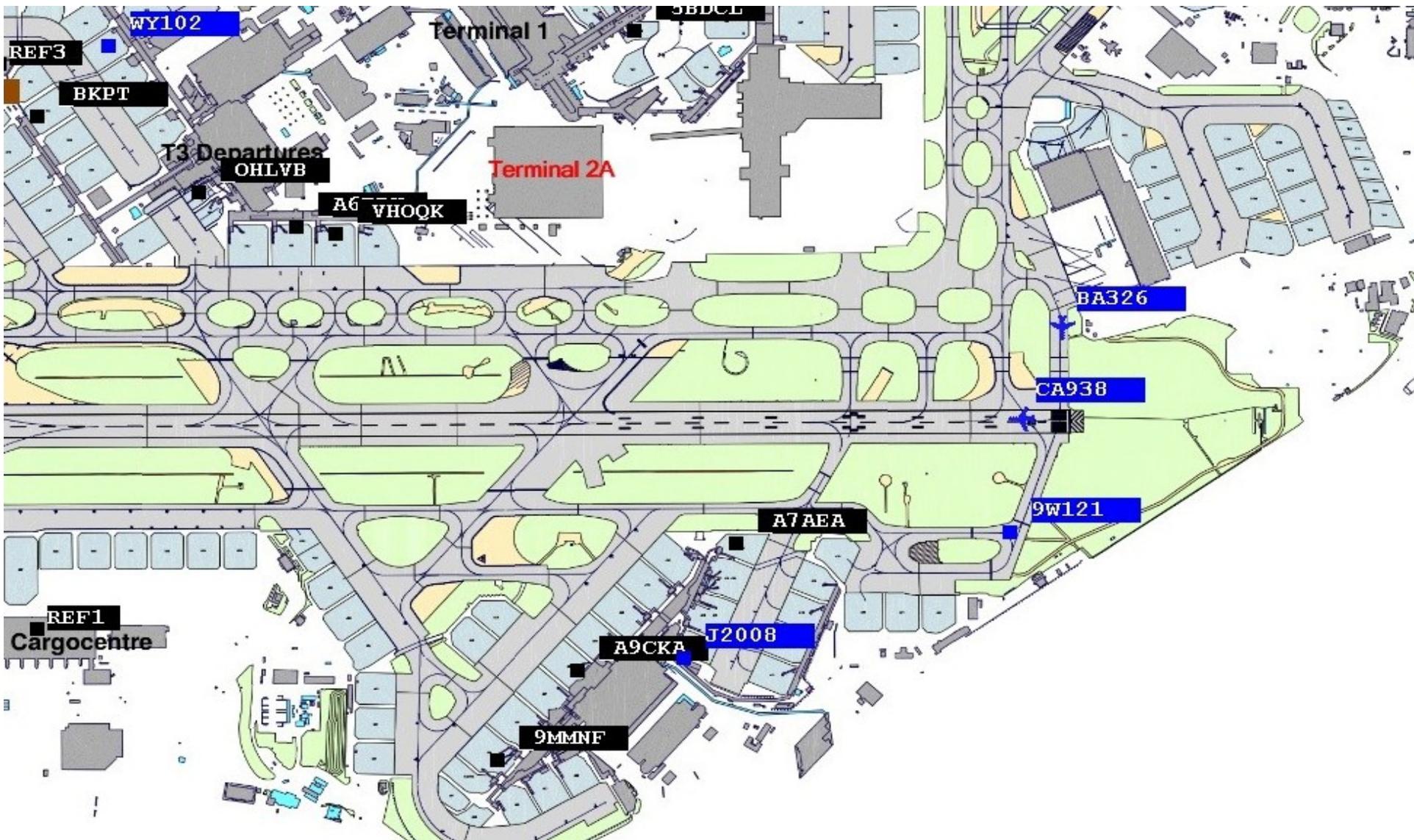
A-CDM – LHR Portal

Home | Departures | Turn-round

Auto-Refresh Off   Last Updated: 31/3/2016 11:55:25 UTC

− Filters

Save Filter   Carriers ▼   Terminals ▼   Has Alert ☐ Hide CX & DV ☐
Flights   Handlers ▼   End Status Time Current ▼   Hide Off-Block ☐ Hide Airborne ☐

Alert	Flt	Call Sign	Reg	Typ	Std	Status	SOBT	EOBT	TOBT	Strt Req	TSAT ▲	AOBT	TOT	Rwy	Lnk Flt	Dest	SID
	BA1342	SHT20B	GEUPW	A319	508	Taxied	11:45	11:45	11:40 D	▼	11:45	11:47	12:12 T	27R	BA977	LBA	WOBUN3F
	BA9171E	BAW9171	GBNWM	B763	568	Taxied	11:30	11:30	11:40 D	▼	11:49	11:49	12:20 T	27R	BA228	CWL	CPT3F
	BA434	BAW2JA	GEUPH	A319	511	Taxied	10:50	11:50	11:50 D	▼	11:50	11:50	12:14 T	27R	BA919	AMS	BPK7F
	BA816	BAW816	OYJTT	B737	531	Taxied	11:55	11:55	11:55 D	▼	11:55	11:54	12:24 T	27R	BA1479	CPH	BPK7F
	BA766	BAW766	GEUOF	A319	527	Taxied	11:55	11:55	11:55 D	▼	11:55	11:57	12:34 T	27R	BA949	OSL	BPK7F
	BA1416	SHT86Y	GEUUK	A320	505	Taxied	11:55	11:55	11:55 D	▼	11:55	11:55	12:24 T	27R	BA1477	BHD	WOBUN3F
■ 011	BA874	BAW874	GEUUS	A320	351	Gate Closed	11:50	11:50	11:55 D	3	12:00		12:21 T	27R	BA799	BUD	BPK7F
■ 008	BA510	IBE31YC	ECJDM	A321	517	Start Req	10:35	11:13	11:55 D	▼	12:00		12:26 C	27R	IB3160	MAD	MID4F
	ME202	MEA202	T7MRE	A320	329	Taxied	12:00	12:00	12:00 E	▼	12:00	11:58	12:20 C	27R	ME201	BEY	DET2F
	DL029	DAL29	N831MH	B764	412	Start Req	11:50	11:50	11:45 D	▼	12:02		12:21 T	27R	DL018	ATL	CPT3F
	BA632	BAW82GR	GBNWX	B763	556	Start Req	11:55	11:55	11:55 D	▼	12:04		12:32 C	27R	BA903	ATH	DET2F
■ 011	AA081	AAL81	N759AN	B772	305	Gate Closed	11:50	11:50	11:55 D	3	12:04		12:27 T	27R	AA104	DFW	CPT3F
	VS005	VIR5C	GVWKD	A346	317	Start Req	12:00	12:00	11:55 D	▼	12:05		12:27 T	27R	VS010	MIA	CPT3F
	BA169	BAW169	GYMML	B772	535	Gate Closed	12:05	12:05	12:05 D		12:05		12:31 T	27R	BA114	PVG	BPK7F
	AC865	ACA865	CGFAH	A333	141	Gate Closed	12:00	12:00	12:00 E	-2	12:05		12:31 T	27R	AC864	YUL	CPT3F
	AA087	AAL87	N784AN	B772	365	Gate Closed	11:25	12:10	12:00 D	-2	12:07		12:33 T	27R	AA078	ORD	CPT3F
	BA984	BAW984G	GEUXE	A321	532	Gate Closed	12:00	12:00	12:00 D	-2	12:09		12:37 T	27R	BA431	TXL	BPK7F
	QF010	QFA10	VHOQB	A388	301	Gate Closed	12:05	12:05	12:05 E		12:11		12:37 C	27R	QF001	DXB	DET2F
	AC851	ACA851	CGHQY	B788	233	Gate Closed	12:05	12:05	12:05 E		12:14		12:41 T	27R	AC850	YYC	CPT3F
	VS011	VIR11B	GVEIL	A346	322	Start Req	12:05	12:05	12:00 D	▼	12:14		12:38 T	27R	VS012	BOS	CPT3F
	LO282	LOT282	SPLRE	B788	218	Gate Closed	09:15	12:00	12:05 D		12:15		12:42 T	27R	LO281	WAW	BPK7F
	BA035	BAW35	GZBJH	B788	545	Last Call	12:10	12:10	12:10 D		12:15		12:41 C	27R	BA188	MAA	DET2F
	BA177	BAW04A	GCIVV	B744	542	Last Call	12:10	12:10	12:10 D		12:19		12:44 T	27R	BA262	JFK	CPT3F
	BA081	BAW81	GCIVA	B744	303	Last Call	12:20	12:20	12:20 D		12:20		12:50 C		BA054	ACC	GOGSI
	FI451	ICE451	TFISZ	B752	241	Last Call	12:10	12:10	12:10 E		12:21		12:43 T	27R	FI450	KEF	WOBUN3F

Rows: 26-50 ▼

A-CDM – Generic Milestones

A-CDM – Variable Taxi Time
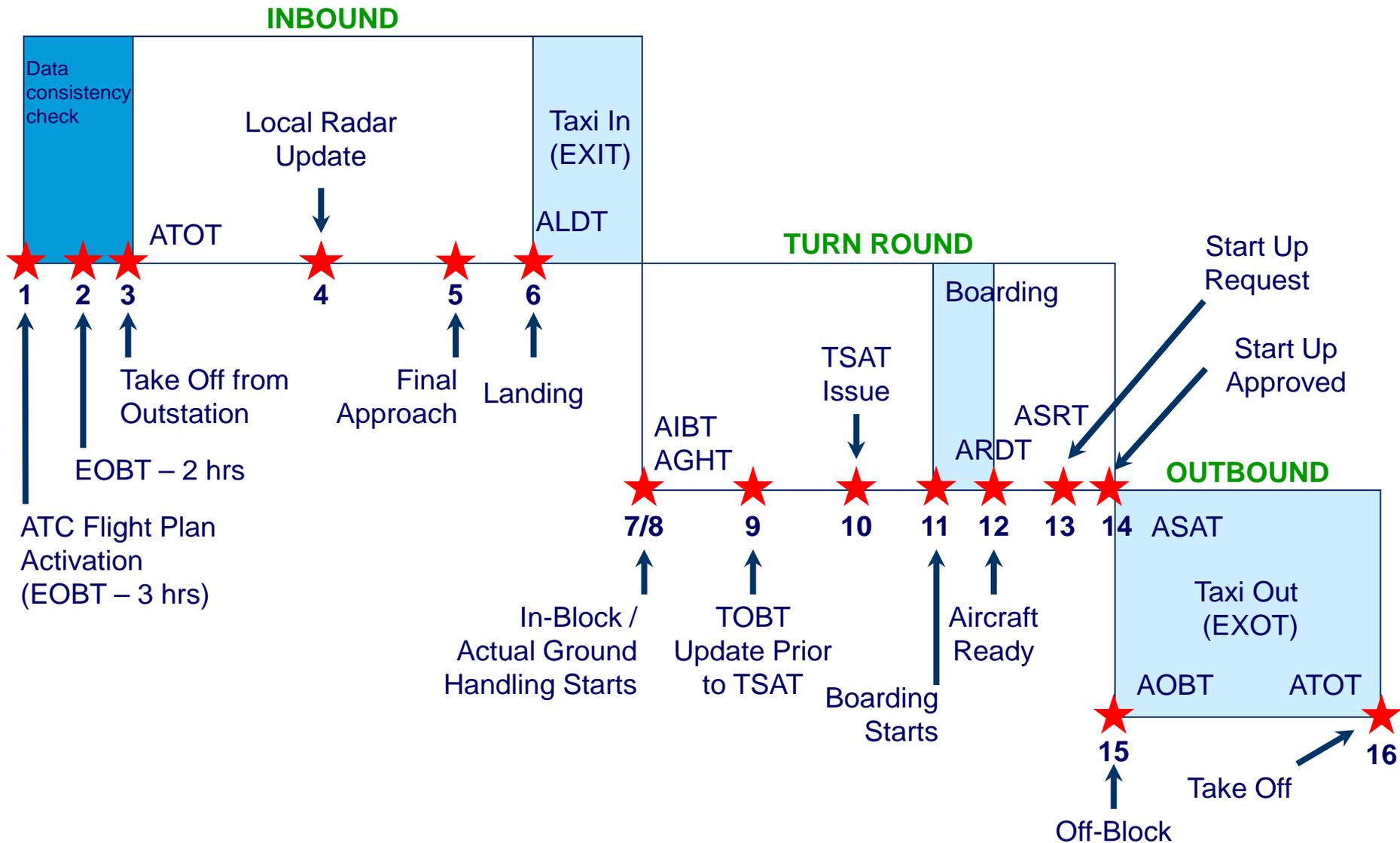
Which factors need to be considered?

Airport layout
Infrastructure availability
Runway(s) in use
Stands and parking positions
Aircraft type and operator
Push-back method
Remote de-icing
Traffic density

A-CDM - Variable Taxi Times

- Replace default times
- Individual Times based on RWY and target stand
- Improvement of Estimated In Block Time

Today: Taxi-in Time 10 min

10 min   12 min   15 min

4 min

3 min
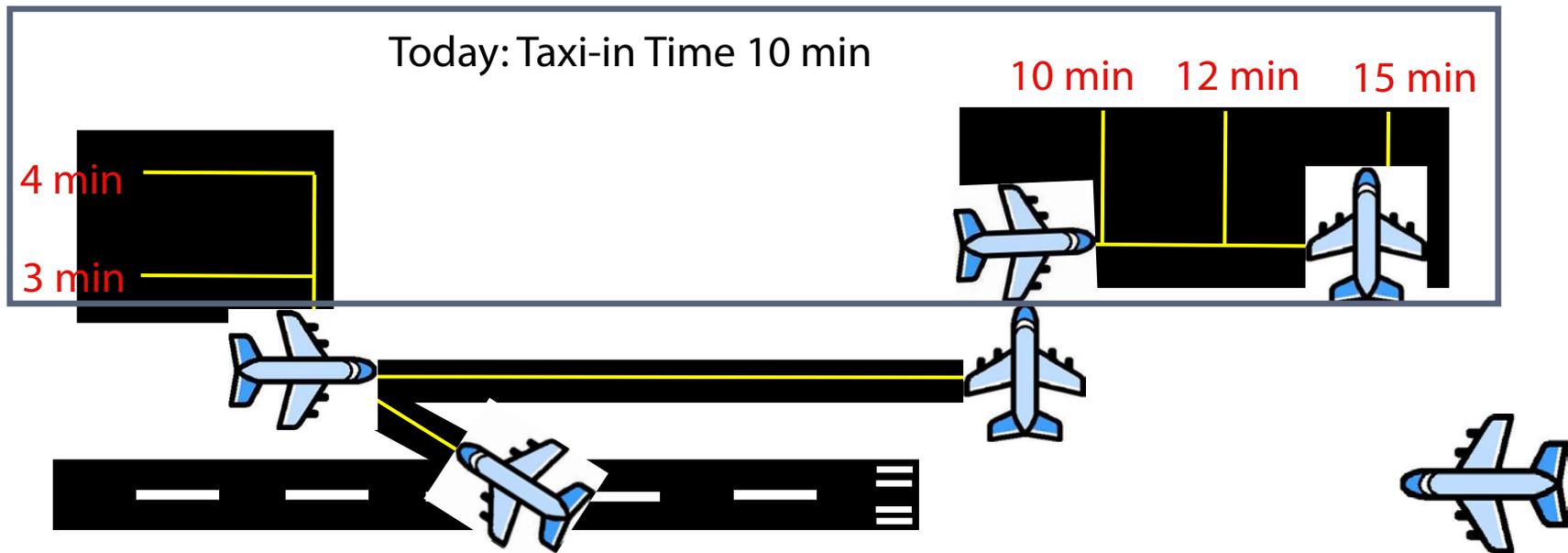
A-CDM - Pre-Departure Sequencing

Objectives;

Improve prediction of push back order

Improve management of queuing aircraft at holding point

Principle;

Replace "first come first served" principle

Target Start-up Approval Time (TSAT) communicated by ATC

All CDM partners can see pre-departure sequence
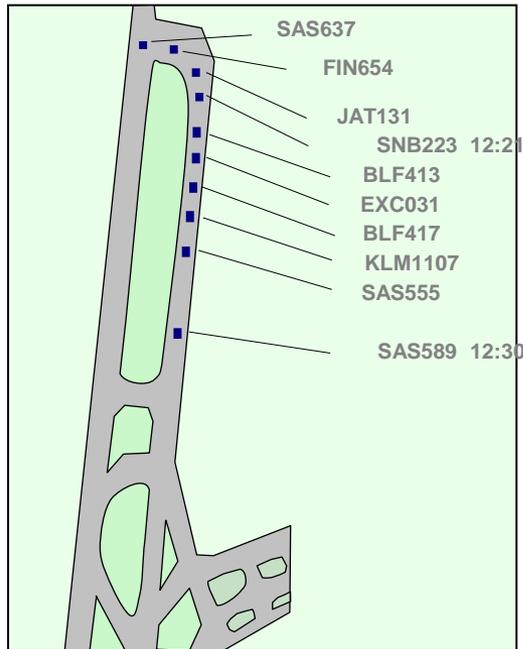
Without …   With …
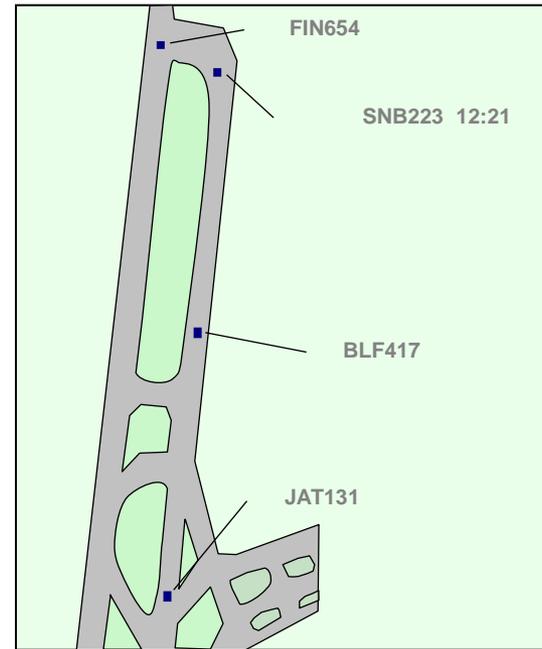
Effect → Reduced Runway Queue

How to achieve this effect?

Off-Blocks TSAT **Sequencing**, and or

Runway TTOT **Planning**

A-CDM - Pre-Departure Sequence?

4 May 2009

Active RWY 04L

using 13R as a taxiway = 63 aircraft
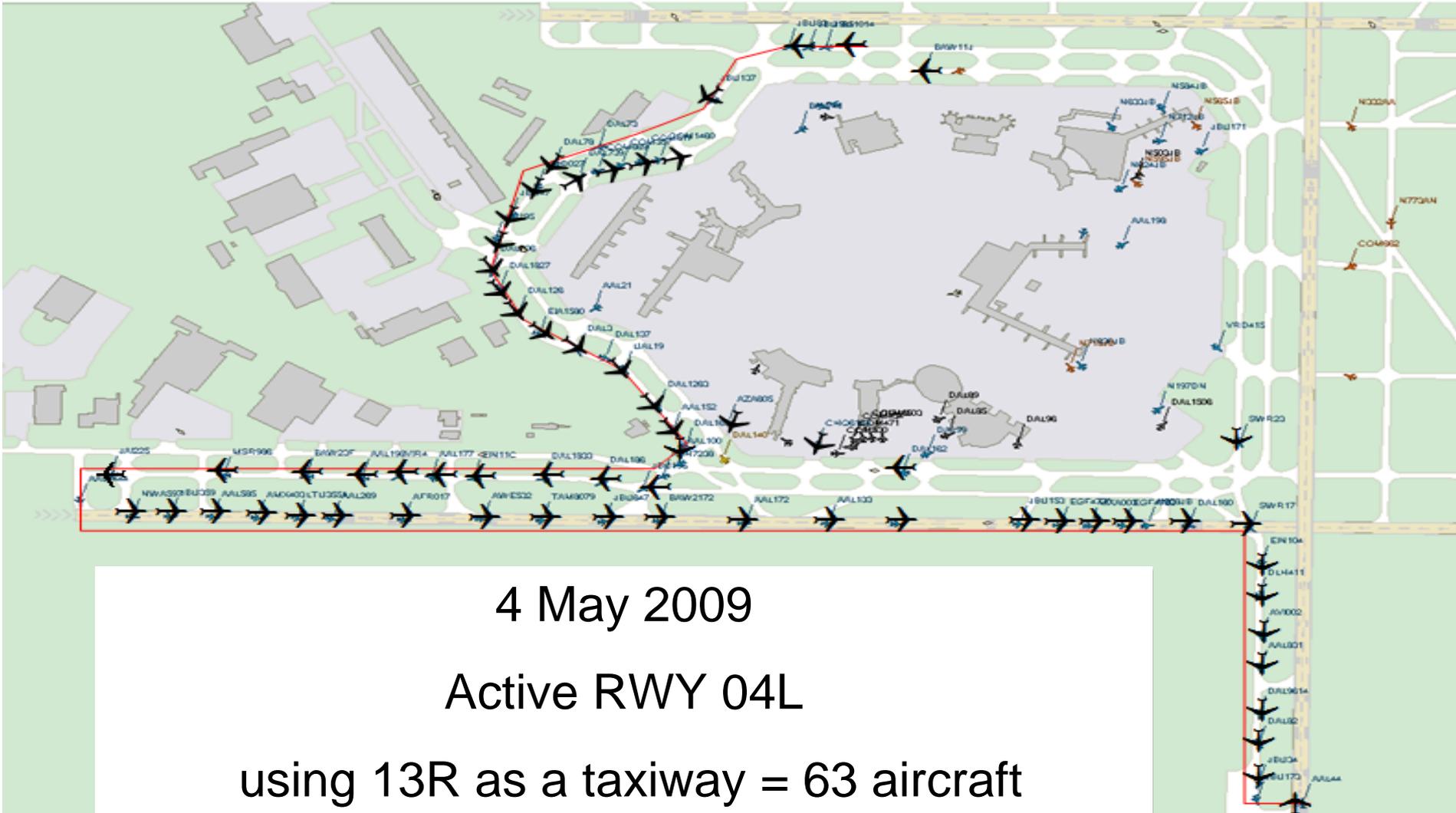
A-CDM - How does it all fit together?
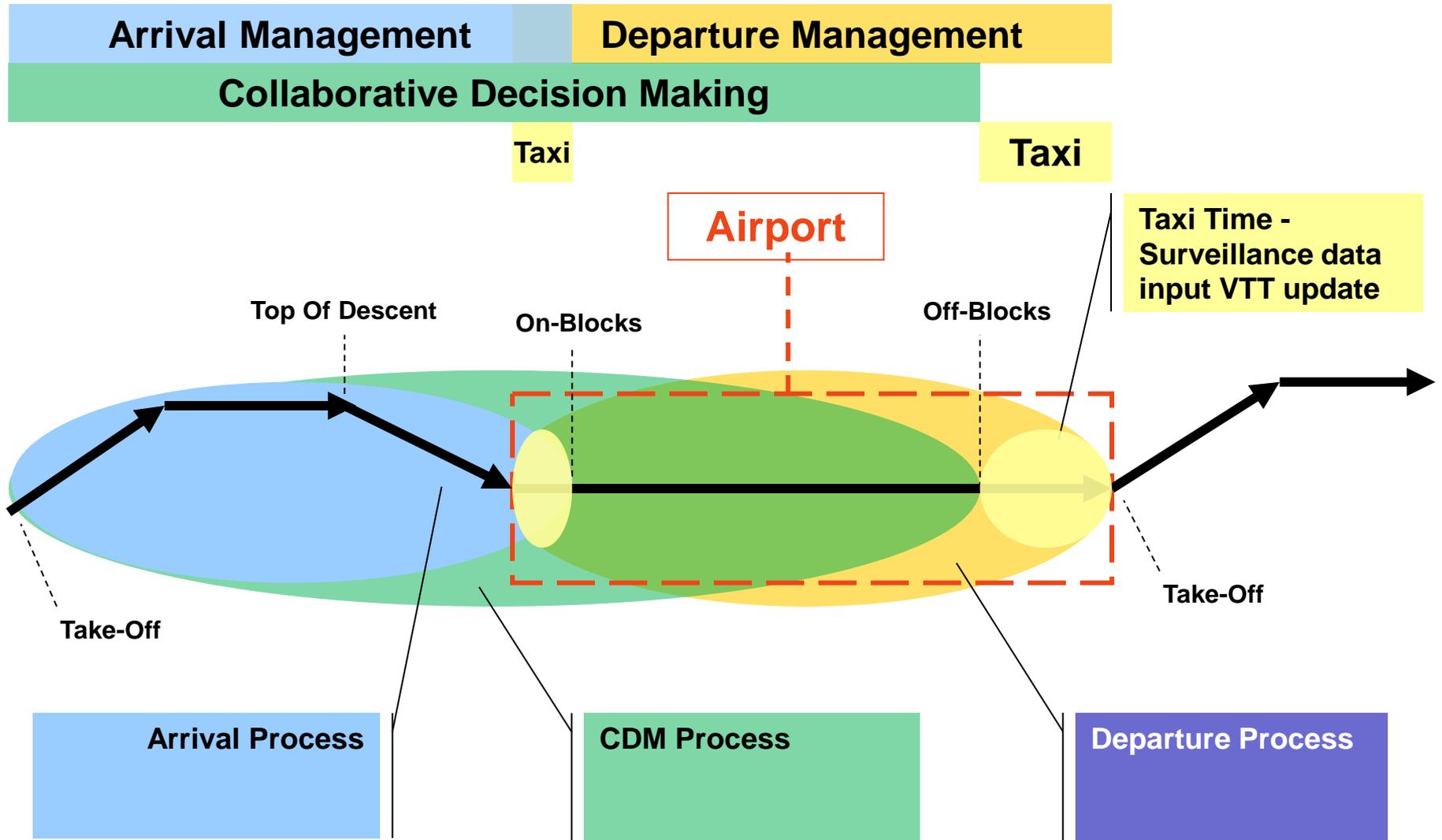
A-CDM - "Adverse Conditions" what is it?

Predictable

- Maintenance / repairs

- Industrial action

- Forecast Weather ????

- Need for de-icing

Unpredictable

- Equipment Failures

- Accidents / incidents / security

- Weather conditions (e.g. low-visibility)
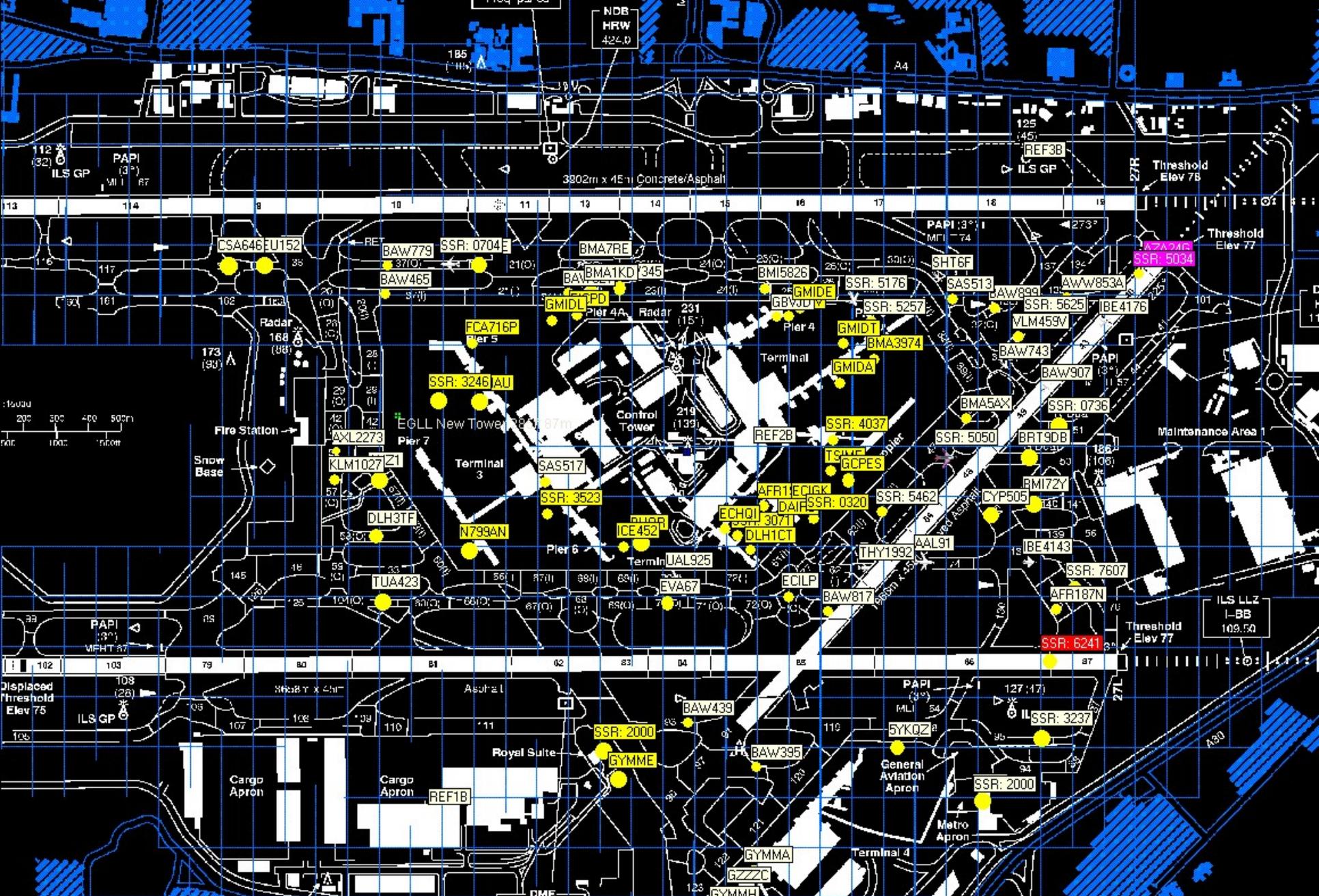
Ground Situation Heathrow August 2005 following severe thunderstorms

A-CDM - Collaborative Management of Flight Updates

➢Today, NMOC has a non optimal traffic demand picture
(EOBT+ Default Taxi Time)

➢Results in unnecessary restrictions applied

➢Wasted ATFM slots

➢Overload and traffic bunching

A-CDM - Linking Airports with a Network

Objective

To share dynamic Airport CDM Information with the ATM Network

NMOC – Airport – NMOC

Flight Update Message (FUM)

Flight Status, Time over & landing times

Departure Planning Information (DPI) Message

Off-Blocks & Estimated Take-Off Times
Aircraft type, Taxi times & SID

Benefits

Airports - Arrival estimates

Network - Take-Off estimates (improve En route sector planning)

Benefits – Partners

1,100 Tonnes of CO_2
300 kg of SO_2

360,000 kg of Fuel Burn

2,000 Minutes of Delay

26,300 Minutes of Taxi

€ 280,000 in Fuel

Benefits estimated between February 2014 and February 2015

← ✈ Departures   700 late gate changes

630,000 kg of CO_2
180 kg of SO_2

200,000 kg of Fuel Burn

73,000 Minutes of Delay

15,000 Minutes of Taxi

€ 160,000 in Fuel
2.9 Million in Delay

Benefits estimated between January 2014 and January 2015

34,800 Minutes of ATFM Delay

3.6 Million in ATFM Delay Costs €

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A-CDM – is beyond Europe

Global Aspects

Harmonization

Thank you