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
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
A-CDM – Main Partners

- 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
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

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)

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

Single Platform
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A-CDM – Generic Milestones

INBOUND

1. Data consistency check
2. ATOT
3. Take Off from Outstation
4. Local Radar Update
5. Final Approach
6. ALDT
7. Taxi In (EXIT)

ATC Flight Plan Activation (EOBT – 3 hrs)

EOBT – 2 hrs

OUTBOUND

1. Taxi Out (EXOT)
2. ASAT
3. Aircraft Ready
4. Boarding
5. Start Up Request
6. Start Up Approved
7. AIBT
8. AGHT
9. TSAT Issue
10. TOBT Update Prior to TSAT
11. Boarding Starts
12. ARDT
13. ASRT
14. Aircraft Ready
15. Off-Block
16. Take Off

TURN ROUND

7/8. In-Block / Actual Ground Handling Starts
9. ALDT
10. AIBT
11. AGHT
12. TSAT Issue
13. TOBT Update Prior to TSAT
14. Boarding Starts
15. AIBT
16. AGHT

A-CDM = Airspace Congestion Management
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
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
A-CDM - What does sequencing do?

Effect → Reduced Runway Queue

How to achieve this effect?

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

Runway TTOT **Planning**
4 May 2009

Active RWY 04L

using 13R as a taxiway = 63 aircraft
A-CDM - How does it all fit together?

Collaborative Decision Making

Arrival Management

Departure Management

Taxi

Arrival Process

CDM Process

Departure Process

Take-Off

Top Of Descent

On-Blocks

Off-Blocks

Taxi Time - Surveillance data input VTT update
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
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 CO₂
- 300 kg of SO₂
- 2,000 Minutes of Delay
- 360,000 kg of Fuel Burn

Benefits estimated between February 2014 and February 2015

26,300 Minutes of Taxi

280,000 in Fuel

700 late gate changes

200,000 kg of Fuel Burn

15,000 Minutes of Taxi

2.9 Million in Delay

34,800 Minutes of ATFM Delay

630,000 kg of CO₂

180 kg of SO₂

73,000 Minutes of Delay

160,000 in Fuel

Network Manager
nominated by
the European Commission
A-CDM – is beyond Europe

Global Aspects

Harmonization
Thank you