Supporting European Aviation

EASA/EUROCONTROL Network Manager/Latin America Webinar On ANSP/Airport Capacity Management

Airport - Collaborative Decision Making and other types of Airport connectivity

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30 June 2021

FOUNDING MEMBER SESAR JOINT UNDERTAKING

NETWORK MANAGER

Agenda

- Airport Challenges for the Network
- A-CDM
- AOP/NOP Integration (higher level of connectivity than A-CDM)
- Regional Airport Integration
- Airport Corner

Airport Challenges for the Network

1. Integrating airports with the Network
2. nodes of the Network
3. bottlenecks to the Network
4. new/expansion very difficult

Airport Challenges for the Network

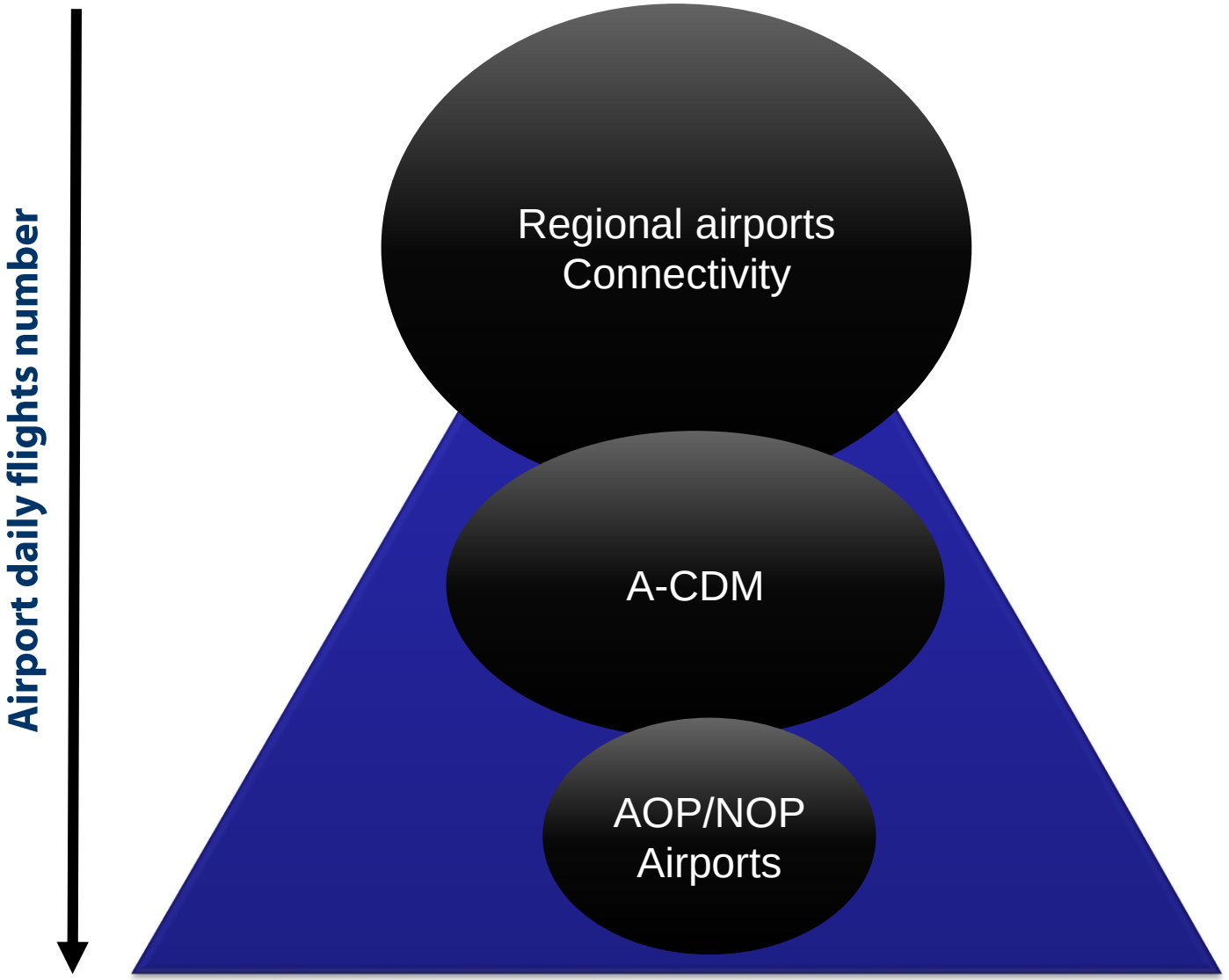
INFLUENCES

Airports performance **influences** Network performance

IMPACTS

Network performance **impacts** Airport performance

Airport Challenges for the Network – Connectivity Strategy



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Challenges - Airports

Improve common situational awareness between the airport partners

Enhance predictability of airport operations

Optimise the utilisation of airport resources

Limit the environmental impact of airport operations

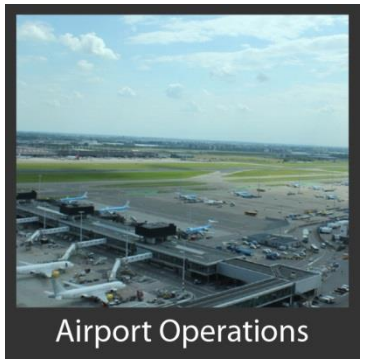
A-CDM Implementation History in Europe

- First beginnings – end of ‘90s
  - Calculated Off Block (COB) procedure at Munich
- Airport CDM emerges and starts 2004
  - EUROCONTROL, FMG, DFS
- First fully implemented A-CDM airport 2007
  - Munich

A-CDM Implementation History in Europe

- 2007 – 1 airport
- 2010 – 3 airports
- 2013 – 8 airports
- 2015 – 18 airports
- Today – 30 airports

Airport CDM



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

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

Information Sharing

Foundation for Airport CDM

The **right** information

To the **right** people

At the **right** time

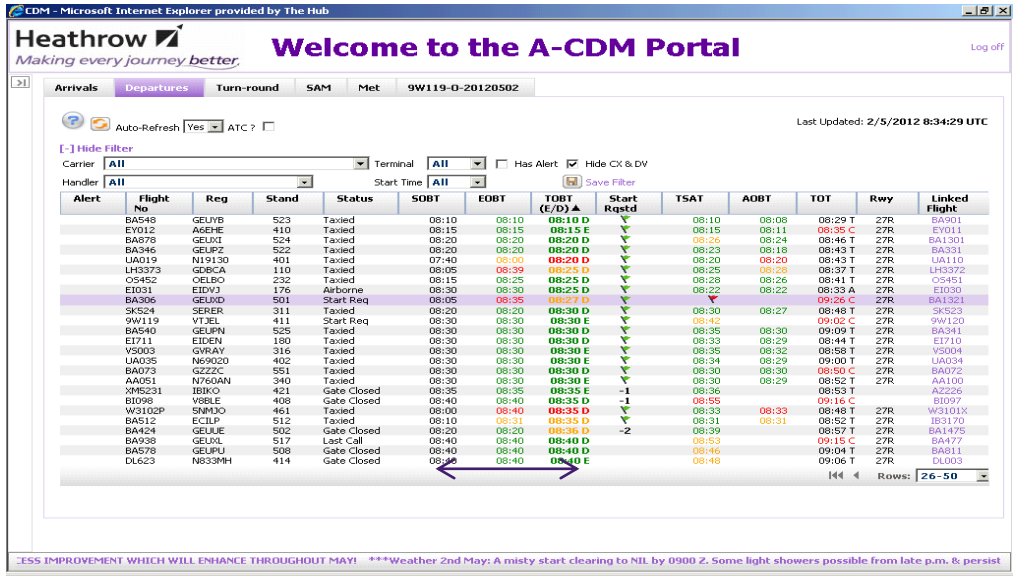
Information Sharing

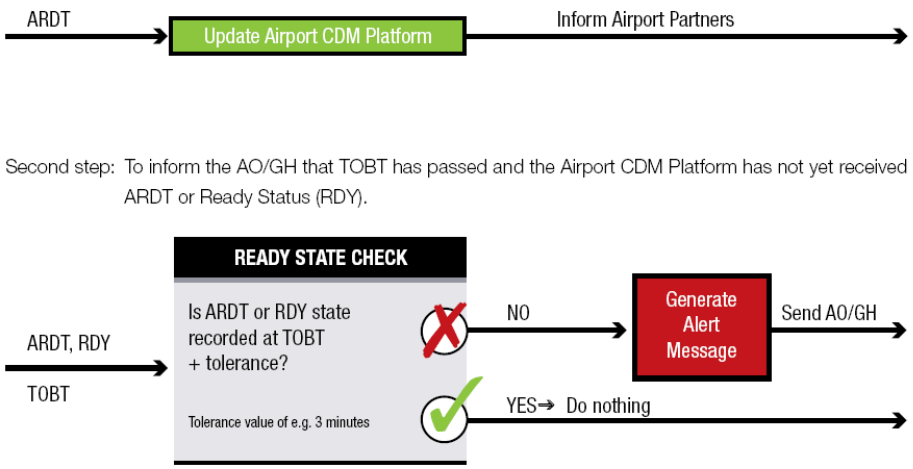
Requirements

- One Airport CDM Platform

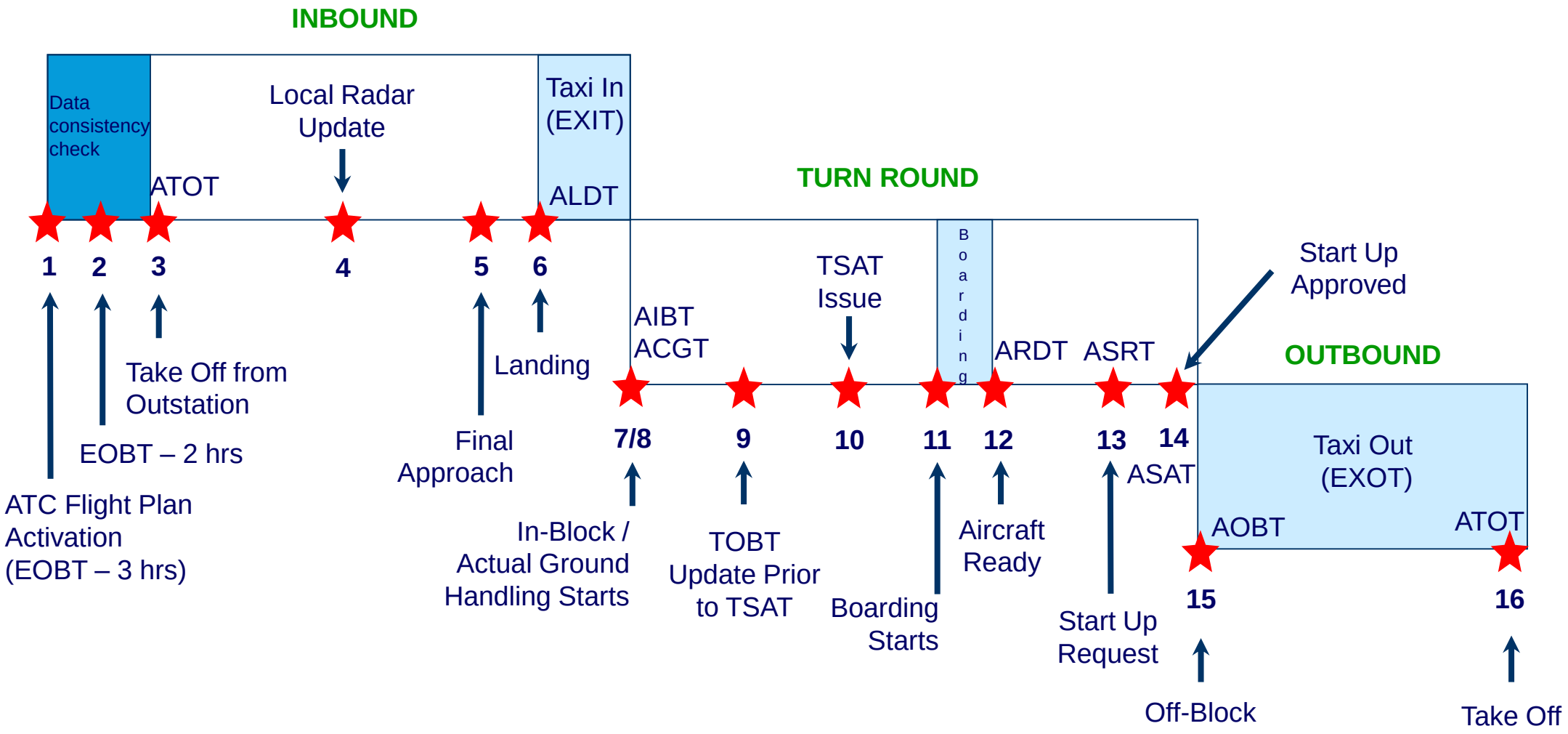
and

- Procedures, actions and alerts for each key milestone.





Milestone Approach [Generic]



Milestone Approach

Key Definitions

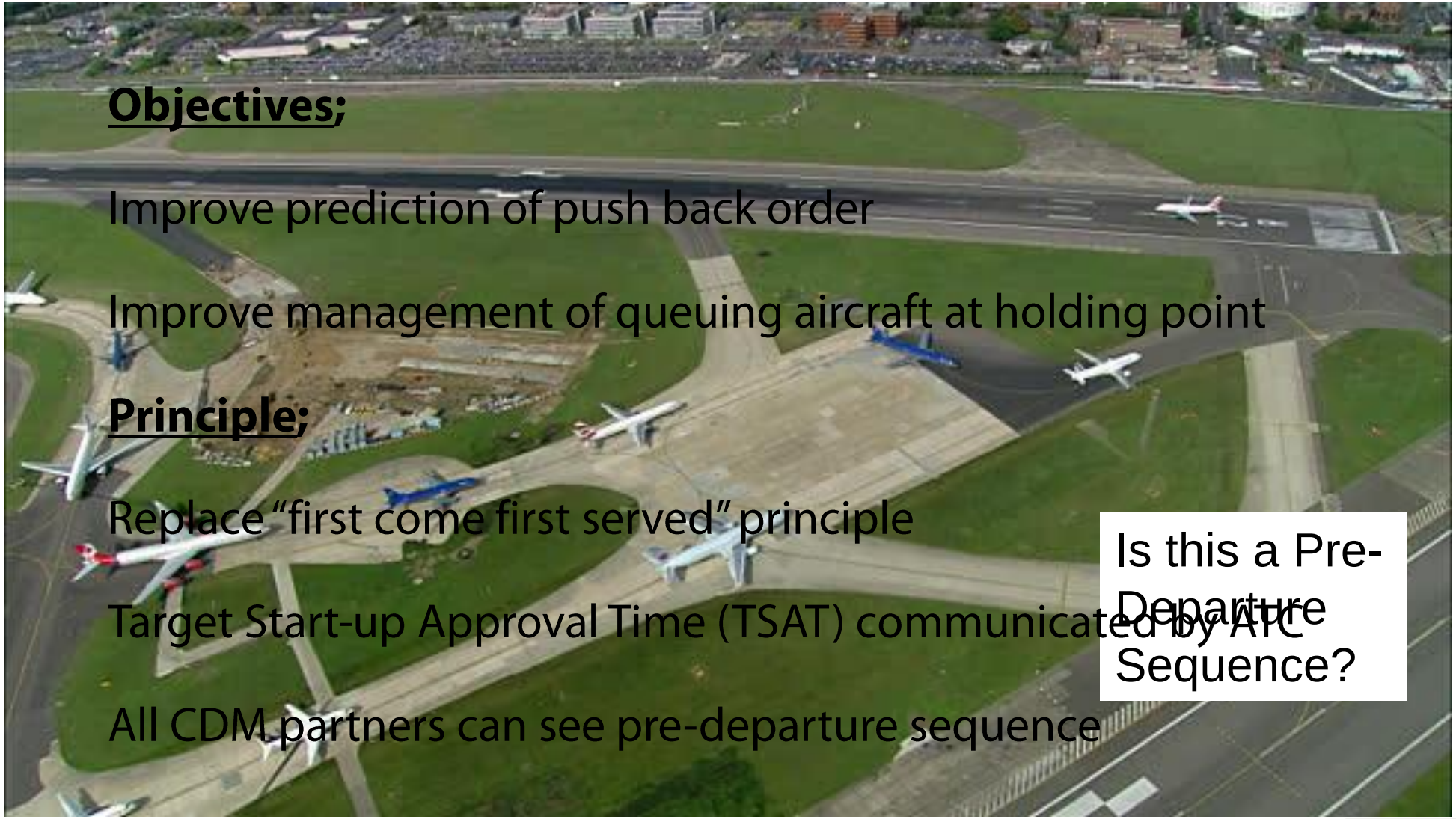
- **Target Off-Block Time (TOBT)**

  The time that an **Aircraft Operator or Ground Handler** estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle available and ready to start up / push back immediately upon reception of clearance from the Tower

- **Target Start up Approval Time (TSAT)**

  The time provided by ATC taking into account TOBT, CTOT and / or the traffic situation that an aircraft can expect start up / push back approval

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

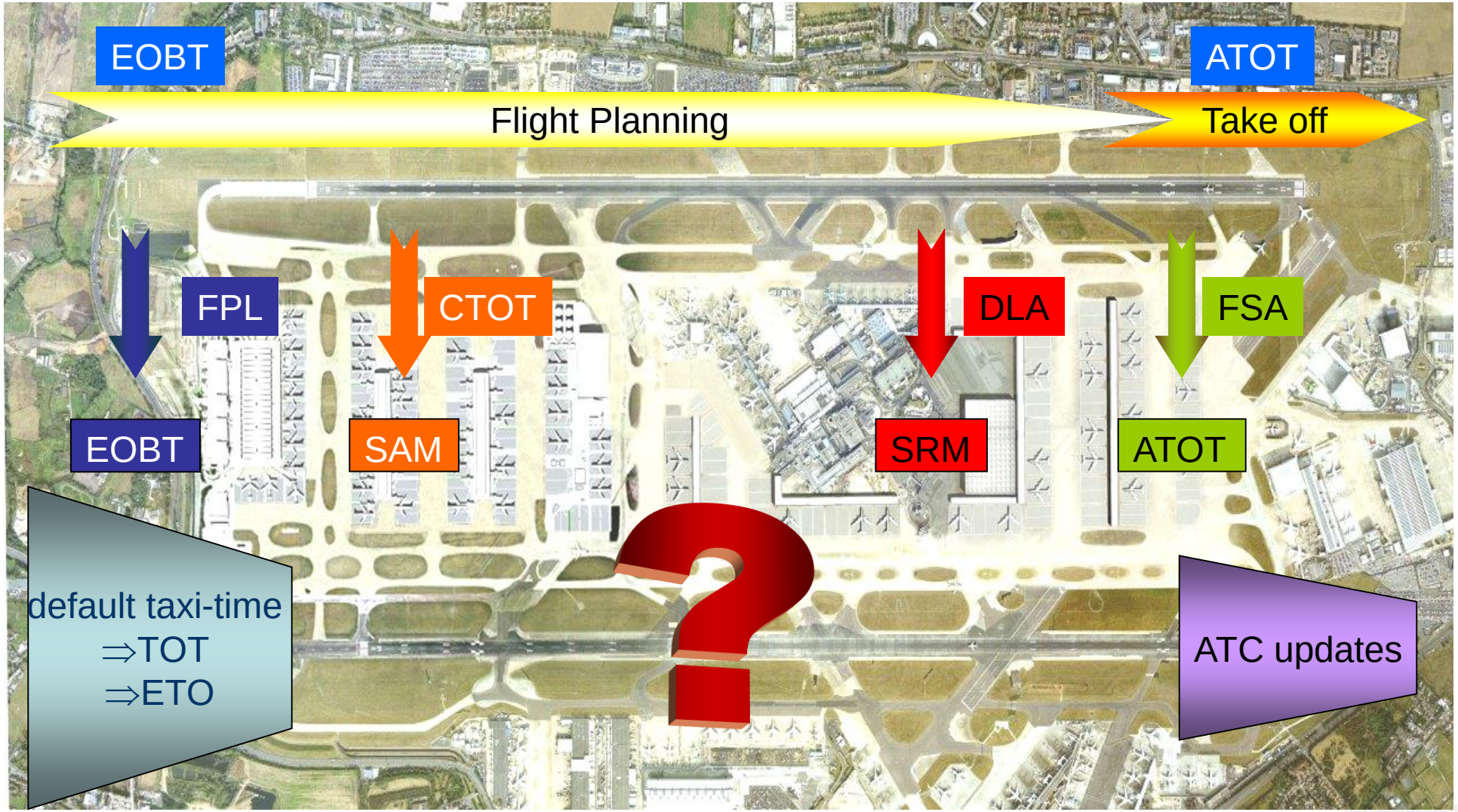
All CDM partners can see pre-departure sequence

Is this a Pre-Departure Sequence?

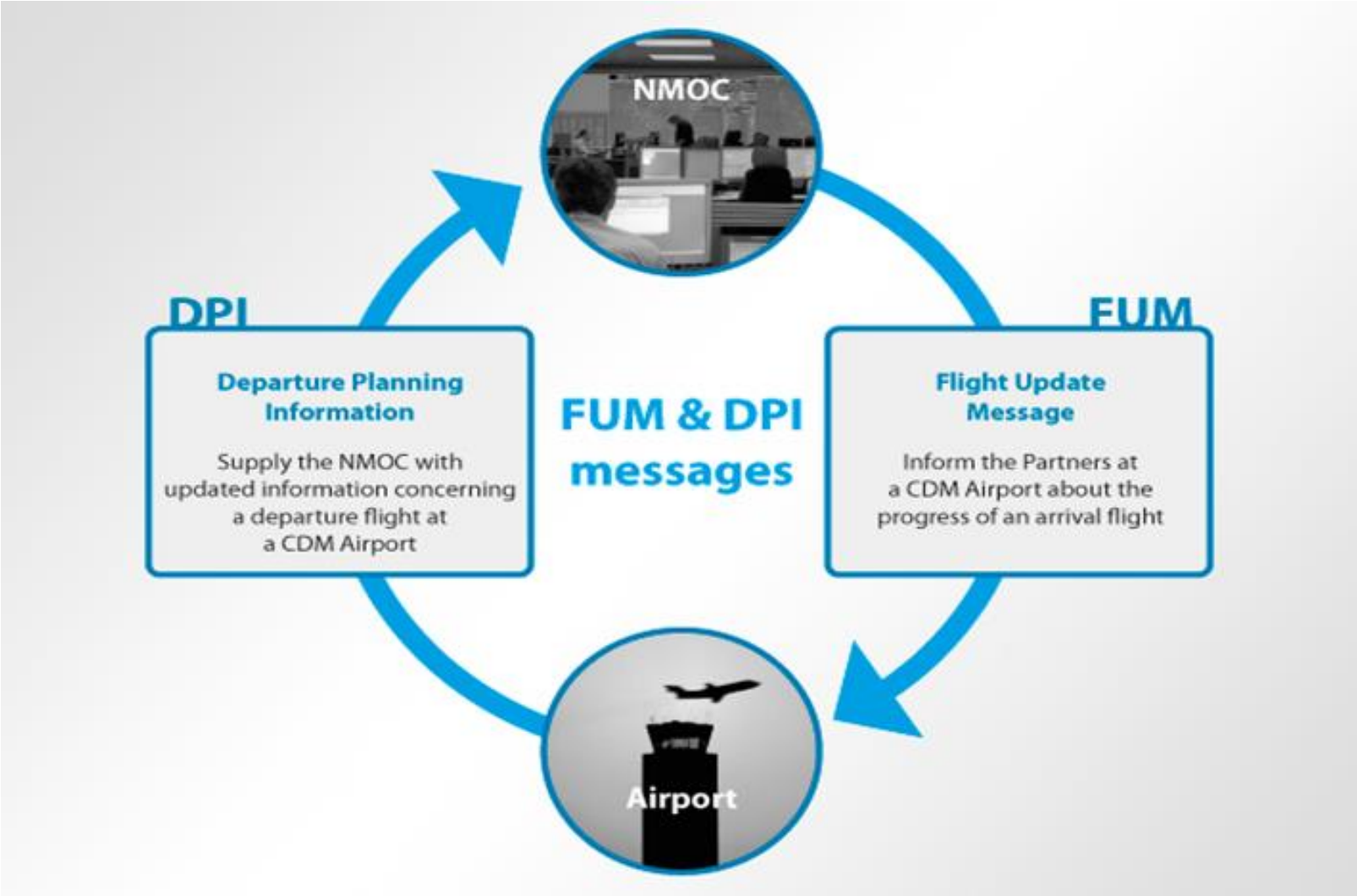
Link to ATFM (NMOC)

- The link between Airport Operations and Network Operations
- Provides a two-way exchange of information
- Recognised as a way to integrate airports with the ATFM Network with benefits for both

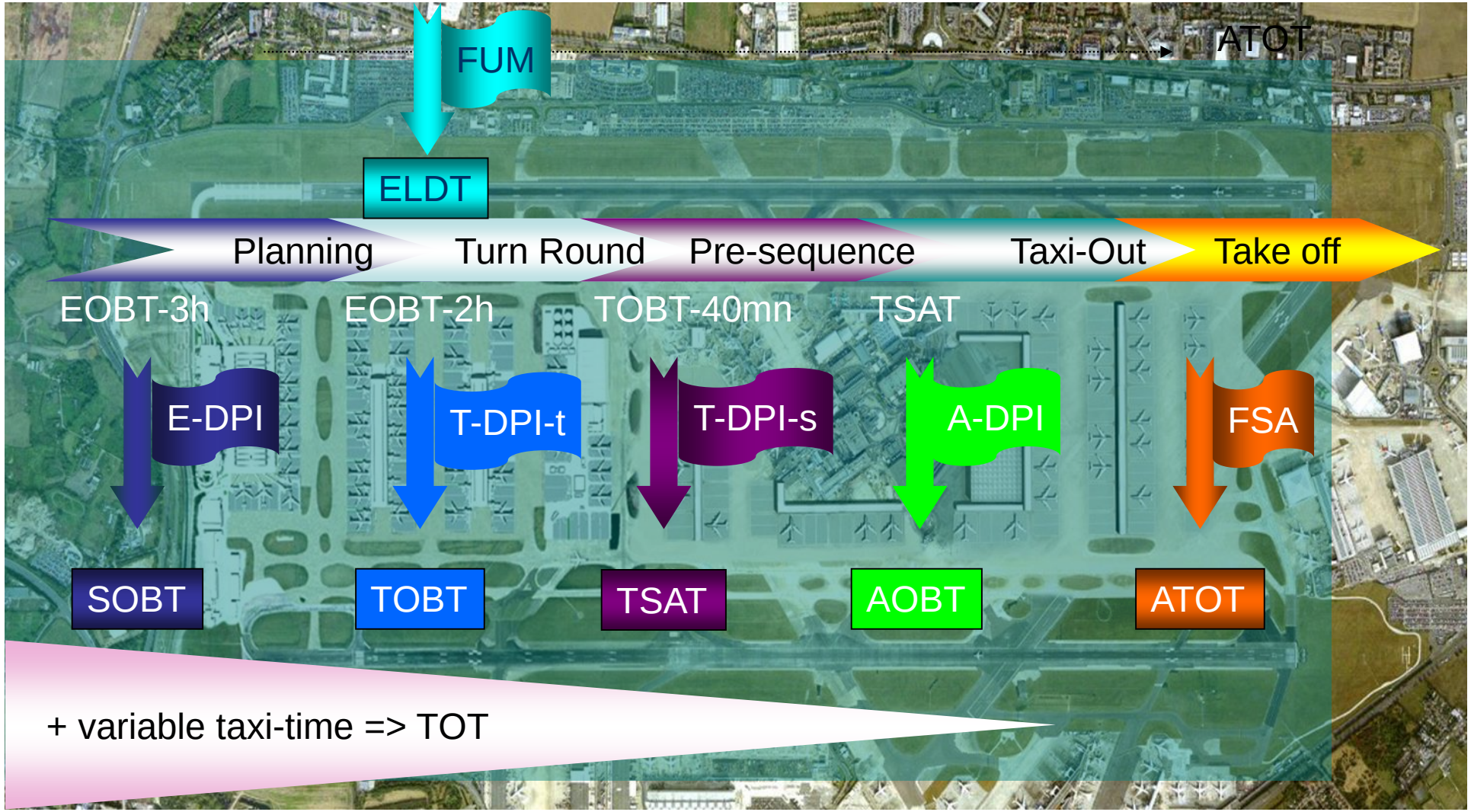
Gap – in departure information



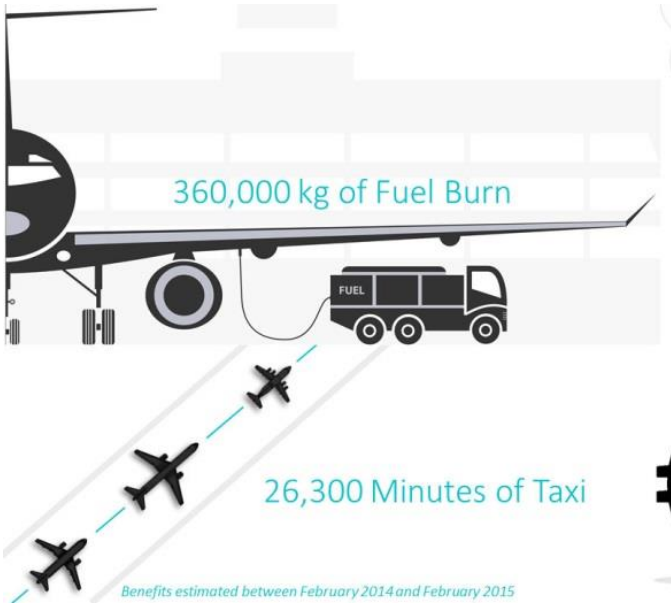
A-CDM – in the European Network



Departure Planning Information (DPI)



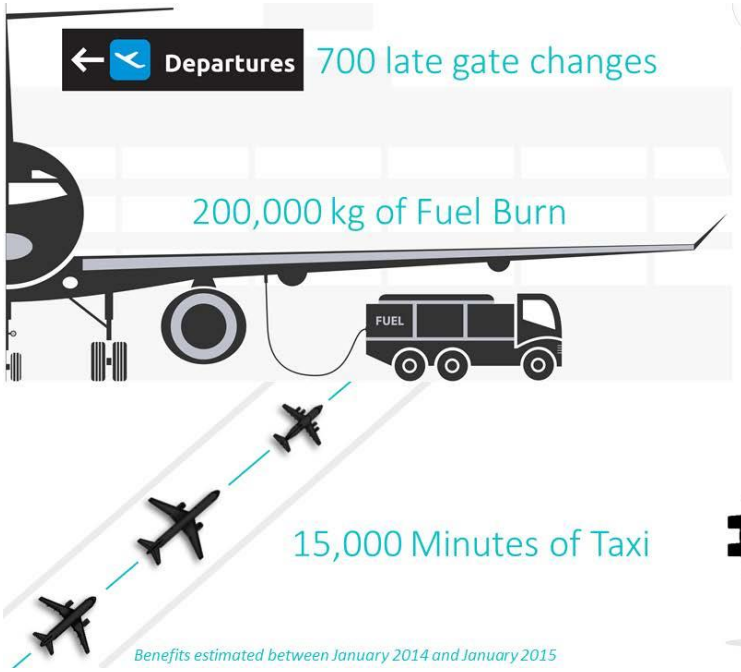
Benefits – Partners



1,100 Tonnes of CO_2
300 kg of SO_2

2,000 Minutes of Delay

€ 280,000 in Fuel



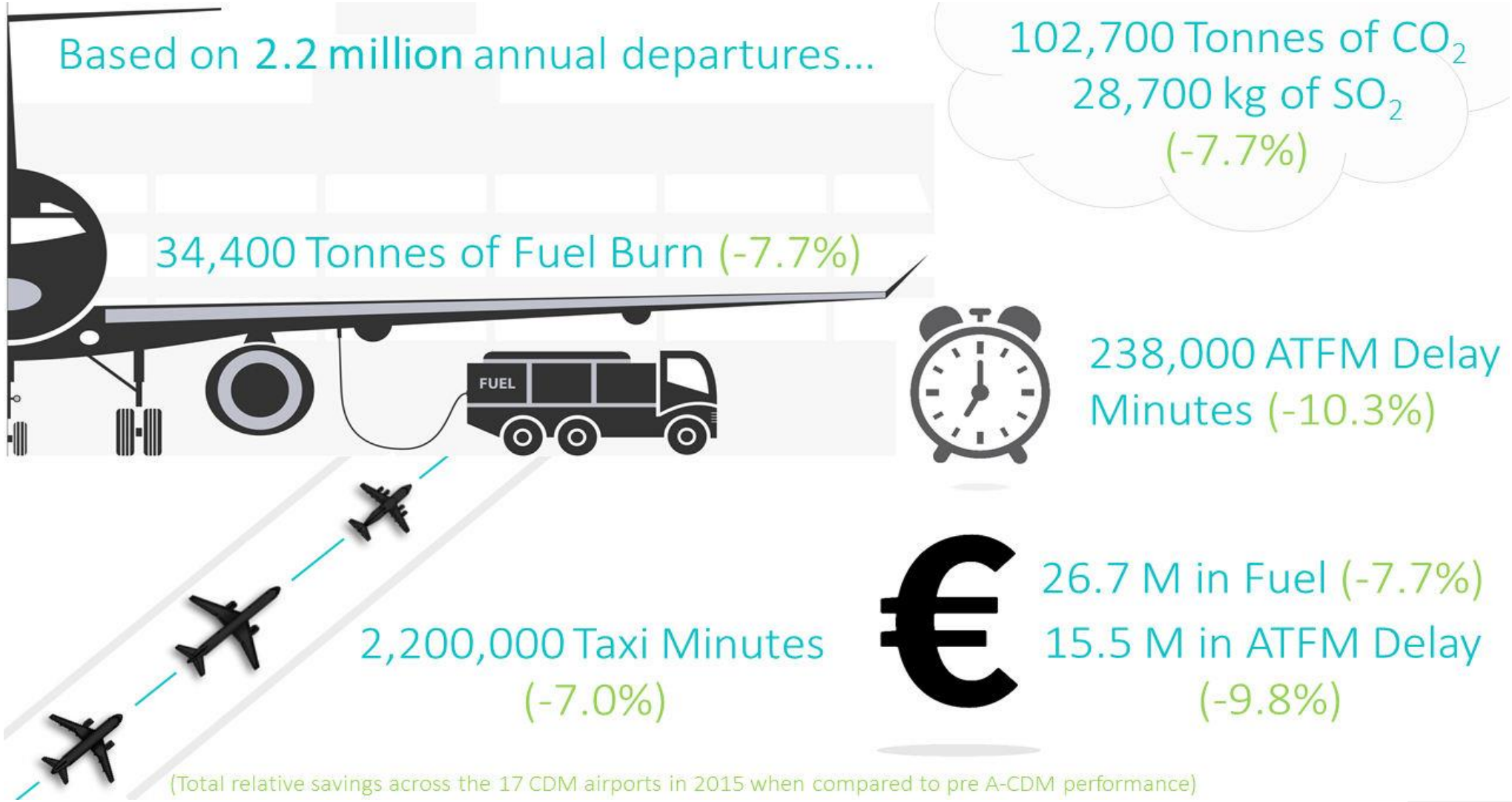
630,000 kg of CO_2
180 kg of SO_2

73,000 Minutes of Delay

€ 160,000 in Fuel
2.9 Million in Delay

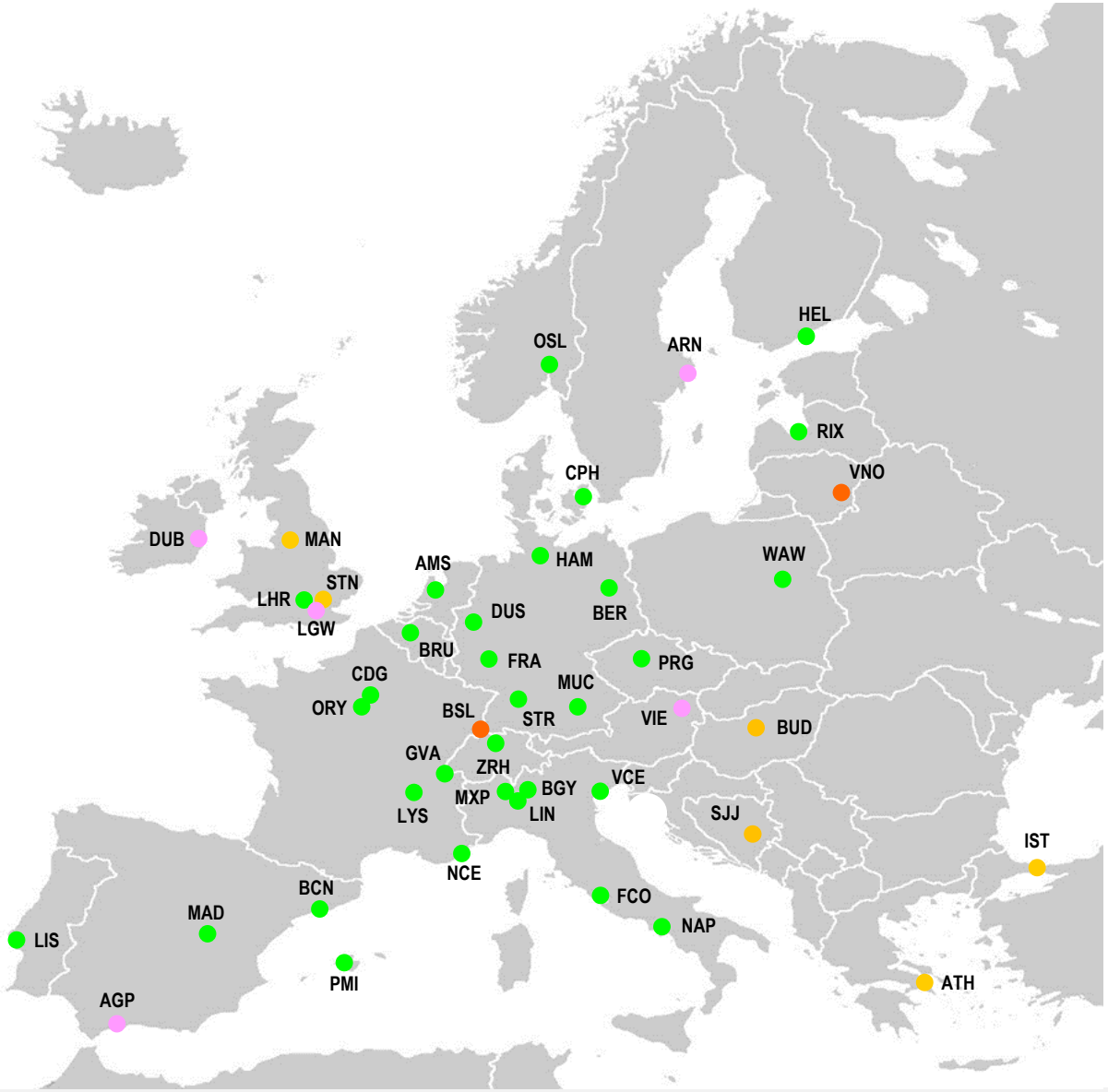
34,800 Minutes of ATFM Delay
3.6 Million in ATFM Delay Costs €

Benefits – Network



(Total relative savings across the 17 CDM airports in 2015 when compared to pre A-CDM performance)

A-CDM Implementation Status



A-CDM Airport

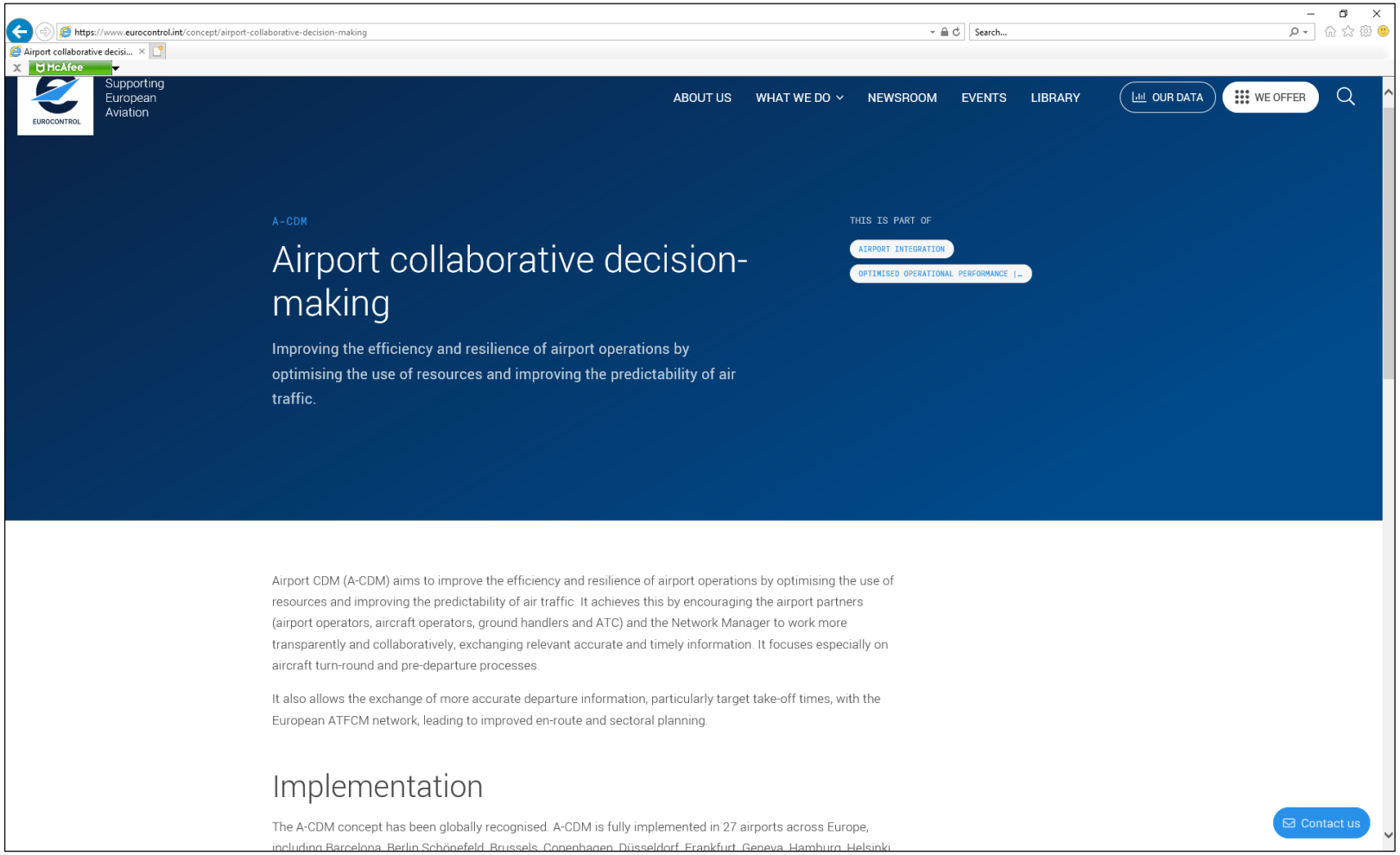
A-CDM Planned 2021

Ongoing

Initial contact

Reference Documents

https://www.eurocontrol.int/concept/airport-collaborative-decision-making



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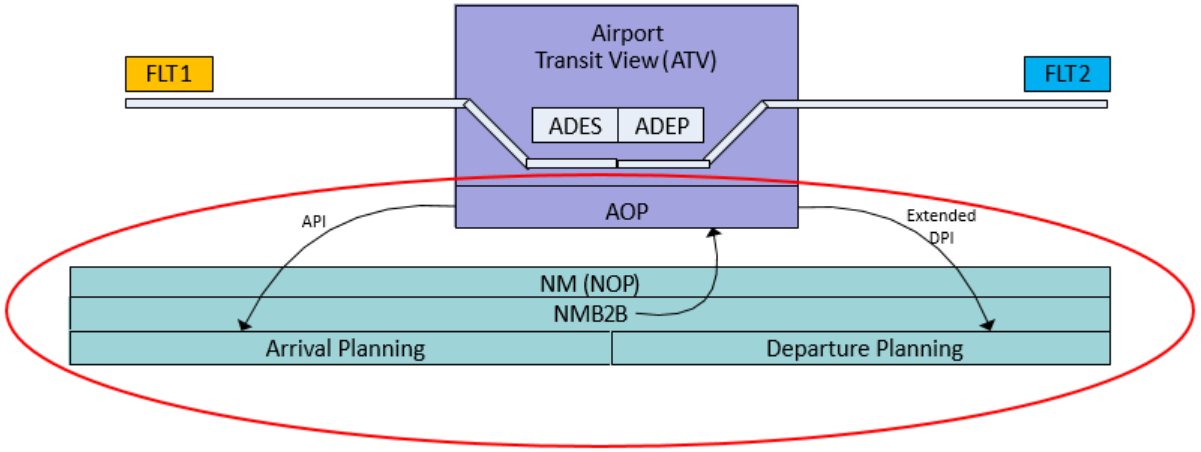
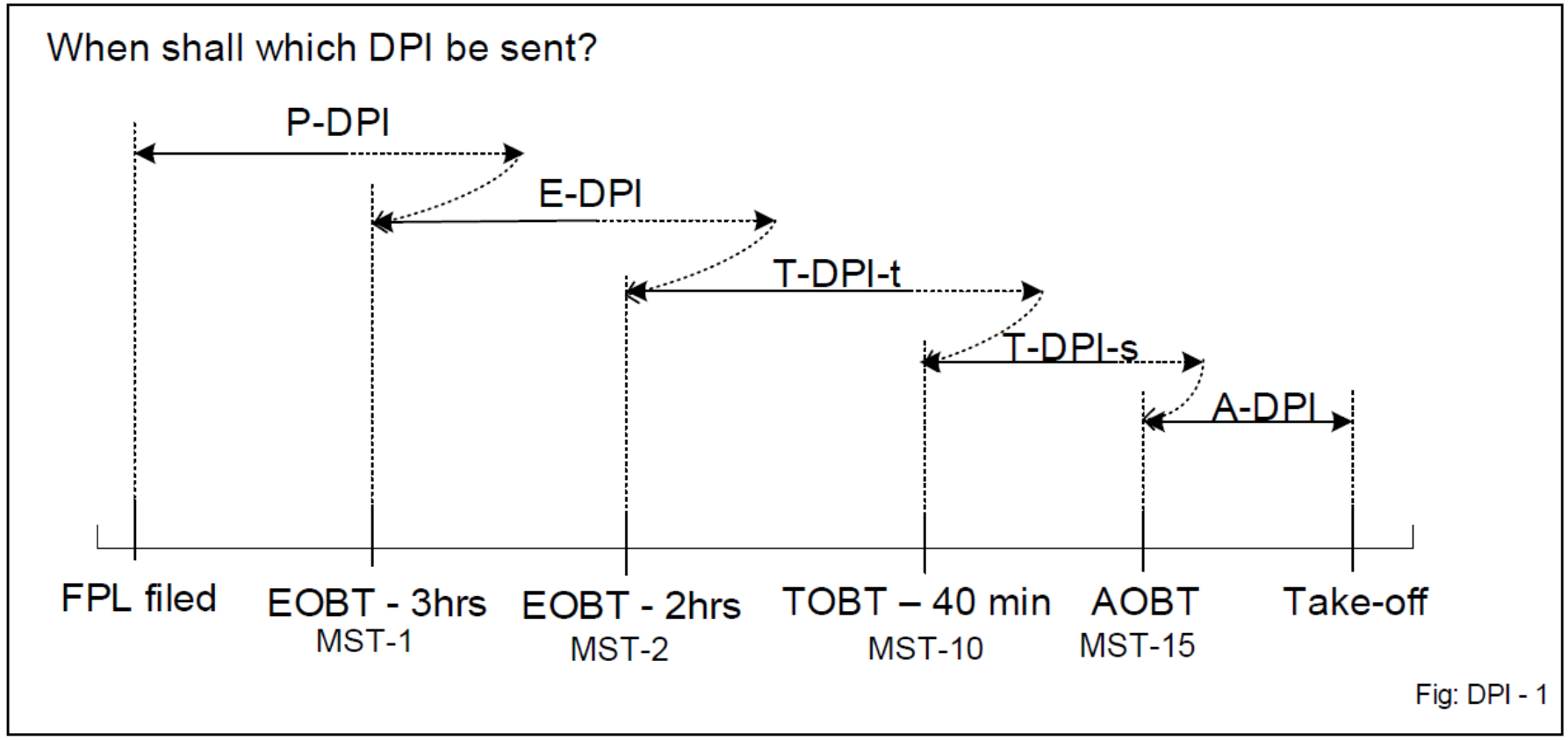
Initial AOP/NOP Integration - Requirements

- DPI:
  - DPI in A-CDM process (pre-requisite)
  - P-DPI Mandatory
- API:
  - G-API Mandatory
  - TTA-API Optional
  - TTO-API Optional



- DPI and API exchange via NM B2B services (over Internet rather than AFTN)
- Airport capacity information and weather events expected impact provided via Airport Corner
- Deployment planned to be completed within 31/12/2023

P-DPI objective is to extend A-CDM timeframe



Initial AOP-NOP integration – Airport Partners

CEF 2015_113_AF4:

- ADP (CDG, ORY)
- FRAPORT (FRA)
- LONDON Heathrow (LHR)

CEF 2016_131_AF4:

- SCHIPHOL (AMS)
- AENA (MAD, BCN, PMI)
- BRUSSELS (BRU)
- STOCKHOLM (ARN)

CEF 2017_052_AF4:

- ROME Fiumicino (FCO)
- MILAN Malpensa (MXP)
- VIENNA (VIE)
- MANCHESTER (MAN)
- LONDON Stansted (STN)
- NICE (NCE)
- DUSSELDORF (DUS)

Not in CEF but in CP1 regulation

- BERLIN Brandenburg (BER)
- COPENHAGEN (CPH)
- DUBLIN (DUB)
- MUNICH (MUC)

CEF_M2015_1125276

- LISBON (LIS)

CEF_2017-EL-TM-0158-W

- ATHENS (ATH)

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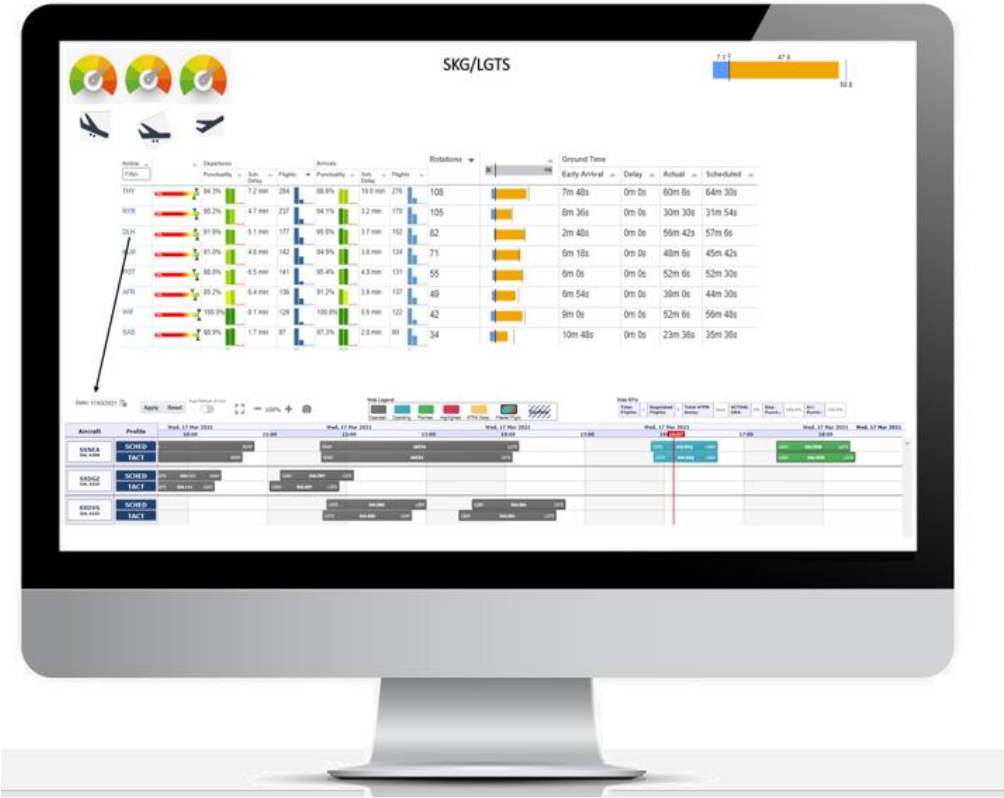
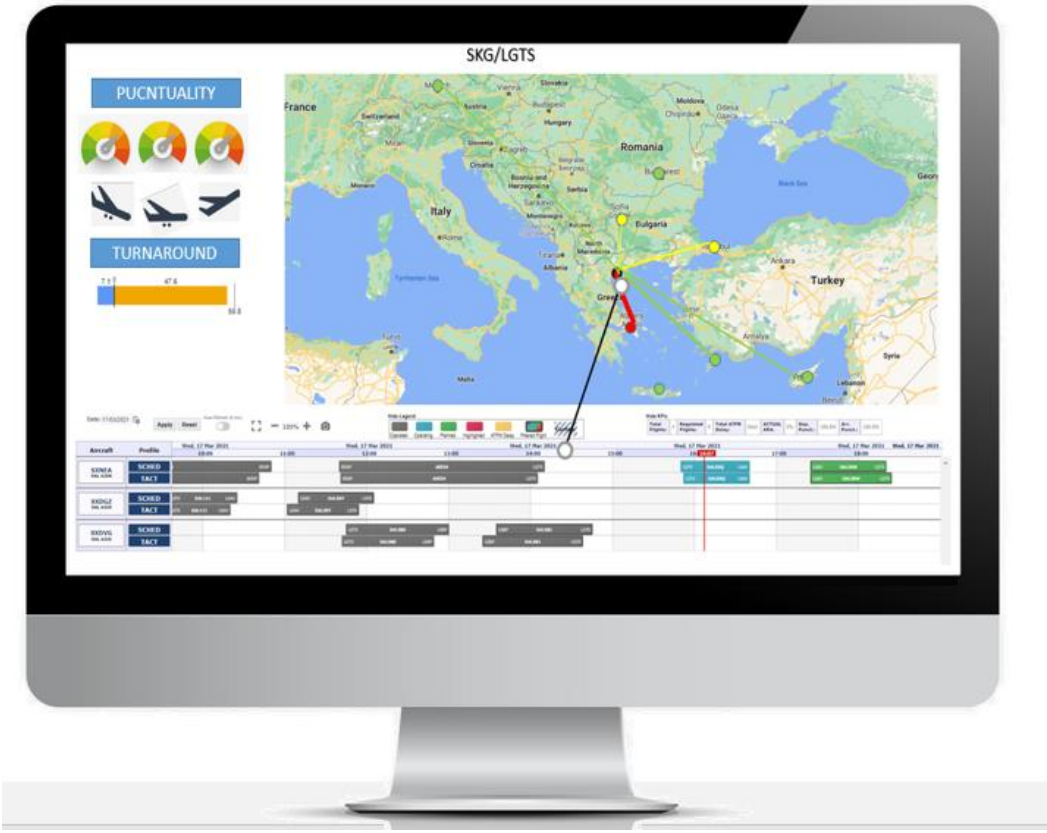
Regional Airports Integration

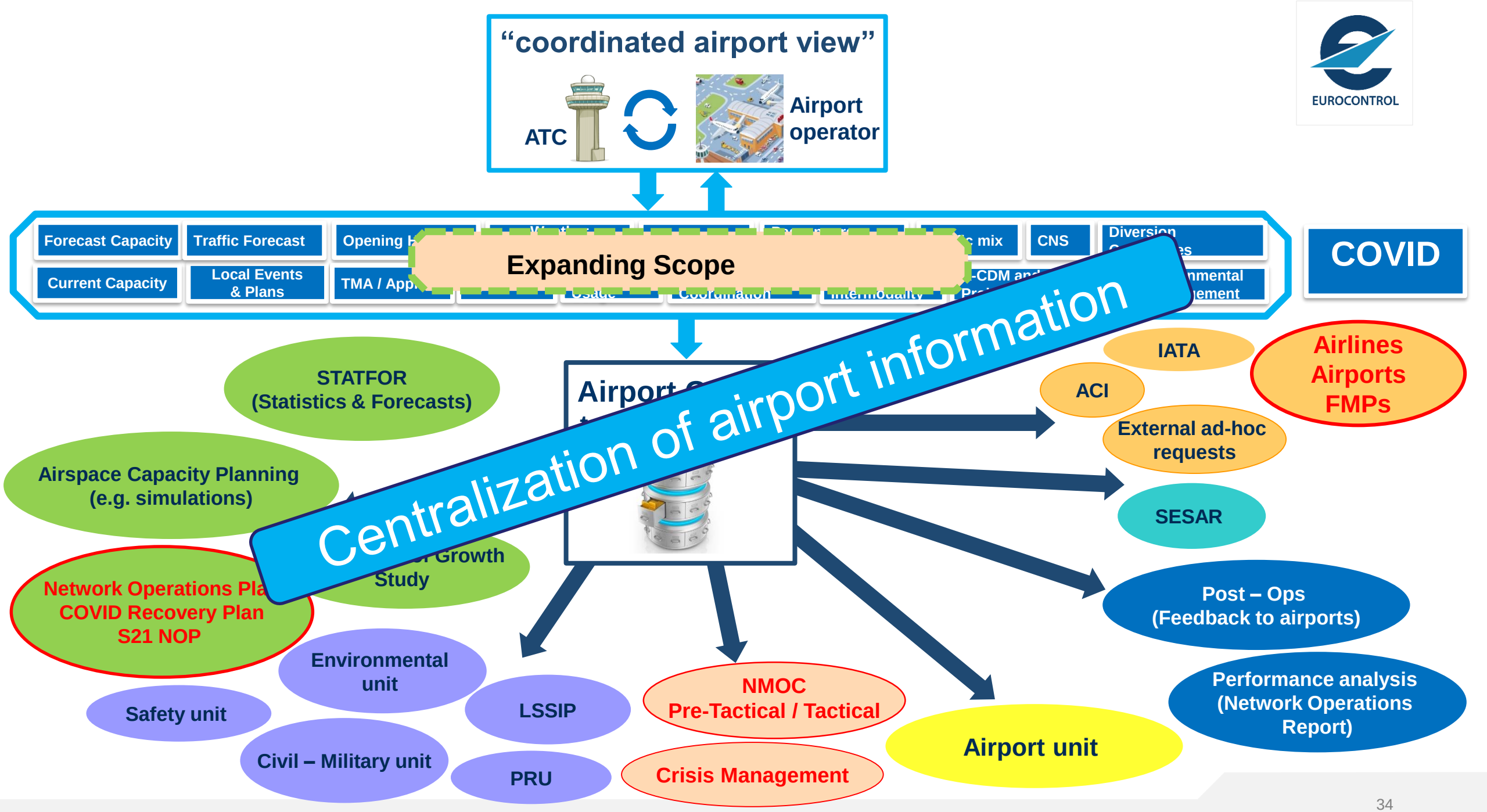
- Program initiated in 2020 with two objectives
  - Engage small and regional airports with the network. (Airports are the nodes of the network)
  - Increase the % of traffic departing from connected airports up to 95%.

- The new concept is based on:
  - The exchange of a limited amount of information with the Network Manager to improve traffic demand predictions. (Advanced ATC Towers)
  - Use of ADS-B for a/c ground surveillance
  - Automation
  - Provide added value Network Services for Regional Airports to improve airport performance and Passenger Experience

Regional Airports Integration






"coordinated airport view"
ATC
Airport operator
Forecast Capacity
Traffic Forecast
Current Capacity
Local Events & Plans
CNS
Expanding Scope
COVID
Centralization of airport information
STATFOR (Statistics & Forecasts)
Airspace Capacity Planning (e.g. simulations)
Network Operations Pla
COVID Recovery Plan
S21 NOP
Study
Safety unit
Environmental unit
Civil – Military unit
LSSIP
PRU
NMOC Pre-Tactical / Tactical
Crisis Management
Airport unit
IATA
ACI
External ad-hoc requests
SESAR
Airlines Airports FMPs
Post – Ops (Feedback to airports)
Performance analysis (Network Operations Report)

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Information Scope Evolution

EUROCONTROL

Strategic Planning

Forecast capacity | Planned events | Environmental Management | Local contacts
Air-Rail Inter-modality plans | Runway configuration usage | Traffic forecast
Standard / Temporary Diversion capabilities | A-CDM, CDO/CCO status | COVID

Pre Tactical Planning

Events: Adverse Weather | Unforeseen maintenance
Industrial action | Unforeseen impact of planned events

Diversions Capabilities

Tactical Operations

Emergency quick reporting
Diversion Capabilities Process

Post Operations

Post-ops feedback: NMOC and Airport Unit Feedback
Applied regulations | Top 50 most delayed flights
Regulation profile | What can be improved

Support to Crisis Management

COVID dedicated interface
Emergency Reporting Process
Future "Crisis Management interface"

Airports Events Reporting

Example

Airport: EHAM / Amsterdam/Schiphol
Author(s): Airside Operations Manager Airside Opeartions Manager
Date & Time: 10/12/2017 16:02:16 (UTC)

The following event has been **created**

Event Name	Event Description	Start Date/Time (UTC)	End Date/Time (UTC)	Status	Type(s)	NOTAM(s)	Event Probability	Additional Information
Capacity reduction expected	Due to the expected winter weather (snowfall), a capacity reduction expected.	11/12/2017 14:30	11/12/2017 22:00	Not Started	- Capacity Enabler - Weather		95	
Confidentiality				Files		AIP(s)	Coordination among stakeholders	
Public				*No file was uploaded*			- Airport Operator - Local ATC - FMP - Main Carrier Airline	

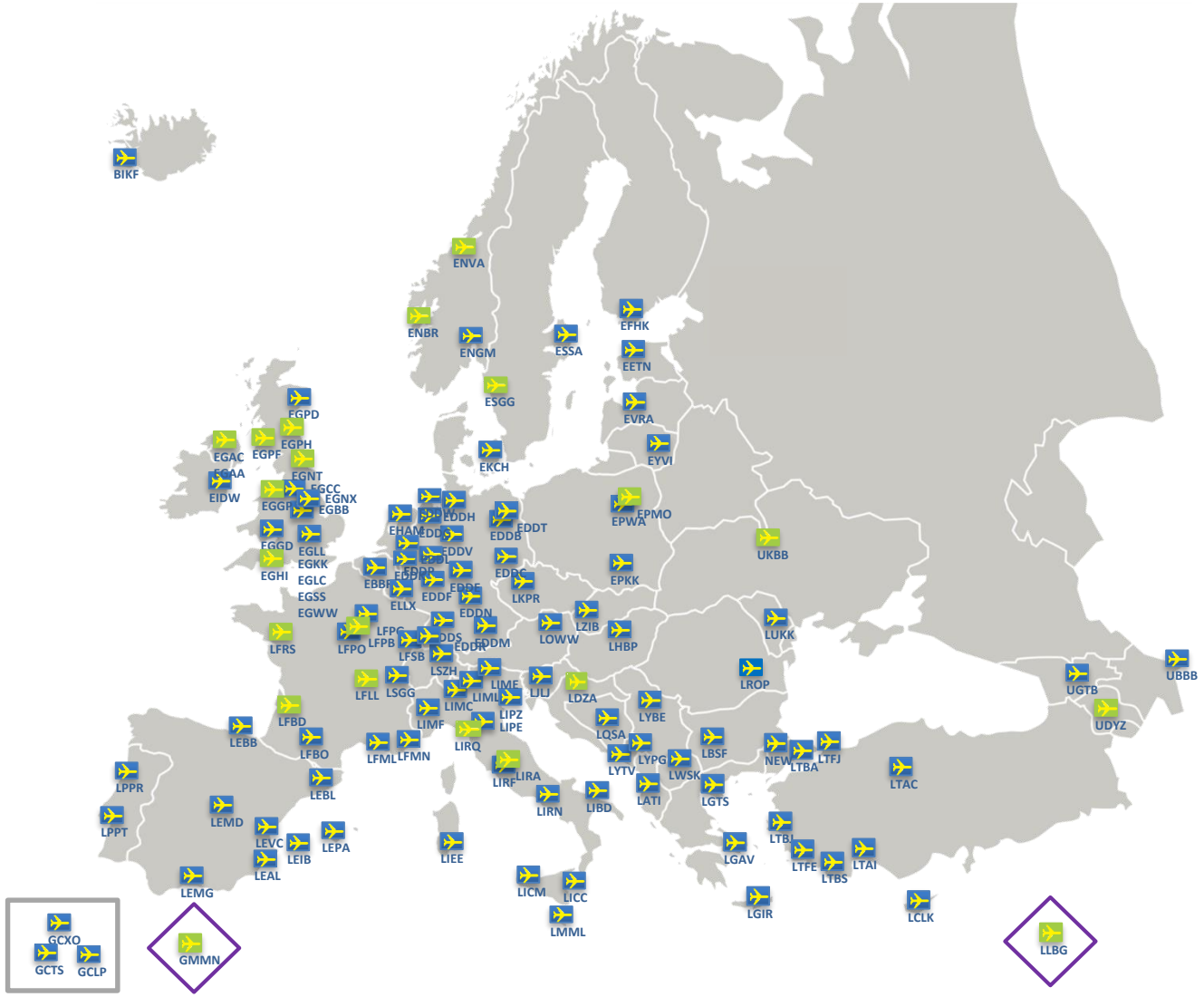
Expected Capacity			
Arrival	Departure	Global	Dat (
10mvts/h	10mvts/h	20mvts/h	11/12/ 14:30

NMOC is automatically notified about:

- ✓ **Weather events**
- ✓ **Industrial Action events**
- ✓ **Events with capacity impact in the next 6 days** (pre-tactical/tactical)

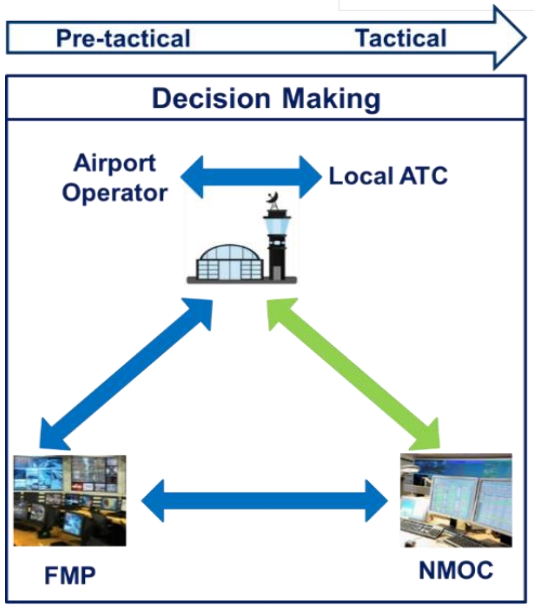
Airports Coverage

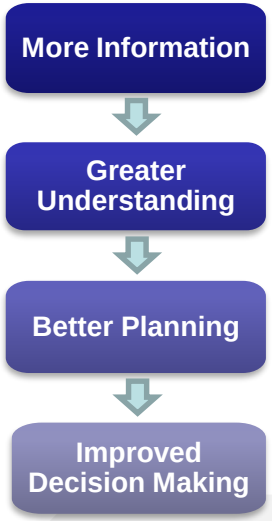
- **130 Airports, about 1000 data providers**
  - ✓ Top 40 most constraining
  - ✓ Member States main airport
  - ✓ More than 50K movements/year
  - ✓ Seasonal airports
  - ✓ Voluntary requests to join
  - ✓ Ad-hoc opportunities



Airport Corner Benefits

- **Enhancing Situational Awareness:**
  - Single source for monitoring short, medium and long term airport operation plans: **Support to strategic decision making and NM capacity planning**
  - **Wide range of airport information** made available to EUROCONTROL, airlines and airports
  - **Pre-tactical/tactical:**
    - ✓ The **direct exchange of information** between airports and NM allows NM, Airport Operators, ATC and Airlines to take **better informed decisions**
    - ✓ Supporting **early identification of issues** (e.g. events, diversions)
    - ✓ **Enabling early mitigation actions** and **minimizing operational impact**
  - Providing background information **complementing other sources** such as AIPs, AIP SUPs and NOTAMs
- **Support to Crisis:**
  - **Enabling quick and regular airport information provision** to all ATM partners (e.g. COVID capacities, operational constraints)
  - **Facilitating coordination in a diversion situation** (e.g. severe weather events, diversion capabilities)





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Thank you, questions?

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