



ICAO CAIRO UNITING AVIATION

NO COUNTRY  
LEFT BEHIND



# ICAO ATFM SEMINAR

**Dubai, UAE, 14 December  
2016**



nominated by  
the European Commission



**Network Manager**  
nominated by  
the European Commission



# ICAO ATFM Seminar

## Session 2.2: ATFM Sub-regional and Regional Solutions

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EUROCONTROL Network Manager Directorate

12<sup>th</sup> December 2016

- Central Flow Management Unit –  
1996
- Network Manager 2011

# Shortcomings prior to CFMU

- Inaccurate picture of Demand – no single Flight Plan
- Slot approval request for every flight (no automation)
- Waste of Capacity
- High Delays
- Inflexible

# Evolution of Flow Management

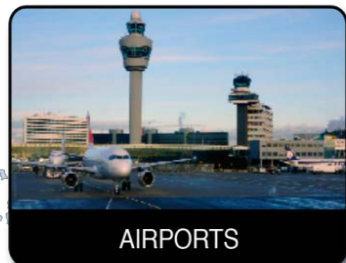
- Political decision to create Centralised Flow Management Unit (CFMU) by ECAC Minister of Transport (1988)
- Decision to create centralised flight plan processing unit also (IFPS)
- ICAO Provisions (Doc 7030) – ATFM available to all EUR states
- April 1996 – ATFM operations – 6 states
- 2016 – 42 states

# Evolutions since 1996

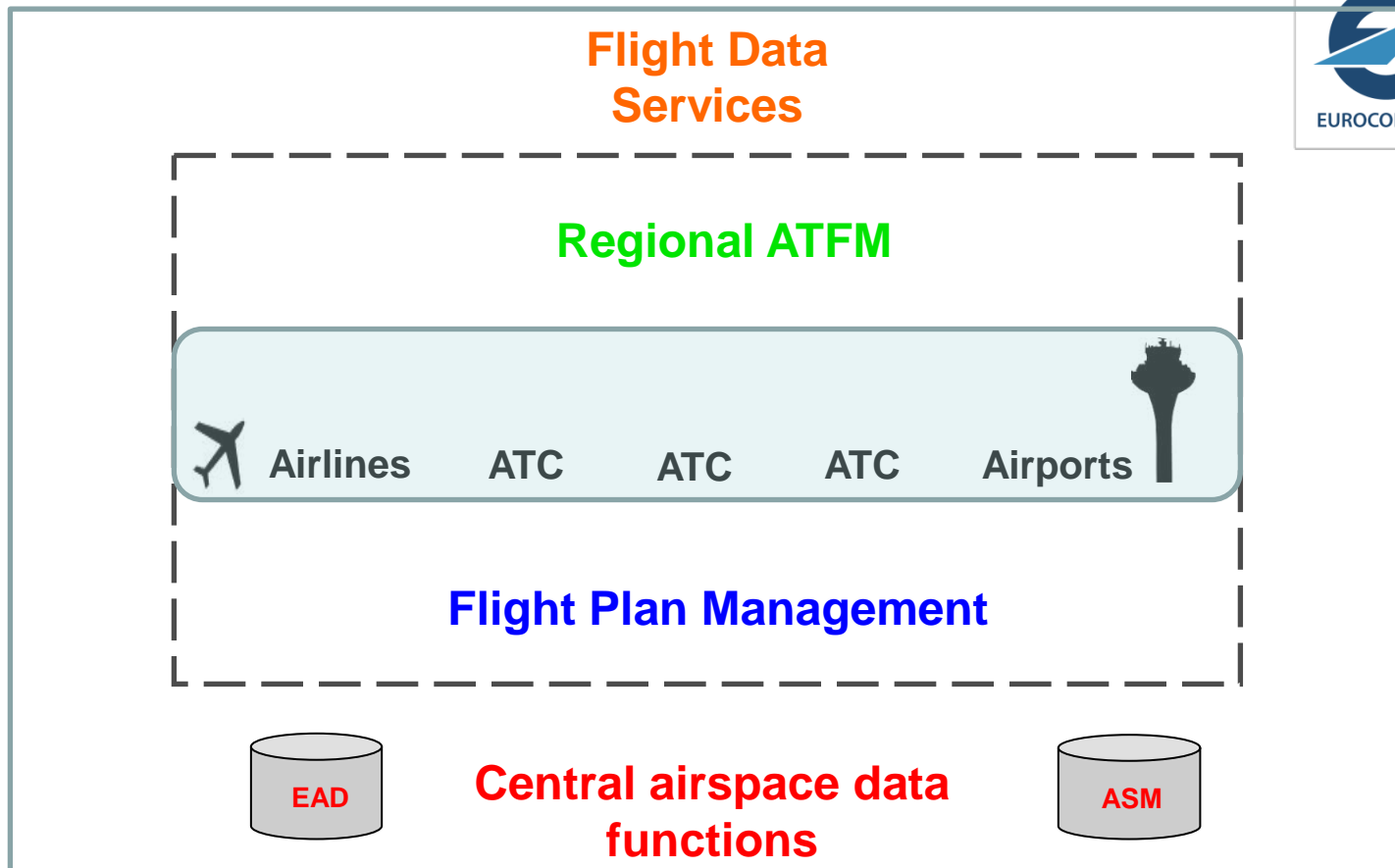
- 1996 – Airspace Data, IFPS, CFMU
- 1998 – Flexible Use of Airspace
- 2000 – ATFM > ATFCM – Capacity Optimisation
- 2004 – Integration of surveillance data
- 2009 – Integration of Airport CDM data
- 2009 – Network Operations Portal
- 2010 – ATFM for disruption and crisis management
- 2010 – ATFM and Flight Efficiency
- 2011 – CFMU to Network Manager
- 2011 – Operations Planning – Operations – Post operations and performance management
- 2012 – EU SES Performance targets
- 2012 – Short term ATFM Measures (STAM) ATC <> ATFM



# Network Operations Concept



Unique collaboration of all ATM stakeholders



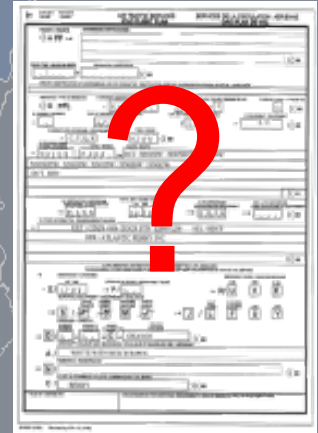
## Network Operations comprise:

- **Central airspace data management function (AIS, AIP, NOTAM and airspace management based on military airspace bookings).**
- **Single flight plan reception, verification and distribution process (IFPS).**
- **Centralised air traffic flow and capacity management function (ATFM)**
- **Real-time flight data collection and distribution, common real-time situation awareness across the network to all.**



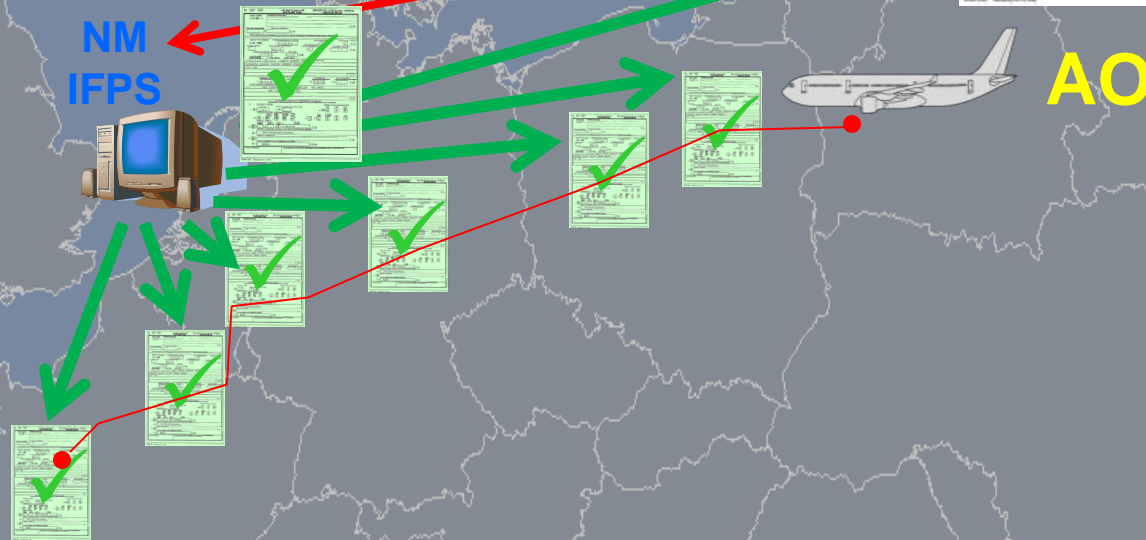
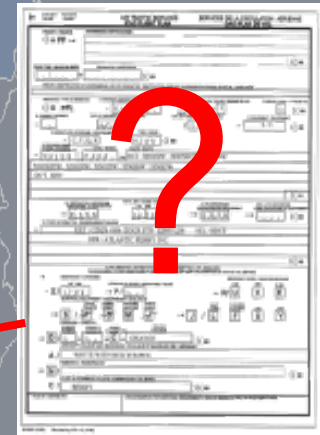
# Before Centralised Flight Planning

- Flight Plan submitted to numerous ATS units via ATS unit at ADEP
- No acknowledgement process
- Missing and inconsistent Flight Plans
- Reliability concerns

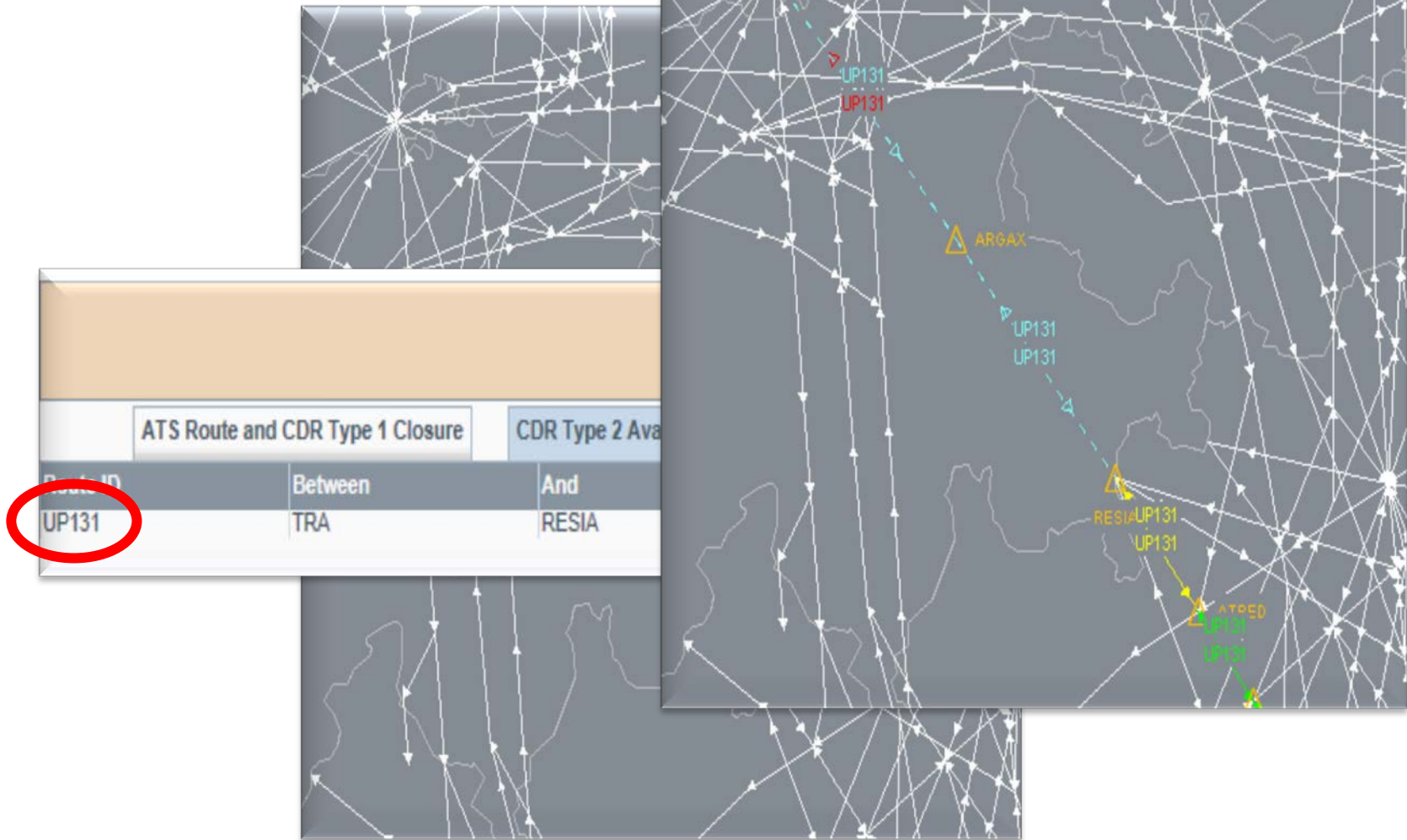


# Centralised Flight Planning

- 1 single Flight Plan submitted to IFPS
- Full acknowledgement process
- Distributed to all ATS units concerned
- Everybody has the same Flight Plan reference
- Common and correct data, correct format



# Airspace Management



# ATM Structure in Europe

**One single  
Flow Management  
System over  
Europe**

**42 States**

**65 En-route centres = 1750 Sectors**

**1940 Aircraft Operators**

**520 Airports**

**61 FMPs**

**Distributed  
roles**

**Network Manager Operations Centre**

**Local FMU**

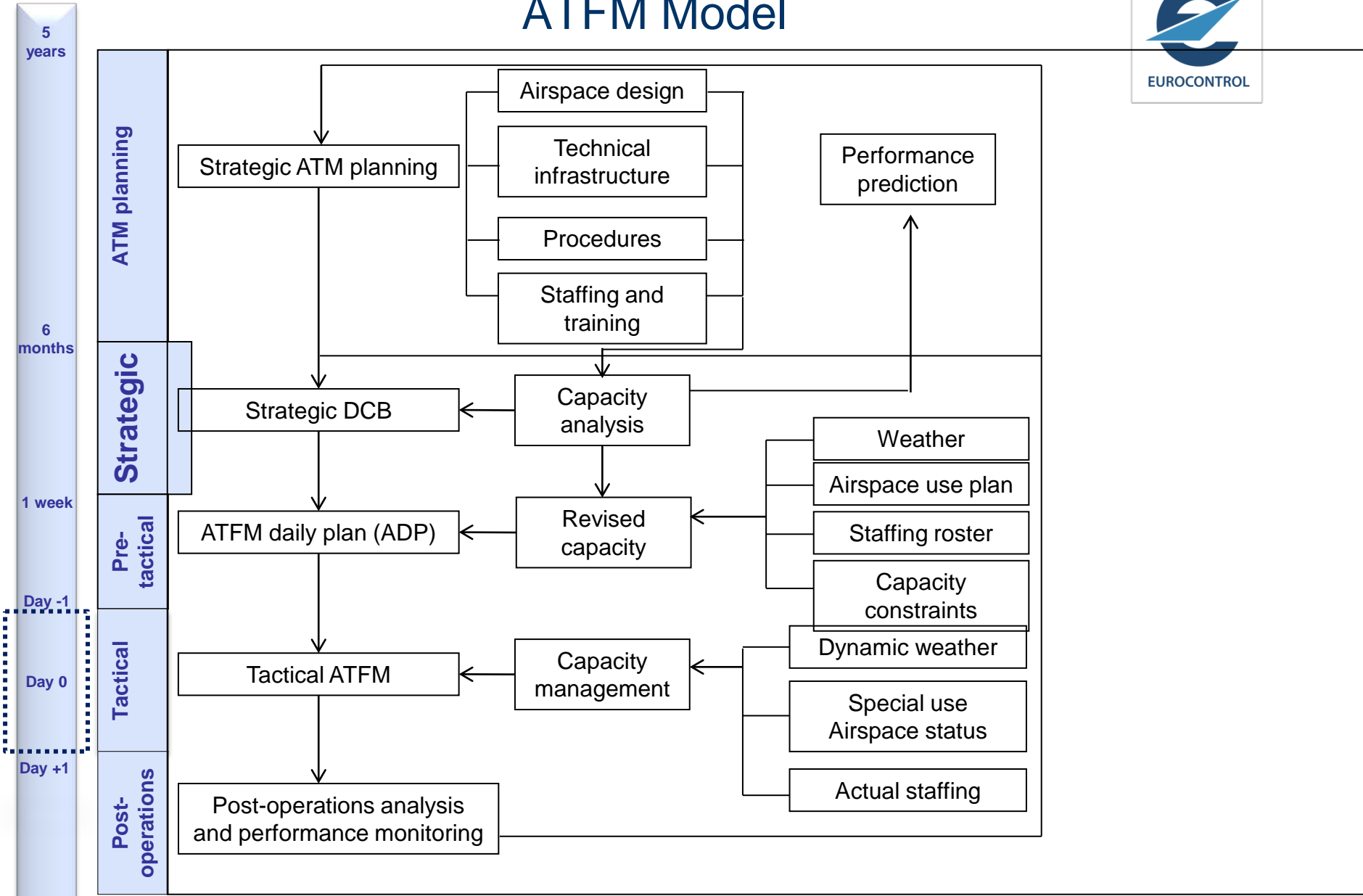
**6700+ connected end-users**

**Central NMOC**

**Peaks 34 000+ flights a day**

**10 000 000 flights a year**

# ATFM Model





# ATFM view of the Network

**Congested areas**  
 <15 min  
 >15 min  
 >30 min  
 >45 min

Current situation		
✈		
Planned flights	Airborne	Landed
27,799	4,395	17,927
✈		⌚
Flights delayed more than 30 mins	Total amount of delays today (mins)	
1,068	97,198	

Today's top 5 accumulated delays (mins)	
	12,751
APT: ISTANBUL/ATATURK	10,254
LFM E12 + K12 195/355	7,802
APT: ISTANBUL/SABIHA GOKCEN	4,311
REIMS UH + XH + KH+ HH	3,918

Live delay situation (mins)	
TEGERNSEE CTA FL315	> 45
ALPEN MIDDLE & TOP 355-UNL	> 45
TG023+TG033	> 45
WUR 355-UNL	> 45
	> 45

Legend (delay in mins/flight)	
■	< 15
■	> 15
■	> 30
■	> 45

Resources

Post-Operations

**Tactical**

Pre Tactical

Strategic

Axis Management

**South West Axis 2014** [update](#) ▶  
01/05/2014 - 02/10/2014

**South East Axis 2014** [update](#) ▶  
01/05/2014 - 01/11/2014

Network Operations Weather Assessment

**Network Operations Weather Assessment objective**



To support ANSPs and AOs in anticipating, identifying, monitoring and planning for potential severe weather events that may impact ATM capacity.

[Daily Update \(click here\)](#)

Contingency

The status of the Network Manager operations is **NORMAL**.

**IHM ATFCM Contingency Plan Summer 2014**

Valid 30th March 2014 - 25th October 2014

This document addresses the contingency procedures to be carried out in the event of a long term failure of Network Operations systems.

ANM

Valid On 27/05/2014

Last Released 27/05/2014 07:44

AIM

Description	Released on
TAXI TIME EPKK	27/05/2014 07:51
TAXI TIME EHAM	27/05/2014 07:44
TAXI TIME EHAM	27/05/2014 04:58
TAXI TIME EPWA	27/05/2014 04:52

[more](#) ▶

European AUP/AUP

EUJP	27/05/2014 06:00	28/05/2014 06:00
EAUP	27/05/2014 06:00	28/05/2014 06:00
EUJP	26/05/2014 13:00	27/05/2014 06:00
EUJP	26/05/2014 12:00	27/05/2014 06:00
EUJP	26/05/2014 11:00	27/05/2014 06:00

ATFCM Network Situation

Last update: 27/05/2014 07:55



Static Map ▶ [Static Map \(IE7/8\)](#) ▶

ATFCM Network Situation Data

Last update 27/05/2014 07:55

Flights	
Total	<b>23,481</b>
Landed	4,099 (17%)
Airborne	4,043 (17%)
Expected	15,339 (65%)

Delays (in minutes)

Cumulated	<b>37,613.0</b>
Average/Flight	1.6
En-route	33,430 (89%)
Airport	4,183 (11%)
>= 30 min	<b>505</b>

Network Headline News

- 27/05/2014 ▶ **IIOH-ATC equipment failure in EDUU UIR (Karlsruhe)**
- 27/05/2014 ▶ **Tactical update 0715 UTC**
- 22/05/2014 ▶ **Greek Islands Airports Teleconf 28/05**
- 21/05/2014 ▶ **Ukraine situation - UPDATE 21/05 1130 UTC**

[more](#) ▶

EVITA

For more information on the European Crisis Visualisation Interactive Tool for ATFCM (EVITA), please consult the [EVITA Web page](#).

Calendar

May 2014

Month	Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
		28	29	30	1	2	3	4
		5	6	7	8	9	10	11
		12	13	14	15	16	17	18
		19	20	21	22	23	24	25
		26	27	28	29	30	31	1
		2	3	4	5	6	7	8

[more](#) ▶

E-Helpdesk

To request access to the **E-Helpdesk** please fill in the **IHM service request form**.







Flights

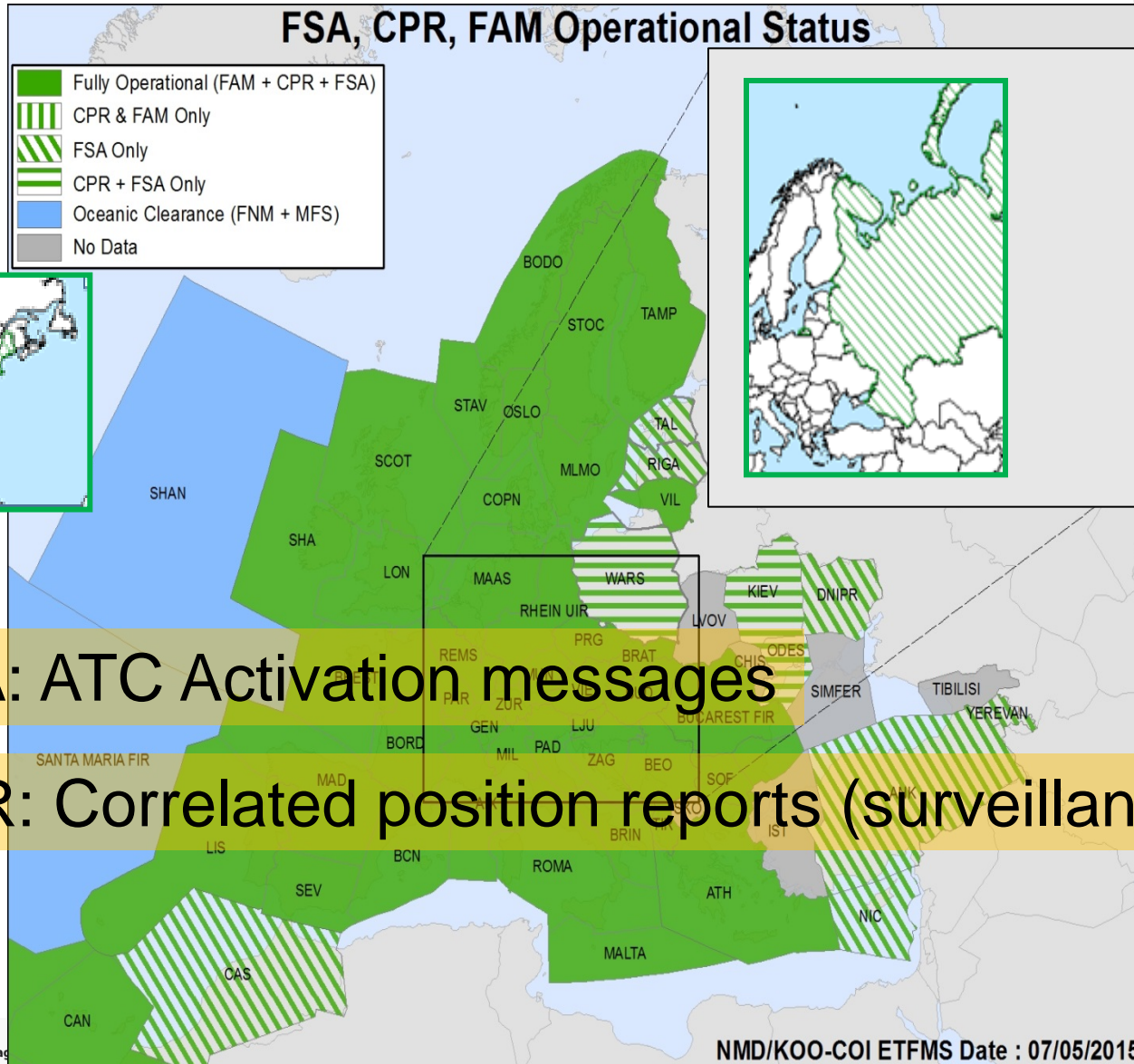
**Collaboration tools for all Operational Stakeholders**



# European Flight Data Reception and Distribution

## FSA, CPR, FAM Operational Status

-  Fully Operational (FAM + CPR + FSA)
-  CPR & FAM Only
-  FSA Only
-  CPR + FSA Only
-  Oceanic Clearance (FNM + MFS)
-  No Data

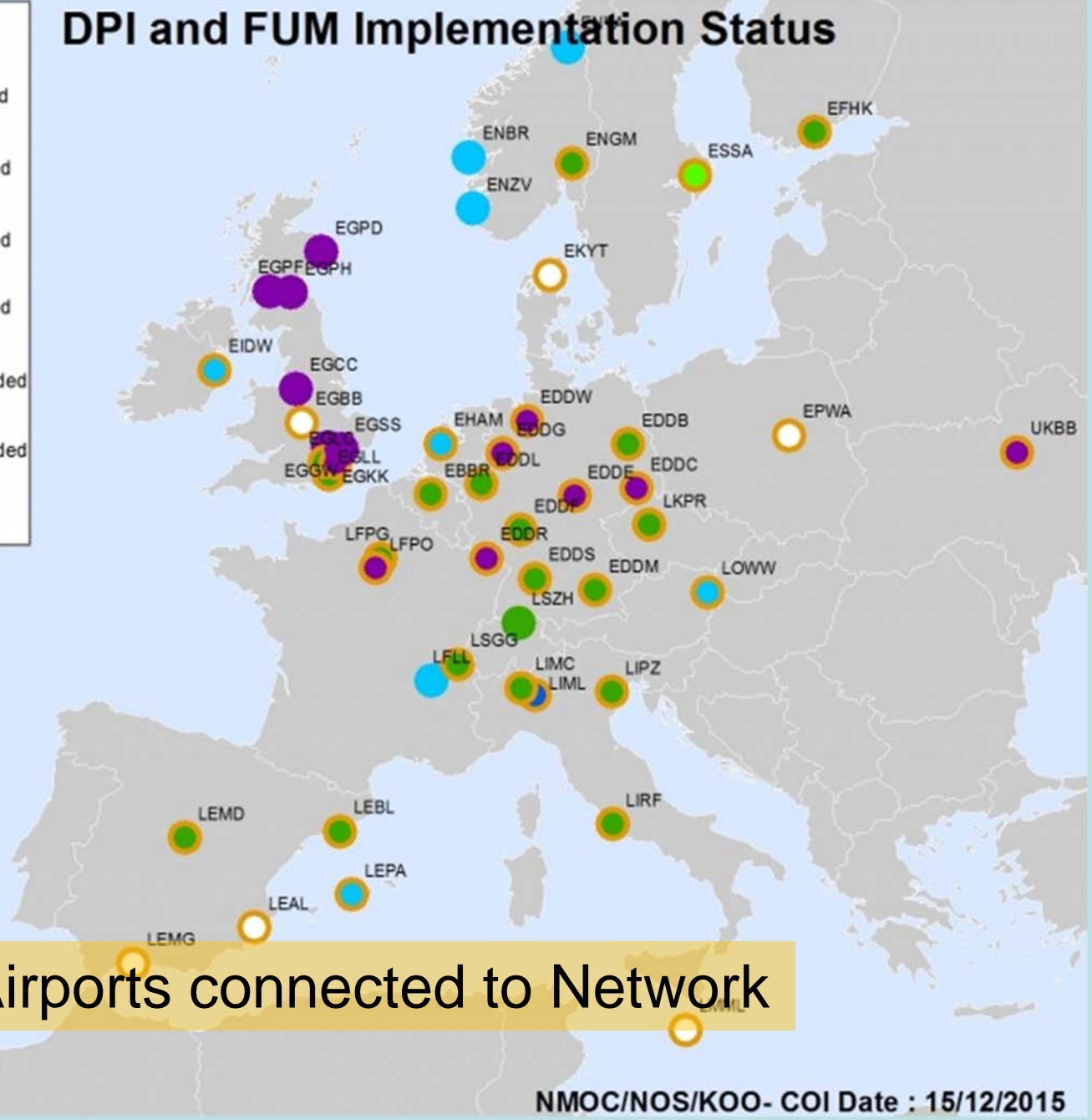


**FSA: ATC Activation messages**

**CPR: Correlated position reports (surveillance)**

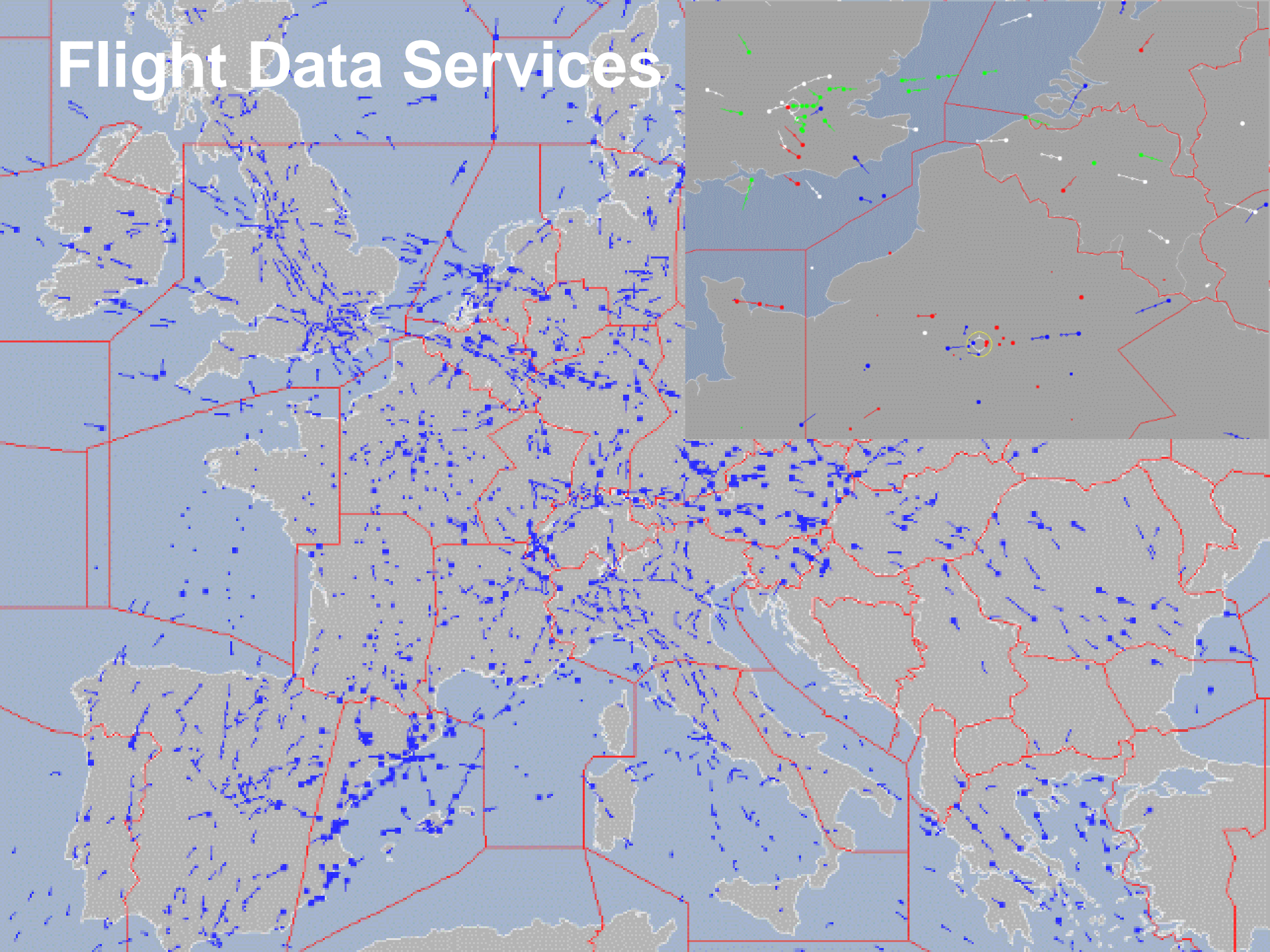
# DPI and FUM Implementation Status

- DPI & FUM Operational
- DPI Operational
- DPI trials ongoing & FUM provided
- DPI trials ongoing
- DPI planned 2015 & FUM provided
- DPI planned 2015
- DPI planned 2016 & FUM provided
- DPI planned 2016
- DPI planned 2017 & FUM provided
- DPI planned 2017
- Adv ATC TWR OPS & FUM provided
- Adv ATC TWR OPS
- Adv ATC TWR trials & FUM provided
- Adv ATC TWR trials ongoing
- FUM provided



CDM Airports connected to Network

# Flight Data Services



Ensuring all actors have accurate data

Ensuring predictability





# Crisis and Disruption Management

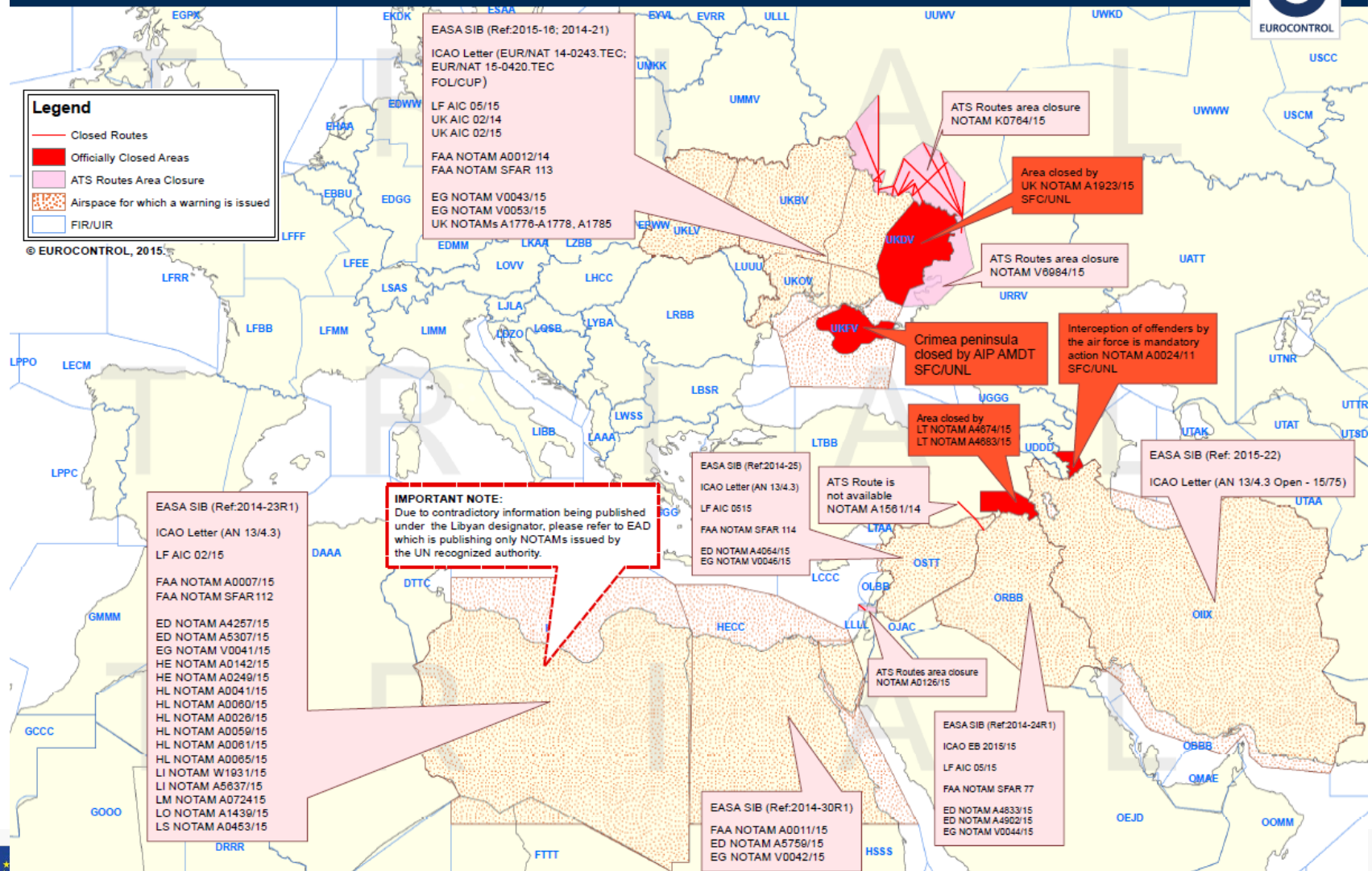
FOR INFORMATION PURPOSES ONLY  
NOT FOR OPERATIONAL USE

## CLOSURES AND WARNINGS

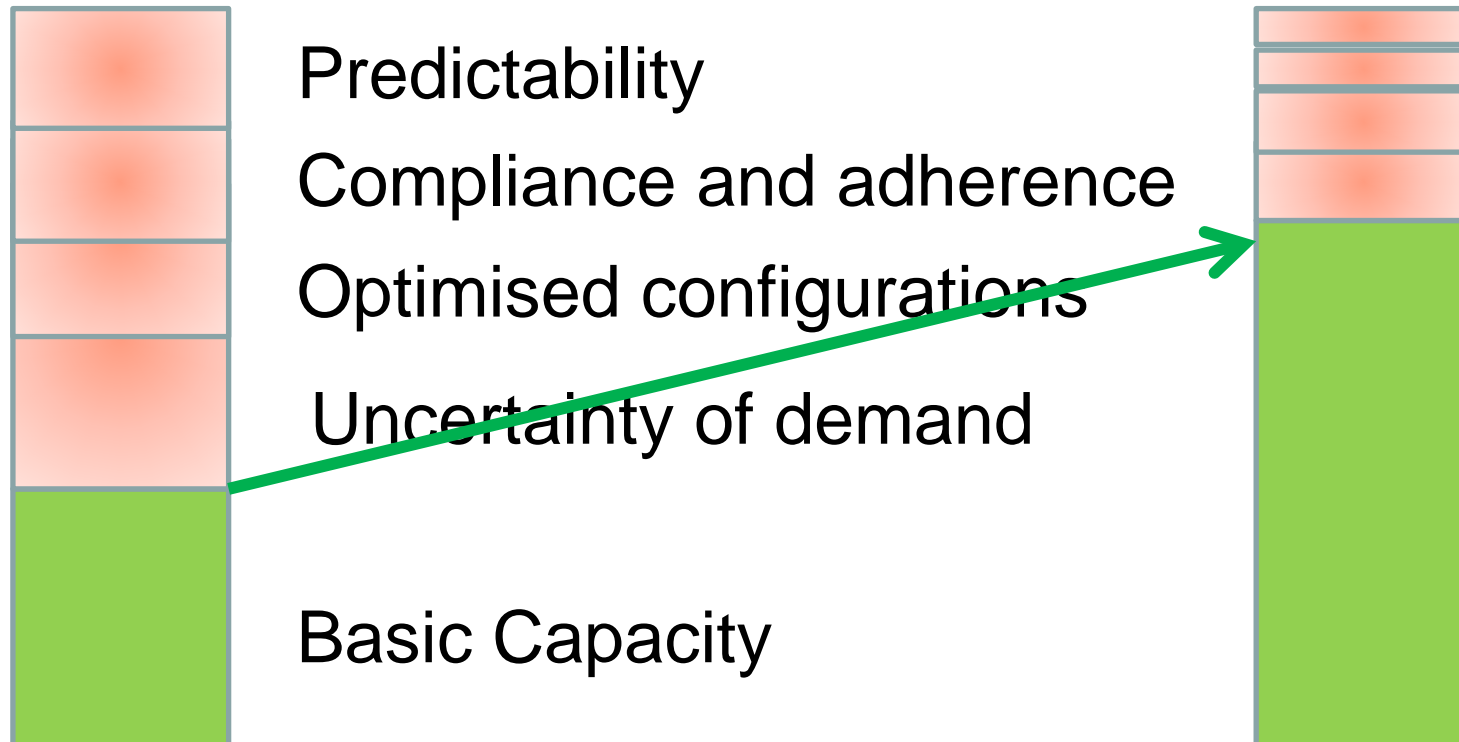
Latest update - 12 OCT 2015



Network Manager  
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# Reminder : ATFM capacity is built up



# Central or Local

- Local
  - Knows the local traffic situation
  - Knows the detailed local conditions
    - Staffing, capacity, NAV Aids, Weather, Military activity, Local airport conditions, Local airline behaviour
  - Local Optimisation
  - Responsible for safety of operations at each unit
  
- Central
  - Network Optimisation
    - Network wide view
    - Interrelationship between local measures
  - Coordination between local units across the network



# Balancing central and local - CDM

- CDM requires full and complete sharing of information
- Involvement of all relevant stakeholders
- Appropriate subsidiarity of decision making
- Clear communication of decisions following CDM process
- Full and open post operations evaluation and learning of lessons learnt
- Data must be fully shared
- Systems must be fully interoperable

# ATFM Developing around the world

## 5 foundations stones of a mature ATFM / Network Operations

*Surveillance and flight data updates – Radar, ADSB, ACARS....*

*Local, regional and cross regional ATFM Measures*

*Traffic Demand: Schedules, flight plans*

*“Supply” information: Capacities, Events, Weather, Disruptions*

*Airspace Digital Infrastructure: Airports, points, routes, FIR, ACC, sectors*

Thank you

Questions