**AATIP**
**ASEAN Air Transport Integration Project**

*A project funded by the European Union*
*and implemented by EASA*
ASEAN Air Transport Integration Project

*in partnership with EUROCONTROL, UKCAA and DGAC France*

# FUA experiences and the application of Enhanced FUA

## ICAO / IATA Workshop on Cross Border ATFM
## Bangkok 17 – 18 November 2015


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EU-AATIP Project


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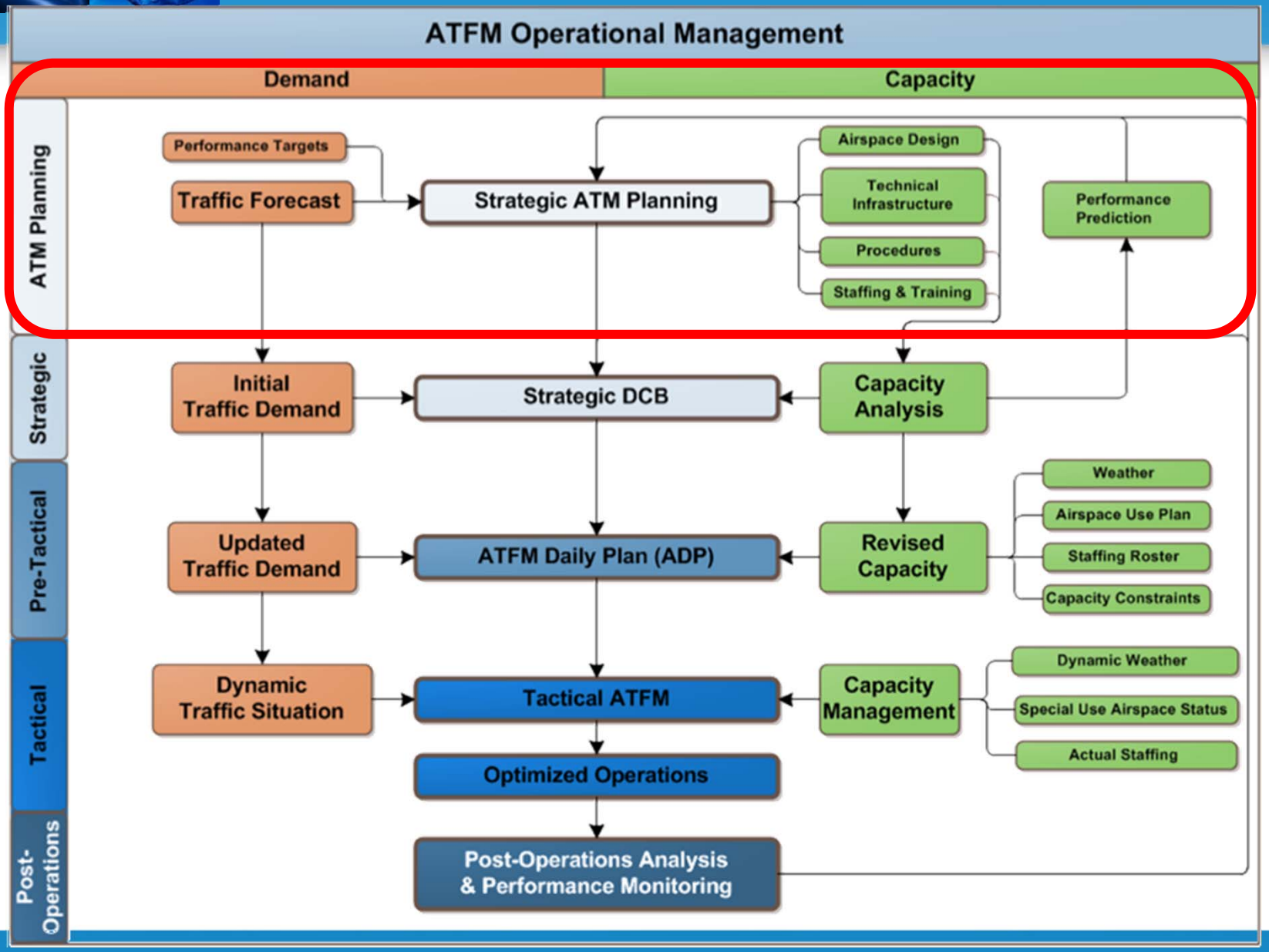
# Ensuring a 'Flexible Use of Airspace'....

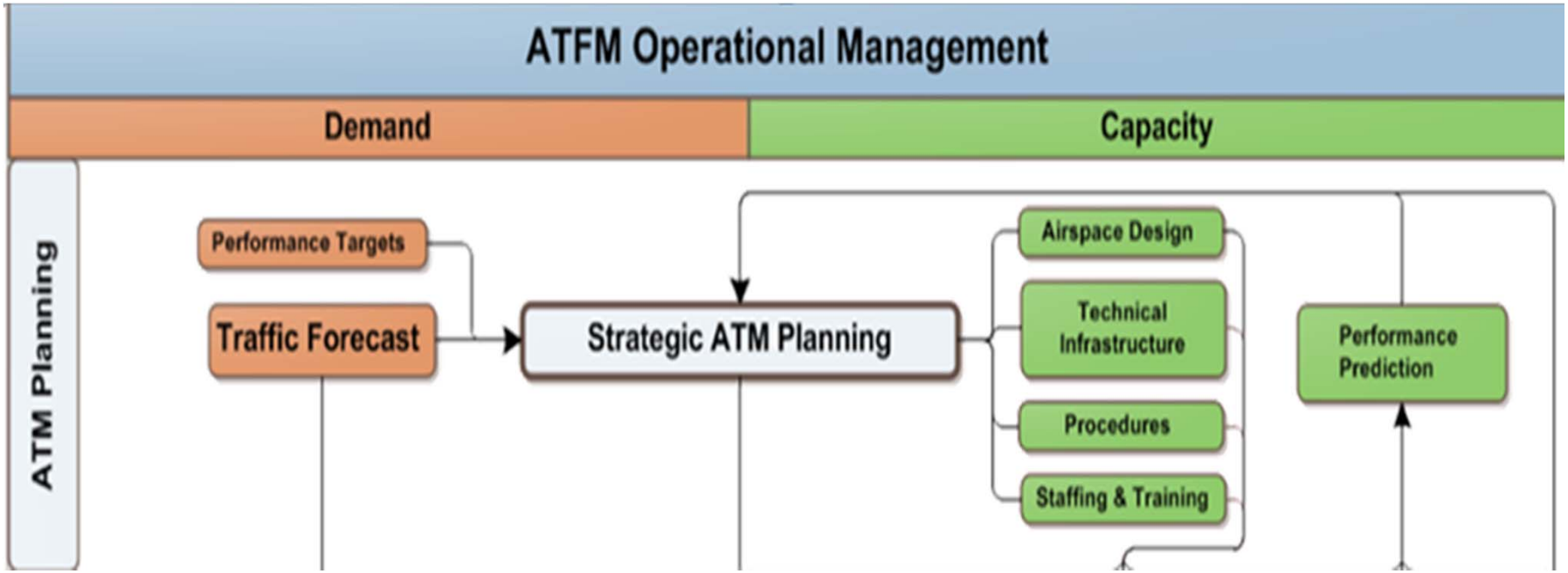
## Presentation structure:

- Why FUA at a workshop on ATFM
- How FUA is applied in Europe
- Benefits of FUA
- Dynamic Management of Airspace

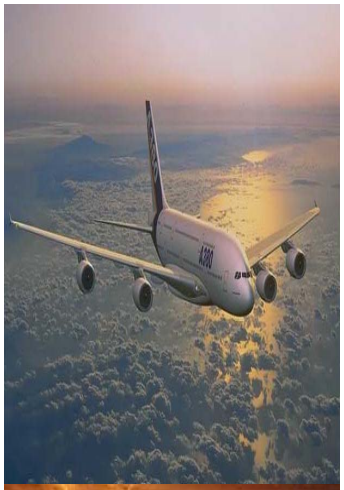
# ICAO Manual on ATFM



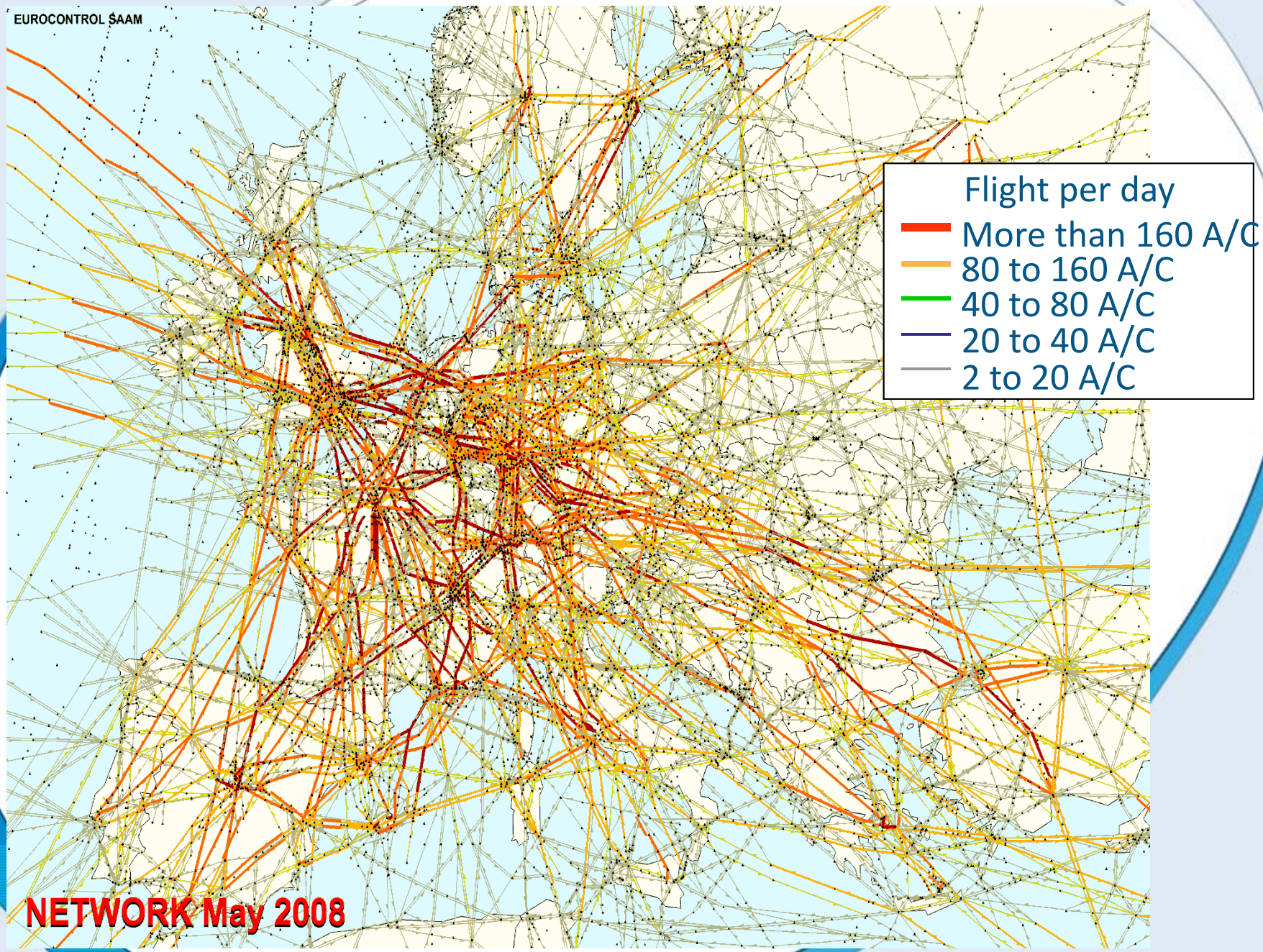
# ICAO Manual on ATFM



# Overview of Europe's Traffic

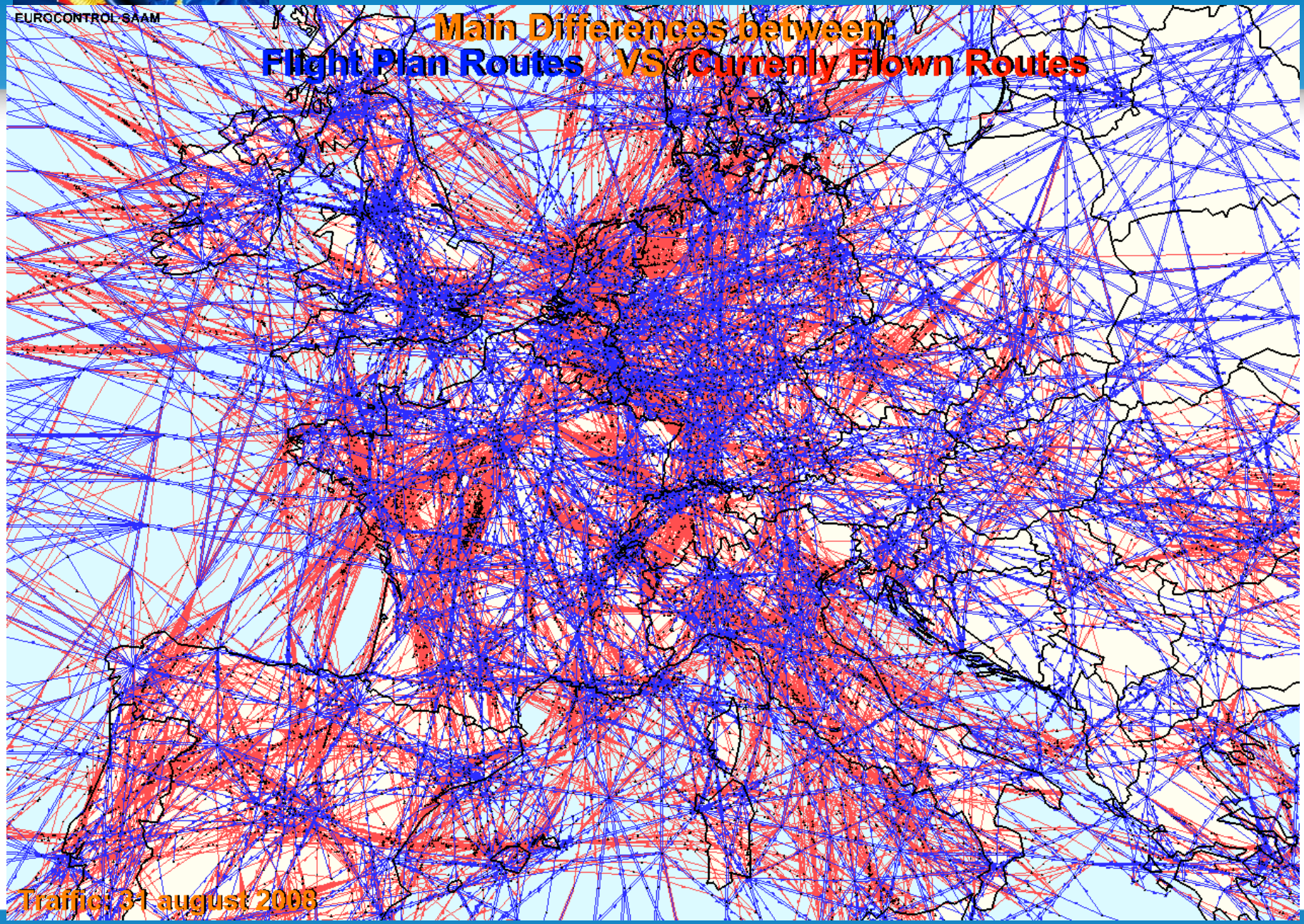


- Dense Route Network
- 1000 airports
- 30000 aircraft per day
- 1000 control sectors
- 80% of traffic is European internal
- 50% of traffic flies less than 600km
- **Military requirements**


EUROCONTROL SAAM
Flight per day
More than 160 A/C
80 to 160 A/C
40 to 80 A/C
20 to 40 A/C
2 to 20 A/C
NETWORK May 2008

EUROCONTROL SAAM

# Main Differences between:
# Flight Plan Routes VS Currenly Flown Routes



Traffic: 31 august 2008

# ATM System Improvements Strategy

1. **Strategic Planning of Airspace**
   - Route network Development
   - National Re-Sectorisation

2. **Controller Workload**
   - ATC procedures
   - System Support

3. **Better Use and Management of Airspace**
   - RVSM
   - Perf Based Navigation
   - *Flexible Use of Airspace*

→ **Increased Capacity**
- Reduced Delays
- Improved Flight Profiles

# How to satisfy all the stakeholders' requirements ?

**Since 1996 through …**

## FLEXIBLE USE OF AIRSPACE

**CONCEPT**

# The basis of the FUA concept

- Airspace no longer designated as civil or military airspace**, a continuum**
- Airspace used flexibly on a day to day basis ➔ necessary airspace segregation only of **temporary nature**;
- Ensure **more efficient sharing** through joint civil/military strategic planning and pre-tactical airspace allocation: Airspace Management Cells **(AMCs)**

# Fundamental principle of FUA

**Airspace should not be designated as either pure civil or military airspace, but rather be considered as a continuum in which all user requirements have to be accommodated to the extent possible.**

# Non-FUA vs. FUA

**P** PROHIBITED

**D** DANGER

**R** RESTRICTED

Normally published as occupied H24

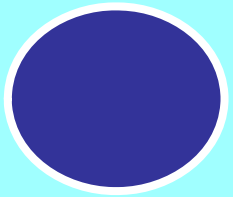
**P** PROHIBITED

**TRA** CROSSING POSSIBLE WHEN ACTIVE / RELEASED AS SOON AS ACTIVITY STOPS

**TSA** RELEASED AS SOON AS ACTIVITY STOPS

# Through Civil / Military Coordination …

ASM Level 1

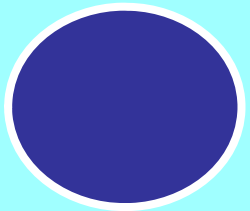


## *Strategic Level*

**Definition and review of national airspace policy and organisation, establishment of pre-determined airspace structures**

High-Level Civil / Military Airspace Policy Body

ASM Level 2

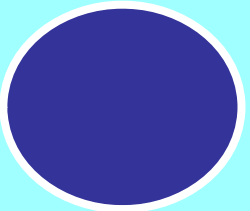


## *Pre-tactical Level*

**Day-to day airspace allocation according to user requirements**

Joint Civil / Military Cell (AMC)

ASM Level 3



## *Tactical Level*

**Real-time use of airspace allowing a safe separation between civil and military aircraft**

Appropriate Civil / Military ATS Units

# CDR Categorisation

**CDR 1** — Permanently plannable during the times published in AIP

- Expected to be available most of the time
- Plannable same way as permanent ATS routes

**CDR 2** — Non-permanently plannable

- Daily allocated as negotiated
- Plannable only in accordance with daily AUP/EAUP
- Part of pre-defined routing scenario

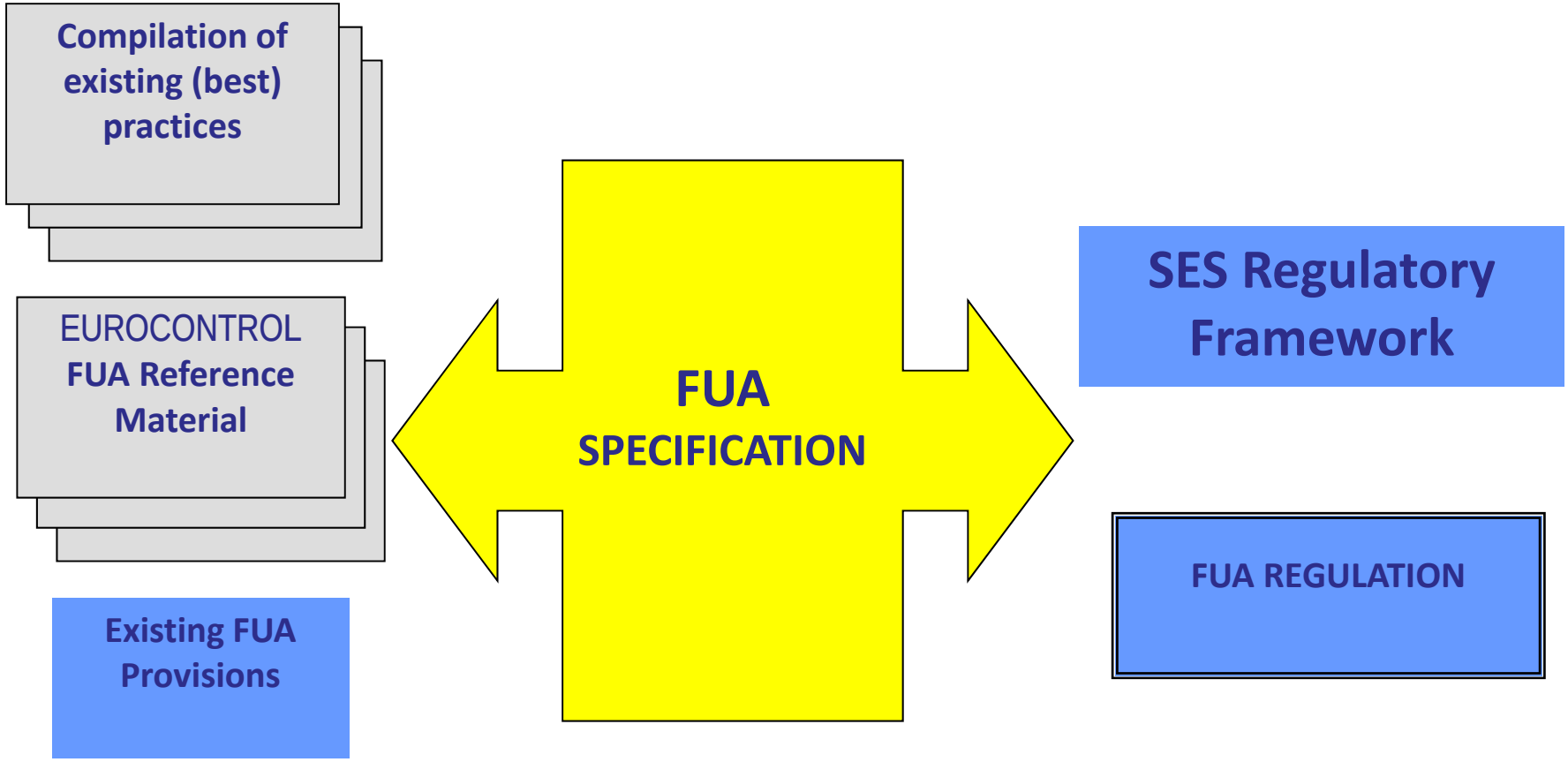
**CDR 3** — Not Plannable

- Usable upon ATC instructions only as short notice routing

# ASM Notification Process

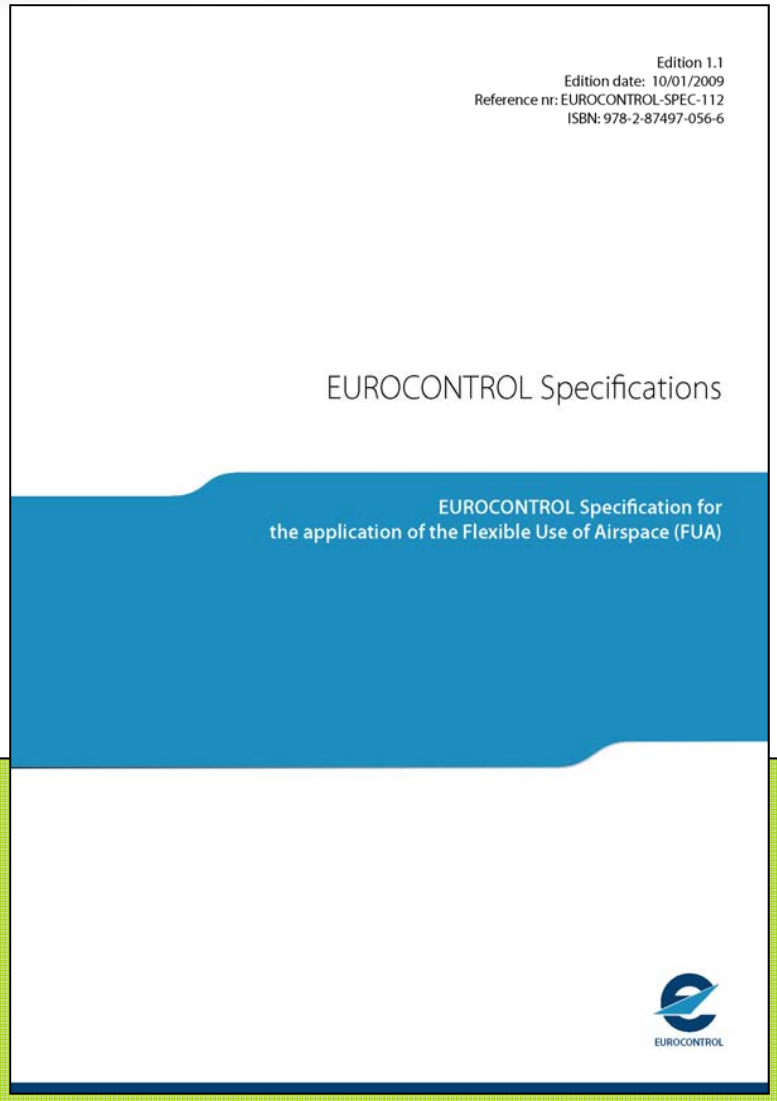
- Mil airspace users advise on requirement;
- National Airspace Use Plan (AUP);
- Put together by the Network Manager, becomes European Airspace Use Plan (EAUP);
- Used by Aircraft Operators in improving flight trajectory.

# Regulatory aspect in regard to FUA Concept



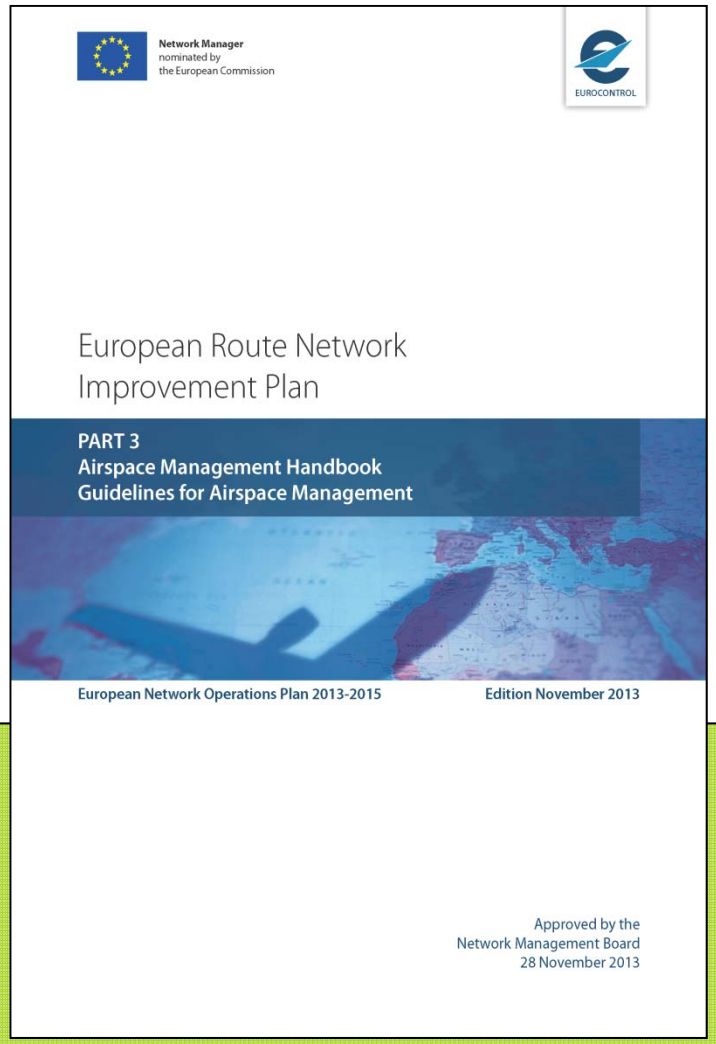

**FUA Specification seen as an interface**

# FUA Specifications




- provides details of procedures and requirements for the application of FUA
- addresses essential interoperability requirements
- a means of compliance

# ASM Handbook



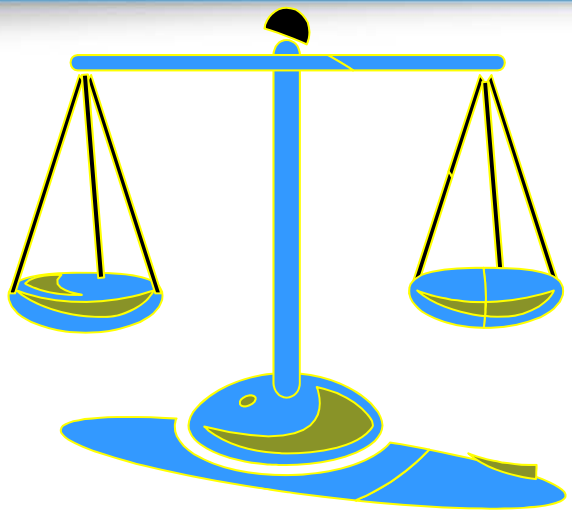

- **FUA Concept described**
- **Processes & procedures at all three ASM Levels**
- **It is the reference document for FUA Regulation**

**EUROCONTROL**
**FUA Guidance Documents**

# Enhanced ASM/ATFCM Process


- Flight efficiency
- Predictability
- Environmental
- Optimised capacity

# Benefits



**340.000 tons CO2/year**

**108.000 tons fuel/year**

**87 million Euro/year**

# Assessment of FUA Operations

**POTENTIAL ECONOMY NOT UTILISED**

**1 week day**

**By not planning on available CDRs**

**10.321 NM on 2.784 flights**

| Fuel : | | $CO_2$ Emissions : |
|---|---|---|
| **129 T** | **105.780 €** | **407 T** |

# ASM / ATFCM Process

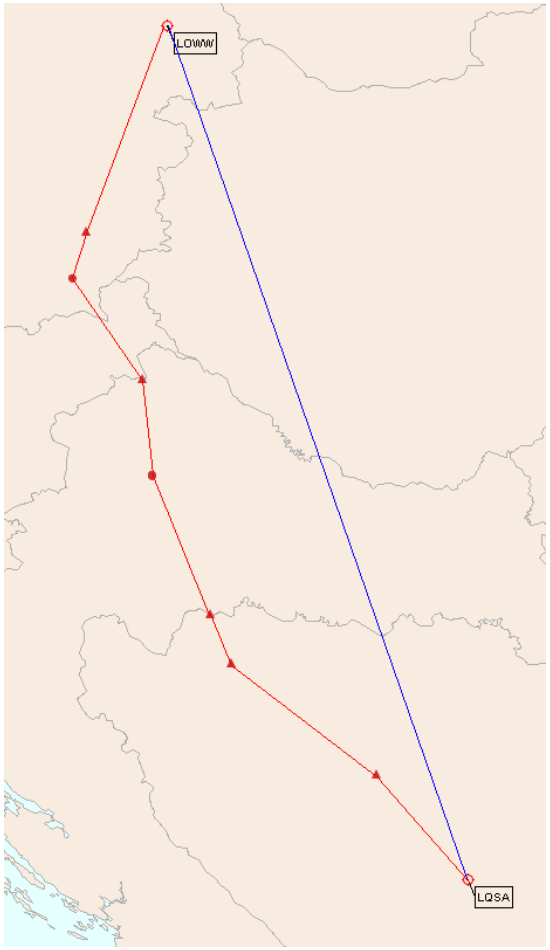
**The Problem**

- Airspace not used optimally
- Impact on performance of Network
- After notification at 15.00 0n Day -1 – tactical
- Work load intense
- Opportunities not used

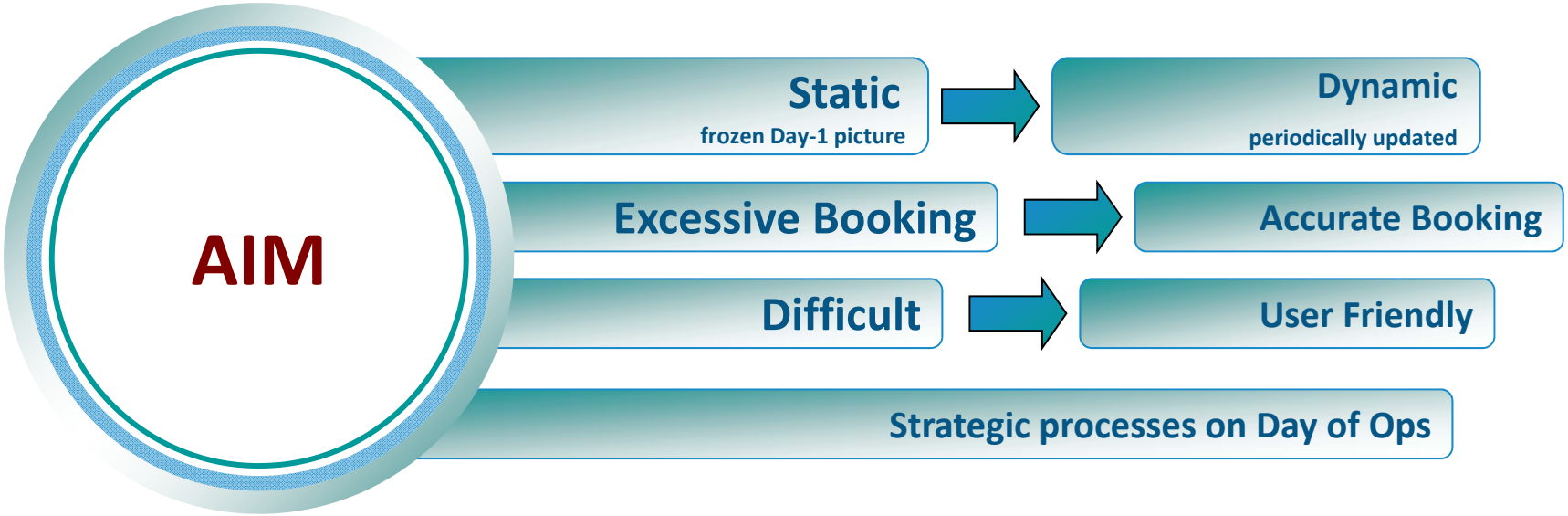
# Tracks far from optimum

- **LQSA-LOWW 51NM difference between flown track and direct distance.**
- **No better airway links published or available.**

...and what is actually flown... (daily)

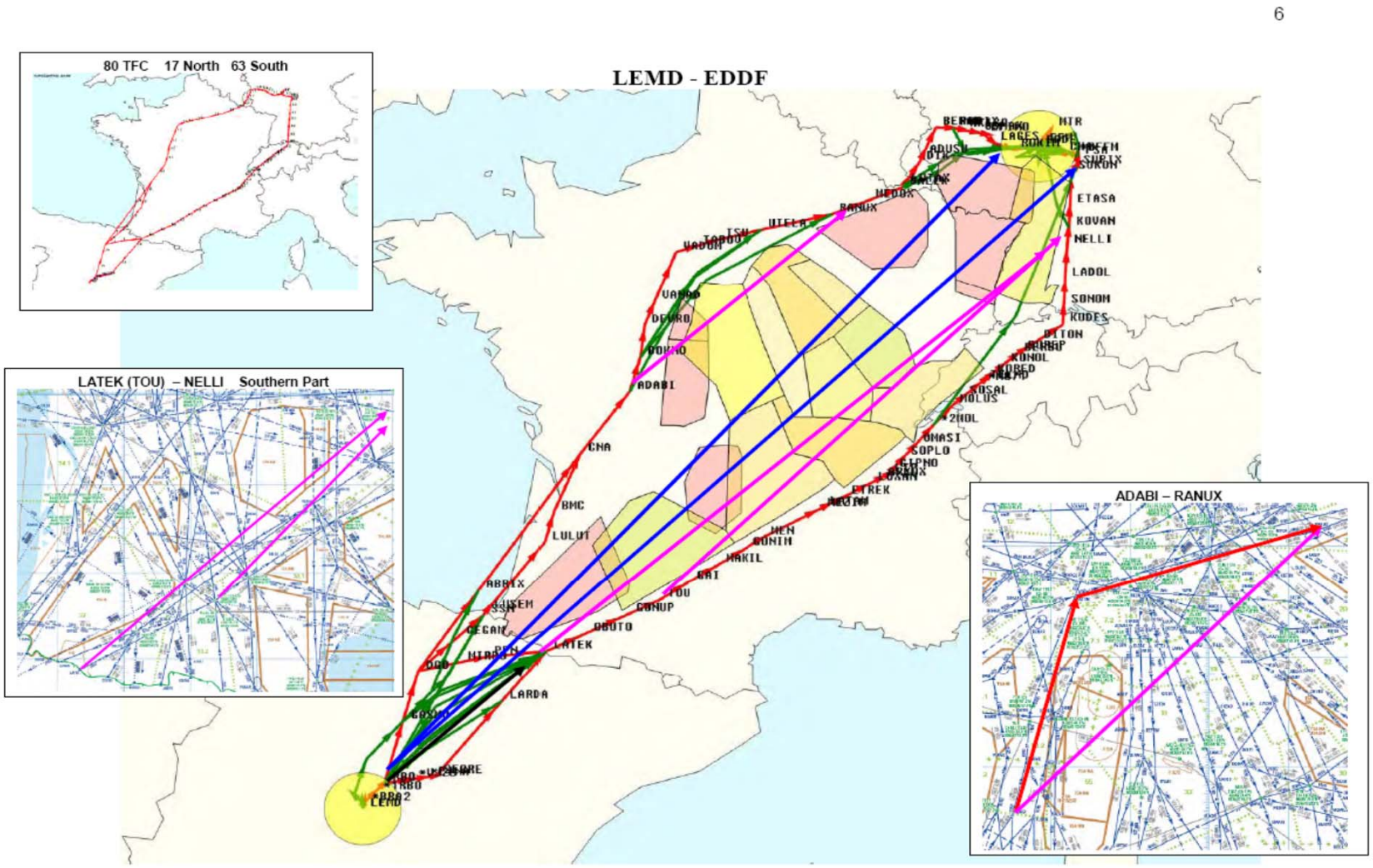


# Enhanced ASM / ATFCM Process



# Improved CDR Network

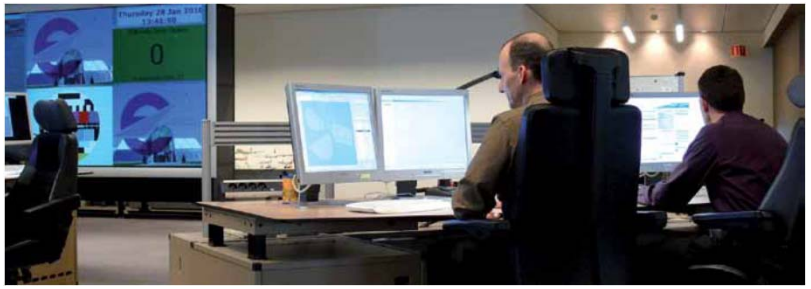
## Improving airspace utilisation



# Support to Civ/Mil ASM coordination

## Military Liaison Officers (MILO) as part of the network management function

- enhance the civil-military ASM coordination process at the European network level
- proposes identified alternative ASM solutions
- an entry point for all civil-military issues



# System Support to Civ/Mil ASM coordination

## CIAM

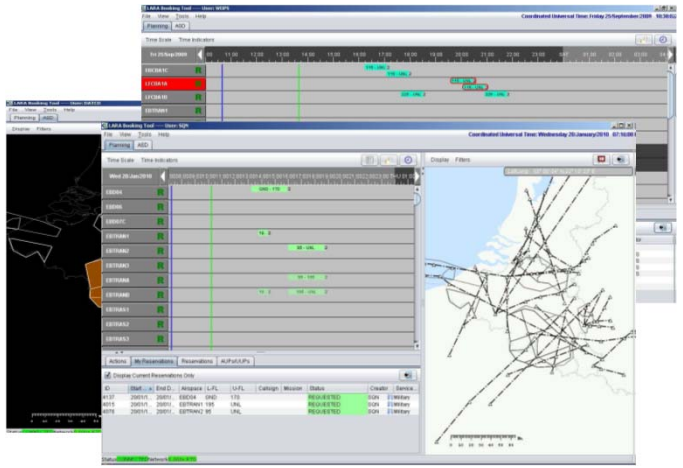
- Enables interface between airspace managers and the Network Manager

## Airspace Data Repository

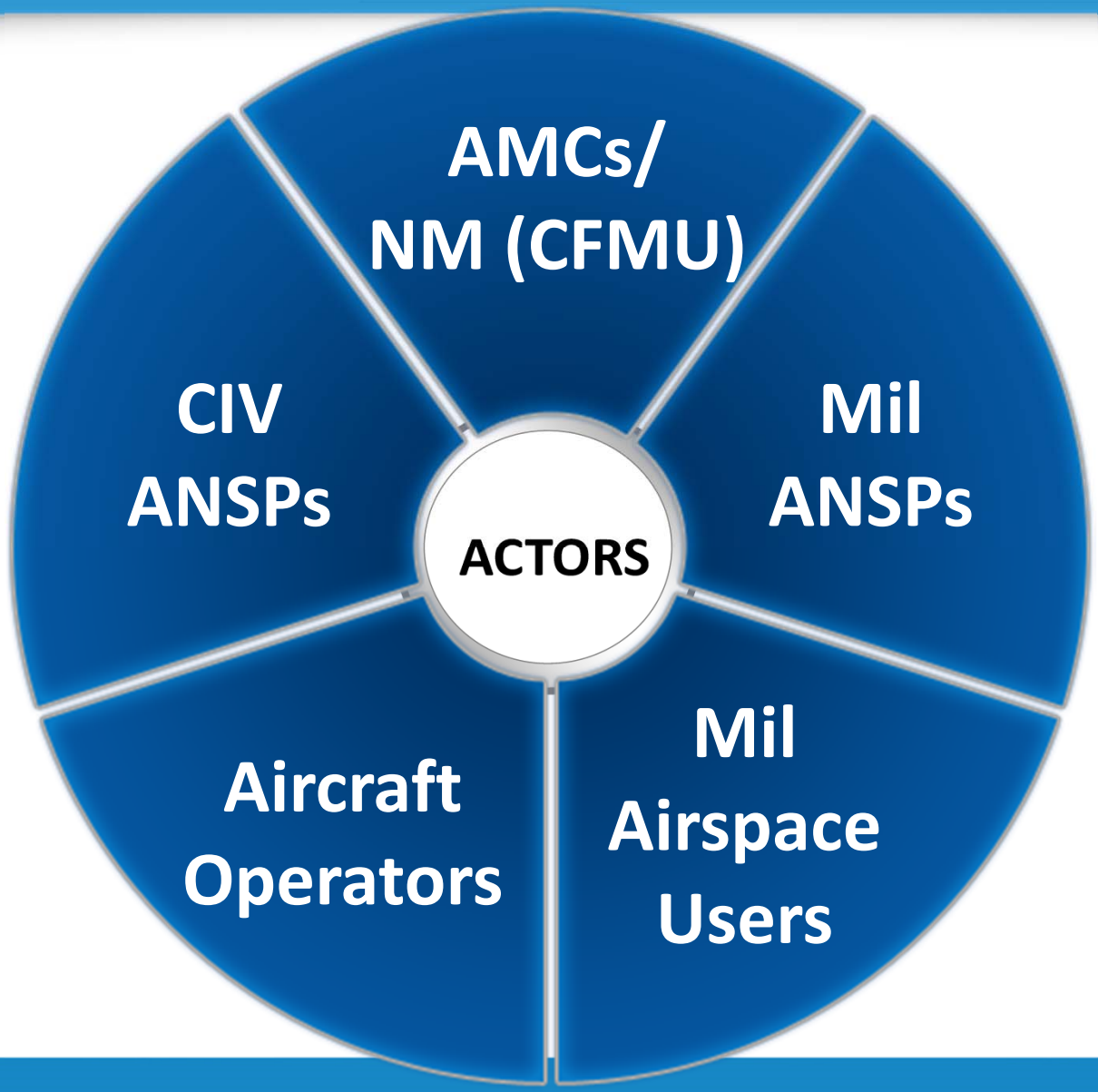
- Enables users to keep up-to-date with airspace status data

## ASM support system - LARA

- **System to support**
  - airspace planning and allocation,
  - CIV – MIL coordination,
  - common situational awareness,
  - collection of statistical ASM data

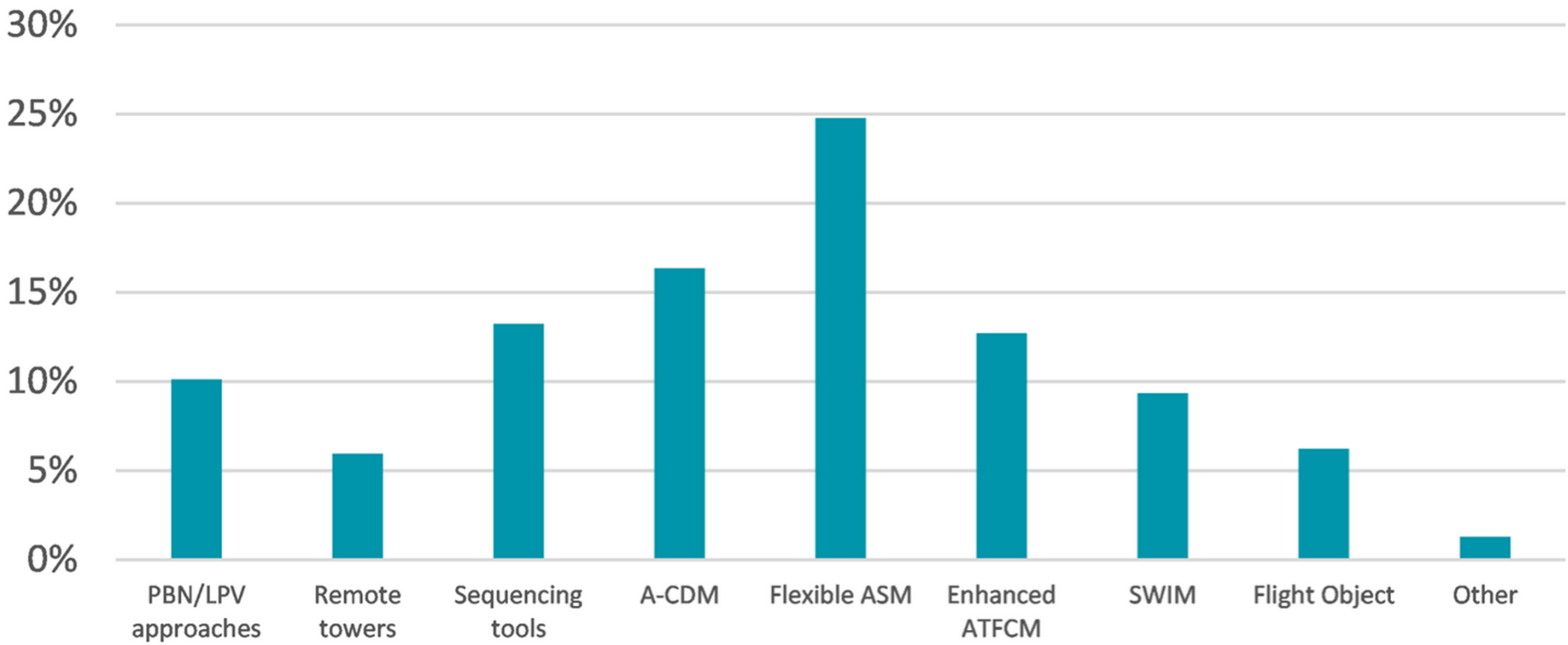


# Commitment


AMCs/
NM (CFMU)
Mil
ANSPs
Mil
Airspace
Users
Aircraft
Operators
CIV
ANSPs
ACTORS

# Enhanced ASM/ATFCM Process

Which of the following innovations offer the greatest all-round benefits to ANSPs and airspace users?



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# Thank you.

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