



AATIP
ASEAN Air Transport Integration Project

*A project funded by the European Union
and implemented by EASA*



in partnership with EUROCONTROL, UKCAA and DGAC France



FUA experiences and the application of Enhanced FUA

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EU-AATIP Project

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

Presentation structure:

- **The AATIP project**
 - **FUA, the history, European experiences**
 - **Rationale**
 - **How FUA is applied**
 - **Benefits**
 - **Dynamic Management of Airspace**



Overall objective

To **contribute towards** sustainable ASEAN economic growth and **the integration** of the ASEAN Economic Community (AEC), through **the development** of the civil air transport sector.



Specific objectives



To facilitate the development of **institutional frameworks** and to strengthen **institutional capacities** within ASEAN to achieve a **safe, secure and sustainable ASAM.**



Expected results

- **Preparation of the ASEAN Single Aviation Market (ASAM) and its external links.**
- **Progress towards ASEAN institutional development and capacity building.**
- **A series of protocols, mechanisms and working procedures.**



Overview of Europe's Traffic

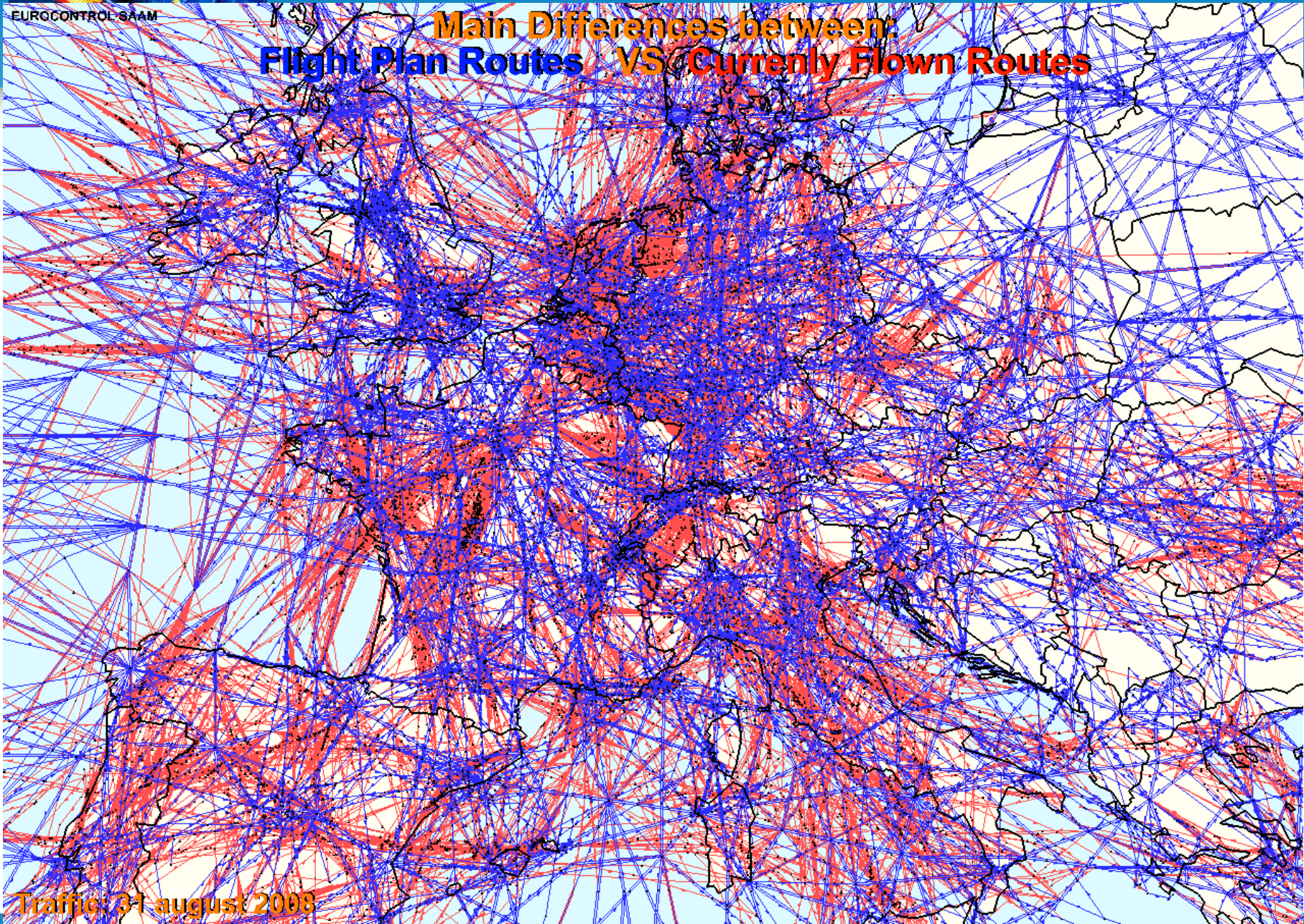


- **Dense Route Network**
- **1000 airports**
- **30000 aircraft per day**
- **1000 control sectors**
- **80% of traffic is European internal**
- **50% of traffic flies less than 600km**
- **Military requirements**
- **Traffic bottlenecks**
(account for 80% of en-route delay)



EUROCONTROL SAAM

Main Differences between: Flight Plan Routes VS Currently Flown Routes



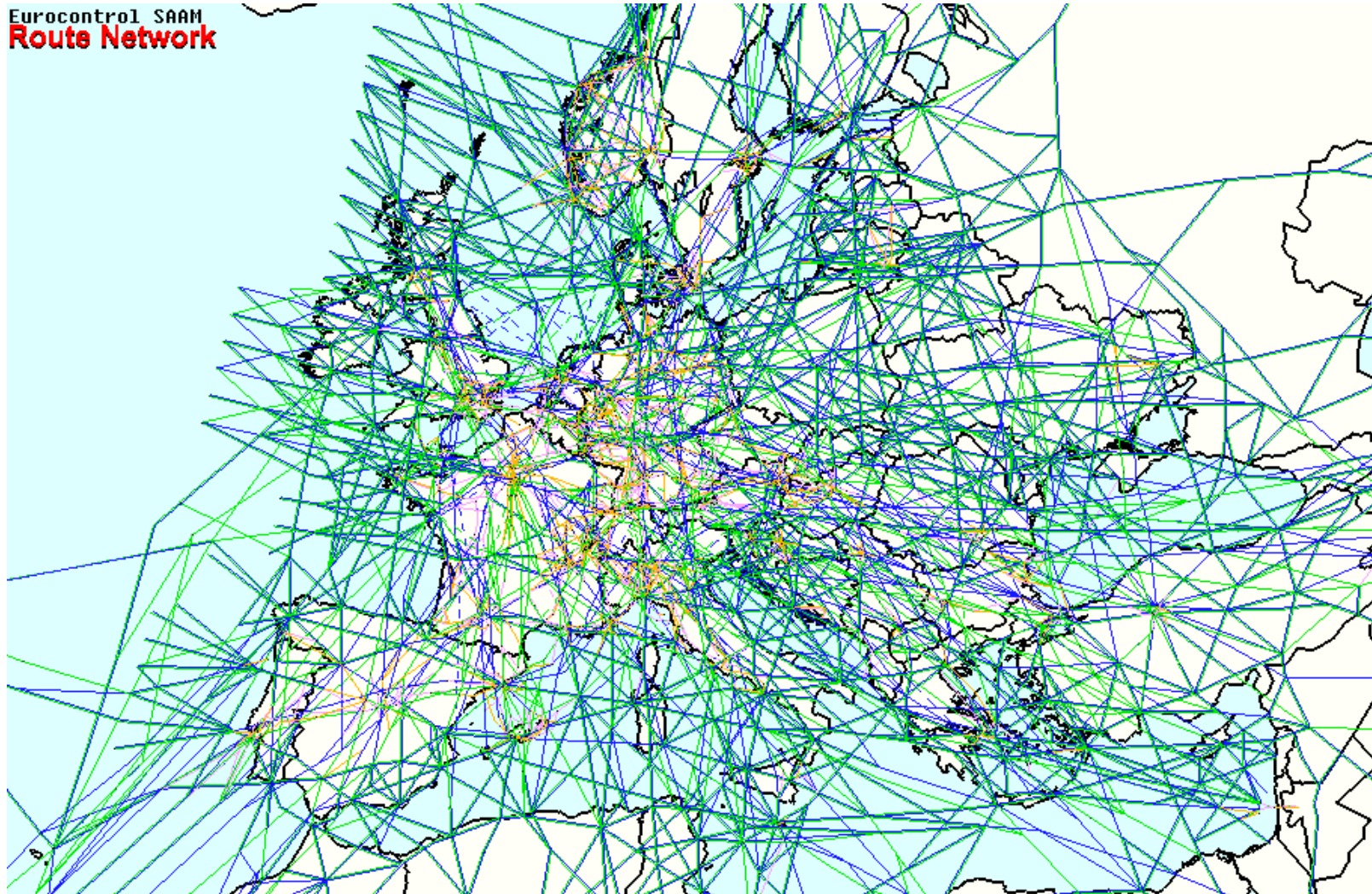
Traffic: 31 august 2008



Why we need flexibility in the European airspace ?

37% of European airspace is uncoordinated
How to reduce the 37% and 9.000.000?

Eurocontrol SAAM
Route Network





ATM System Improvements Strategy

1. Strategic Planning of Airspace

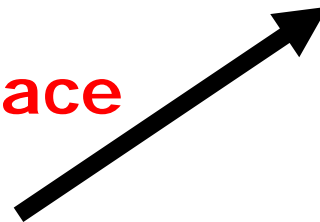
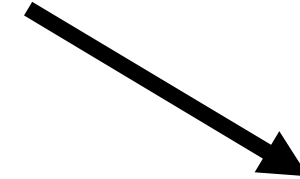
Route network Development
National Re-Sectorisation

2. Controller Workload

ATC procedures
System Support

3. Better Use and Management of Airspace

RVSM
Area 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**)

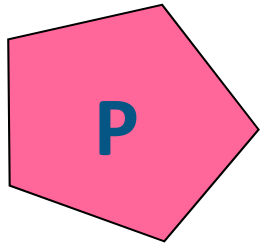


Fundamental principle of FUA

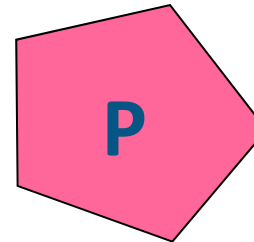
Airspace should not be designated as either pure civil or military airspace, but rather be considered as a continuum in which all user requirements have to be accommodated to the extent possible.



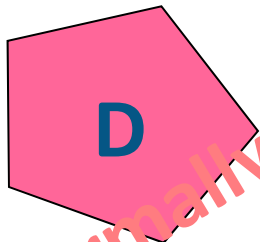
Non-FUA vs. FUA



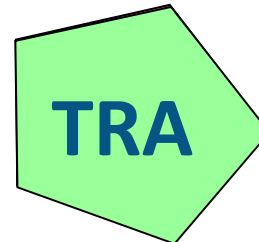
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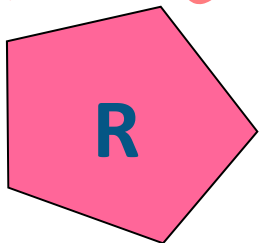
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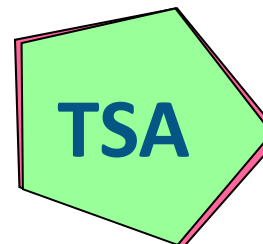
DANGER



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



RESTRICTED



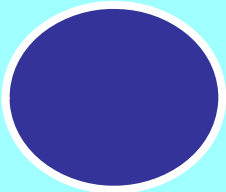
**RELEASED AS SOON AS
ACTIVITY STOPS**

*Normally published as
occupied H24*



Through Civil / Military Coordination ...

ASM Level 1

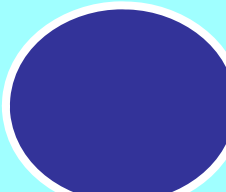


Strategic Level

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

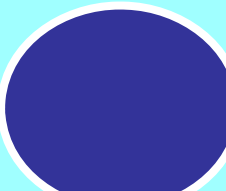


Pre-tactical Level

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

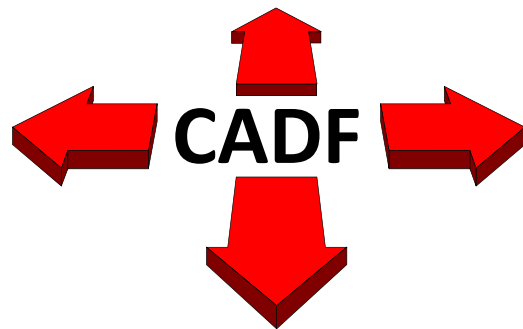


ASM Notification Process

- 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.



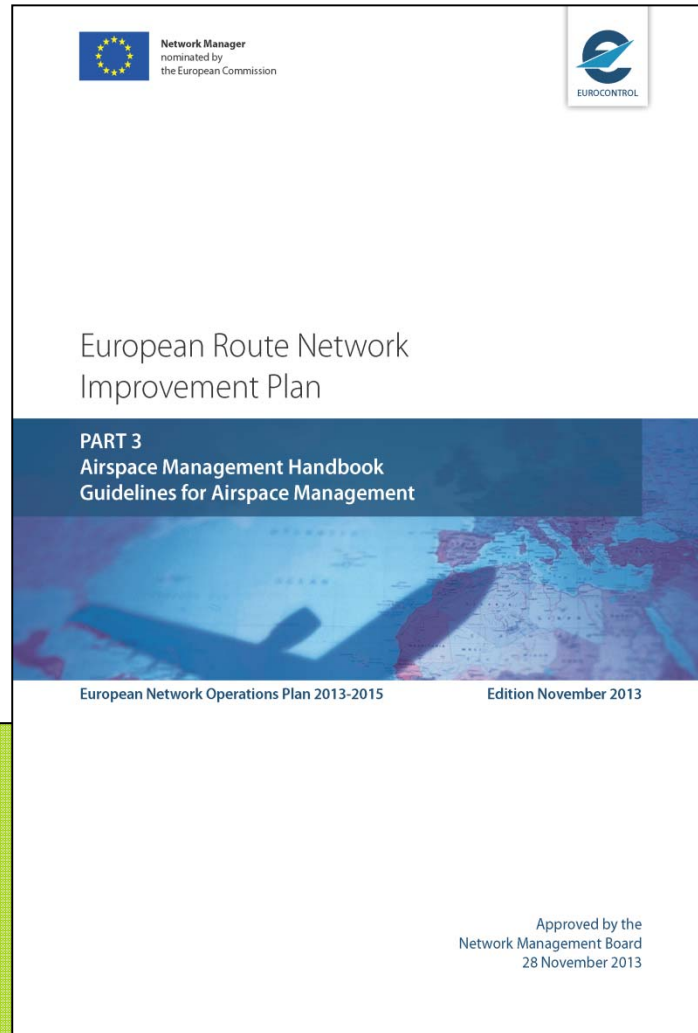
Centralised Airspace Data Function (CADF)



- **Part of the Network Manager in Brussels**
- **Combines National AUPs into the European Airspace Use Plan (EAUP)**
- **EAUP contains list of available CDRs throughout all ECAC Region**



Regulatory aspect in regard to FUA Concept

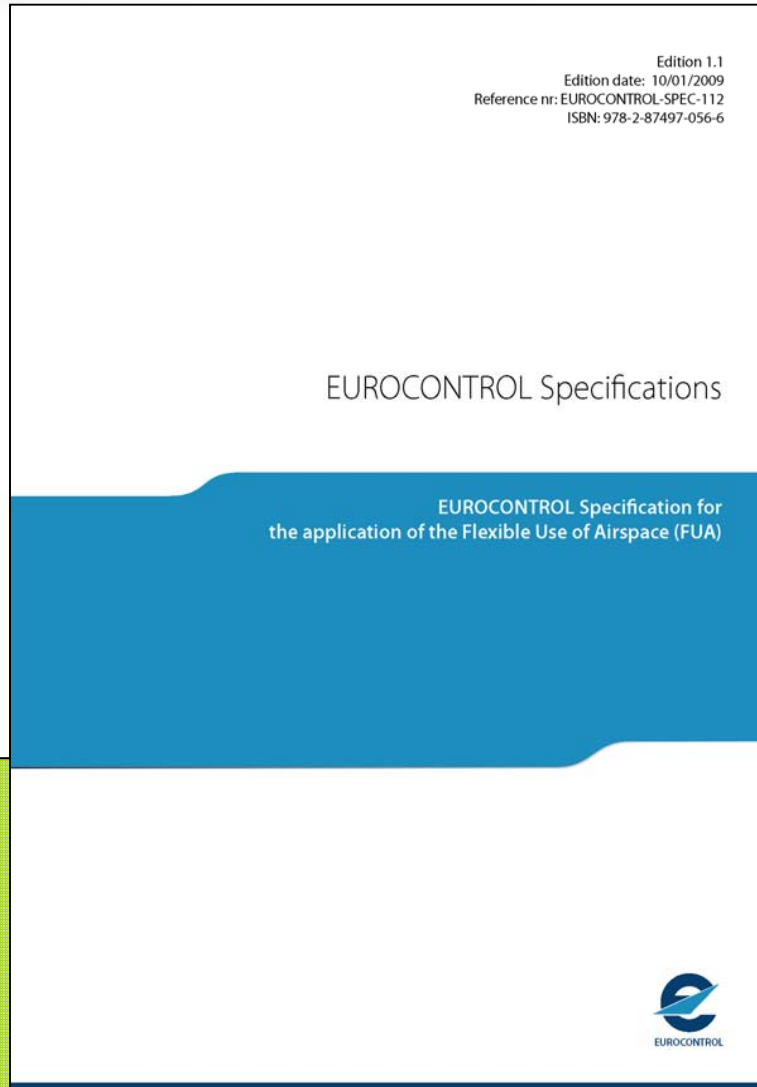


- FUA Concept described
- Processes & procedures at all three ASM Levels
- It is the reference document for FUA Regulation

EUROCONTROL
FUA Guidance Documents



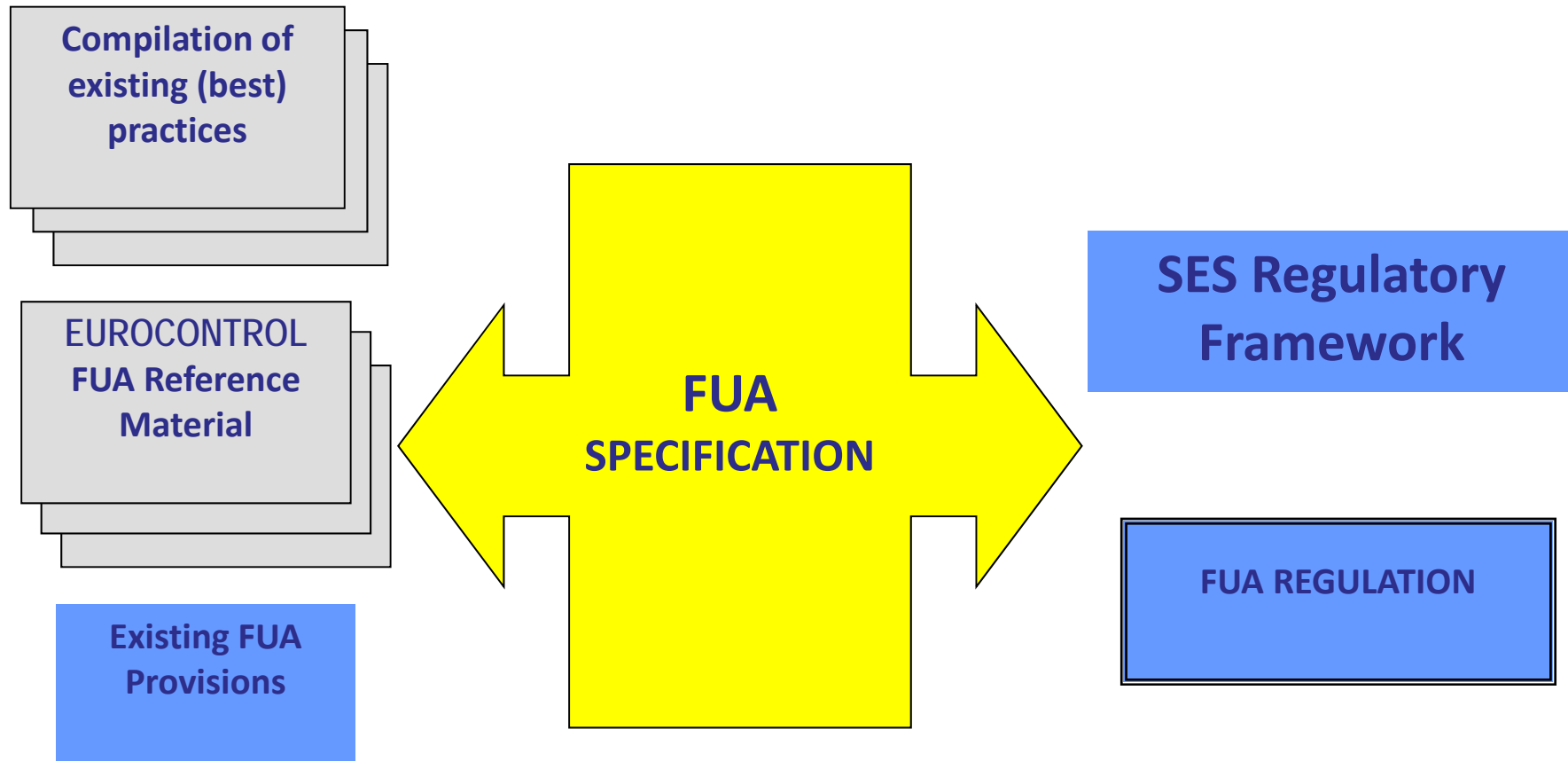
Regulatory aspect in regard to FUA Concept - EUROCONTROL



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



Regulatory aspect in regard to FUA Concept



FUA Specification seen as an interface



FUA Concept



Benefits?



Assessment of FUA Operations

ECONOMY REALISED

1 week day

By filed FPLs on Available CDRs

30.833 NM on 6.086 flights

Fuel :

385 T

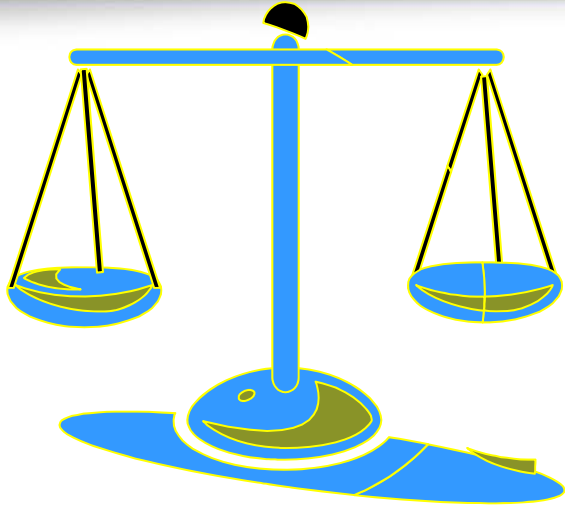
CO₂ Emissions :

315.000 €

1.216 T



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 :

129 T

CO₂ Emissions :

407 T

105.780 €



ASM/ATFCM Process





ASM Improvements Initiative

Exploit airspace availability

Consistent application of FUA

Safe, efficient and accurate data flows

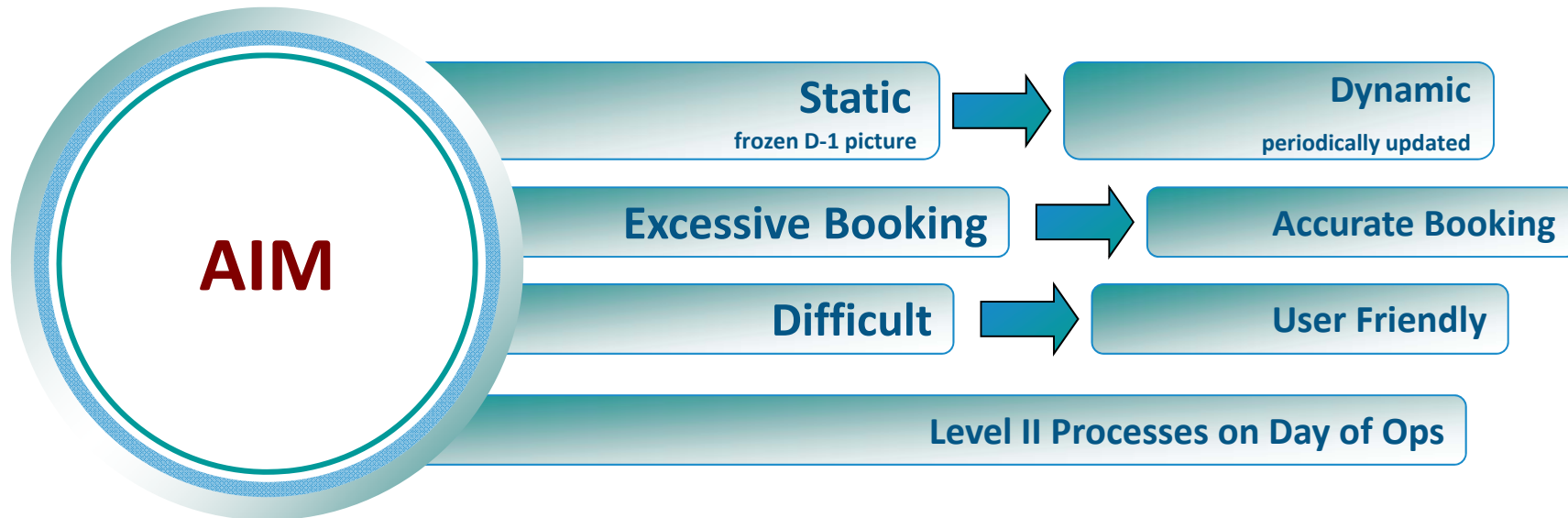
- Rolling UUP
- Procedure 2&3
- EAW
- CDR network

- TRA/TSA clarification
- CBA designation
- CDR inconsistencies

- B2B
- NOP portal
- CIAM
- ASM Support Systems

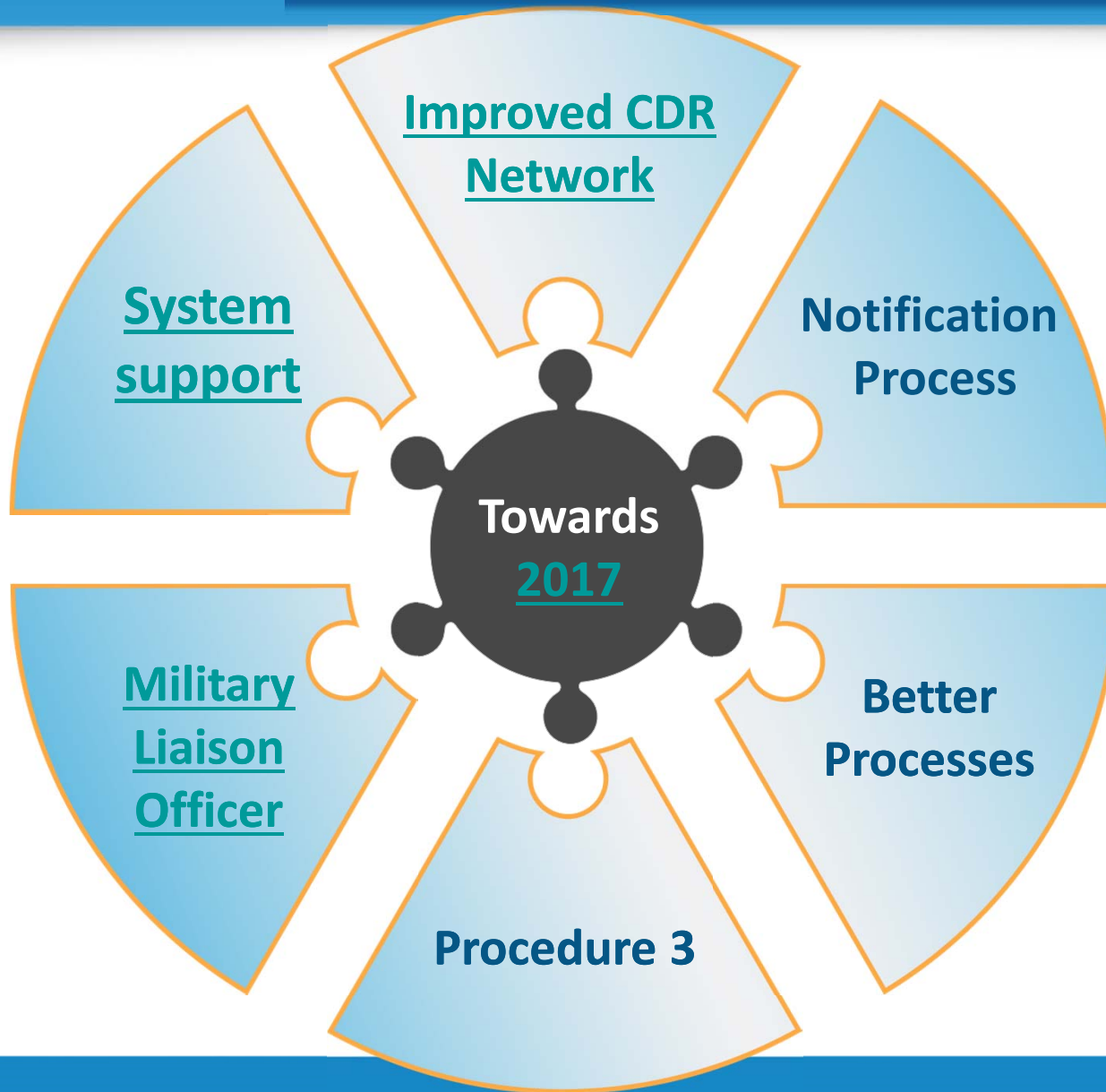


Enhanced ASM Process





Enhanced ASM Processes

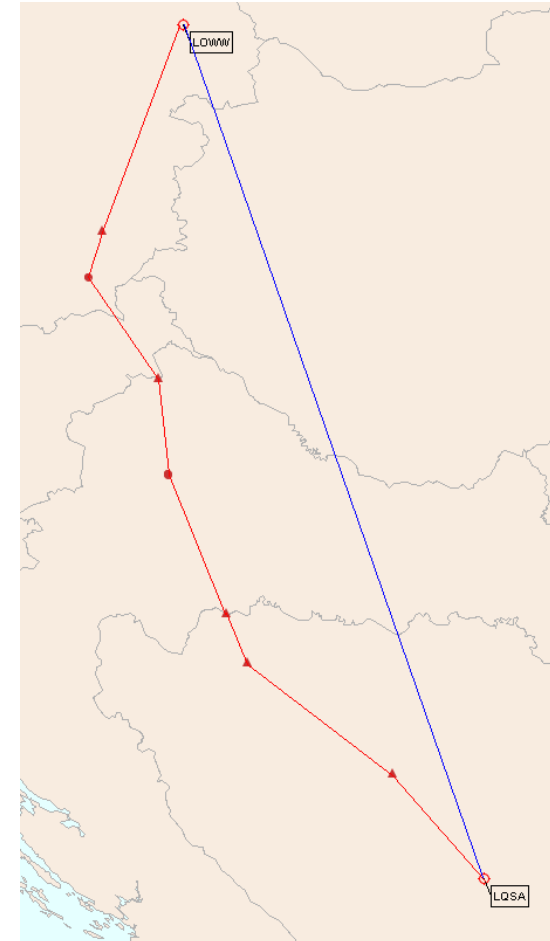
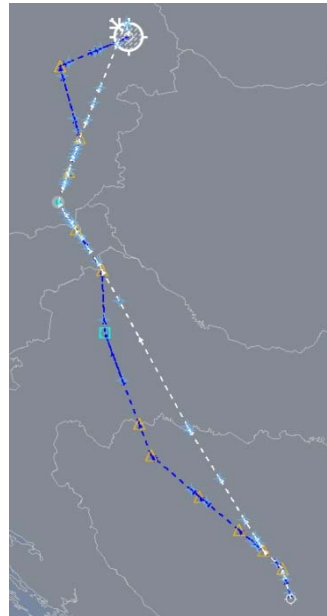




Tracks far from optimum

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

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





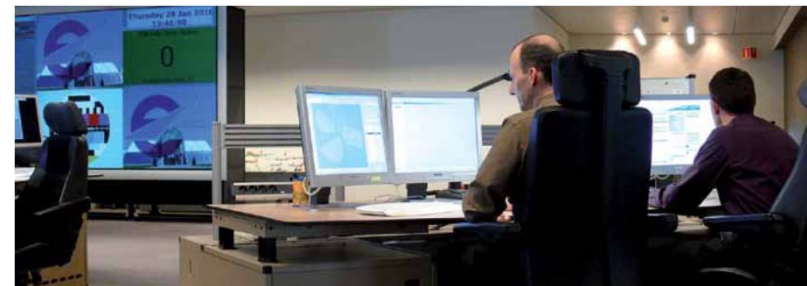
Support to Civ/Mil ASM coordination

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

- ▶ enhance the civil-military ASM coordination process at the European network level

The MILO

- ▶ proposes identified alternative ASM solutions
- ▶ collects and harmonizes national information with regard to major military exercises and activities,
- ▶ an entry point for all civil-military issues





System Support to Civ/Mil ASM coordination

CIAM

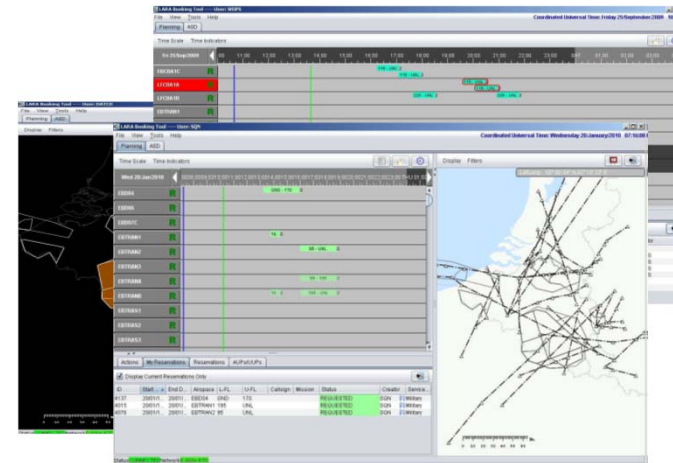
- ▶ Enables interface between airspace managers and the Network Manager

Airspace Data Repository

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

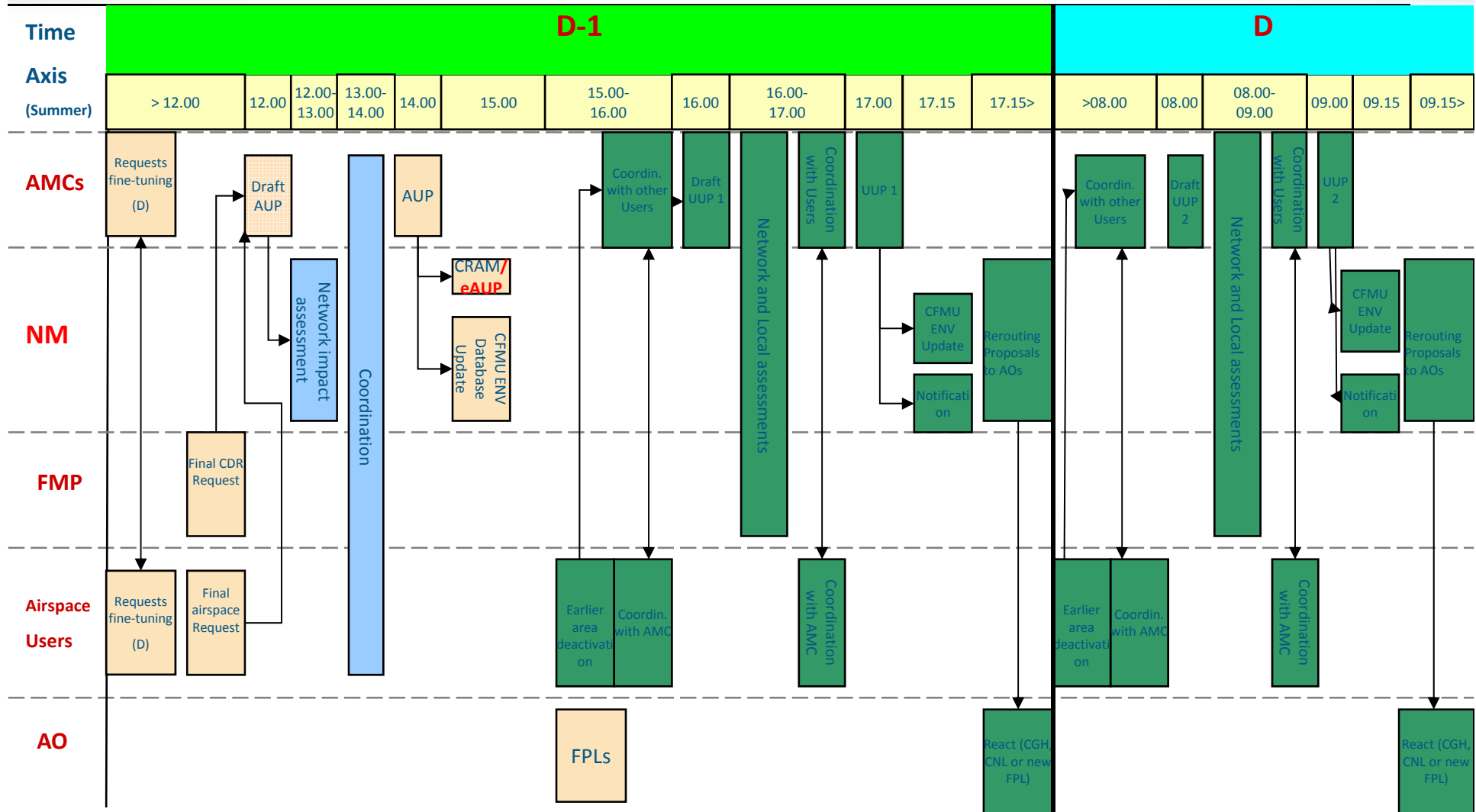
ASM support system

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



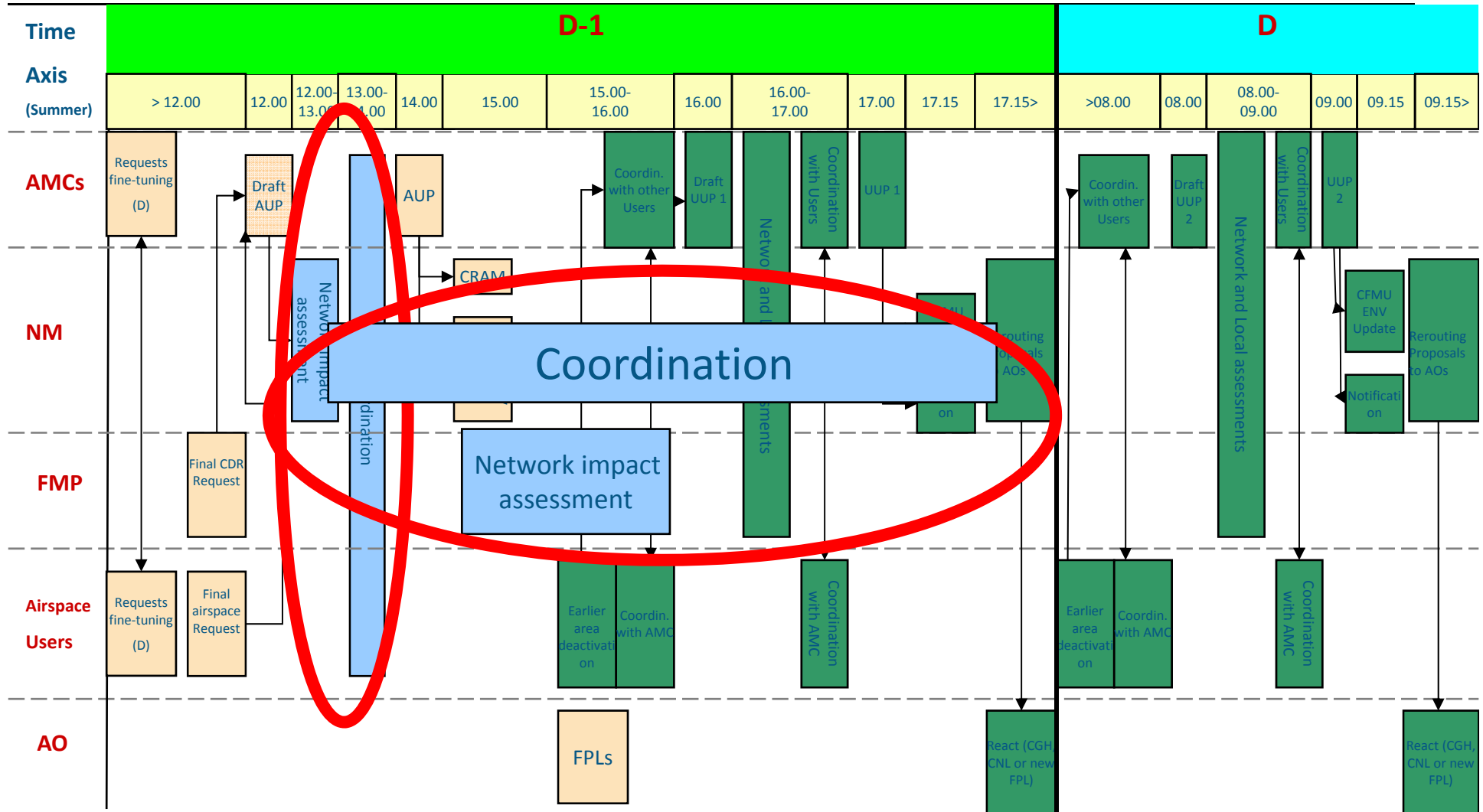


2012 ASM/ATFCM Process



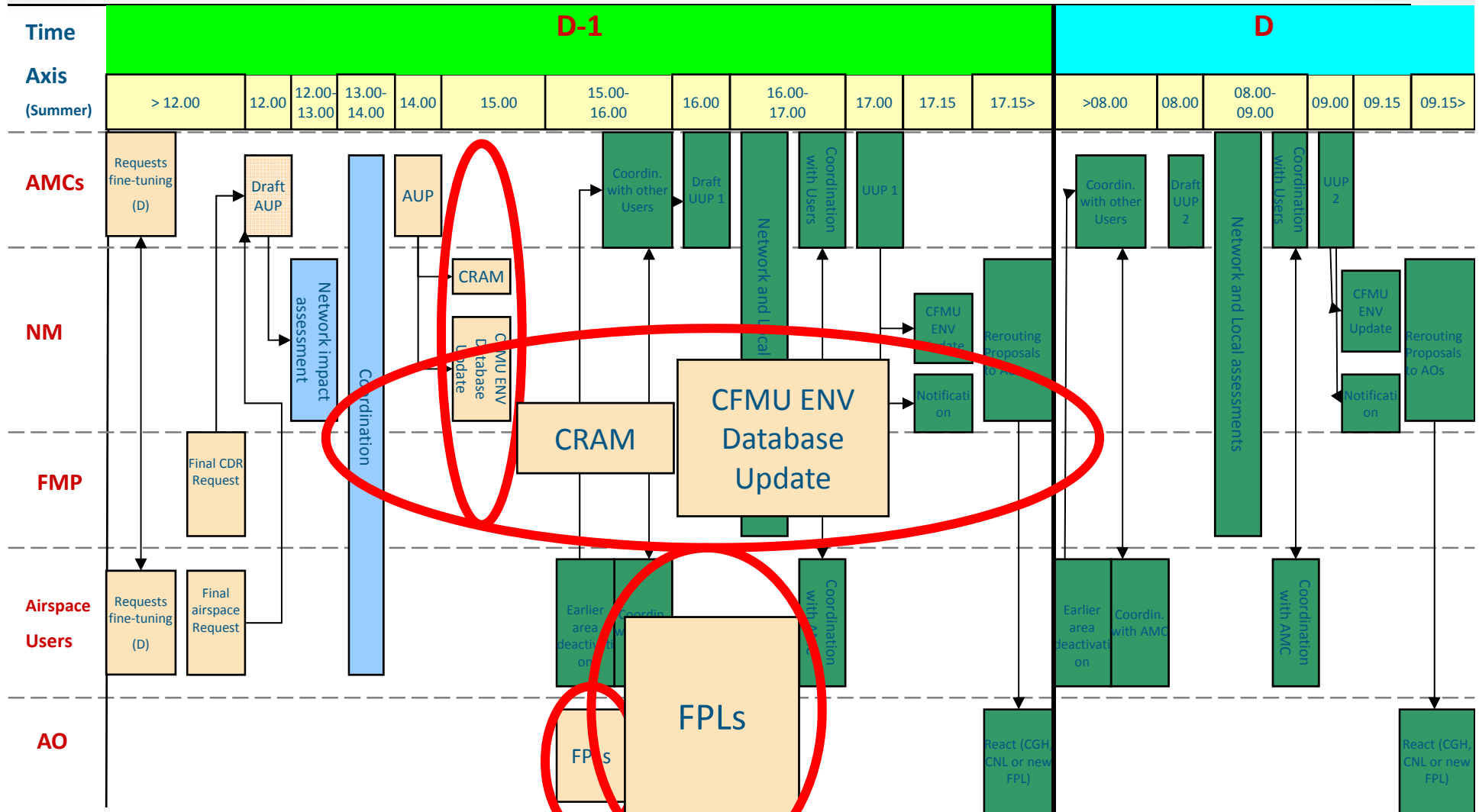


2012 ASM/ATFCM Process



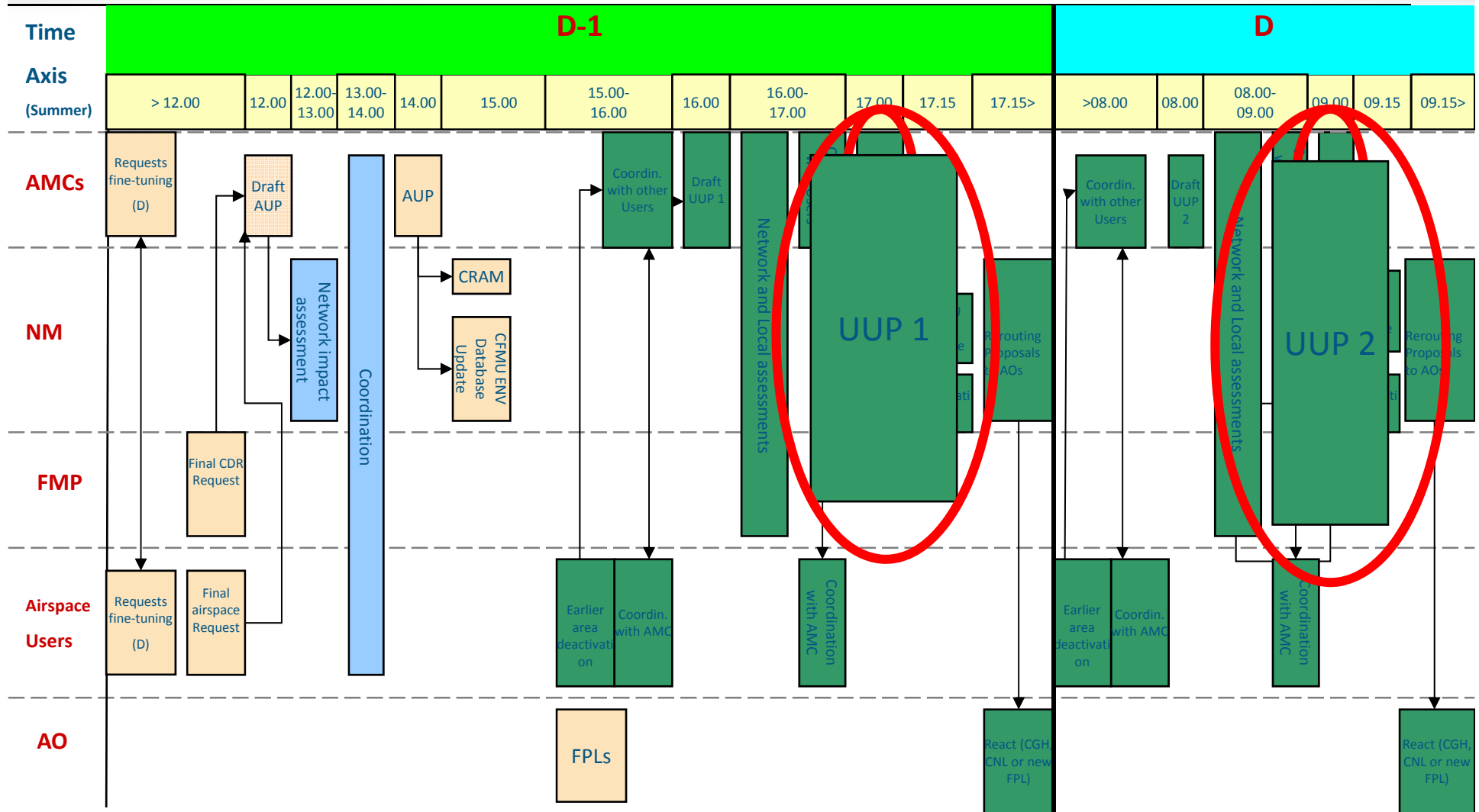


2012 ASM/ATFCM Process



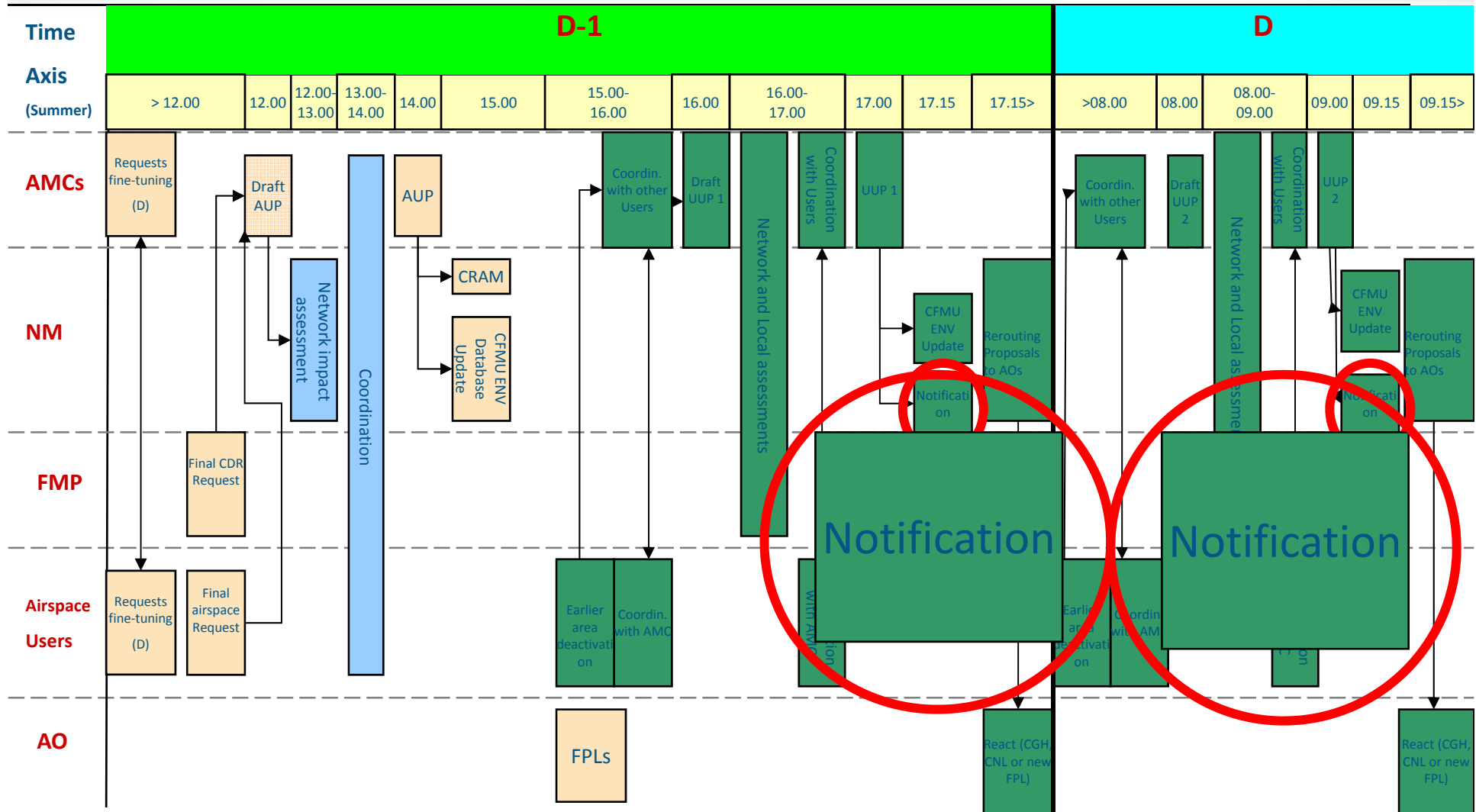


2012 ASM/ATFCM Process



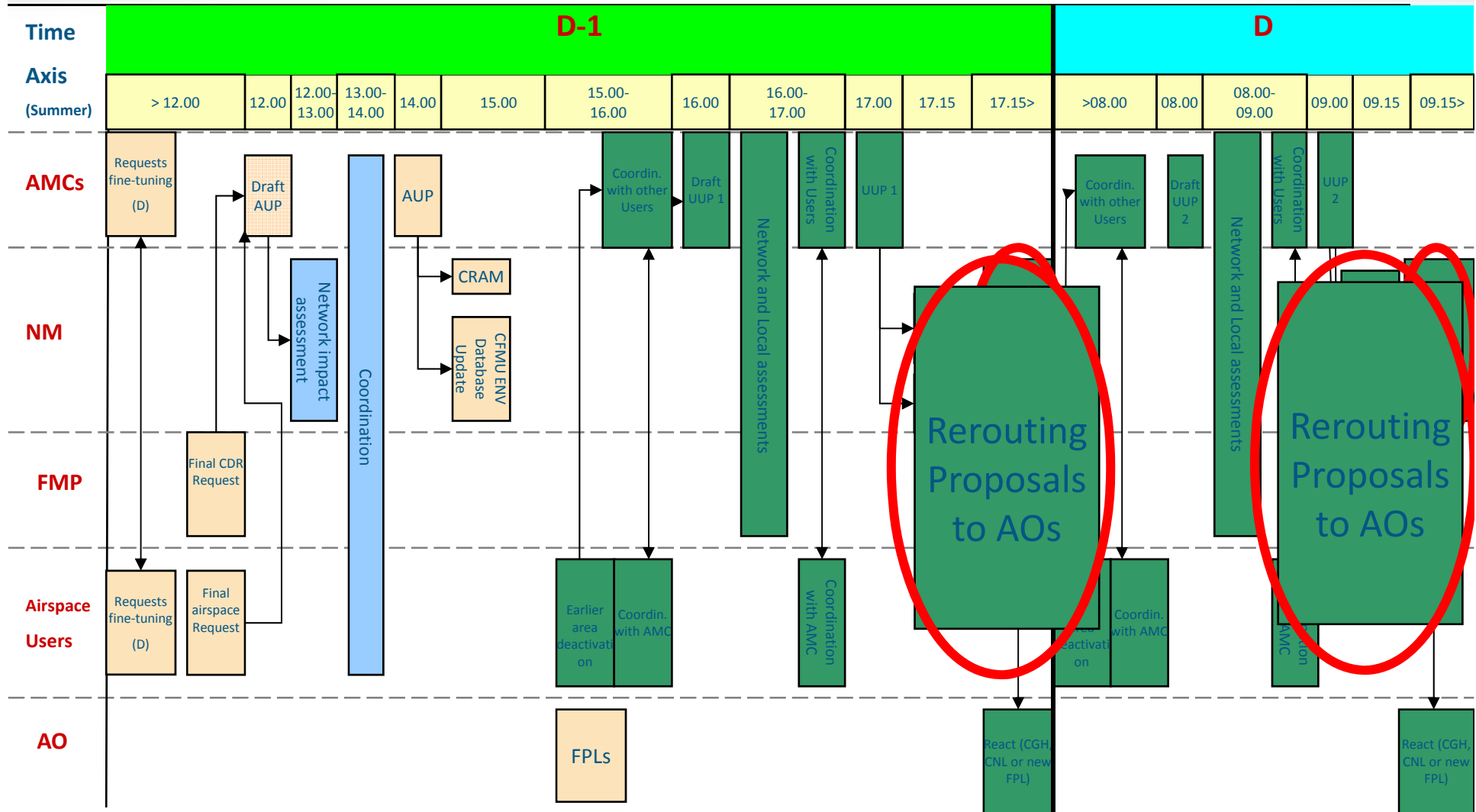


2012 ASM/ATFCM Process



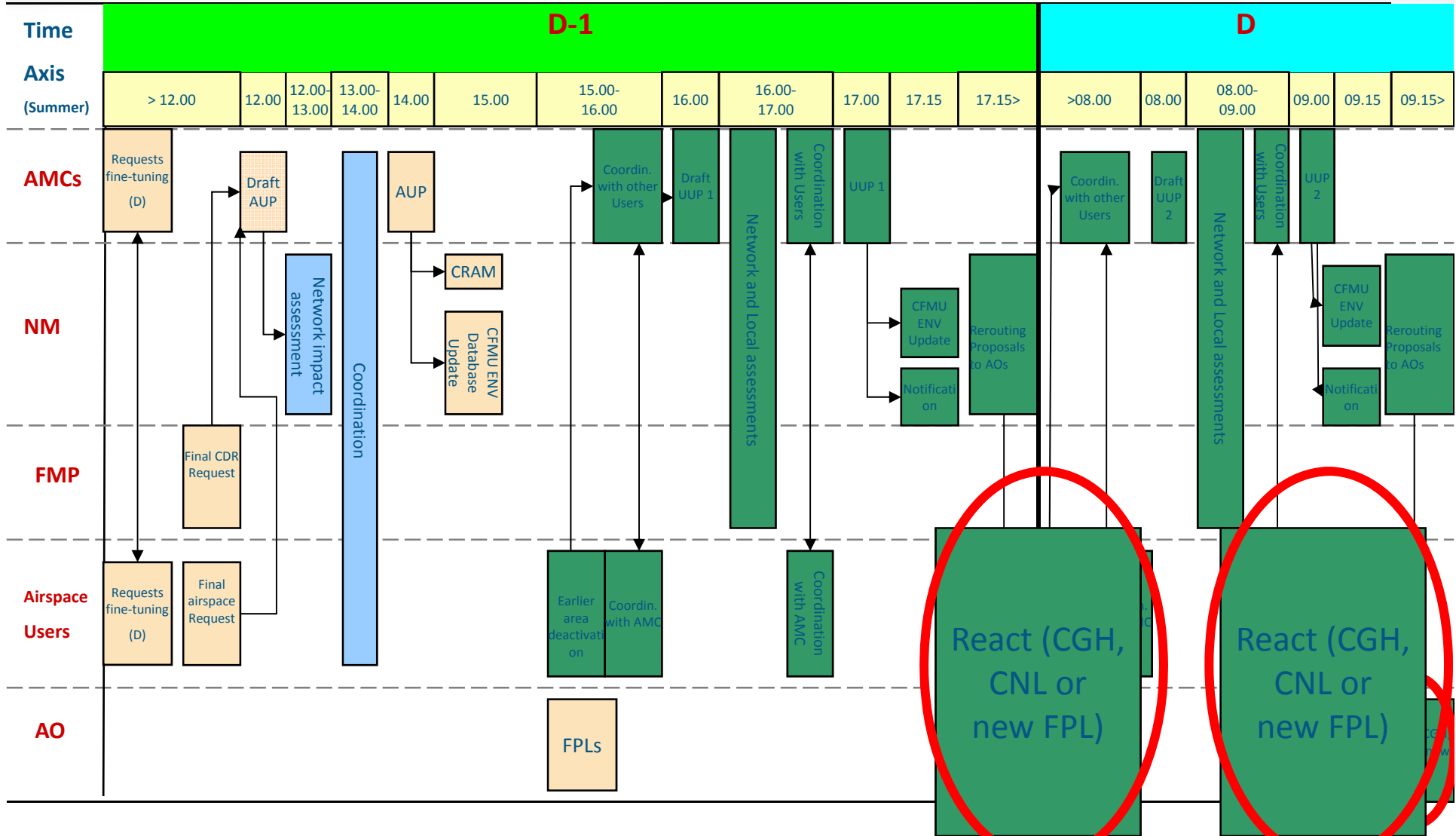


2012 ASM/ATFCM Process



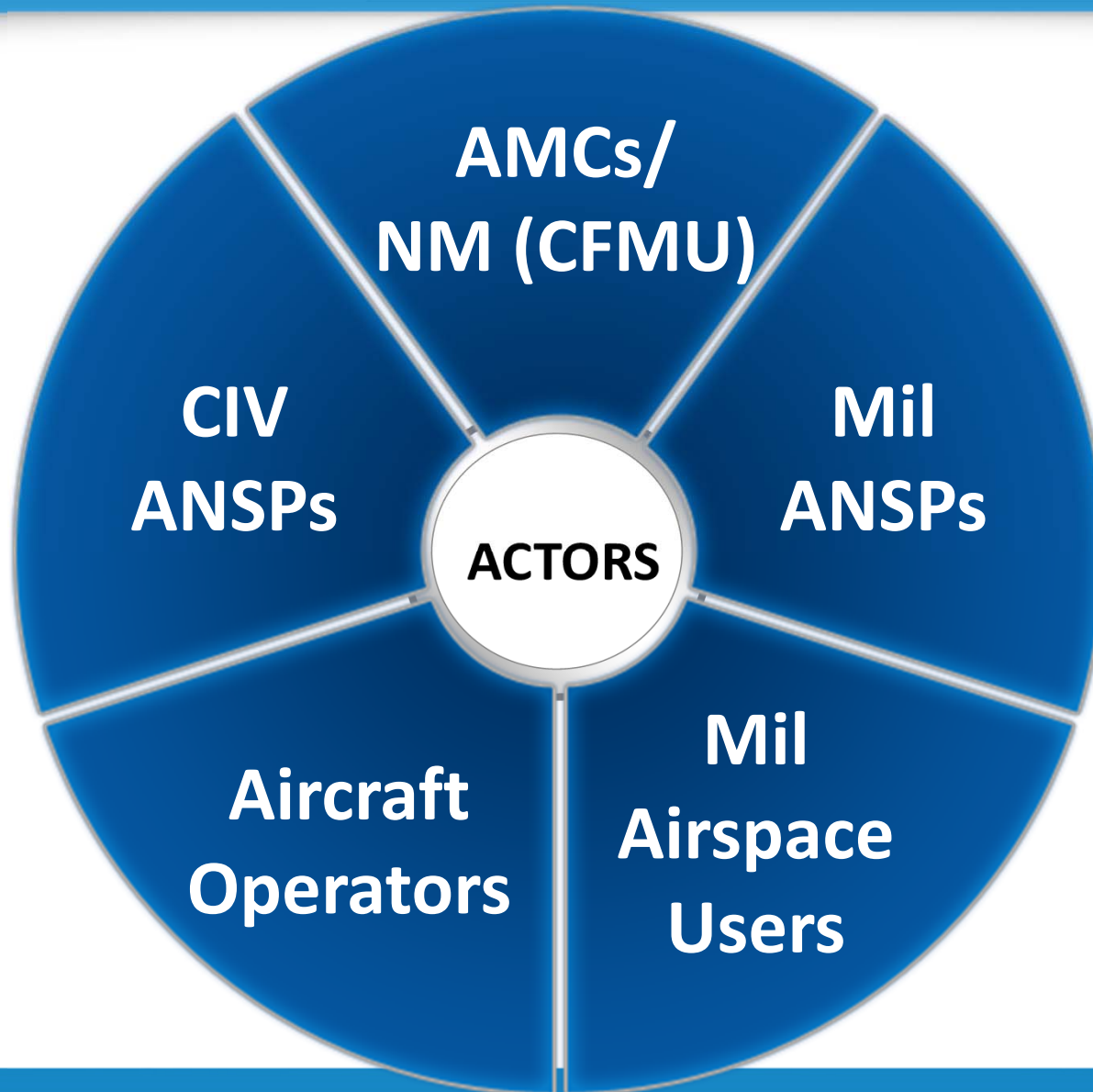


2012 ASM/ATFCM Process





Commitment





Enhanced ASM/ATFCM Process



Flight efficiency

Predictability

Environmental

Optimised capacity



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Thank you.

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