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EUROCONTROL

ICAO AFI civil/military workshop

FUA concept

Pino Acampora
NMD/ACD/Head of PCI Unit
8-11 August 2023

CONSORTIUM COORDINATOR sesar DEPLOYMENT MANAGER
FOUNDING MEMBER sesar JOINT UNDERTAKING
NETWORK MANAGER

Ensuring a 'Flexible Use of Airspace'….

Presenter Biography

- **EUROCONTROL, Network Manager, Head of Network Strategic Projects Coordination and Implementation Unit. (2020)**
- **EUROCONTROL, Network Manager, Head of ASM/ATFCM processes/procedures Section. (20013 – 2020)**
- **EUROCONTROL, Network Manager, Senior ASM/ATFCM processes/procedures expert. (2008 – 2013)**
- **EUROCONTROL, CEATS Project, Senior ASM/ATFCM processes/procedures expert. (2003 – 2008)**
- **EUROCONTROL, Italian Military Liaison Officer as ASM/ATFCM processes/procedures expert. (1999 – 2003)**
- **Italian Air Force, Head of ASM and Instrumental procedures design Section. (1997 – 1999)**
- **Italian Air Force, ASM and Instrumental procedures design Expert. (1995 – 1997)**
- **Italian Air Force, Head of ATS service in Rimini. (1990-1995)**
- **Italian Air Force, military ATCO TWR, APP, TMA, CGA. (1982 – 1990)**

Giuseppe
Acampora
Head of PCI Unit

Giuseppe.acampora@eurocontrol.int
+32499981330

EUROCONTROL in numbers

41

European Member States

2

Comprehensive agreement States outside Europe

4

Sites spread over Belgium, France, Luxembourg and the Netherlands

1,800 +

Officials

1963

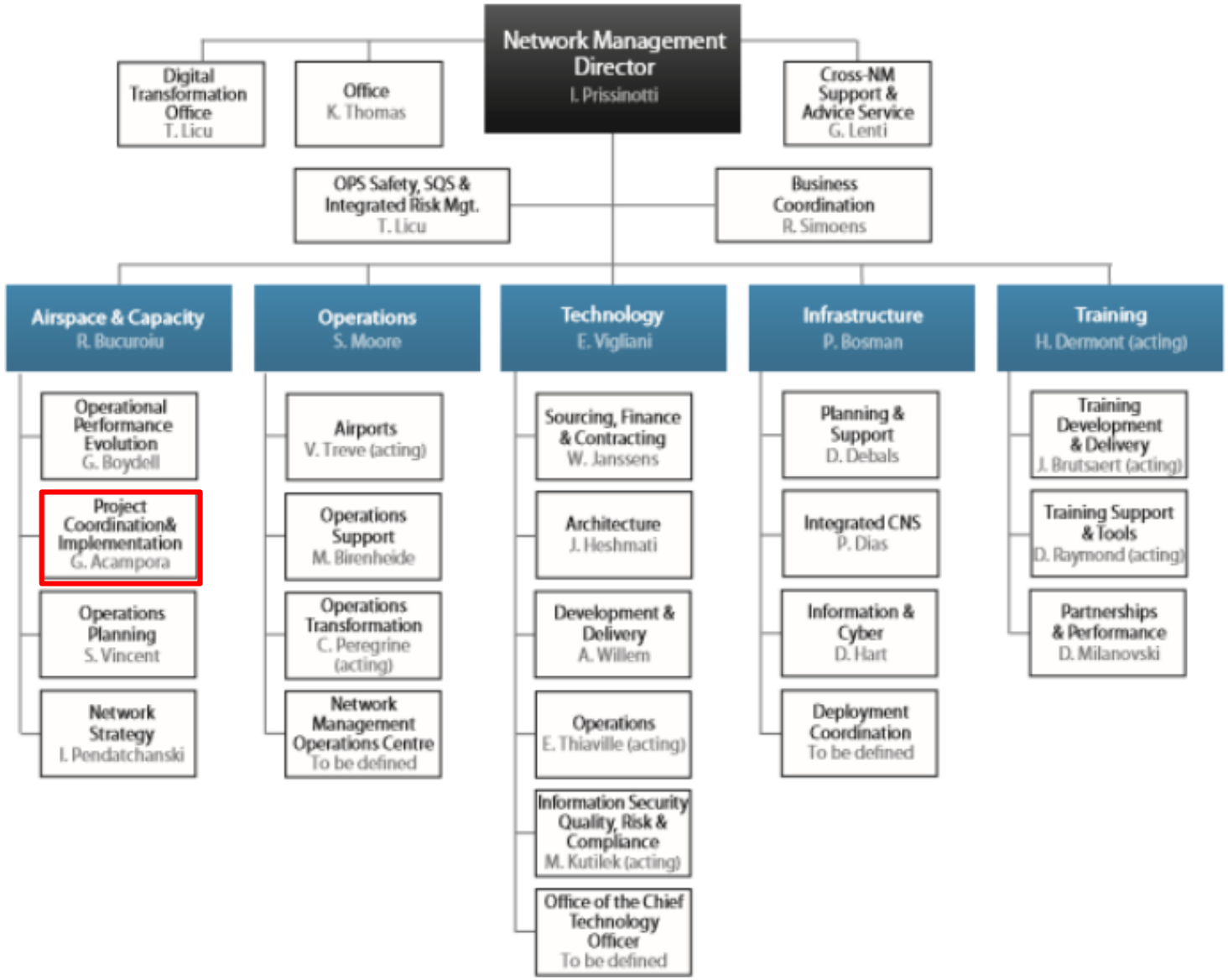
Founded

€ 865 million

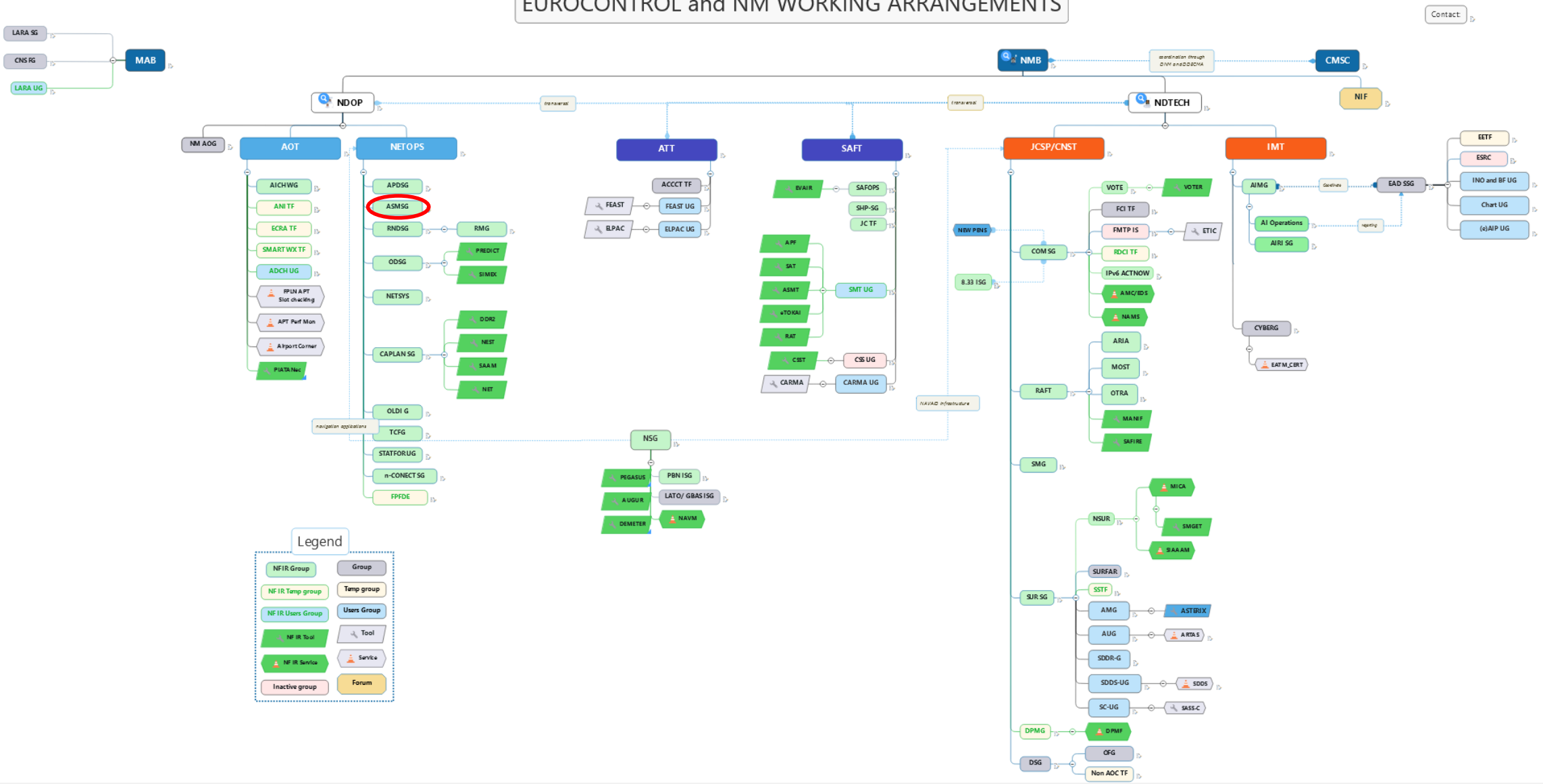
Budget

EUROCONTROL Agency organisation

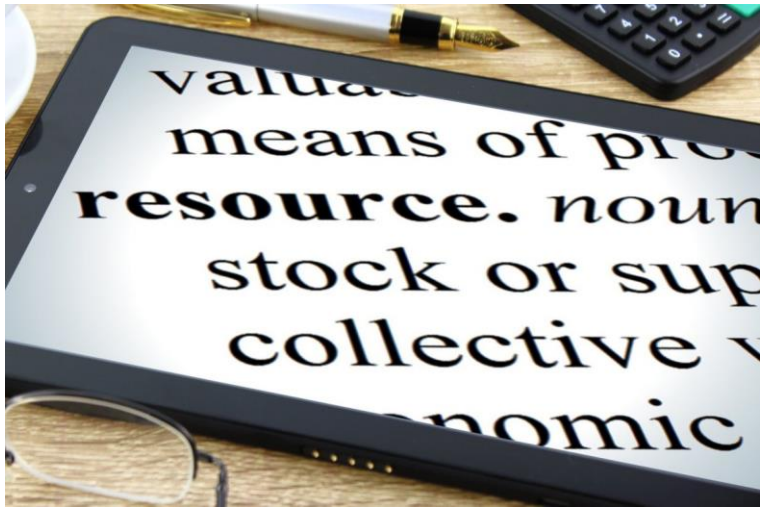
NMD organisatior



EUROCONTROL and NM WORKING ARRANGEMENTS



What is the airspace?



Economic resource

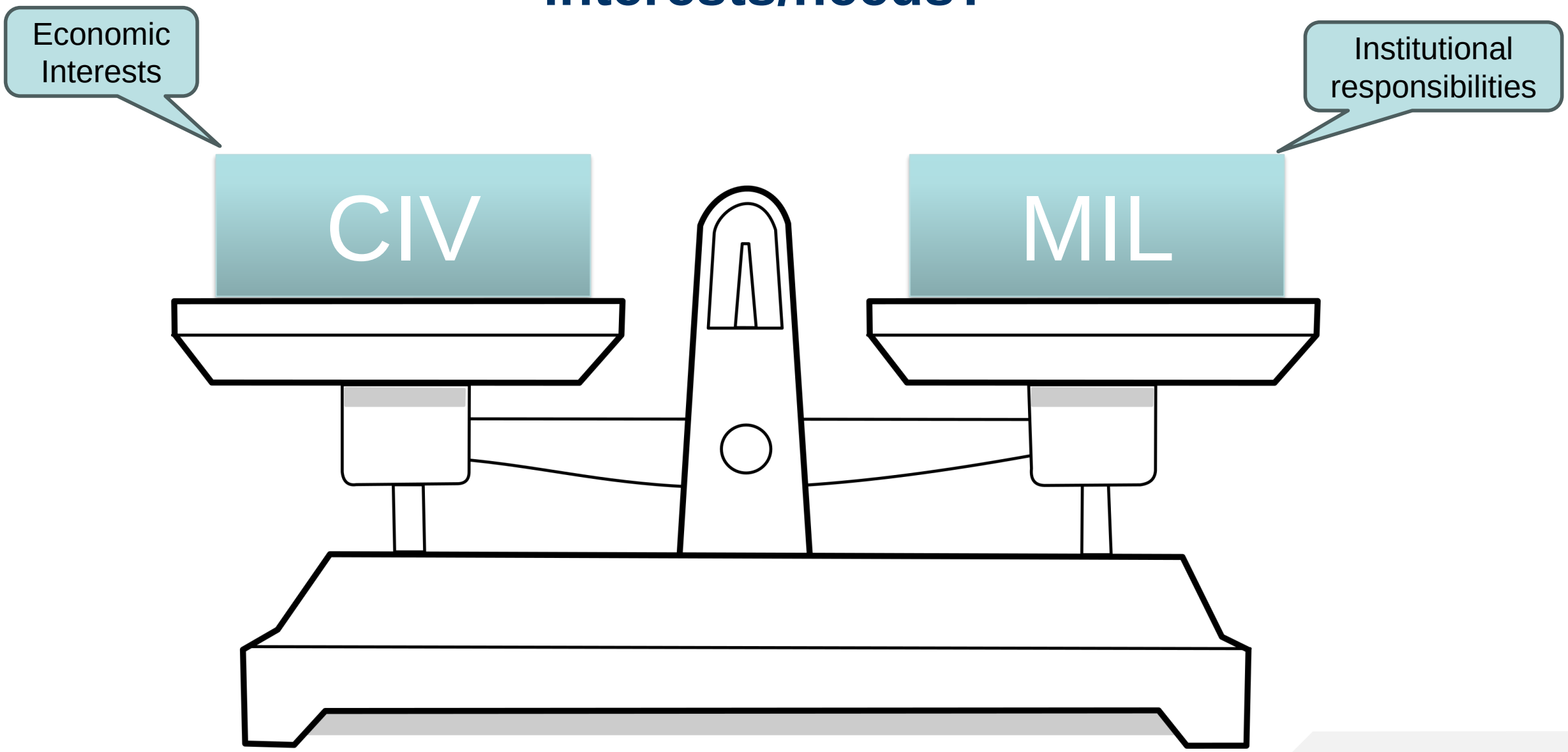
As the global economy is becoming more and more connected, the aviation industry is one of the fastest transportation sectors. The aviation industry provides a total of 87.7 million jobs worldwide. It directly generates employment opportunities within the airlines, air navigation services providers and airport operators, and additionally creates jobs via the supply chain in the transportation of goods and services. Air transportation also plays an important role for tourism, contributing to economic growth, especially in developing countries.

Source: Statista, art. by Erick Burgueño Salas

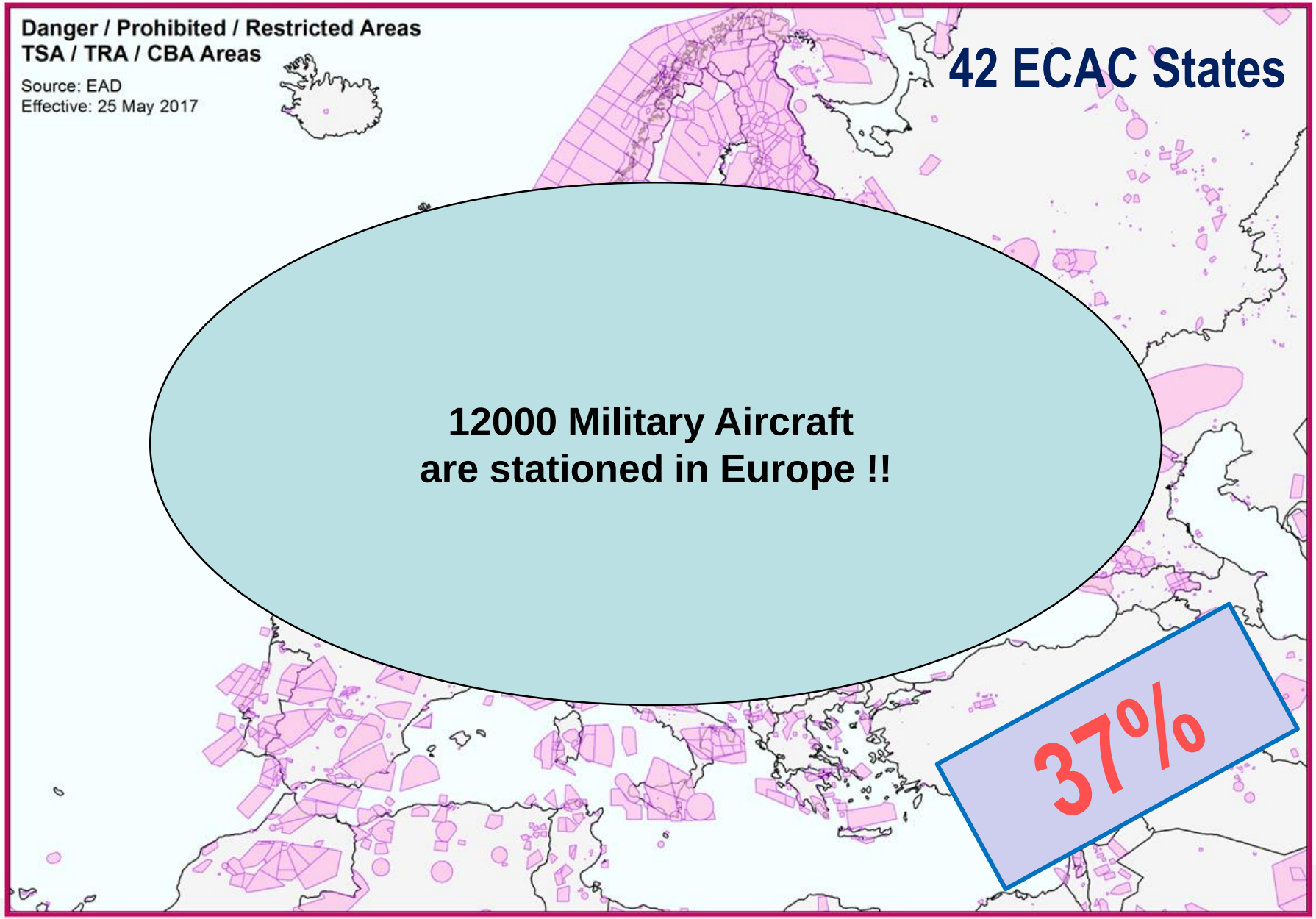
In 2023, the global airline industry's passenger air traffic revenue is expected to amount to 522 billion U.S. dollars, a 19 percent increase compared to the previous year. In the period of consideration, the passenger revenue peaked at 607 billion U.S. dollars, just before dipping to 189 billion U.S. dollars due to the coronavirus pandemic. The airline industry was one of the most affected businesses worldwide by the coronavirus pandemic.

Source: Statista

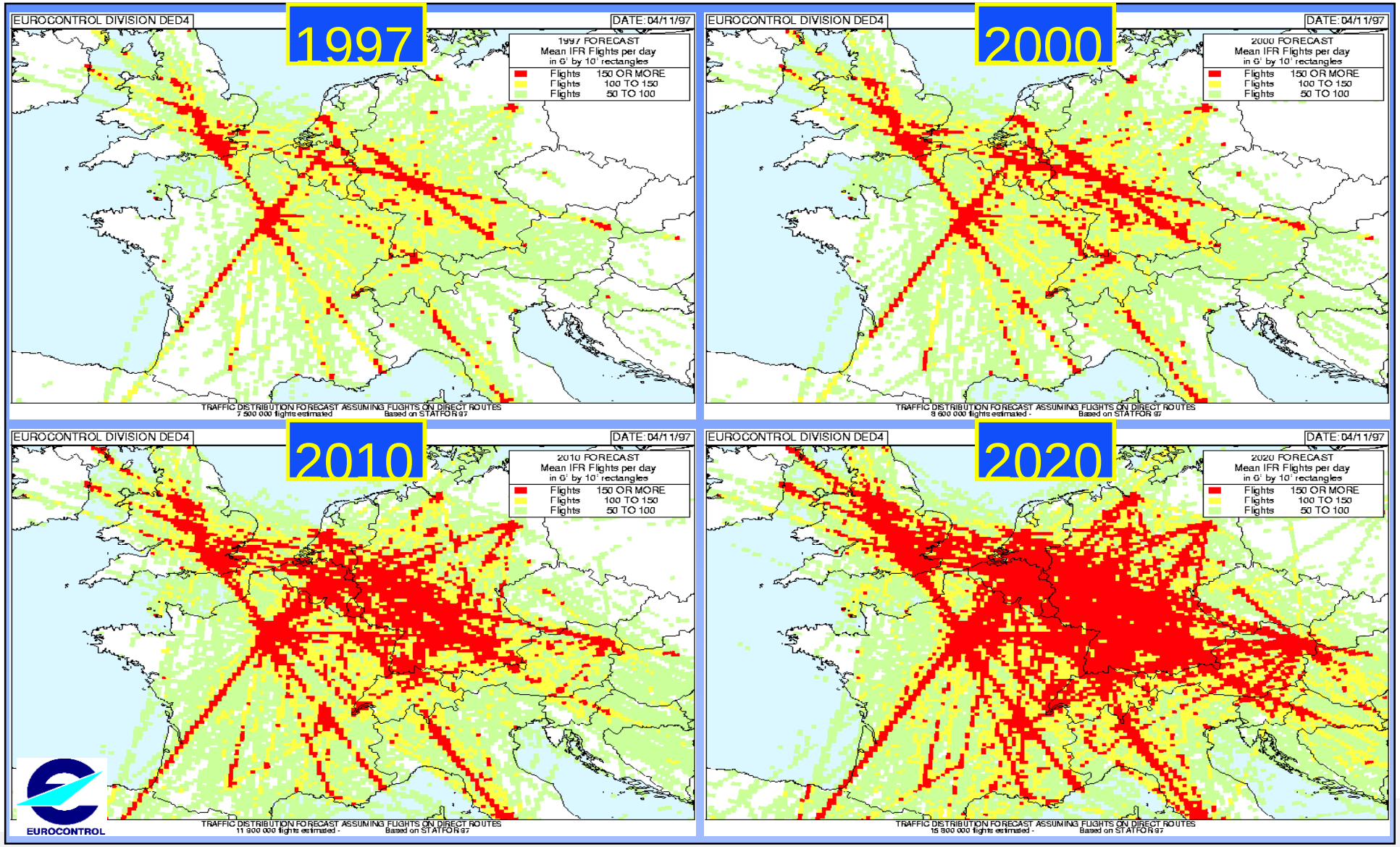
How to Balance different interests/needs?



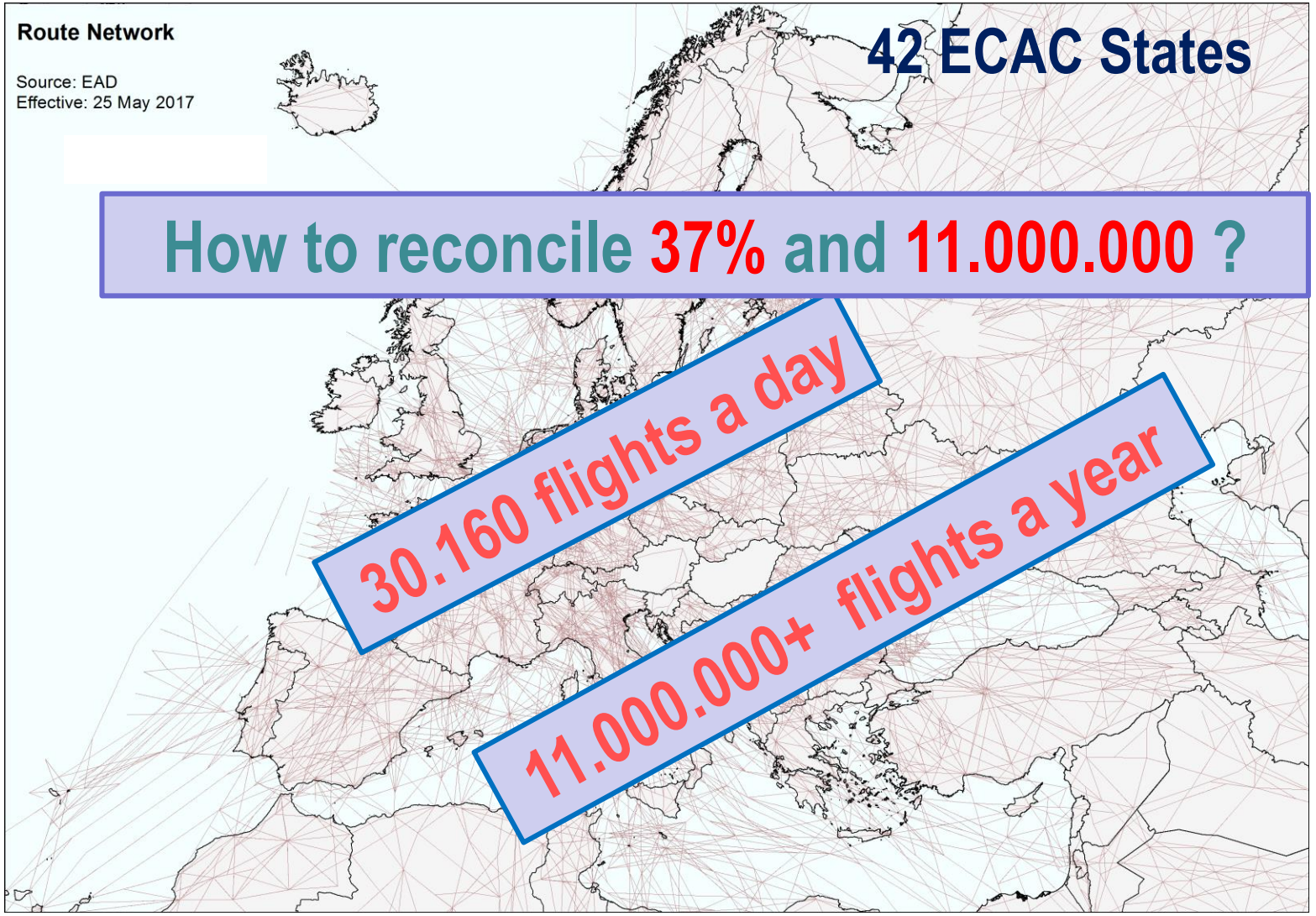
Military needs



The traffic growth at the origin of FUA…



How to manage?



How to satisfy all the stakeholders' requirements ?

Since 1996 through …

FLEXIBLE USE OF AIRSPACE

…and since 2005 backed up legally by EC

FUA - Basic Principles

What is Flexible Use of Airspace?

- Airspace is no longer designated as purely “civil” or “military” airspace, but considered as one continuum and allocated according to user requirements.

- Any necessary airspace segregation is temporary based on real-time usage within a specific time period.

FUA Components

- Dynamic airspace management process;
- Selection of airspace options by ATM community;
- Users' requirements to be accommodated to the greatest extent possible;
- Balancing equitably the different interests;
- Most efficient use of airspace;
- Avoid permanent airspace segregation;
- Improve ATM system performance;
- Feed ATFM process.

Where to start?

- Talk together:
  - Informal;
  - Formal;
  - Develop mutual understanding.
- High-level commitment on both sides:
  - MoT, MoD, DG, Defence Generals;
  - High-level policy and guidance.
- Develop flexible structures and working methods:
  - FUA levels;
  - Airspace structures;
  - Airspace management processes.

Within 3 ASM levels

ASM Level 1

Establishment of pre-determined airspace structures

Strategic Level

ASM Level 2

Day-today allocation of airspace according to users' requirements

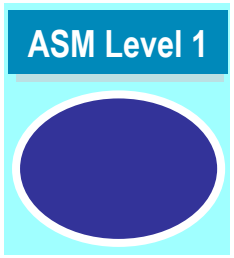
Pre-tactical Level

ASM Level 3

Real-time use of airspace allowing a safe OAT/GAT separation

Tactical Level

Through civil-military coordination



Strategic Level

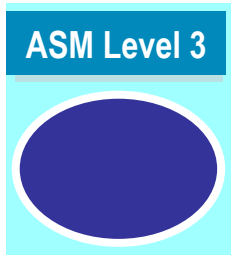
Definition and review of national airspace policy and organisation

High-Level Civil / Military Airspace Policy Body

Pre-tactical Level

Day-to day airspace allocation according to user requirements

Joint Civil / Military Cell (AMC)

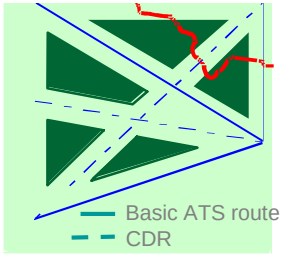


Tactical Level

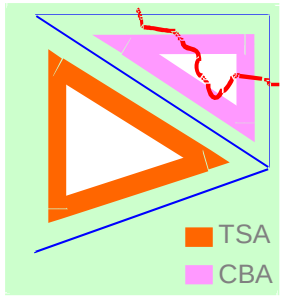
Real-time use of airspace allowing a safe separation between civil and military aircraft

Appropriate Civil / Military ATS Units

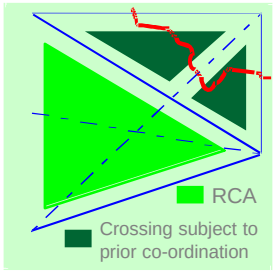
ERNIP Part 3- Using flexible airspace structures



- **Conditional Route (CDR)**
  Non-permanent ATS route or portion thereof which can be planned and used under specified conditions

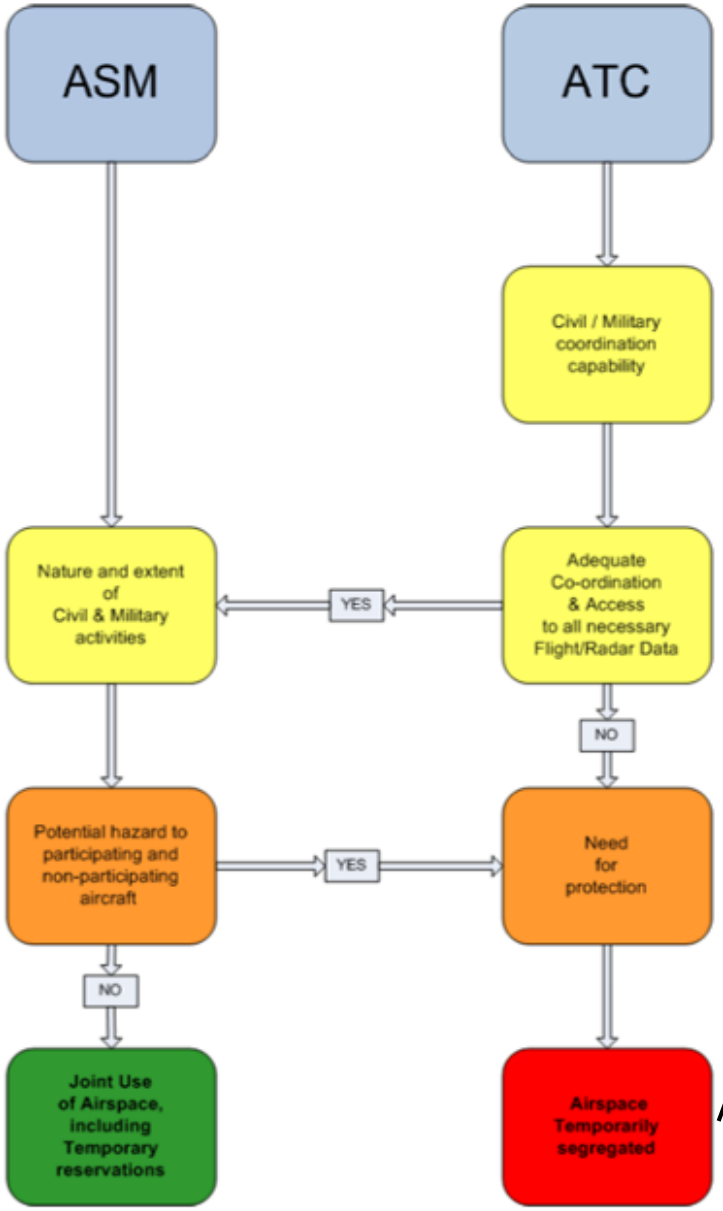


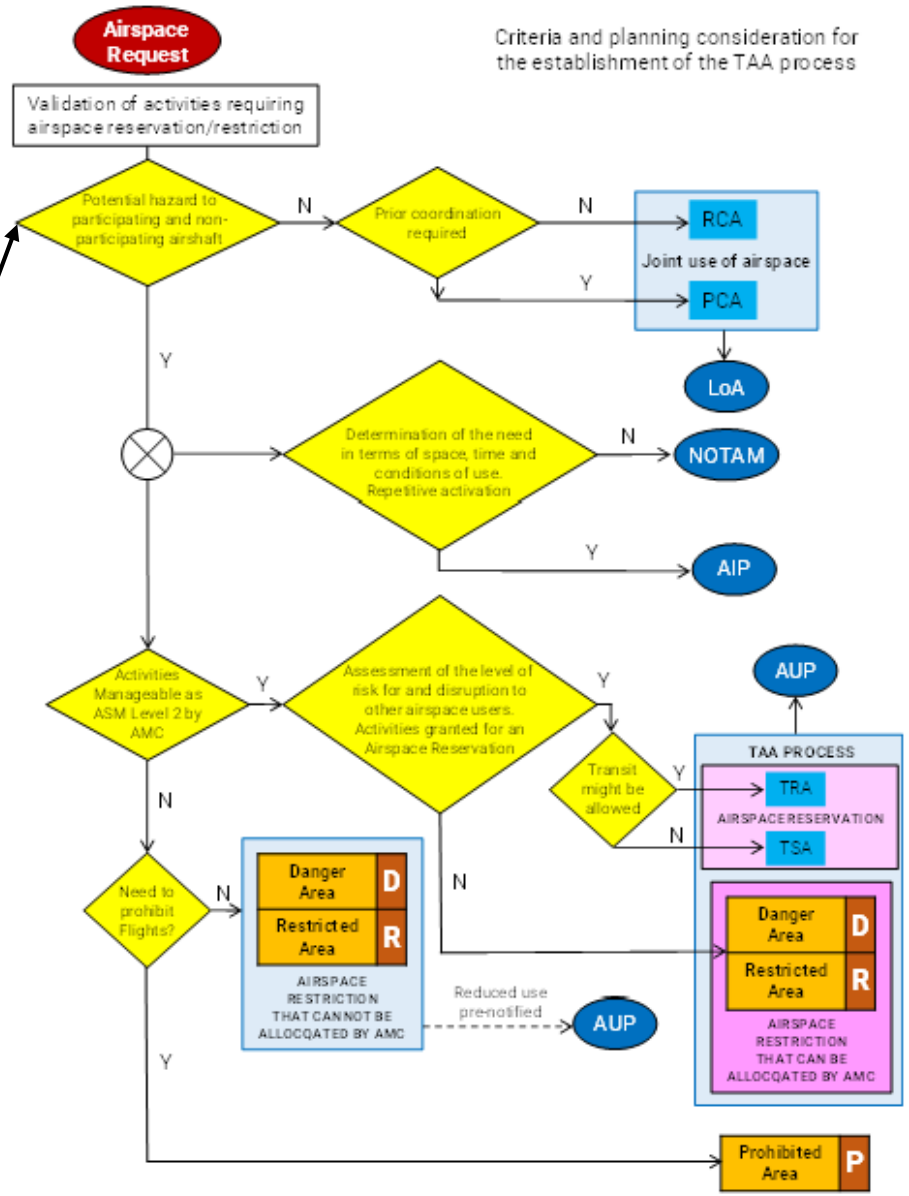
- **Temporary Reserved/Segregated Area (TRA/TSA)**
  Airspace temporary reserved or segregated
- **Cross-Border Area (CBA)**
- **R and D AMC manageable**



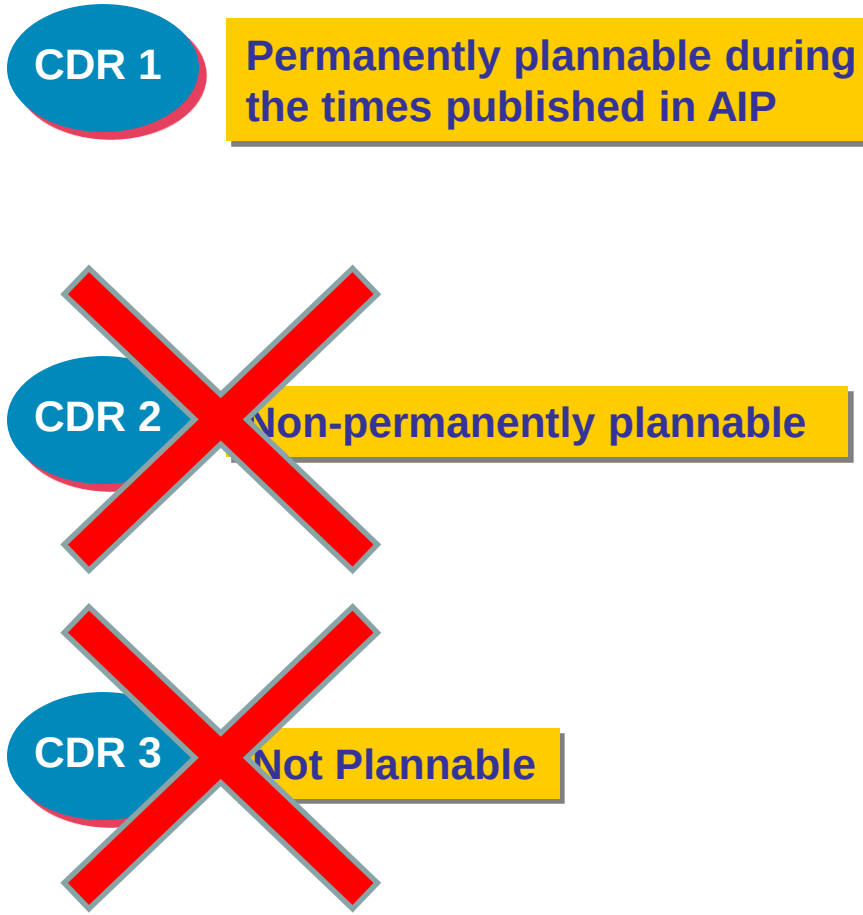
- **Reduced Coordination Airspace (RCA)**
  Specified portion of airspace within which GAT is permitted “off-route” without requiring prior co-ordination.
- **Prior Coordination Airspace (PCA)**
  Specified portion of airspace within which GAT is permitted “off-route” only with prior co-ordination.

ERNIP Part 1/3 – need & type of segregation





ERNIP Part 3- CDR categorisation



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

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

- Usable upon ATC instructions only as short notice routing

FUA Organisation - Who Does What?

National Stakeholders

Strategic

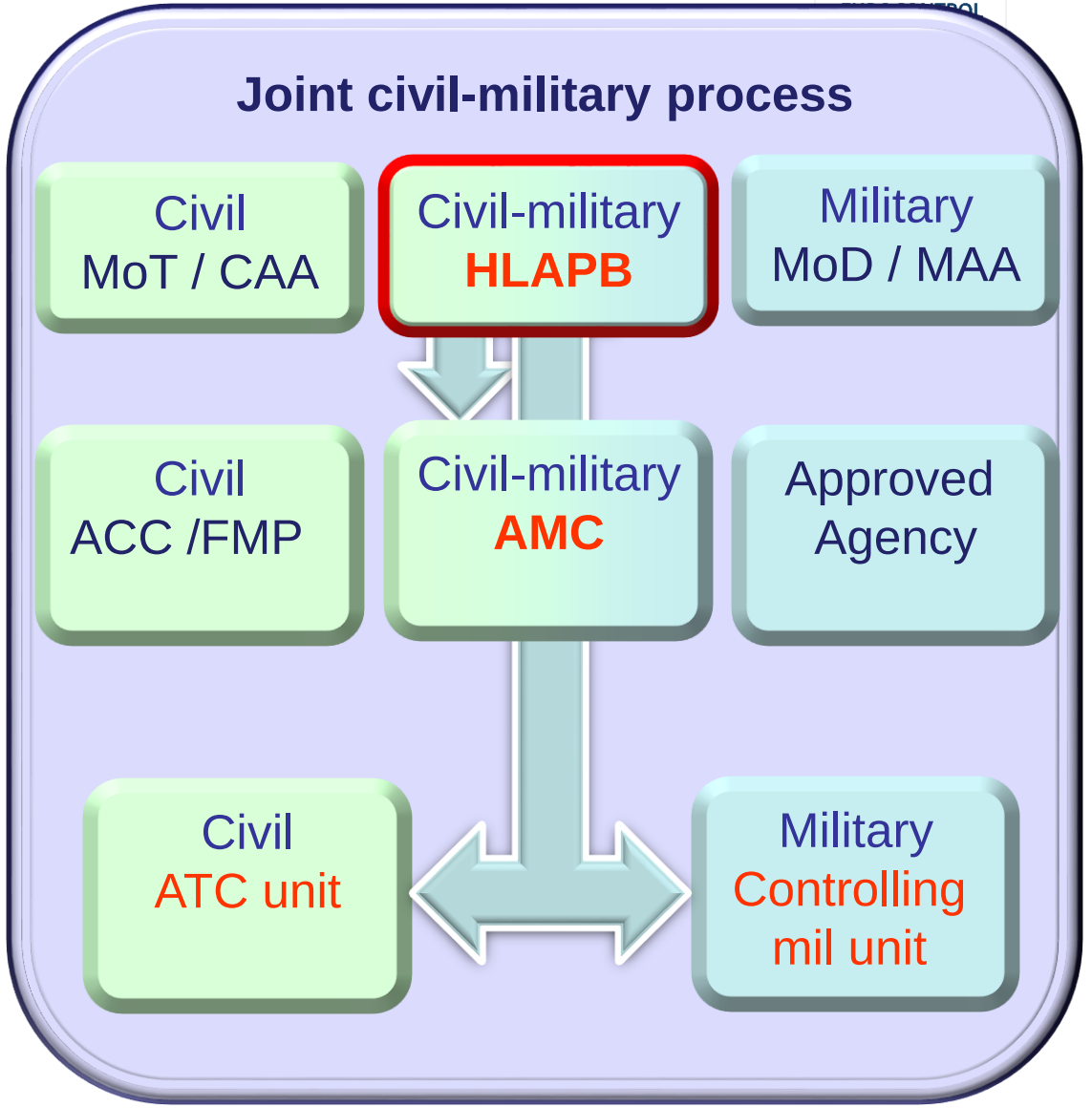
- Definition and review of national airspace policy and organisation taking into account both national and international airspace requirements

Pre tactical

- Is the conduct of operational management within the Framework of the structures/procedures/priorities defined at Level 1
- Day-to day airspace allocation according to user requirements

Tactical

- Real-time use of airspace allowing a safe separation between civil and military aircraft
- Consists of the real-time use of the airspace allocated in Level 2 and the resolution of specific airspace problems and /or individual traffic situations in real time.



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Roles and tasks of L1

CONSORTIUM COORDINATOR sesar DEPLOYMENT MANAGER

FOUNDING MEMBER sesar JOINT UNDERTAKING

NETWORK MANAGER

Strategic ASM Level 1

Main Strategic Level Objective

High level defining and reviewing of the national airspace policy and organisation taking into account both national and international airspace requirements.

Strategic ASM Level 1

Who is responsible?

National High-Level
Civil / Military Airspace Policy Body

- maintains and improves management of airspace and its infrastructure;
- regulates the airspace organisation and management;
- accommodates shared use of national airspace by all user groups;
- harmonises airspace management procedures with neighbouring States;
- conducts regular monitoring of compliance to the FUA Concept;
- defines processes & procedures for Civil/Military coordination;
- establishes AMC;
- ensures priority rules;
- more…

ASM Level 1 Organisation

- HLAPB practice in majority of States (CMAB in DOC 10088)
  - Decision makers: MoT & MoD;
  - They can delegate: e.g. to CAA or NSA or ANSPs
  - Advisors: Airspace Users & ANSPs, e.g. National Airspace Advisory Committee
  - Technical support delegated to: CAA/NSA, MAA; ANSPs…

- National Airspace Management Advisory Committee (NASMAC) – (CAOM in DOC 10088)
  - HLAPB establishes NASMAC
  - The main task of Advisory Committee is to assist HLAPB
  - Committee may be chaired by the Chairman of the HLAPB,
  - Membership covering the whole spectrum of the State aviation community
  - Sub-committee or working group may be set up by the HLAPB
  - Where it is possible HLAPB and NASMAC could be combined

ICAO DOC 10088 – Appendix E

COMPOSITION of CMAB

a) **Chair of the Board**. The Board shall elect co-chairpersons and their vice-chairpersons (one each from the civil aviation authority and the military authority) for a cycle of three meetings, unless otherwise re-elected.

b) **Members**. Representatives of the civil aviation authority, military authorities, appropriate ANSPs and military unit(s) and involved members from ministries and authorities which have an impact on aviation operations.

c) **Observers** could be invited on an ad hoc basis

Name	*Title/Function*	*Organization*	*Status in CMAB*

ICAO DOC 10088 – Appendix F

COMPOSITION of CAOM

a) **Chairperson**. The Committee shall elect co-chairpersons and their vice-chairpersons (one each from the civil aviation authority and the military authority) for a cycle of three meetings, unless otherwise re-elected.

b) **Members**. Representatives of the civil aviation authority, military authorities, appropriate ANSPs and appropriate military unit(s).

c) **Observers** could be invited on an ad hoc basis.

Name	*Title/Function*	*Organization*	*Status in CMAB*

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Roles and tasks of L2

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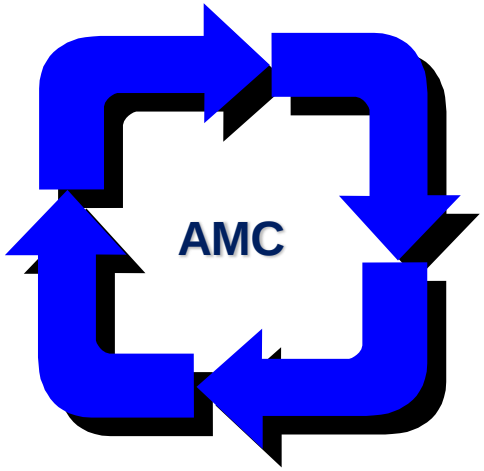
Pre-tactical ASM Level 2

Main Pre-tactical Level Objective

Conduct of operational management within the framework of the structures and procedures defined at Level 1.

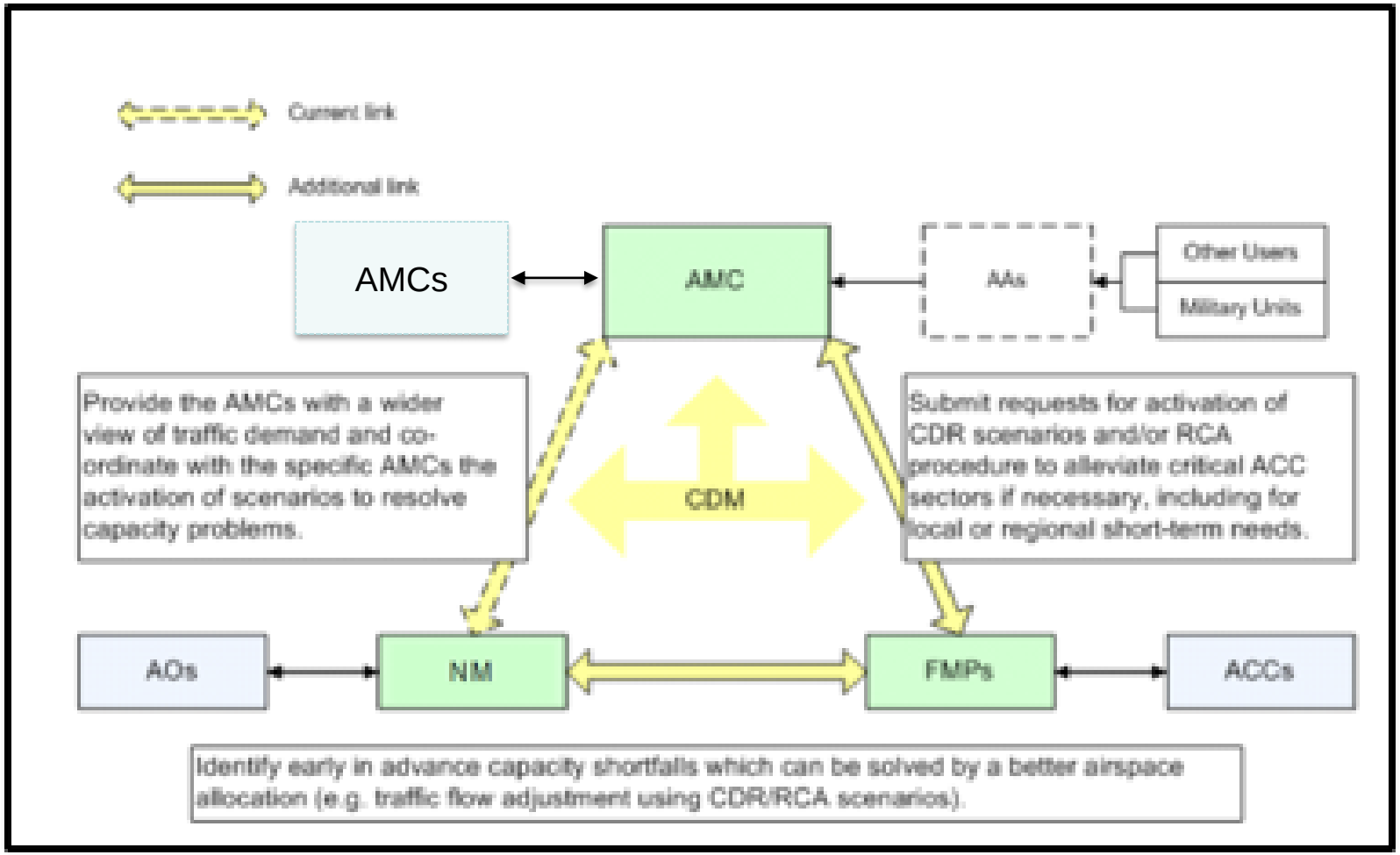
Day-to day airspace allocation according to user requirements.

Airspace Management Cell



- Joint Civil / Military Body
- Established by National Authority
- Allocates airspace identified as TRA, TSA, CBA or CDR
- Allocation decision notified by Airspace Use Plan (AUP)

Airspace Management Level 2



Airspace Management Level 2

- AMC: Joint Civil/Military staff;
  - Sometimes integrated with FMP (UK, Netherlands, Germany)
  - Most cases co-located in ACCs
- Main decision principle: Consensus or priority rules application
- National partners: Approved Agency (AA) or Squadrons and FMP
- International partners: Network Manager, neighbouring countries (FABs)

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Roles and tasks of L3

CONSORTIUM COORDINATOR sesar DEPLOYMENT MANAGER

FOUNDING MEMBER sesar JOINT UNDERTAKING

NETWORK MANAGER

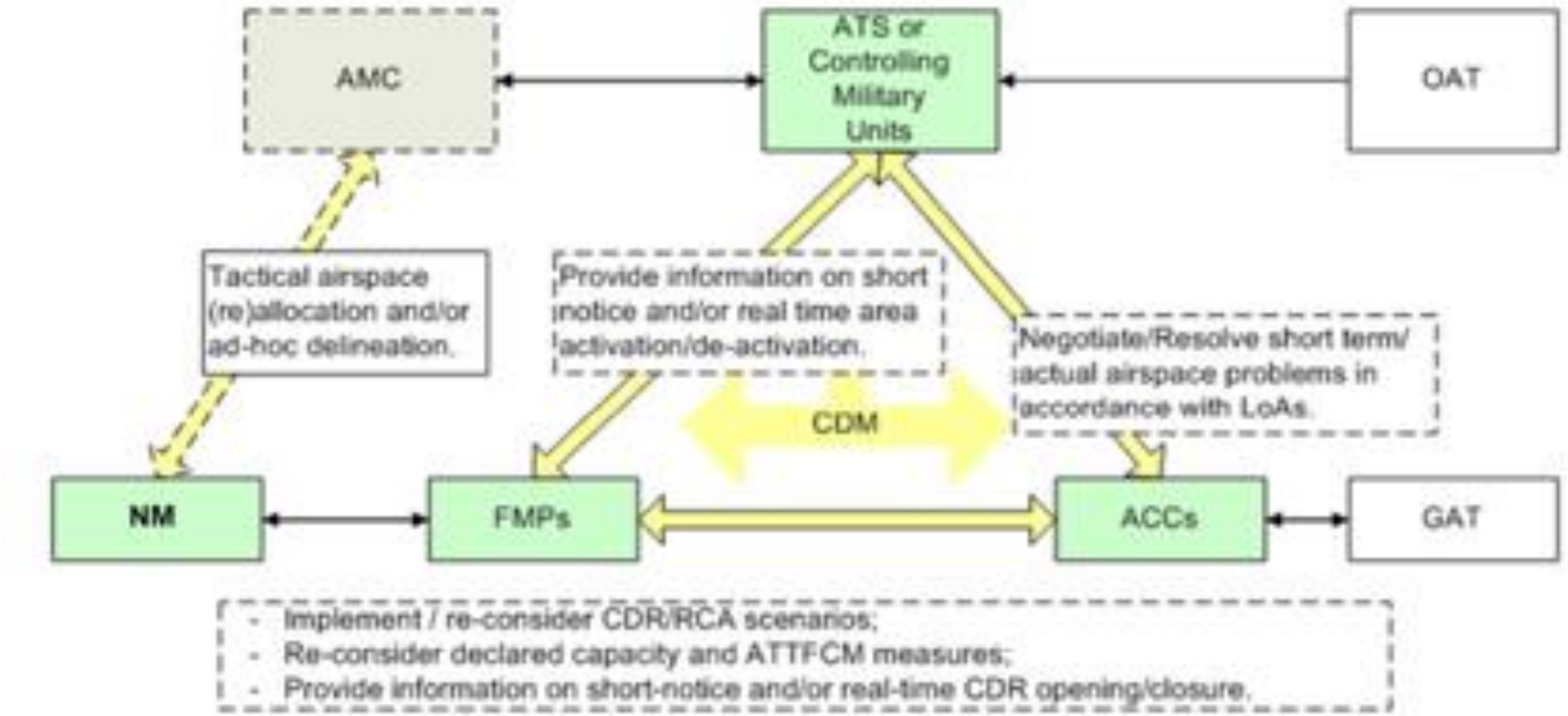
Tactical ASM Level 3

Tactical Level Objective:

Ensure real-time use of the airspace allocated at Level 2 and the resolution of specific airspace problems and/or individual traffic situations in real time.

Ensure a safe OAT/GAT Separation.

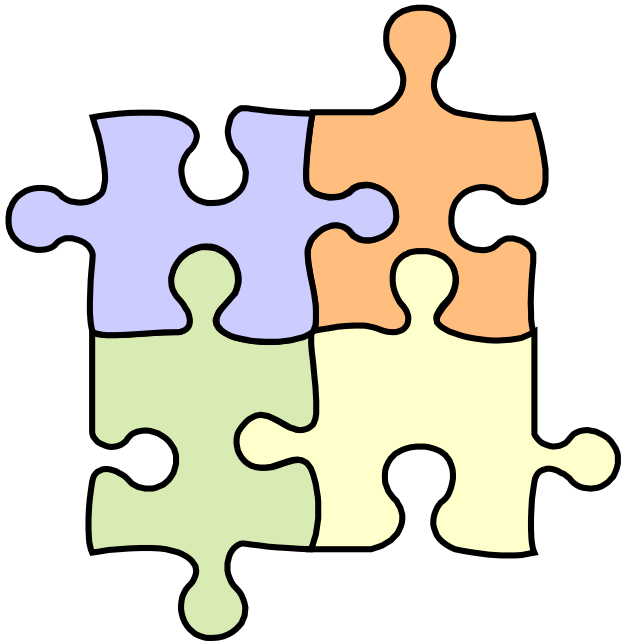
Tactical ASM Level 3



Tactical ASM Level 3 - models

- Separate civil/military ATS organisations (side-by-side)
  - Co-located ATS units
  - Separated ATS units
- Total Integration of ATS services (single unified ANSP)

- Separation responsibilities
  - Civil ATCOs and Military ATCOs
  - Civil ATCOs and Military Air Defence
  - Civil / Military ATCOs (double licence)



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FUA Process

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FOUNDING MEMBER sesar JOINT UNDERTAKING

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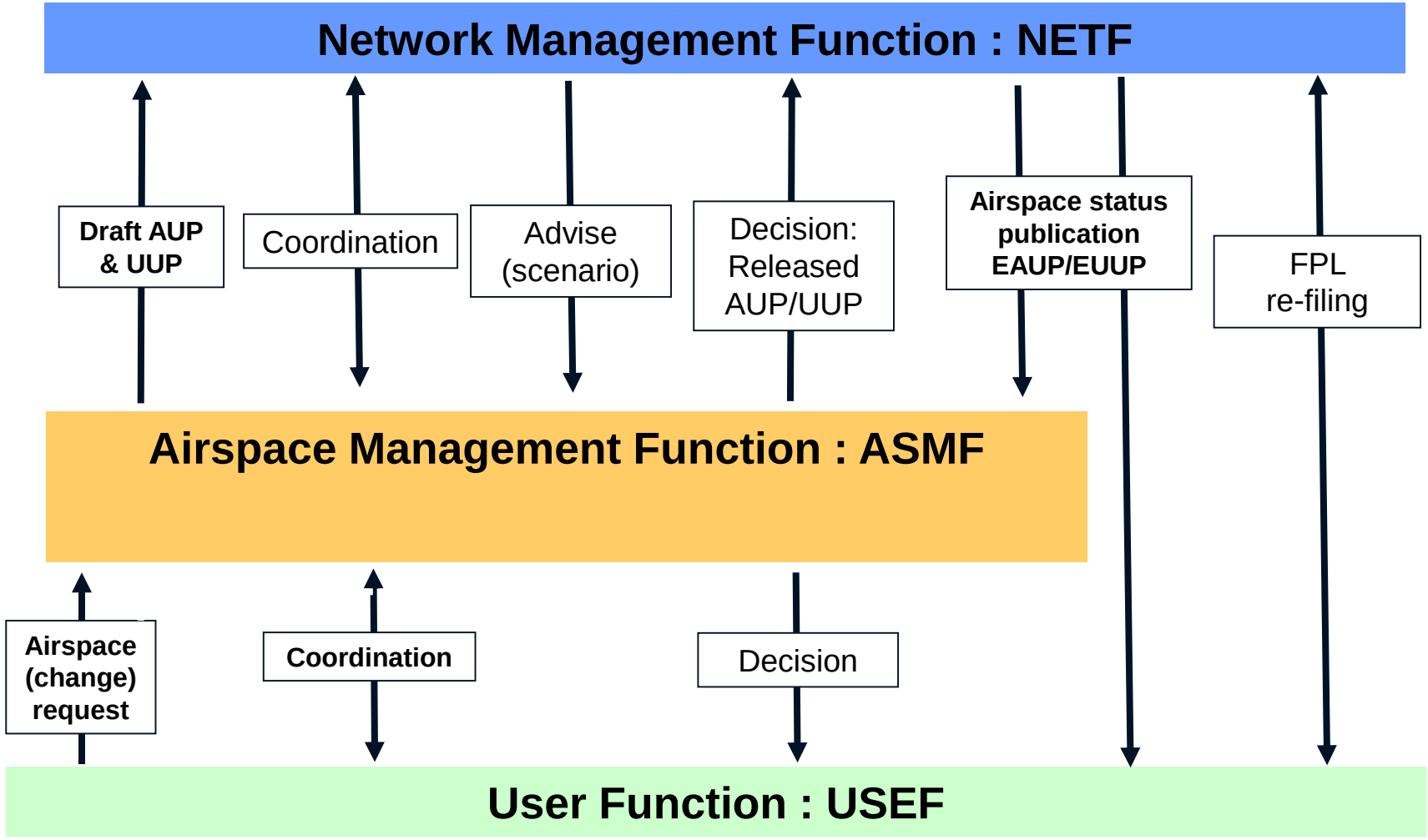
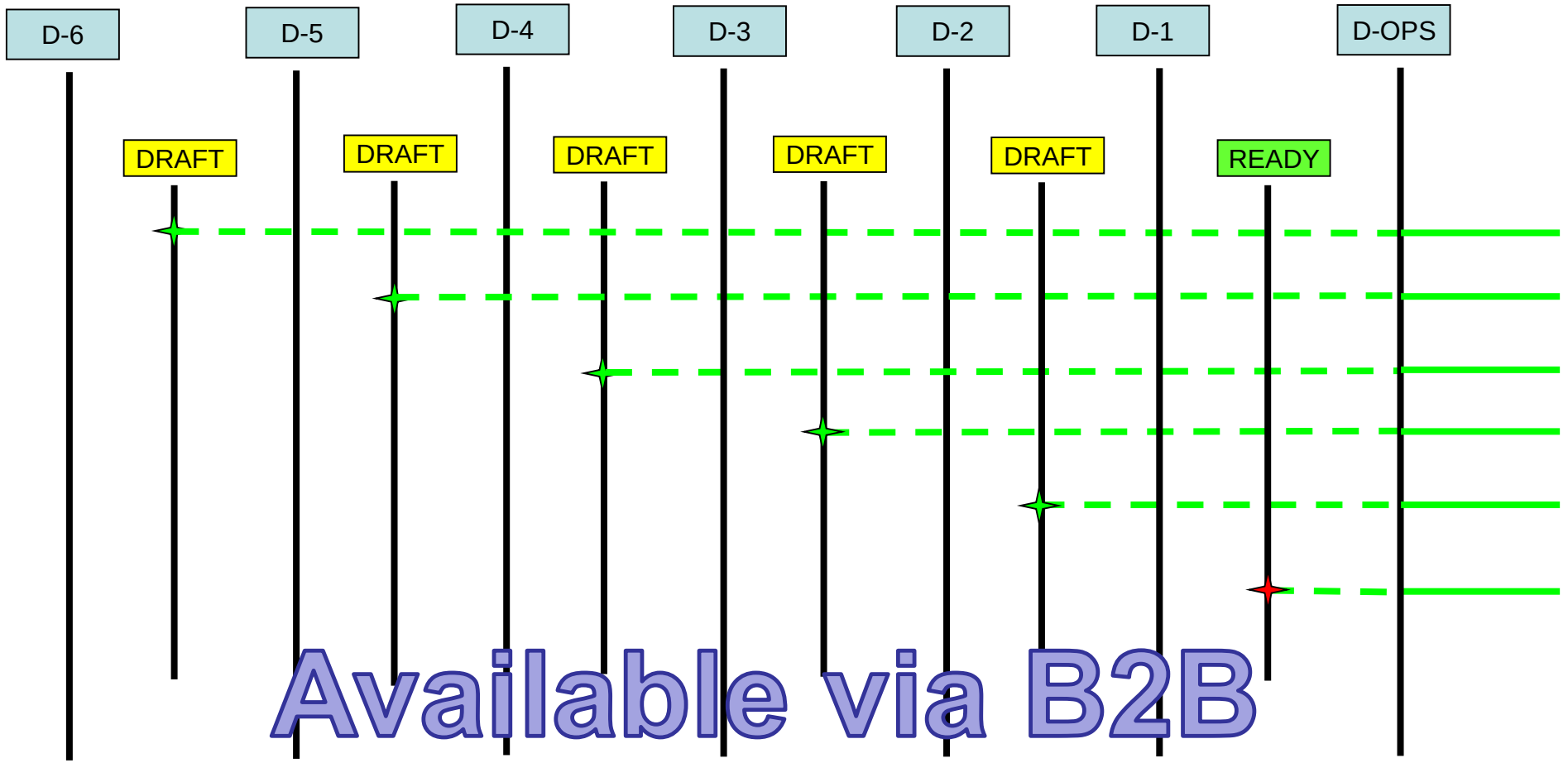
AUP/UUP PROCESS

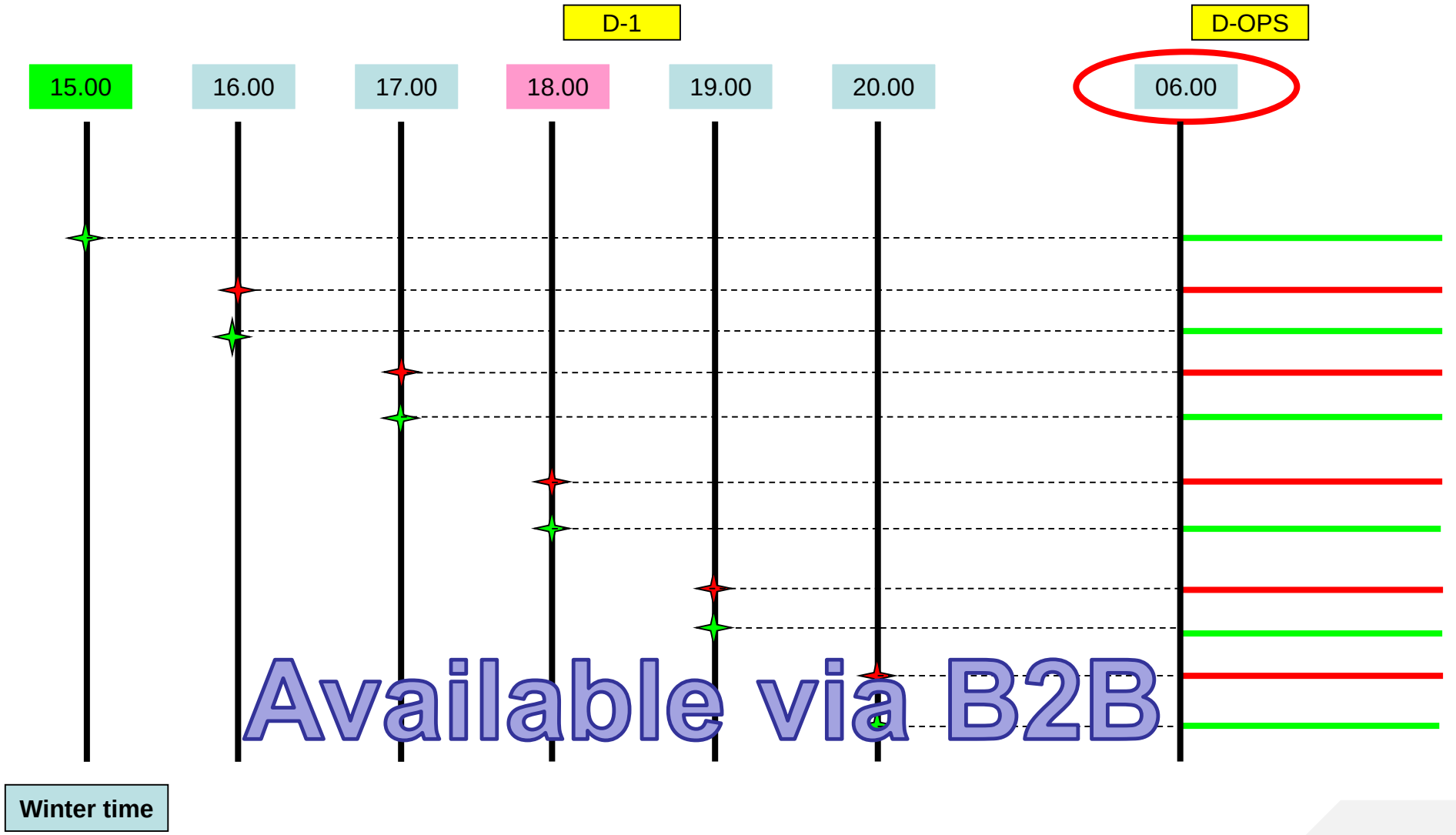


Draft Rolling EAUP

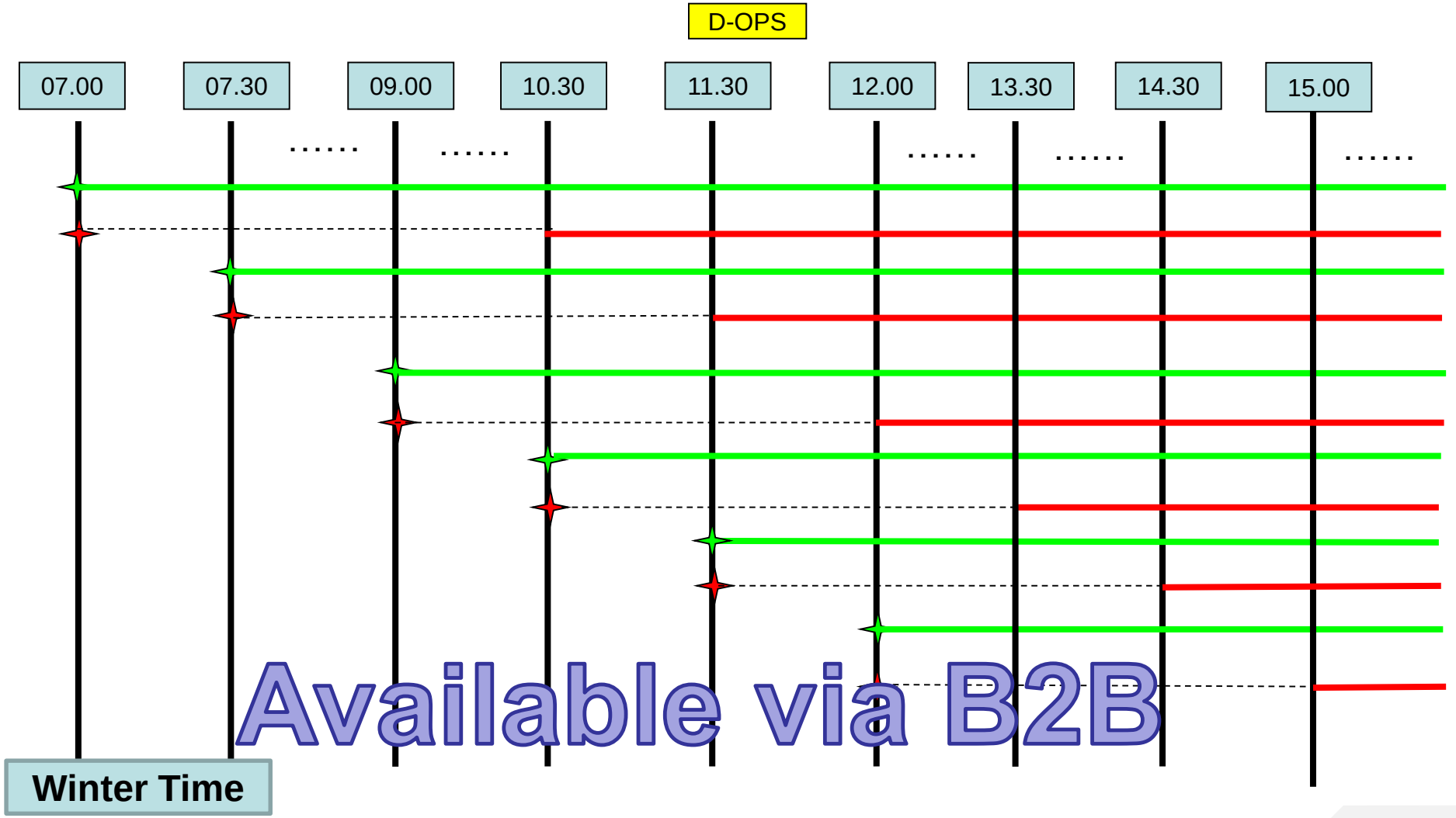


Winter time

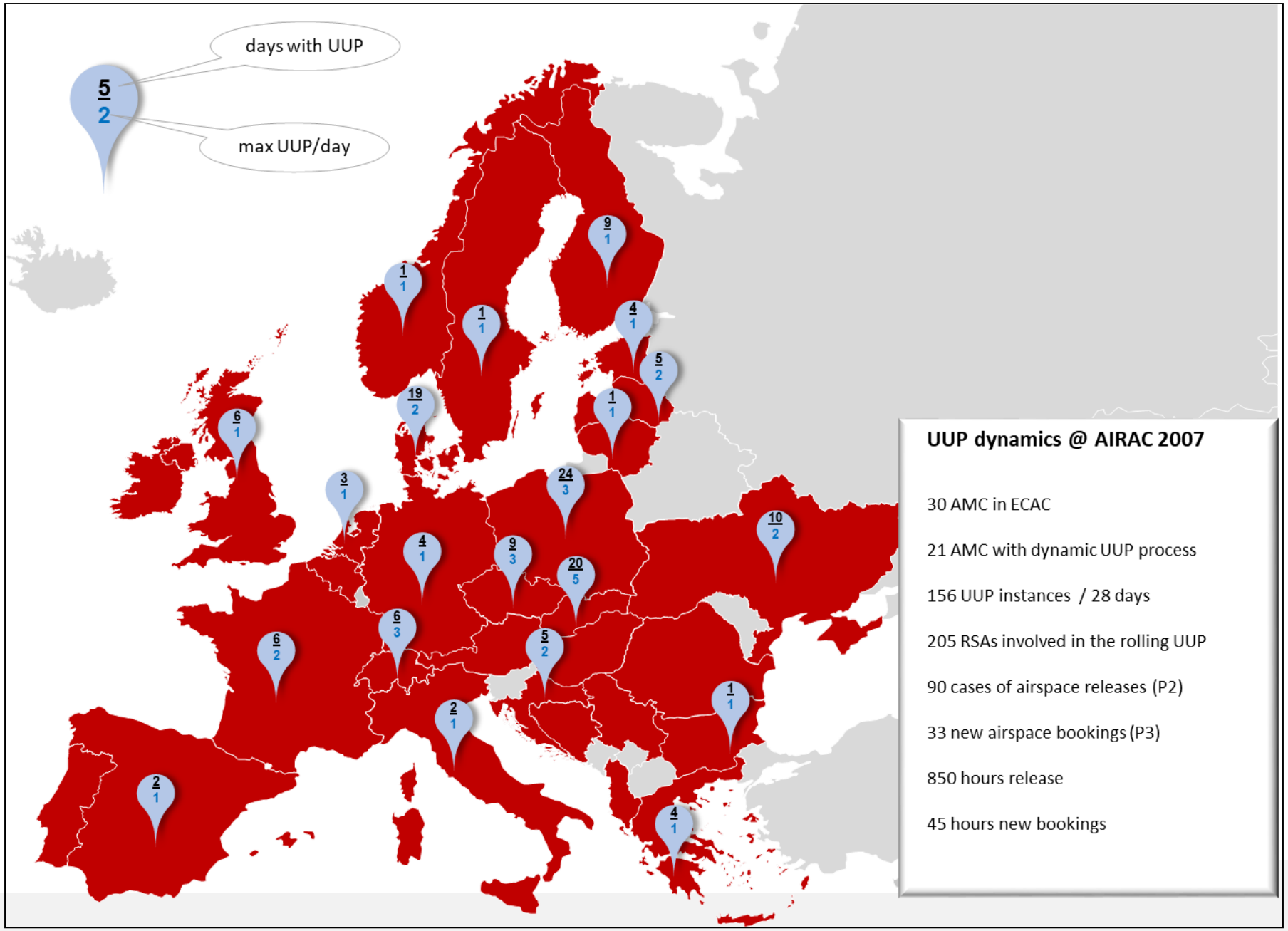
AUP/UUP PUBLICATION D-1



Rolling UUP D-OPS



AIRAC 2007 - Number of daily UUPs per State



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FUA IN PRACTISE

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FOUNDING MEMBER sesar JOINT UNDERTAKING

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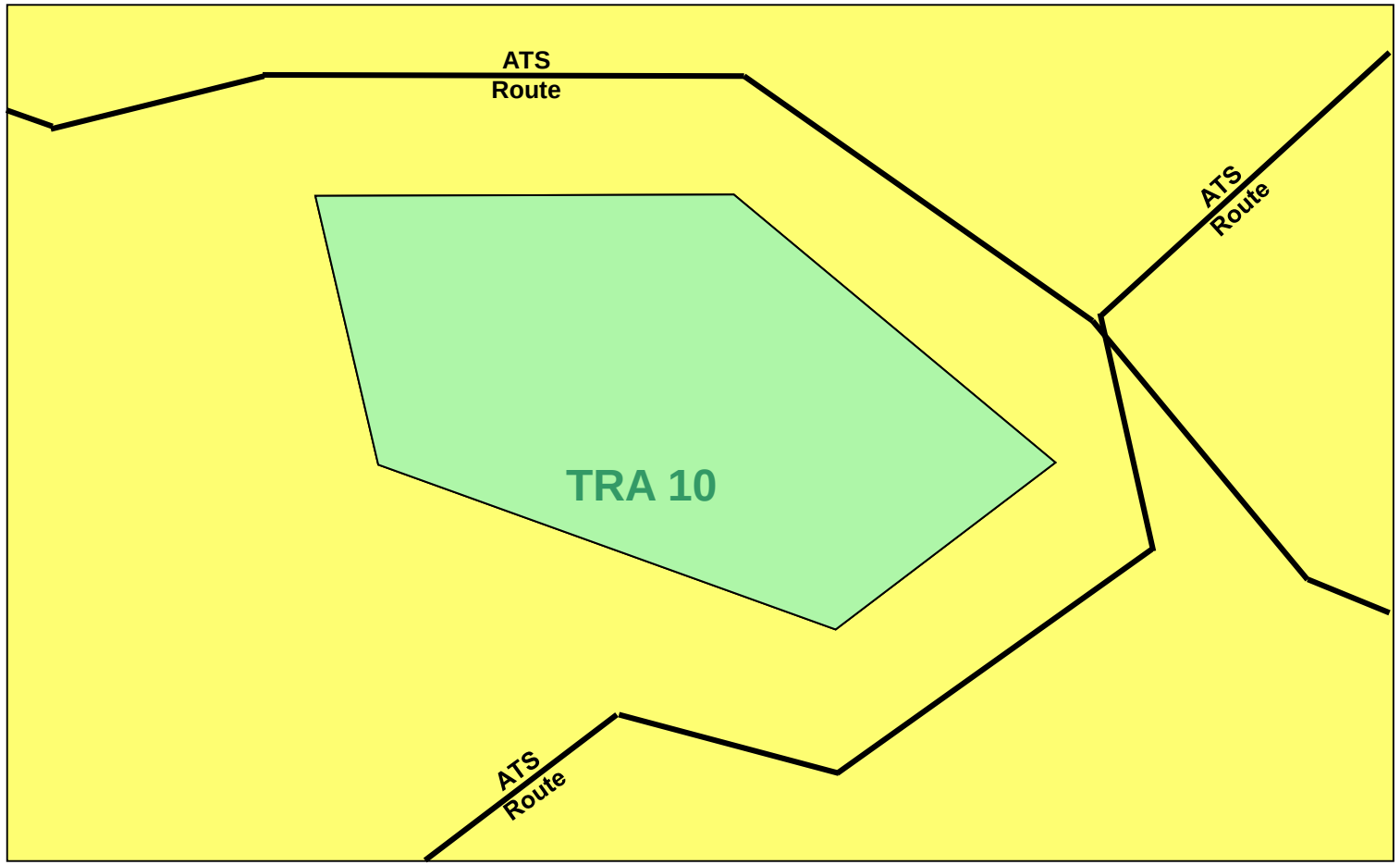
FUA concept in practice…

After FUA implementation a FUA is may be published as a TRA …

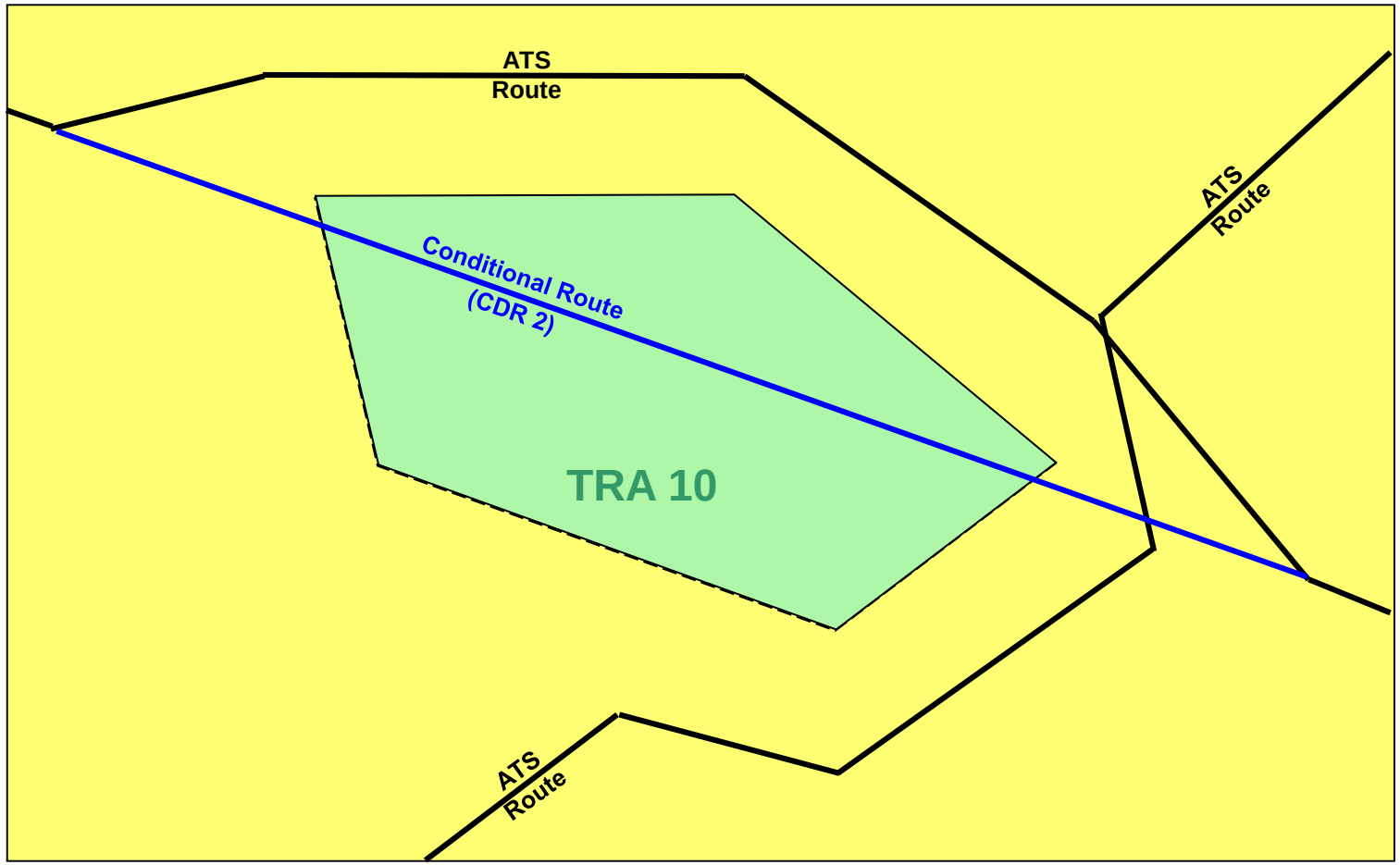
Before FUA implementation …



ASM Strategic Level 1

FUA concept in practice…

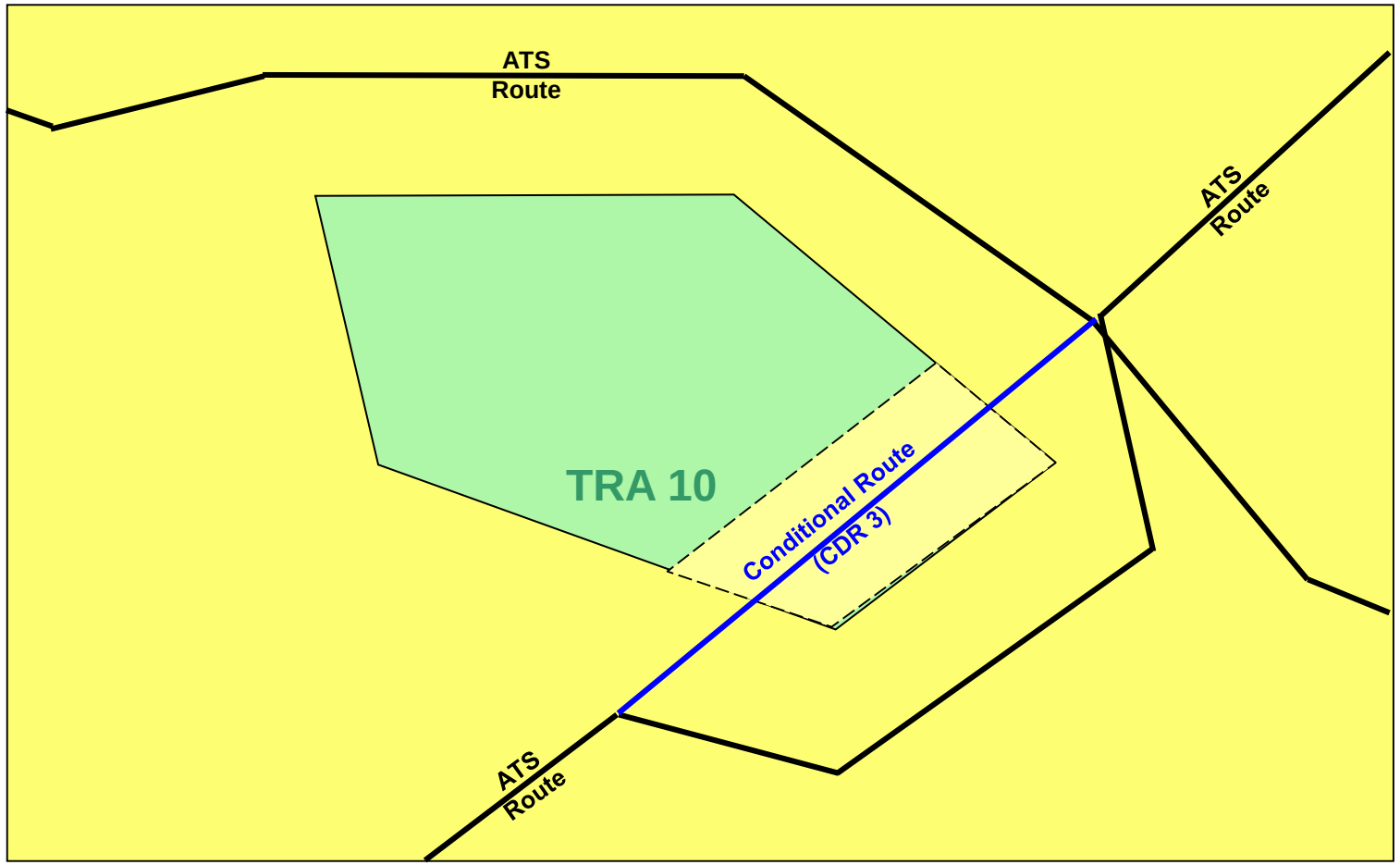
or a Conditional Route (CDR 2) made available … for flight planning



ASM
Pre-tactical
Level 2

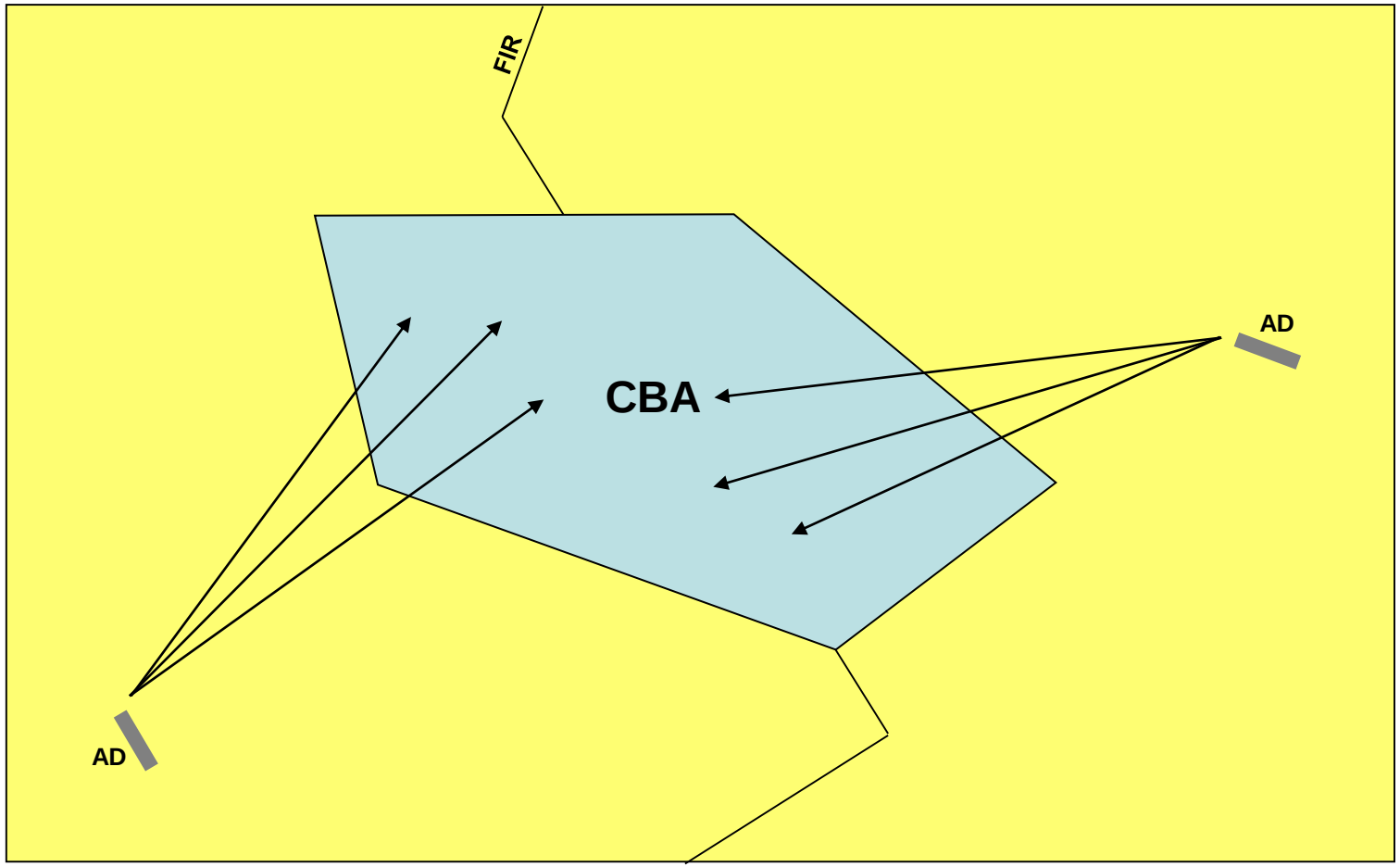
FUA concept in practice…

… a Conditional Route (CDR 3) can be opened… for direct routing…a TRA is not active

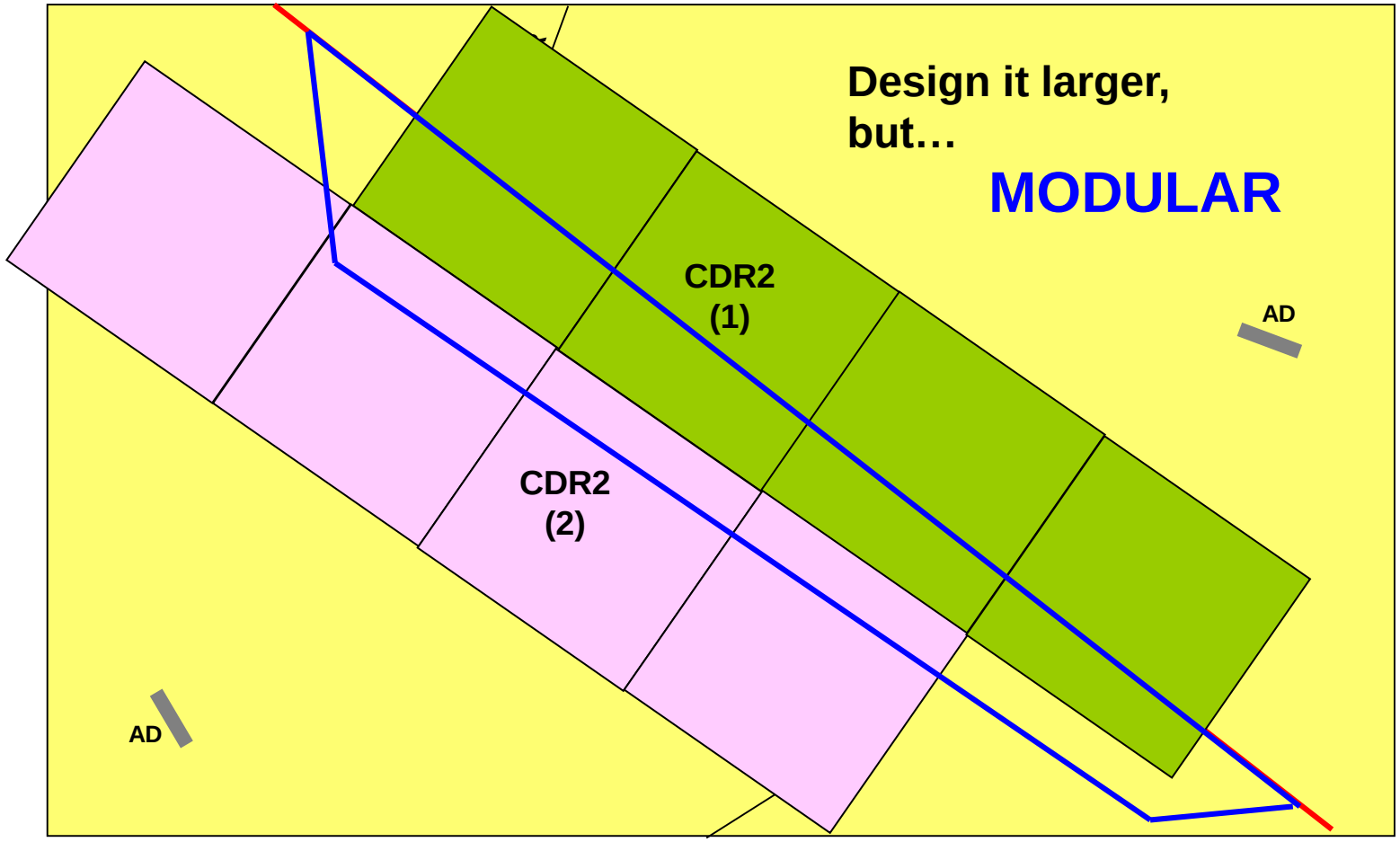


ASM
Tactical
Level 3

Current cross-border/FIR boundary operations



CBO operations - recommended



giuseppe.acampora@eurocontrol.int