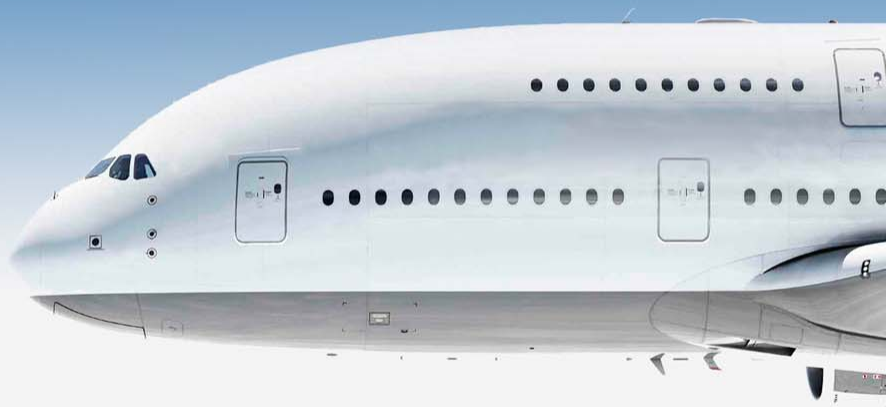
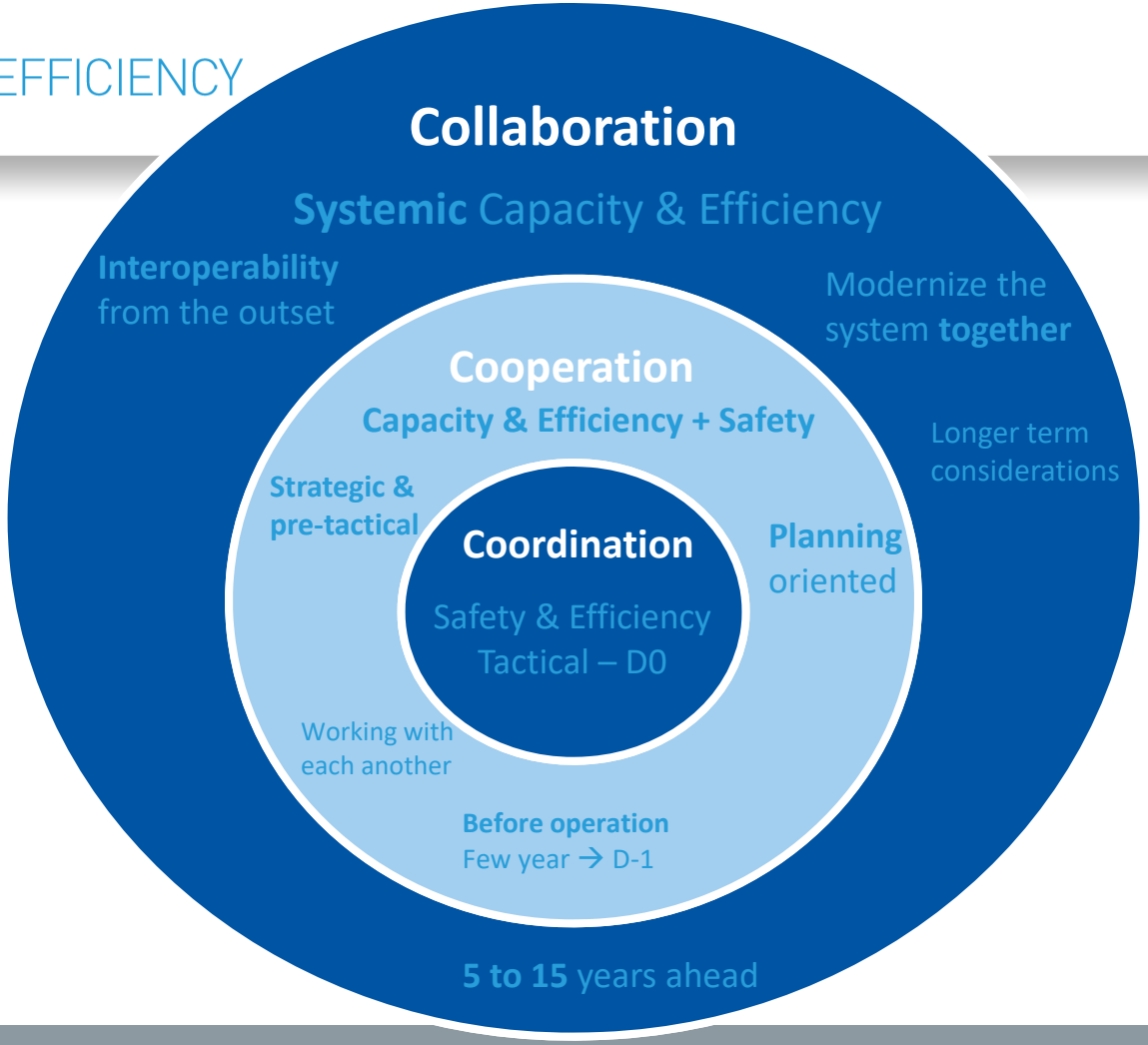
ICAO CAPACITY & EFFICIENCY

Civil-Military cooperation and coordination



Mr Thomas Bombaert
Air Traffic Management Expert – ICAO ANB


Collaboration
Systemic Capacity & Efficiency
Interoperability
from the outset
Modernize the
system together
Cooperation
Capacity & Efficiency + Safety
Longer term
considerations
Strategic &
pre-tactical
Coordination
Planning
oriented
Safety & Efficiency
Tactical – D0
Working with
each another
Before operation
Few year → D-1
5 to 15 years ahead

Why cooperation?

- Civil aviation **growth**
- Competing needs vs **common resource**
- Military to protect their national **security and defense capabilities**
- Need to **optimize** the airspace usage

Objectives of cooperation

- higher le
- ↑ airspac
- ↑ **nation**
- ↑ **militar**
- ↑ **interoperability**
- **cost efficient** operations

State economy
&
National security and defence

Needs

- Different needs
- Different organizations/structures
- Different considerations

Basic principles

- Communication
- Trust
- Reciprocal understanding

At all levels

Where to start?

- High-level **commitment**, **policy** and **guidance**
- Legal framework
- National **body**
  - **Strategy & action plan**
- Liaison/cooperation **structures/mechanisms** :
  - pre-tactical planning
  - tactical use of airspace

Enablers

- Regular ATM & CNS **joint meetings**
- **Interoperability** enhancement
- **Legal agreements** and/or letters of agreements/ mutual understanding

State Aircraft Ops

State Aircraft Operations

- Various **roles**
- Real missions vs Training
  - Both important – different priority
- Planning cycle is different from Civ
- Compliancy (Tech/Ops) is variable
- During Exercise: Air component is only one element → impacts predictability
- Not always aircraft related

State Aircraft Operations

- In support of National security and defence
- Building and maintaining the readiness of State aviation capabilities

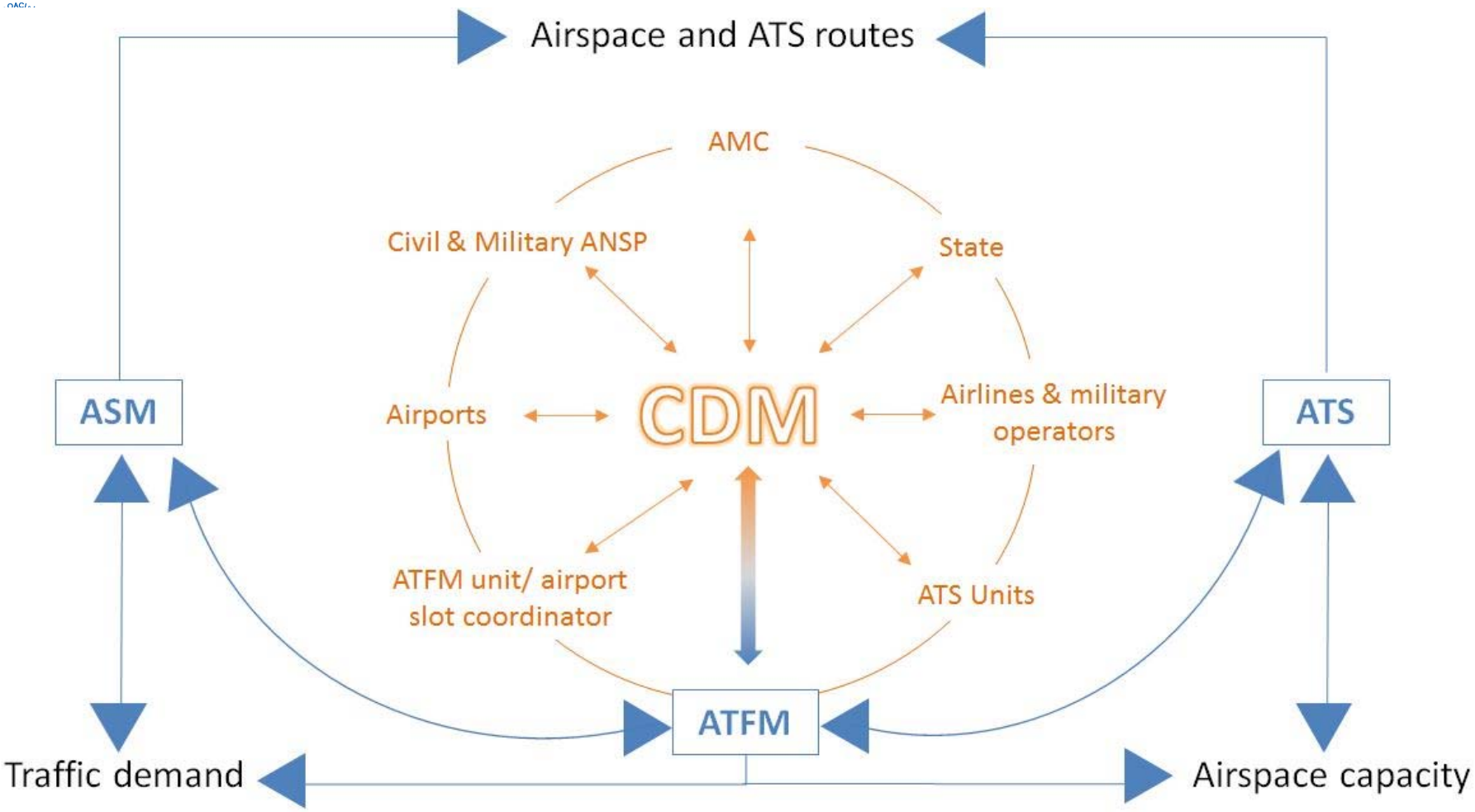
Collaborative decision making

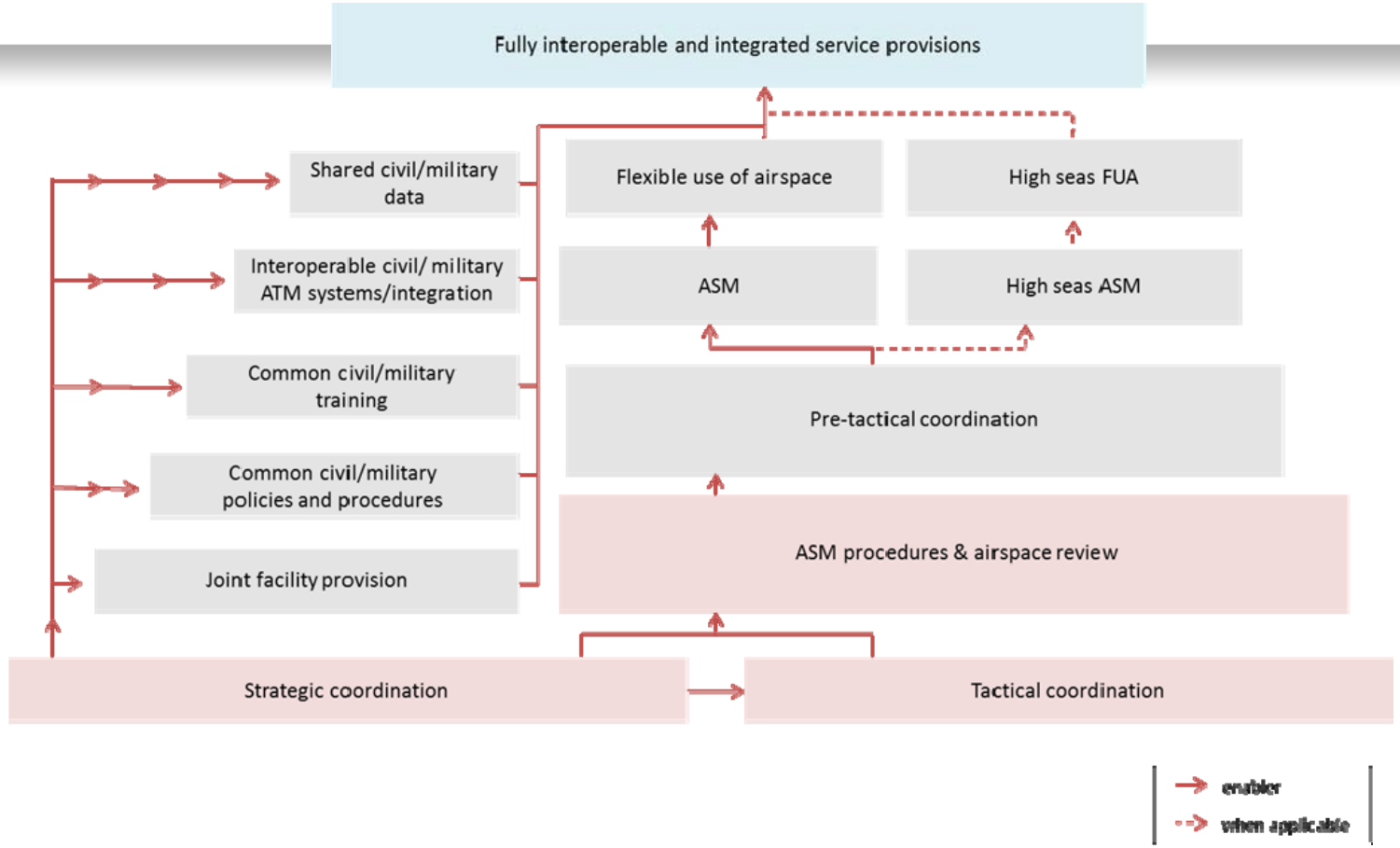
Collaborative Decision Making

- Process from which **all** participating parties can gain **benefits** through the **negotiation of proposed options**
- Enables **information** sharing and facilitates decision-making

CDM

- Requires pre-defined, **procedures** and **rules** → expeditiously and equitably
- At **all levels**:
  - Strategic: Policy/rules/priorities/planning cycles
  - Pre-tactical: planning
  - Tactical : execution


Airspace and ATS routes
AMC
Civil & Military ANSP
State
ASM
Airports
CDM
Airlines & military operators
ATS
ATFM unit/ airport slot coordinator
ATS Units
ATFM
Traffic demand
Airspace capacity


Fully interoperable and integrated service provisions
Shared civil/military data
Interoperable civil/ military ATM systems/integration
Common civil/military training
Common civil/military policies and procedures
Joint facility provision
Flexible use of airspace
High seas FUA
ASM
High seas ASM
Pre-tactical coordination
ASM procedures & airspace review
Strategic coordination
Tactical coordination
enabler
when applicable

Airspace organisation and management

Airspace Management (ASM)

- ASM is the process by which airspace **options are selected**
  - "Conventional" ASM
  - Flexible use of Airspace

FUA vs “Conventional” ASM

FUA

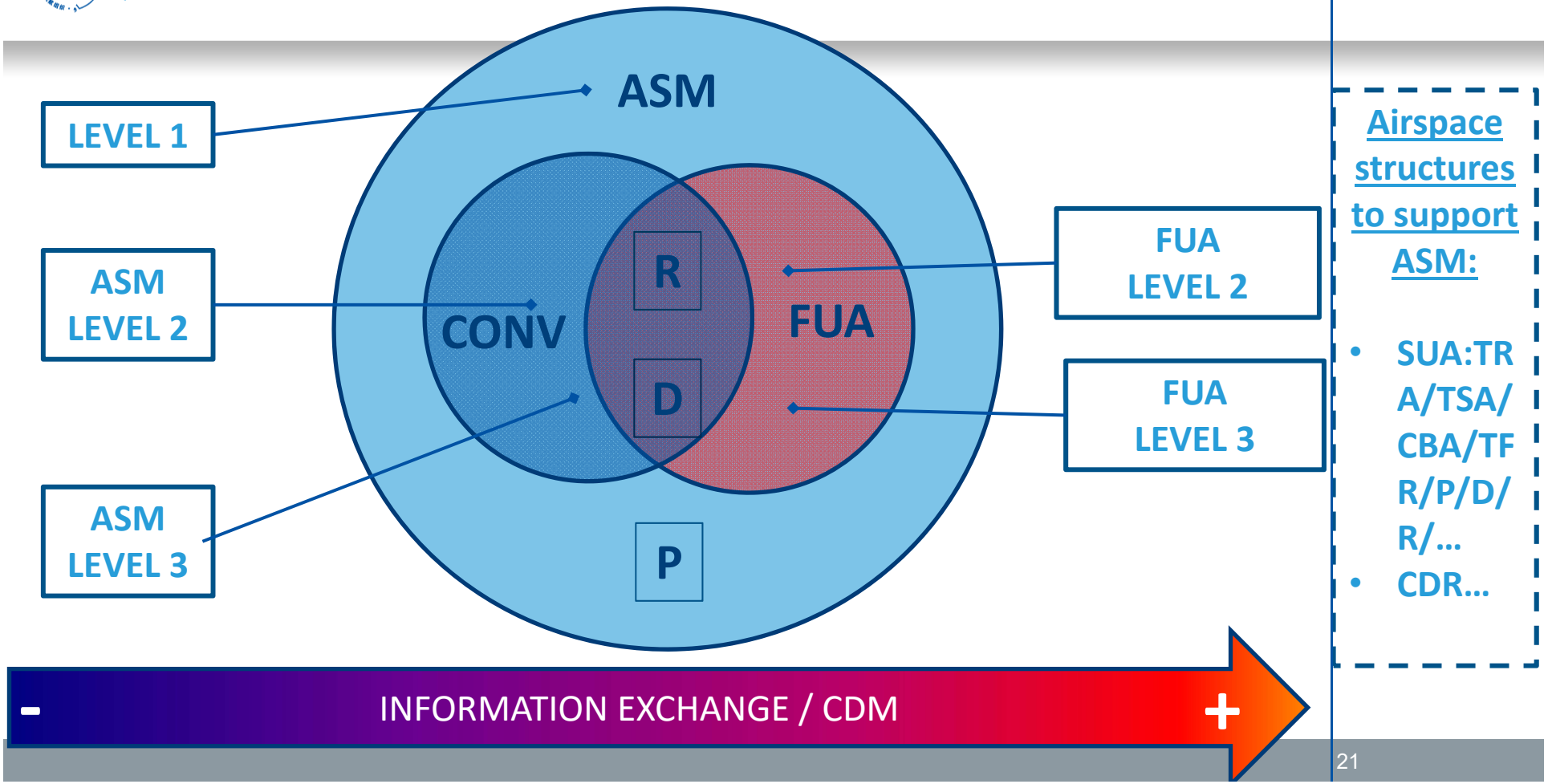
- Dynamic Airspace
- Continuous process
- Meeting users needs
- Avoid “wasting” airspace
- Enhance system performance

“Conventional” ASM

- Static environment
- Negative impact on system performance
- Not in line with needs (e.g. H24 activated zones)

ASM/FUA Levels

- Level 1 : Strategic
- Level 2 : Pre-tactical
- Level 3 : Tactical


ASM
LEVEL 1
ASM
LEVEL 2
ASM
LEVEL 3
CONV
R
D
FUA
P
FUA
LEVEL 2
FUA
LEVEL 3
Airspace structures to support ASM:
• SUA:TRA/TSA/CBA/TFR/P/D/R/…
• CDR…
-
INFORMATION EXCHANGE / CDM
+

ASM Principles

- airspace is a **common resource** to be allocated as a result of **coordination**;
- all available airspace should be **managed flexibly**;
- dynamic flight trajectories should be accommodated and **optimum operational solutions** provided;
- **segregated** airspace should be **minimized** (size, shape, and activation)
- airspace use should be **coordinated** and **monitored** to accommodate the competing requirements
- airspace reservation/restrictions should be **planned** in advance with **changes made dynamically**

"Conventional" ASM

- Strategic cooperation (level 1) → Policy, Airspace design, procedures, guidance…
- Pre-tactical: Airspace restrictions, planning coordination, usage of P R D areas
- Tactical: Real-time coordination civil-military controller to guarantee safety

What is FUA ?

- **Dynamic** Airspace Management Process
- Selection of **airspace options** by ATM community
- Users' requirements to be accommodated to the **greatest extent possible**
- Aims at balancing **equitably the interests**
- Most **efficient** use of airspace
- **Avoid permanent** airspace **segregation**, any restriction or reservation should be of a **temporary nature**
- Improve system **performance**
- Feed **ATFM** process

Is FUA a complex process?

- FUA complexity is linked to the operational environment complexity
- **SCALABLE** : Implement what you need

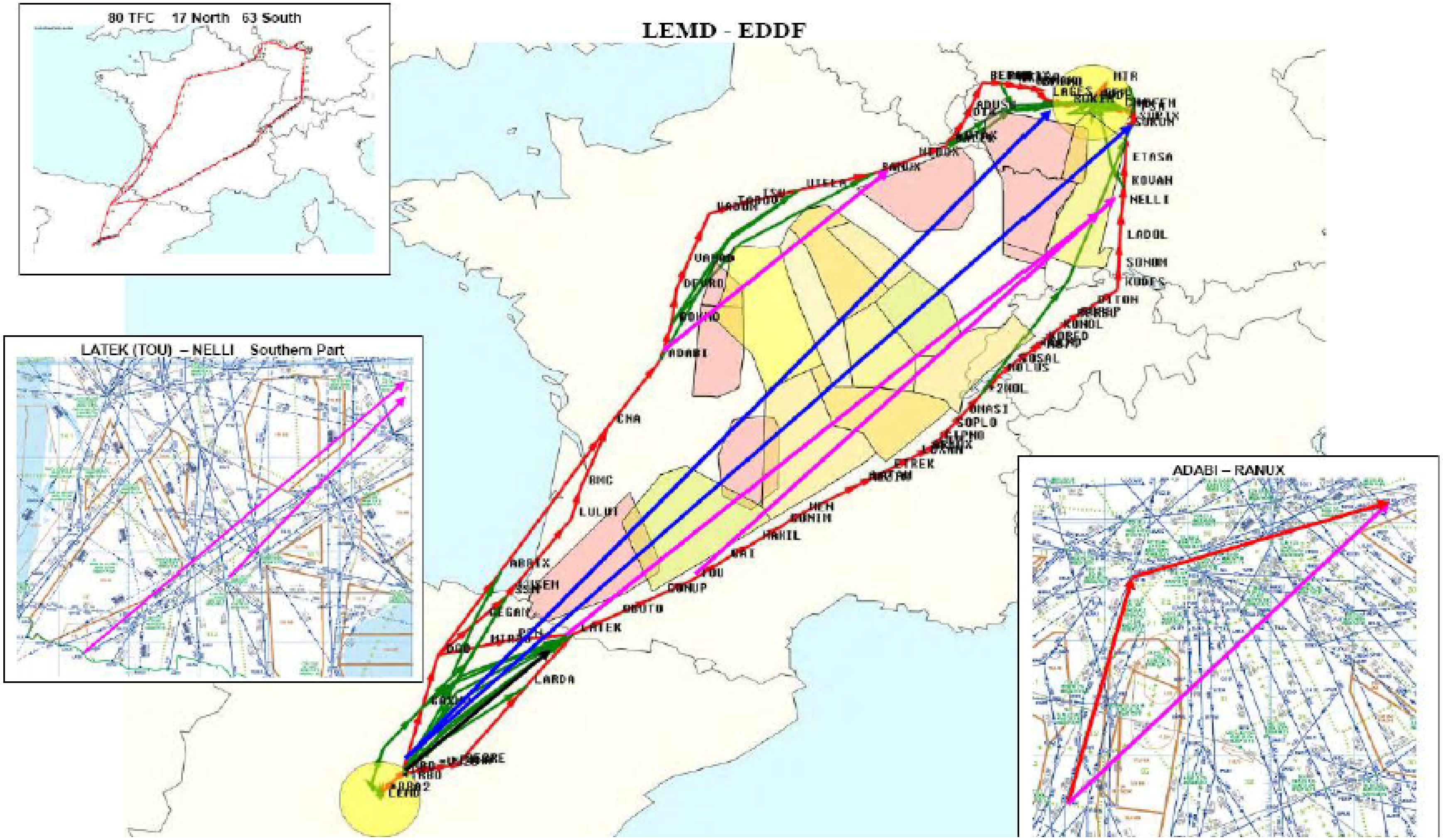
Concept

- 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.

Where to Start?

- **Talk** to each other – Formally and informally
  - Reciprocal understanding
- High-level **commitment** on both sides
  - MoT, MoD, DG, Defence Generals…
  - High-level policy and guidance
- **Develop structures** : HLAPB, AMC, management, planning process, execution procedures, airspace structures…

LEMD - EDDF


80 TFC 17 North 63 South
LATEK (TOU) – NELLI Southern Part
ADABI – RANUX
RANUX
ADABI
CHA
BMC
LATEK
LARDA
TOU
ETASA
KOVAN
NELLI
LADOL
SOHOM

Composition of FUA

3 Levels

- Level 1 : Strategic
- Level 2 : Pre-tactical
- Level 3 : Tactical
- (Post-operation)

Building blocs

- High-level airspace policy body
- Airspace structures
- Processes: AMC, AUP, UUP
- Procedures and priority rules
- Tactical coordination facilities and procedures

Level 1 : Strategic

- National ASM **policy**
- Reassess the national **airspace structure**
- Periodically review the national **airspace needs**
- Establish **negotiation procedures** and **priority rules** for airspace allocation at Level 2
- Review the **procedures** and **efficiency** of Level 2 and Level 3 operations;

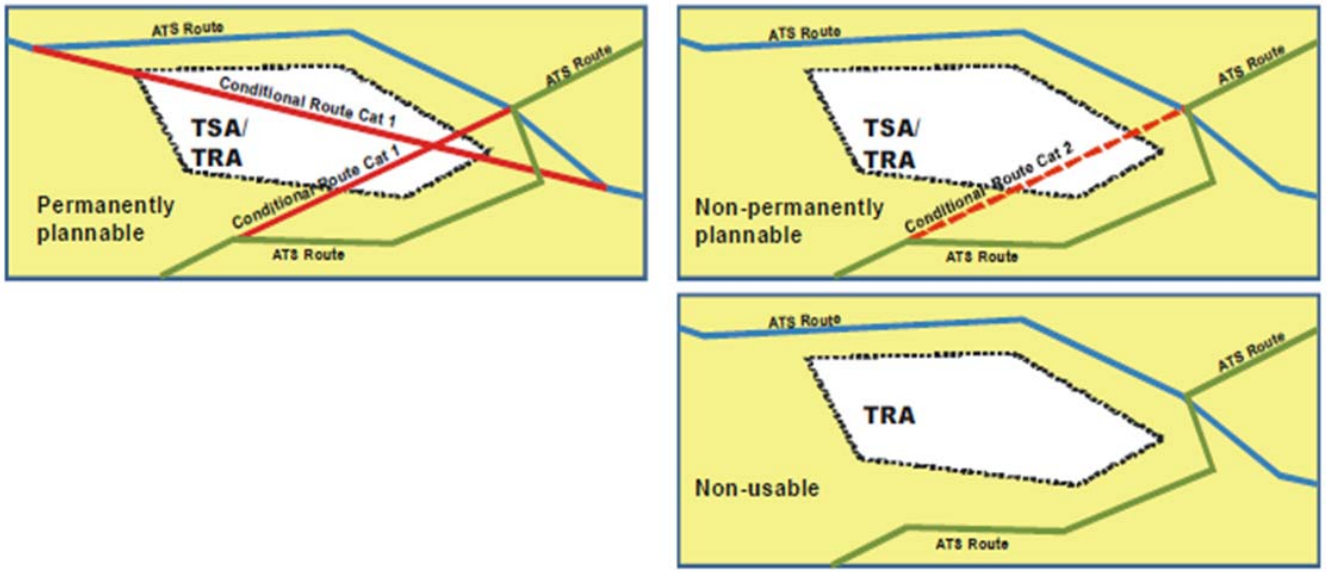
Level 2 responsibility: mainly AMC

- **Focal point** for Level 2 coordination
- **Collect and analyse** all airspace **requests** (starting weeks/months in adv) which may require temporary airspace segregation
- **Analyse** the airspace structures availability requests vs with the traffic demand
- **Decide** on the allocation of reserved/restricted areas after coordination
- Make **CDR2** available for flight planning
- Promulgate the national **airspace use plan** on D-1 to all concerned users
- **Collect and analyse** more **up-to-date** information on the day of operation
- Promulgate, if necessary, **updated airspace use plan**
- Participate in a post operation **analysis** of airspace allocation

Airspace Structures

- Conditional Routes (CDR)
- Temporary Airspace Reservation (TRA/TSA)
- Danger/Restricted Areas (AMC Manageable areas)

CDR


ATS Route
ATS Route
Conditional Route Cat 1
TSA/
TRA
Conditional Route Cat 1
Permanently
plannable
ATS Route
ATS Route
ATS Route
TSA/
TRA
Conditional Route Cat 2
Non-permanently
plannable
ATS Route
ATS Route
ATS Route
TRA
Non-usable
ATS Route

Level 3 : Tactically

- Real time **activation**, **deactivation** or real time **reallocation** of the airspace allocated at Level 2
- **Resolution** of specific airspace **problems**
- AMC **or** directly between ATS units
- Coordination **procedures** and communication **facilities**
- **Notification** of the current status of the airspace.

Implementation

- In line with the airspace complexity/Ops environment
- Supporting tools : LARA…

Kick-Off

- Commitment, guidance, priorities: High-level
- National HLAPB + Cttes
- Action plan
- State strategic airspace policy
- ASM/FUA policy + structures + manuals
- Legal considerations

Coordination requirements

- Need for direct communication means, i.e. direct lines, phones…
- Need for information exchange: FPLs, ATM messages
- Radar data exchange will facilitate coordination
- Need for procedures and guidance from Level 1, including priorities
- Leverage Level 2 airspace plans
- Adjustments in real-time

Performance measurement

Performance measurement

- Increase **trust**
- **Measure** efficiency of cooperation and application of dynamic ASM
- Provides a **process** to choose metrics
- Provides some **indicators**

Conclusions

- Why: Safety, Capacity & Efficiency - National security and defense
- In line with the operational context & complexity
- Basic requirements: Top Level commitment, Trust, Communication & reciprocal understanding
- It is a long (and continuous) process, but worth it
- A –mandatory – win-win?


MONTRÉAL
(HEADQUARTERS)
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(EUROPEAN AND
NORTH ATLANTIC)
BEIJING
(ASIA-PACIFIC
SUB-OFFICE)
CAIRO
(MIDDLE EAST)
MEXICO CITY
(NORTH AMERICA AND CARIBBEAN)
DAKAR
(WESTERN AFRICA)
BANGKOK
(ASIA-PACIFIC)
NAIROBI
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ICAO
THANK YOU!