Civil-Military Cooperation – Guidance

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Background

• Cir 330 : Civil/Military Cooperation in Air Traffic Management – 2011

• ATMOPS Panel task to upgrade Cir 330 to a Manual and enhance the guidance material
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
Collaboration – Cooperation – Coordination

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<th>Collaboration</th>
<th>Cooperation</th>
<th>Coordination</th>
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<tr>
<td>Building a system <strong>together</strong> Interoperability from scratch Longer term considerations → <strong>Systemic</strong> CAP &amp; EFF</td>
<td>Planning oriented Strategic + pre-tactical Political <strong>guidance</strong> Working with one another → <strong>Capacity &amp; Efficiency + Safety</strong></td>
<td>Talk to each other • <strong>Safety</strong> • Efficiency (when resulting from cooperation)</td>
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5 to 15 years ahead | Before operation Few year → D-1 | **Tactical** – Daily operation |
Objectives of cooperation

- higher levels of safety
- ↑ airspace capacity
- ↑ national security
- ↑ military mission effectiveness
- ↑ interoperability
- cost efficient operations

State economy & National security and defence
Basic principles

• Communication
• Trust
• Reciprocal understanding

At all levels
Baseline

• High-level **commitment, policy and guidance**
  – National **body**
  – Liaison/cooperation **structures/mechanisms**:
    • pre-tactical planning
    • tactical use of airspace
Enablers

• Regular ATM & CNS joint meetings
• Interoperability
• Legal agreements and/or letters of agreements/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
Interoperability
Interoperability

• Supports both sides operations
• Enhance airspace access
• Increasingly necessary in the future
  – SWIM, Nav, Surv, Comms
Interoperability

• Ground-ground (AFTN, AMHS, IP …)
• Air-ground (VHF, CPDLC…)
• Information management
• Not only technical – also operational (procedures, training…)
Interoperability

• Military compliancy and certification:
  – National prerogative
• Standards making organization standards helps interoperability
• Guidance for interoperability
Interoperability constrains for Mil

- Multiple CNS/ATM equipage **lacks military justification**
- **Huge** military **fleets** with different types;
- Technical **integration** constraints;
- Timelines of **procurement** cycles and budgetary constraints;
- **Lacks** equivalent verification of **compliance/certification processes**
Performance measurement
Performance measurement

• Increase trust

• **Measure** efficiency of cooperation and application of dynamic ASM

• Provides a **process** to choose metrics

• Provides some **indicators**
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
INFORMATION EXCHANGE / CDM

Airspace structures to support ASM:

- SUA: TR A/TSA/ CBA/TF R/P/D/ R/...
- CDR...

ASM

CONV

FUA

LEVEL 1

ASM
LEVEL 2

ASM
LEVEL 3

FUA LEVEL 2

FUA LEVEL 3
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…
## 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
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…
Advanced FUA

- Integration ASM, ATFCM & ATS (enhanced CDM)
- **Area modularity in airspace design**
- Direct routing and Free Route Airspace
- **Enriched & continuous data sharing between civil and military**
- **Collaborative Decision Making** involving all actors (airspace configurations)
- Automated performance feedback
AFUA Goal

- Predictability for Civil
- Flexibility for Military
Doc 10088

• New Manual on Civil-military cooperation
• Editorial/approval is underway
• Unedited version publication target: mid-2018
Conclusions

• Why: Safety, Capacity & Efficiency - National security and defense
• How: applying guidance in line with the operational context
• Basic requirements: Top Level commitment, Trust, Communication & reciprocal understanding
• It is a long (and continuous) process, but worth it
THANK YOU!