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Presentation Outline

- Civil Military Airspace organization and Management (CAOM)
- Flexible Use Airspace (FUA)
- Civil-Military Interoperability
- Civil and Armed Conflict, Natural Disasters, Special Activities
- Civil-Military Cooperation Performance Measurement Framework
- ATM Security
- Air Defence Identification Zones (ADIZS)



Civil Military Airspace Organization and Management (CAOM)

Prerequisites to implement FUA:

- FUA is an application of efficient airspace management based on civil-military coordination processes which are appropriate to the national needs.
- Establishing civil-military coordination entities for airspace organization and management is essential to implement FUA
- The CMAB should establish a CAOM to make strategic decisions on a State's airspace policy.
- The CAOM should organize and manage airspace and complete the necessary strategic planning work, taking into account national and international airspace users and ATS providers' requirements.
- CAOM is normally composed of civil and military members as appropriate to meet the State's needs, and should be empowered to interact with both national decision making and operational levels.



Civil Military Airspace Organization and Management (CAOM)

- Role of CAOM is to reconcile civil and military operational needs without according preferential treatment to either;
- ensures that airspace planning considers all users' interests and the State airspace policy
- main function of the CAOM is to continuously reassess national airspace, progressively establish new flexible airspace structures and introduce procedures for the allocation of these airspace structures on a daily basis
- CAOM should be fully supported at the State's political level to empower and enable it to fulfil its responsibilities:



Civil Military Airspace Organization and Management (CAOM)

CAOM Responsibilities:

- a) ensure that a commonly agreed airspace policy is formulated (e.g. a national airspace charter);
- b) establish an AMC and associated procedures
- c) build trust, respect and confidence between regulators, airspace users and stakeholders using a consultative approach with the goal of consensus, especially in the development of flexible airspace structures and procedures;
- d) consider both the civil and military aspects when planning for airspace classifications;
- e) establish processes to achieve joint airspace planning activities as the norm, for the needs of both civil and military airspace users to be taken into account at the earliest planning phase;



Civil Military Airspace Organization and Management (CAOM)

Responsibilities of CAOM:

- f) to the extent possible, implement best practices and ensure that the airspace change processes and procedures are compatible with appropriate civil and military aviation safety procedures, including the review of airspace safety risk assessments where appropriate;
- g) ensure that a safety risk assessment is conducted when planning for the establishment of new airspace structures or when changing or modifying airspace structures;
- h) develop collaborative airspace planning and harmonization of airspace management procedures with neighbouring States, and work with these States to establish a cross-border area (CBA) as described in Chapter 4;



Civil Military Airspace Organization and Management (CAOM)

Responsibilities of CAOM:

- j) ensure ongoing re-assessment of national airspace with regard to effective application of the FUA concept, monitor the relevant national legislation and propose amendments as necessary (in coordination with the Legal Committee, if one has been established by the CMAB);
- k) establish framework agreements between civil and military authorities to facilitate the application of the FUA concept as described in Chapter 4;
- l) ensure that coordination processes between all phases of FUA are established and that civil and military terms and definitions applicable to the principles governing the FUA Concept are harmonized;
- m) validate activities requiring airspace segregation and assess the level of risk for other airspace users;



Civil Military Airspace Organization and Management (CAOM)

Responsibilities of CAOM:

- n) ensure that agreed priority rules and negotiation procedures for airspace allocation at pre-tactical and tactical phases are clearly defined and implemented;
- o) ensure the progressive design and establishment of new flexible airspace structures, including non-permanent structures as well as free route airspace, when so decided and where appropriate, according to the specific requirements;
- p) ensure that the total volume of airspace restrictions or reservations are kept to the minimum necessary while ensuring safety and satisfying national operational requirements;



Civil Military Airspace Organization and Management (CAOM)

Responsibilities of CAOM:

- q) coordinate and plan major or specific events, such as large-scale military exercises, well in advance especially when additional segregated airspace is required;
- r) establish a communications plan for civil and military stakeholders' coordination during the planning and execution of military operations;
- s) initiate AIS publications, as required, to notify changes to airspace structures, classification, access or status; and
- t) coordinate, as necessary, with other CMAB Committees



Civil Military Airspace Organization and Management (CAOM)

- a) **Safety.** An acceptable level of safety should be maintained for any airspace change and safety risk assessments should be carried out in accordance with the applicable ICAO provisions and State regulations.
 - A safety risk assessment should be systematically conducted by each State before FUA implementation.
- b) **Consultation.** Consultation with airspace users, service providers and other bodies should be conducted to obtain consensus, wherever possible, before making changes in the planning or design of airspace arrangements.
- c) **Cooperation.** Close cooperation should be maintained with national and international partners to ensure that national airspace planning and policies are consistent with national and international commitments and programmes.



Civil Military Airspace Organization and Management (CAOM)

- d) Environment. The environmental impact of airspace design and planning should be taken into account, wherever possible, at the earliest possible stage when revising airspace procedures and arrangements.
- cooperation and coordination procedures related to FUA should be documented in comprehensive LoAs between relevant civil and military authorities or units as appropriate.
 - An appropriate manual detailing all cooperation and coordination procedures should be drafted and agreed upon by all stakeholders before being presented to the CAOM for endorsement.



Setting up the Airspace Management Cell (AMC)

- a) a clearly defined concept of operation and gap analysis are necessary to define the structure of the AMC;
- b) the roles, responsibilities and objectives should be clearly defined;
- c) the complexity with regards to the role AMC will be a function of the objectives, and the complexity of the airspace to be managed, therefore the AMC may take various forms in different implementations; and
- d) the stakeholders involved in performing the pre-tactical airspace management in the future AMC should work together to define its structure, participants and processes.

Setting up the Airspace Management Cell (AMC)

Factors to be considered to define ACM structure, participants and processes:

- a) define the stakeholders involved in the AMC and how their requests will be submitted to the AMC by stakeholders such as ANSPs, ATFM actors, military users (squadrons, planners, firing ranges, etc.), airspace planners,
- b) decide the type of implementation:
 - 1) physical joint cell manned by ANSP and military unit personnel;
 - 2) a virtual AMC jointly working on the same system;
 - 3) a correspondence-based AMC for very simple airspace; and
 - 4) a military liaison officer in the civil area control centre (ACC), etc.;
- c) identify the necessary tools to perform pre-tactical functions, ranging from email to spreadsheet, to more advanced airspace management tools;



Setting up the Airspace Management Cell (AMC)

Factors to be considered to define ACM structure, participants and processes:

- d) list the processes to be documented;
- e) review training requirements and scope;
- f) review existing regulations and/or agreements, and determine if amendments are required prior to the commencement of operations;
- g) determine the necessary safety risk assessments to be conducted;
- h) clarify negotiation procedures, priority rules, and assign executive decision makers (some may be done within the AMC, others may require civil or military authorities outside of the AMC);
- i) ensure that the AMC pre-tactical processes interlink with the ATFM function, when implemented;



Setting up the Airspace Management Cell (AMC)

Factors to be considered to define ACM structure, participants and processes:

- j) assess the airspace structures to be implemented, if necessary, to facilitate the FUA application;
- k) clarify and identify the flow of airspace information regarding airspace needs, negotiation, allocation, dissemination and publication of an airspace use plan (AUP) and its subsequent updates;
- l) determine the AUP and updated airspace use plan (UUP) requirements and publication timings;
- m) conduct post-operation analysis.



Principle of FUA

- Basic principle of FUA is that **airspace should not be designated as purely civil or military**, but rather as a continuum in which all user requirements are accommodated to the greatest possible extent.
- any necessary airspace restriction or reservation should be of a temporary nature.
- FUA concept considers effective communication, cooperation and coordination necessary to ensure a safe, flexible, efficient and predictable use of airspace.



Principle of FUA

- a) cooperation and coordination between civil and military authorities should be carried out at the strategic, pre-tactical and tactical phases to increase safety and airspace capacity and to improve the efficiency of aircraft operations;
- b) ASM, ATFM and ATS should be established and interact in a consistent manner, including the establishment of necessary means to exchange information; and
- c) the FUA concept should, when possible, be applied across national borders and/or the boundaries of flight information regions (FIRs), which requires international coordination.



PRINCIPLES FOR ENHANCED FUA

- States should consider implementing enhanced FUA if civil and military operations are unduly constrained to provide at least seven days' advance notice for activations of airspace restrictions (as specified in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066))
- The PANS-AIM provision referred above is complemented by a note indicating that, whenever possible, at least 24 hours' advance notice is desirable to permit timely completion of the notification process and to facilitate airspace utilization planning.
- With the enhanced implementation of FUA, the notification process takes the form of an airspace use plan (AUP) provided on the day before operation to inform airspace users about the airspace availability on the day of operation
- It is essential that States properly explain their notification process in their national AIP so that airspace users and stakeholders understand how to be fully and timely informed of the airspace status.



COLLABORATIVE DECISION MAKING (CDM)

- CDM is a process focused on how to decide on a course of action articulated between two or more community members.
- Through this process, ATM community members share information and apply the decision-making approach and principles.
- overall objective is to improve the performance of the ATM system as a whole while balancing the needs of individual ATM community members.
- CDM should be applied to all layers of decision making from strategic planning through to real-time operations and post operational analysis.
- State should ensure that a framework is established for the effective coordination between ATS, ASM and ATFM at the three FUA phases (strategic, pre-tactical and tactical) in a collaborative manner,



FUA AIRSPACE STRUCTURES

- **Special use airspaces (SUAs)** are airspace volumes designated for specific operations such as, military training, exercises and operations of a nature such that they require limitations on airspace access to be imposed on other aircraft not participating in those activities.
- may include, but are not limited to, airspace reservations and/or airspace restrictions in the form of restricted or danger areas to ensure safety and proper notification of airspace users.
- ultimate goal is to establish airspace blocks of optimized dimensions that are operated in a cooperative manner



FUA AIRSPACE STRUCTURES

- Regular and qualitative civil-military cooperation can lead to the execution of certain military operations, such as training and formation flights, within a civil controlled airspace without the use of SUAs, especially when civil ATC understands military operating parameters
- Uncontrolled airspace. Uncontrolled airspace is an unknown traffic environment where aircraft operating in accordance with visual flight rules (VFR) may operate without establishing continuous two-way communications with the appropriate ATS unit.
- the implementation of FUA structures is not advised in uncontrolled airspace, unless special requirements and procedures are put in place,
- Restricted and danger areas may be declared suitable for FUA pre-tactical management and identified as such (“manageable”) in the AIP
- A SUA could be defined as “manageable” if its activation decision, in terms of airspace volume and time, is the outcome of a negotiation process at the AMC level.



Conditional Routes (CDR)

- A CDR is a non-permanent ATS route or portion thereof which can be planned and used under specified conditions.
- The properties of CDRs, including their categories, alignment, route designator and availability for flight planning are published in the national AIP.
- It remains a State responsibility to decide whether an AIS notification (such as NOTAM) is required as an additional publication.
- CDRs can be established at the FUA strategic phase:
 - a) through areas of potential temporary reservations (e.g. TRAs, manageable danger, restricted areas) resulting from military activities
 - b) to address specific ATC conditions (e.g. traffic restrictions or ATC sectorization) resulting from purely civil needs.

Conditional Routes (CDR)

CDRs can be divided into the following categories:

- Category 1 CDRs (CDR1): Permanently plannable,
- Category 2 CDRs (CDR2): Non-permanently plannable.
- Category 1 CDRs and Category 2 CDRs availability or non-availability is usually **notified on day before the operation** to relevant stakeholders of the airspace allocation on the day of operation **through the airspace use plan**.
- It remains a State responsibility to decide whether an AIS notification (e.g. NOTAM) is required as additional publication to the airspace use plan



Conditional Routes (CDR)

Category 1 CDRs

- States are responsible for ensuring consistency between relevant publications (e.g. NOTAM and airspace use plan/updated airspace use plan)
- available for flight planning during times published in the AIP
- can either be established on a 24-hour basis
- or for fixed time periods or at fixed flight level bands.
- tactical utilization may be granted based on defined tactical coordination procedures between responsible **ATS and/or controlling military units.**



Conditional Routes (CDR)

Category 2 CDRs: may only be planned in accordance with conditions published daily in the airspace use plan and updated airspace use plan.

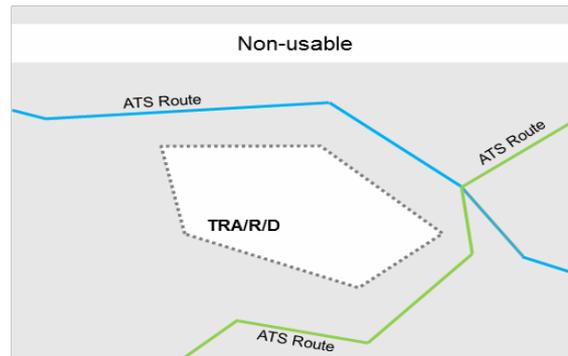
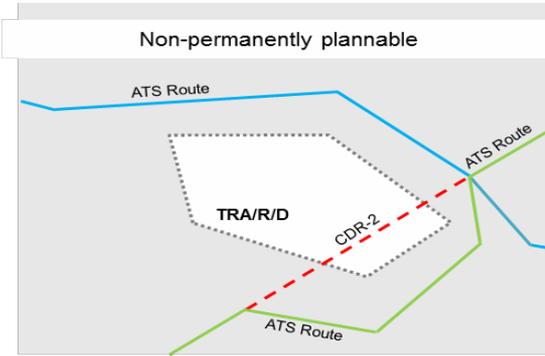
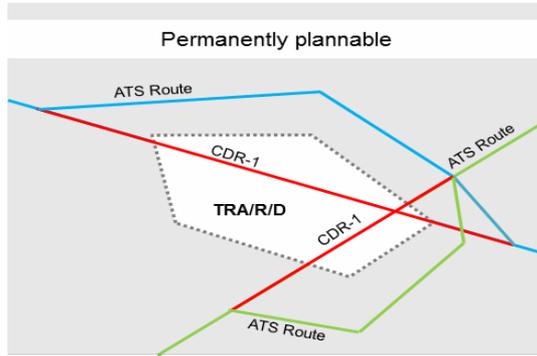
- form part of predefined routing scenarios depending on the allocation of associated SUA or for addressing specific ATM conditions.
- availability can be requested to adjust traffic flow, when a capacity shortfall has been identified and relevant factors have been considered by the ATS units
- may be managed tactically, whenever conditions allow short-notice usage, subject to preventive coordination between responsible ATS and/or controlling military units.
- Non-plannable tactically available routings should be made available at short notice when the **pre-notified activity in a SUA has ceased**. After coordinating with the ATS or controlling military unit(s) in charge of the SUA, the responsible controller may offer aircraft a short-notice routing through the area by providing ATC instructions.



Temporary Airspace Allocation and Reservation (TRA)

- TRA process consists of the allocation of airspace of defined dimensions for a temporary reservation.
- When the publication of a NOTAM is deemed necessary by a State, the NOTAM Code Group should include **RA** as its second and third letters to indicate an airspace reservation, followed by the appropriate fourth and fifth letters such as CA for activated.
- Important information regarding the TRA, such as the TRA unique identifier, the coordinates - if not published in the AIP - as well as other conditions in application during the activation, should be provided in plain language in Item E) of the NOTAM (see details in PANS-AIM).
- manageable airspace (e.g. TRA, danger or restricted) should be published in the en route (ENR) section of the AIP with the time of possible activation which can be either a defined period or 24 hours a day.

Example of Options for FUA structures





FUA STRATEGIC PHASE

- Governments should endorse the principle of civil-military cooperation and coordination at the State level by harmonizing policies regarding civil-military ATM cooperation and coordination.
- Cooperation should include coordinating airspace design and development, airspace access, standardizing procedures, regulation and supporting long and medium-term ATS planning.
- The policies should also define the CDM responsibilities for civil and military aviation authorities, in managing civilian use of military airspace, implementing procedures to apply airspace reservations or restrictions based on actual use, and release of airspace restrictions once activation is complete.
- The strategic phase consists of a joint civil and military process that will design and implement the national airspace policy.
- To achieve this, States should establish a joint national CAOM that is responsible for the design, implementation and oversight of a collaborative FUA.



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FUA STRATEGIC PHASE

The following tasks need to be performed to ensure the overall application of the FUA concept:

- a) design and establish airspace structures;
- b) develop coordination procedures and airspace management procedures;
- c) develop separation minima and operational rules in order to define responsibilities between civil and military control units when accommodating interactions between civil and military flights;
- d) develop cross-border coordination if necessary, and
- e) perform regular reviews of the national airspace structures, performance data and post-operations analysis reports as appropriate.



FUA STRATEGIC PHASE

States ensure that national airspace policy and the coordination procedures for the joint civil-military airspace allocation and review process are defined taking into account:

- a) the needs of all stakeholders and safety of all airspace users;
- b) national security and defence needs;
- c) civil aviation commercial and economical needs
- d) environmental issues;
- e) seasonal weather; and
- f) ATM network effects.



FUA PRE-TACTICAL PHASE

- Pre-tactical FUA is a series of activities allowing for a better exchange of information and better coordination of airspace needs between the strategic and the tactical FUA phases. Such coordination may take the form of exchange of information supported or followed by formal publications like NOTAM.
- It may also be more advanced and include some CDM processes before a decision is made on airspace utilization.
- pre-tactical coordination is highly recommended to improve airspace efficiency, develop confidence building between the various categories of airspace users
- find the right balance between predictability and flexibility and consider the needs of all users
- have procedures in place to trigger the cancellation of such NOTAMs



ENHANCED FUA PRE-TACTICAL PHASE

- States should ensure that appropriate civil-military ASM structures and processes are established and managed by a joint civil-military AMC.
- The outcome of this phase is the publication of the airspace use plan (AUP), which builds on the priorities established in the strategic phase and subsequent required aeronautical publications, such as NOTAMs, when applicable.
- The AMC is responsible for the effective drafting and sharing of pre-tactical ASM data to develop a daily AUP.
- The AUPs should be promulgated and published on the day before the operation, ideally at the same time each day.



ENHANCED FUA PRE-TACTICAL PHASE

- AUPs and UUPs should include, as a minimum, the following:
- a) a header: unique identification for the sending unit, date and time of the promulgation, message type (AUP or UUP), validity period (e.g day of operations 06:00 UTC until the next day 06:00 UTC);
- b) SUAs activation identification;
- c) SUAs vertical dimension, start time and end time of the activation (UTC time);
- d) CDRs availability, vertical dimension, start time and end time of the activation (UTC); and
- e) the unit responsible for each activated SUA.



ENHANCED FUA PRE-TACTICAL PHASE

Optional information to be published in AUPs (or UUPs):

- a) information related to national events, such as major military exercise, major sport events, head of State visits, etc.;
 - b) civil and/or military sector configurations;
 - c) capacity and flow forecast;
 - d) special or unusual air activity outside established SUA structures; and
 - e) remarks field with any other relevant information.
- Civil and military authorities should introduce the appropriate support systems, automated and interconnected where possible, for a timely communication of AUP and UUP to all relevant stakeholders.
 - States (or the established CAOM) should form an AMC with the authority to conduct the daily airspace management with the conditions and procedures agreed upon during the strategic phase

Note.— An AMC can also be a joint cell of two or more States



Airspace Management Cell (AMC)

The AMC is responsible for day-to-day pre-tactical airspace allocation and negotiation rules and protocols established by the national CAOM

- The responsibilities of the AMC are to:
 - a) act as the national and, where appropriate, international day-to-day focal point for pre-tactical coordination;
 - b) collect and analyse all airspace requests which may require temporary airspace segregation, including airspace allocation decisions taken during the strategic phase with respect to major military exercises, air shows etc.;
 - c) analyse airspace structures availability and the traffic demand, anticipated ATC capacity problems and expected traffic delay due to ATC sectors congestion;
 - d) decide on allocating reserved/restricted areas and CBA, after completing the coordination, analysis, negotiation and resolution process, considering the ATFM plan for the day of operations;



Airspace Management Cell (AMC)

The responsibilities of the AMC are to:

- e) make Category 2 CDRs available for flight planning in accordance with established procedures and decide on the unavailability of Category 1 CDRs in accordance with criteria established during the strategic phase;
- f) promulgate the national AUP on the day before the operation to all concerned users. The AUPs should be published in an agreed format, as soon as possible and by an agreed published time (e.g. at 1800 hours local time), to cover the twenty-four hour period of the next day (e.g. between 0600 hours the next day to 0600 hours the day after);
- g) collect and analyse updated information on the day of operation from approved agencies concerning the cancellation of reserved/restricted areas already published in the current daily airspace use plan;
- h) promulgate, when necessary, UUPs containing additional reservations, or amendments or cancellations of reserved/restricted areas during the period of validity of the current airspace use plan; and i) participate in a post-operation analysis of airspace allocation.



Airspace Management Cell (AMC)

- Units that represent users (e.g. squadrons, wings, ATS units/flow management positions) wishing to utilize airspace managed by the AMC, are identified as **approved agencies and are authorized by the national authority** concerned.
- Approved agencies can participate in the negotiation and coordination process of the AMC to use allocated SUA and other allocated airspace as appropriate.
- Approved agencies are expected to:
- a) prepare airspace use programmes regarding activities requested in a timely manner;
- b) submit requests for airspace utilization to the AMC at least one day before the proposed activity;
- c) ensure that, on the day of the activity, the airspace is used as allocated by the AMC; and



Airspace Management Cell (AMC)

- d) Approved AMC agencies are expected to request, in a timely manner, adjustments to the airspace use plan, or cancel any airspace allocation no longer required; and
- provided information to AMC for promulgation of an UUP and transmitted to the relevant ACCs and users in accordance with national procedures.
- States should ensure that the AMC is equipped with the supporting systems to assess airspace allocation requests, manage such allocation and communicate in due time, its availability to affected users, neighbouring AMCs, ATS units and other relevant partners and organizations.
- Category 1 CDRs unavailability should be listed in the daily national AUP. The State decides whether an additional AIS notification (e.g. NOTAM) is required.



FUA TACTICAL PHASE

- Tactical FUA should be carried out at the civil ATS level and with appropriate military units.
- Dedicated coordination procedures and communication between these units are necessary for the timely and mutual provision of airspace data.
- In addition to routine tactical ATM inputs such as ATC tactical coordination or changes to the tactical airspace configuration, unforeseen events may require deviations from the initial airspace plan (i.e. meteorological conditions, national security incident alerts, SAR operations or natural disasters, etc.).
- To ensure such changes do not adversely impact civil or military operations, a CDM framework is needed.



FUA TACTICAL PHASE

- It should operate along the following principles:
 - a) the appropriate definition, agreement and execution of coordination procedures between civil and military agencies to ensure the safety of civil and military flights;
 - b) the readiness of appropriate procedures and protocols to enable, on an ad-hoc basis, access to sovereign airspace by foreign state aircraft in unusual or unforeseen circumstances such as SAR activities, humanitarian events and/or natural disasters, unforeseen security and defence events etc.; and
 - c) the proper written agreements enabling coordination procedures and direct communication between appropriate civil and military units to safely resolve specific traffic situations.



FUA TACTICAL PHASE

When carrying out real time civil-military coordination States should ensure that:

- a) coordination procedures (including use of system support, between civil ATS and appropriate military units) facilitate the delivery of real-time activation, deactivation or reallocation of airspace agreed upon during the pre-tactical phase;
- b) determination of coordination procedures considers impact on network;
- c) procedures for timely modification of the proposed pre-tactical airspace plan (the daily AUP as planned during the pre-tactical phase) among all affected civil ATS units and appropriate military units are established in written agreements;
- d) all users are notified of any planned activity modifications in a timely and effective manner to facilitate safe, efficient and economic operations; and
- e) provision of data at network level is framed to a national security and defence requirement.



FUA TACTICAL PHASE

- For an efficient FUA process, dynamic FUA, civil ATS units and appropriate military units require reliable means of communications and agreed upon procedures to enable safe and efficient real time coordination of SUAs;
- allow for effective real-time activation, deactivation or reallocation of the airspace allocated during the pre-tactical phase.
- Real time access to flight data, including the intentions of the controller, with or without system support, optimizes the use of airspace and reduces the need for airspace segregation.
- When civil and military controllers provide services in the same or adjacent airspace(s), direct communication between civil ATS units and appropriate military units should be available.
- The capability to exchange relevant flight data between civil ATS units and appropriate military units is paramount.



FUA POST OPERATIONS ANALYSIS

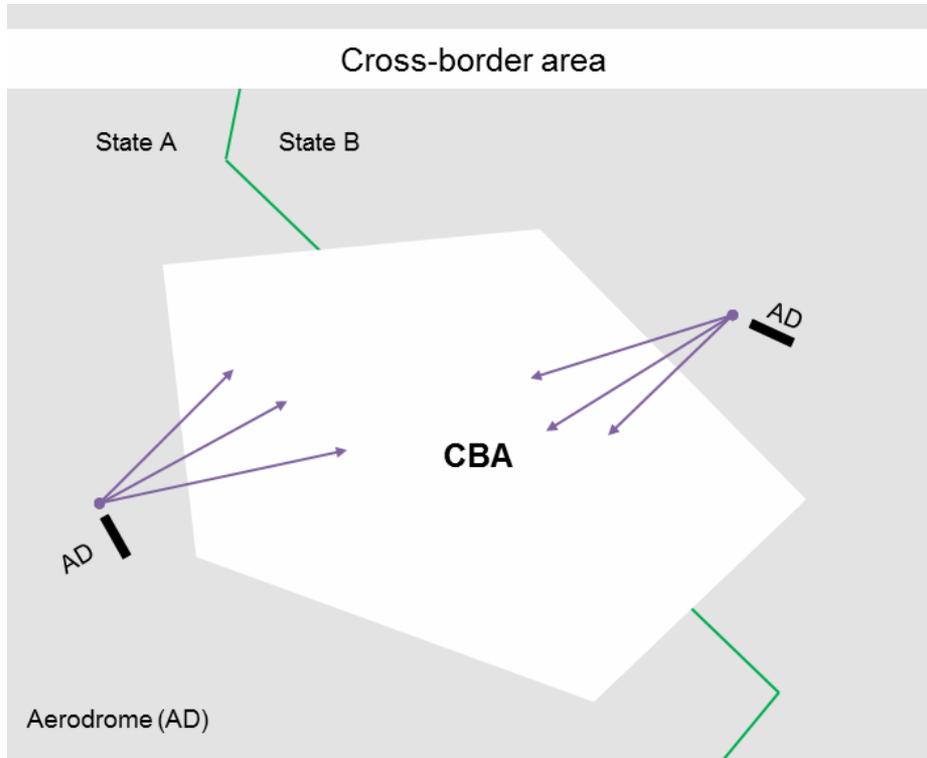
- ASM, and more particularly FUA, cannot achieve its expected benefits without post-operation analysis. After establishing the high-level airspace organization and management principles at the national level, its operations should be monitored and the results evaluated.
- States should establish mechanisms to archive data on FUA activities and in particular the requests, allocation and actual use of airspace structures.
- Information on the impacted civil traffic should be archived as well as input to the analysis of the usage of released SUAs and for the strategic phase to review SUAs definitions in time and space.
- Archived data may be aggregated to calculate performance indicators used to identify accrued benefits and, more importantly, possible areas for improvement.
- The results of such performance evaluations should be used to review the airspace structure and its procedures established



Cross-Border Area (CBA)

- A cross-border area is a portion of airspace subject to reservation, established for specific operational requirements over international borders
- Cross-border areas are established to allow military training and other operational flights on both sides of an international border.
- Their use alleviates the constraints of national boundaries and enables the selection of a suitable location for both civil and military aviation.
- improves the airspace structure and the designed ATS route network in regions located close to national borders.
- Political, legal, technical and operational agreements between the States concerned are required prior to the establishment of CBAs.
- Formal agreements must address issues of sovereignty, defence, legality, operations, the environment and SAR.

Cross-Border Area (CBA)





Cross-Border Area (CBA)

- The flexible management of cross-border area during the pre-tactical phase implies that the **allocation of airspace is managed by one AMC only.**
- This needs to be **established by an agreement between the States concerned**, which may decide to establish either **one AMC (a “lead” AMC)** to assume this role, **or a joint AMC.**
- Another option, although it is less optimal, is to retain two AMCs and define their respective responsibilities and associated processes through an agreement.
- Cross-border activities should be supported by a common set of procedures to manage specific traffic situations and enhance real-time airspace management.
- They should be agreed among the civil ATS unit and the appropriate military units concerned.



CROSS-BORDER AND CROSS-FIR BOUNDARY OPERATIONS

- When deemed necessary, States should establish joint airspace policies to facilitate cross-border operations and cross-FIR boundary operations, addressing legal and institutional aspects such as sovereignty, liability, defence, environment, search and rescue and other issues of common interest.
- States should ensure the following:
 - a) the operational requirements for cross-border operations and cross-FIR boundary operations stemming from the assessment of national airspace structures and the ATS route network, are defined to encompass activities conducted by other States;
 - b) written bilateral or multilateral agreements are concluded to create a framework for cross-border operations and cross-FIR boundary operations.



CROSS-BORDER AND CROSS-FIR BOUNDARY OPERATIONS

- The agreements would address legal and institutional aspects while respecting sovereignty, defence, environment, search and rescue and other issues of common interest.
- These agreements should also encompass operational and technical aspects and activities conducted by other visiting States within an area established across international boundaries or entirely within their sovereign airspace;
- c) a joint concept of operations for cross-border operations and cross-FIR boundary activities is established and considers the impact to the ATM network and military mission effectiveness.



CROSS-BORDER AND CROSS-FIR BOUNDARY OPERATIONS

For effectiveness of cross-border operations and cross-FIR boundary activities, States should:

- a) coordinate their FUA policy with neighbouring and visiting States to harmonize airspace management and use of airspace, while considering the impact on the ATM network;
- b) conduct regular joint assessments and reviews of cross-border operations / cross-FIR boundary operations with neighbouring & relevant States;
- c) create multinational civil-military coordination working arrangements to understand the airspace user needs and requirements of visiting States, harmonizing airspace structure as necessary. Such working arrangements should also be utilized on an ad hoc basis for large-scale exercises and/or major/specific events;



CROSS-BORDER AND CROSS-FIR BOUNDARY OPERATIONS

For effectiveness of cross-border operations and cross-FIR boundary activities, States should:

- d) ensure that airspace structures on either side of national borders or FIR boundaries are coordinated and implemented to optimize the airspace for all users;
- e) jointly define and approve a clear set of separation minima and coordination procedures to be applied between civil and military flights where cross-border/cross-FIR boundary operations have been agreed; and
- f) where States have agreed on establishing cross-border operations across a shared border, they should appoint a lead AMC and ensure that the lead, joint or multi-national AMC has the responsibility for pre- tactical FUA pre-tactical phase on both sides of the international border.



CROSS-BORDER AND CROSS-FIR BOUNDARY OPERATIONS

Where a joint or multinational AMC is established, written agreements are concluded covering all relevant operational, technical, procedural and personnel issues. These can include (but are not limited to):

- a) responsibilities and liabilities; b) information exchange;
- c) ATC procedures; d) coordination and phraseology;
- e) air defence notification and related control procedures;
- f) other operational issues;
- g) personnel issues including qualifications and training;
- h) technical issues; and i) contingency plans.



AIRSPACE OVER THE HIGH SEAS

- States which have accepted the responsibility for the provision of ATS in airspace over the high seas recognize that **aircraft cannot be denied access to this airspace**, although operational restrictions might apply for air traffic control service reasons.
- States therefore should have airspace management procedures in place to facilitate this.
- Annex 11 — Air Traffic Services, provides for **activities potentially hazardous to civil aircraft, whether over the territory of a State or over the high seas, to be coordinated with the appropriate air traffic services authorities.**
- organization or unit conducting or identifying activities potentially hazardous to civil aircraft to contribute to the safety risk assessment in order to facilitate consideration of all relevant safety-significant factors.



AIRSPACE OVER THE HIGH SEAS

- Coordination be effected early enough to permit timely promulgation of information regarding the activities in accordance with PANS-AIM, Doc 10066
- A State, having reasons to establish a danger area over the high seas, should consider the potential impact on the safety, regularity and efficiency of international civil air traffic and well as the more specific recommended practices contained in Annex 11.
- In this context, management of danger areas and the establishment of conditional routes and dynamic trajectory operations over the high seas can yield the same benefits as over sovereign airspace
- States should ensure information on the status of the airspace is widely made available through the appropriate aeronautical publication and, if established, an AMC should act as the focal point for all airspace use requests.



QUESTIONS ?





ICAO

CAPACITY & EFFICIENCY



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU