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Basic Building Block (BBB) ATM/SAR

North America, Central America and the Caribbean

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ICAO NACC ATM/SAR Regional Officer

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Background

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AIR TRAFFIC SERVICES

Objectives of the Air Traffic Services

Annex 11, 2.2

The objectives of the air traffic services shall be to:

a) prevent collisions between aircraft;

b) prevent collisions between aircraft on the maneuvering area and obstructions on that area;

c) expedite and maintain an orderly flow of air traffic;

d) provide advice and information useful for the safe and efficient conduct of flights;

e) notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

Divisions of the Air Traffic Services

Annex 11, 2.3

The air traffic services shall comprise three services identified as follows.

The air traffic control service, to accomplish objectives a), b) and c) of 2.2, this service being divided in three parts as follows:

a) Area control service: the provision of air traffic control service for controlled flights, except for those parts of such flights described in 2.3.1 b) and c), in order to accomplish objectives a) and c) of 2.2;

b) Approach control service: the provision of air traffic control service for those parts of controlled flights associated with arrival or departure, in order to accomplish objectives a) and c) of 2.2;

c) Aerodrome control service: the provision of air traffic control service for aerodrome traffic, except for those parts of flights described in 2.3.1 b), in order to accomplish objectives a), b) and c) of 2.2.

The flight information service, to accomplish objective d) of 2.2.

The alerting service, to accomplish objective e) of 2.2.

Determination of the need for air traffic services

Annex 11, 2.4

The need for the provision of air traffic services shall be determined by consideration of the following:

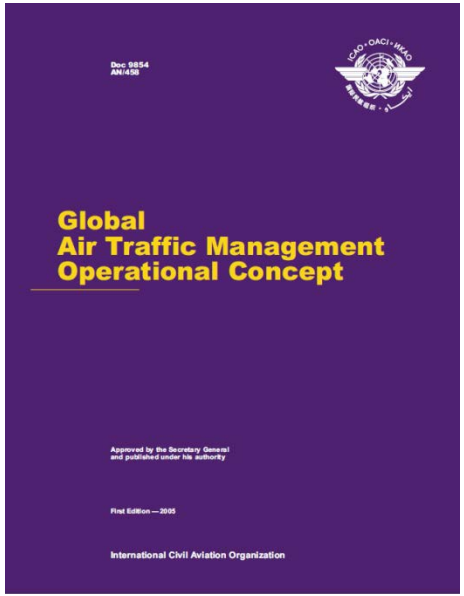
a) the types of air traffic involved;

b) the density of air traffic;

c) the meteorological conditions;

d) such other factors as may be relevant.

The Future System



To achieve an **interoperable** global air traffic management system, **for all users during all phases of flight**, that **meets agreed levels of safety**, provides for **optimum economic operations**, is **environmentally sustainable** and **meets national security requirements**

Concept components

AOM — Airspace organization and management
DCB — Demand/capacity balancing
AO — Aerodrome operations
TS — Traffic synchronization
CM — Conflict management
AUO — Airspace user operations
ATM SDM — ATM service delivery management

Concept components

INFORMATION MANAGEMENT

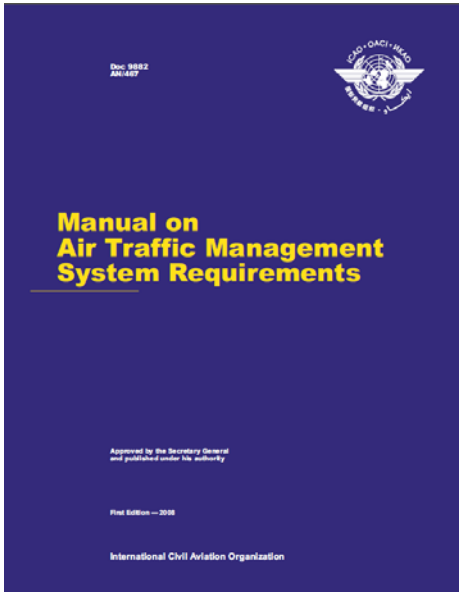
Information: Key for evolution

Global information utilization, management and interchange enabling…

… the future of the air navigation system

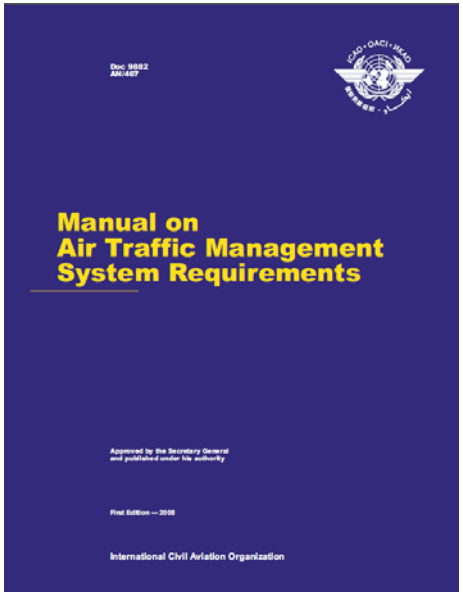
Information Service Requirements

- System-wide information management
- Accredited, quality-assured and timely information
- Nature of information
- Validity period
- Integrated picture
- Aviation data standard and reference system
- Information exchange protocols and procedures
- Collection and integration
- Reduction in transactional friction



Information Service Requirements

- Relevant operational information available
- Optimize flight operations management
- Optimize 4-D trajectory planning and operation
- Status of ATM system resources
- Flight parameters and aircraft performance characteristics
- Access to MET information
- Standards for meteorological model
- Environmental performance targets



Global Aeronautical Distress and Safety System (GADSS)

The GADSS is designed to address three specific issues;

a) the late notification of SAR services when aircraft are in distress (as defined in ICAO Annex 11);

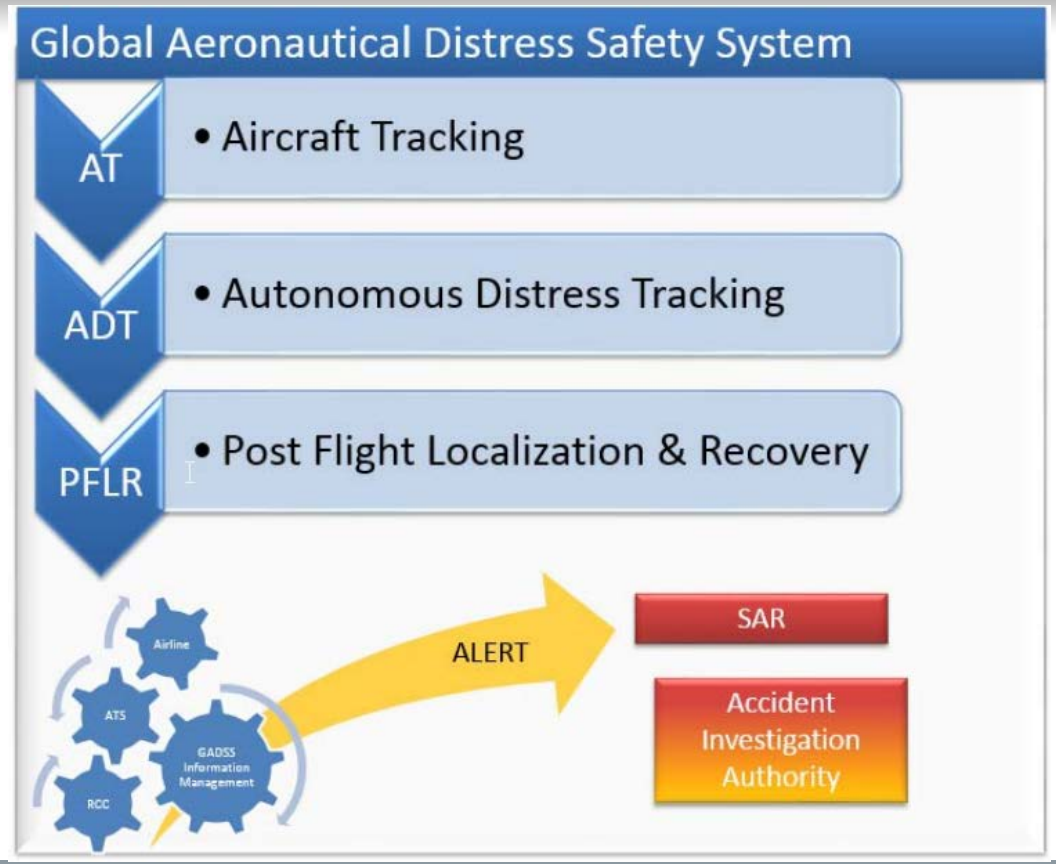
b) missing or inaccurate end of flight aircraft position information i.e. the location of wreckage; and

c) lengthy and costly retrieval of flight data for accident investigation.

Global Aeronautical Distress and Safety System (GADSS)

The consequent objectives of the GADSS are:

- Ensure timely detection of aircraft in distress
  - To timely initiate SAR actions
- Ensure tracking of aircraft in distress and timely and accurate location of end of flight
  - To accurately direct SAR actions
- Enable efficient and effective SAR operations
- Ensure timely retrieval of Flight Recorder Data


Global Aeronautical Distress Safety System
AT
• Aircraft Tracking
ADT
• Autonomous Distress Tracking
PFLR
• Post Flight Localization & Recovery
Airline
ATS
GADSS Information Management
RCC
ALERT
SAR
Accident Investigation Authority

Basic Building Block (BBB) Framework

- The Basic Building Block (BBB) framework outlines the foundation of any robust air navigation system. It is nothing new but the identification of the essential services to be provided for international civil aviation in accordance with ICAO Standards.
- The BBB is considered an independent framework and not a block of the ASBU framework as they represent a baseline rather than an evolutionary step. This baseline is defined by essential services recognized by ICAO Member States as necessary for international civil aviation to develop in a safe and orderly manner. Once these essential services are provided, they constitute the baseline for any operational improvement.
- The BBB framework will be updated every two years taking into account amendments to ICAO provisions. Linked to the Regional Air Navigation Plans (ANPs).

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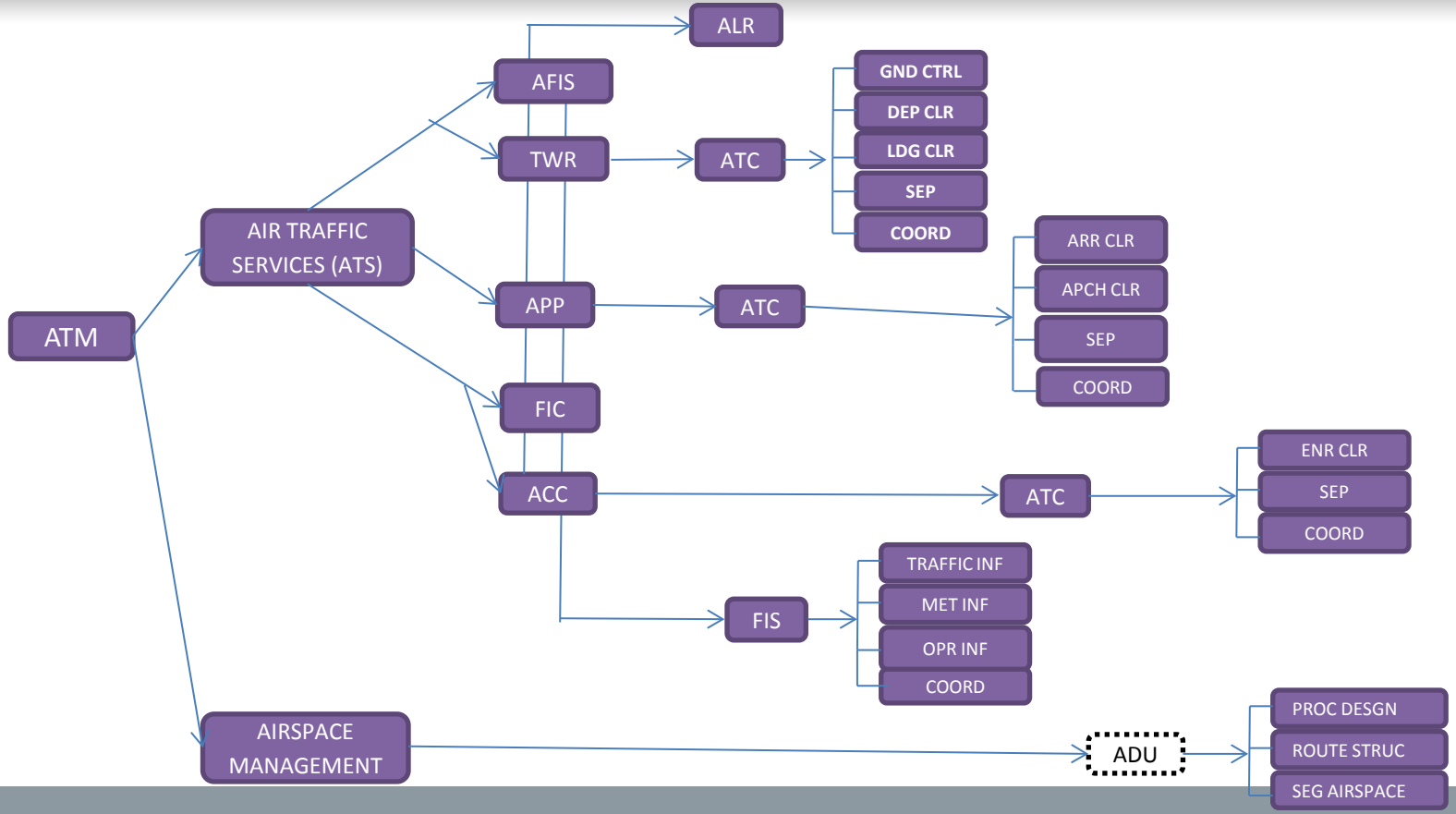
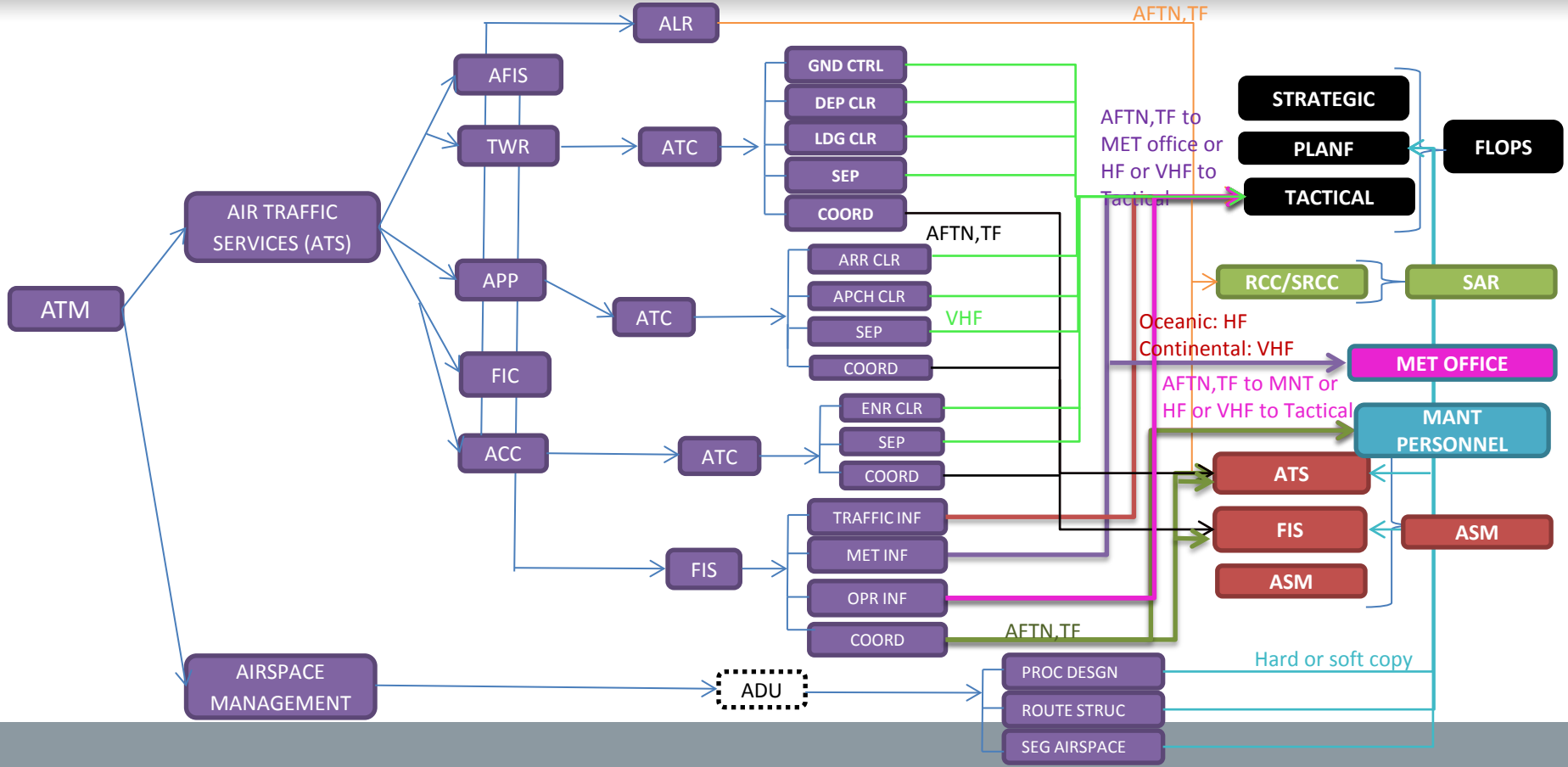
AIR TRAFFIC MANAGEMENT SERVICES

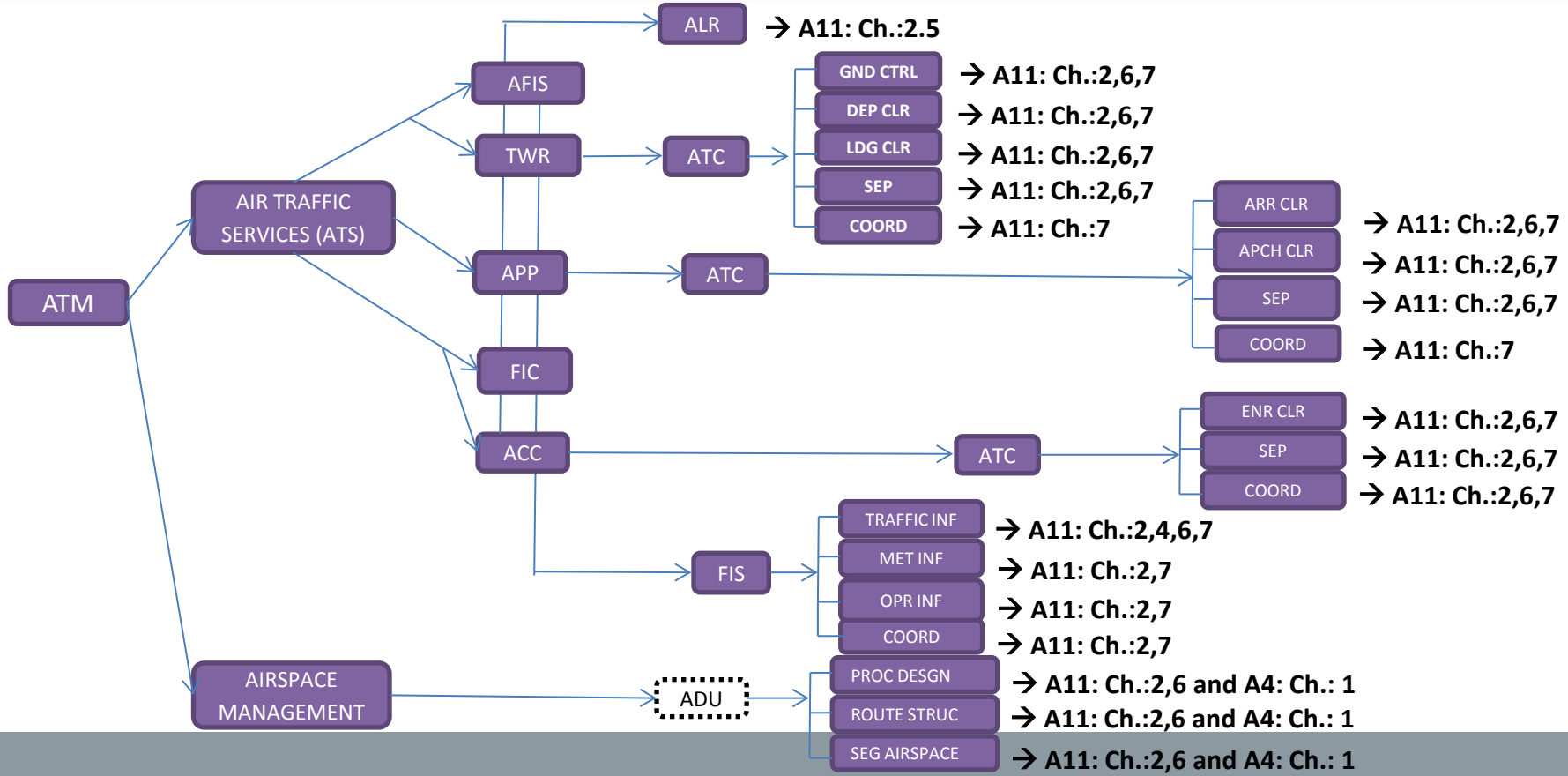
ATM BASIC MODULES AND ELEMENTS



ATM SUPPORT & END USERS



ATM BASIC ELEMENTS/REFERENCES
ICAO SARPs



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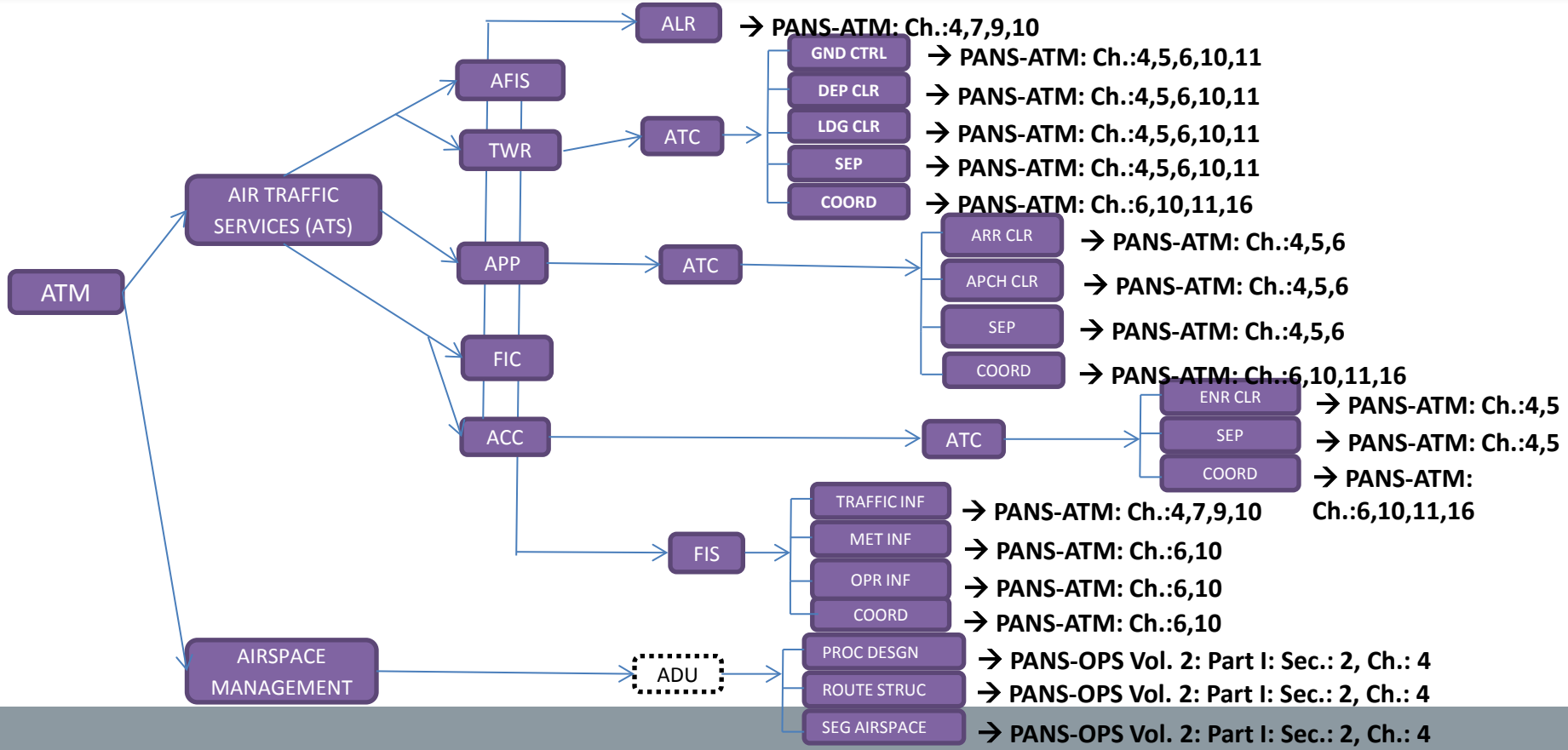

ATM References

- Annex 11: Air Traffic Services
- Annex 4: Aeronautical Charts
- PANS-ATM (Doc 4444): Air Traffic Management
- PANS-OPS (Doc 8168): Aircraft Operations

Main Challenges

- Inadequate determination of the type of services to be provided.
- Declaration of services that are not feasible to be provided.
- Establishment of services beyond user´s requirements and/or capabilities.
- Current services requirements not being met.
- Limited oversight capabilities.

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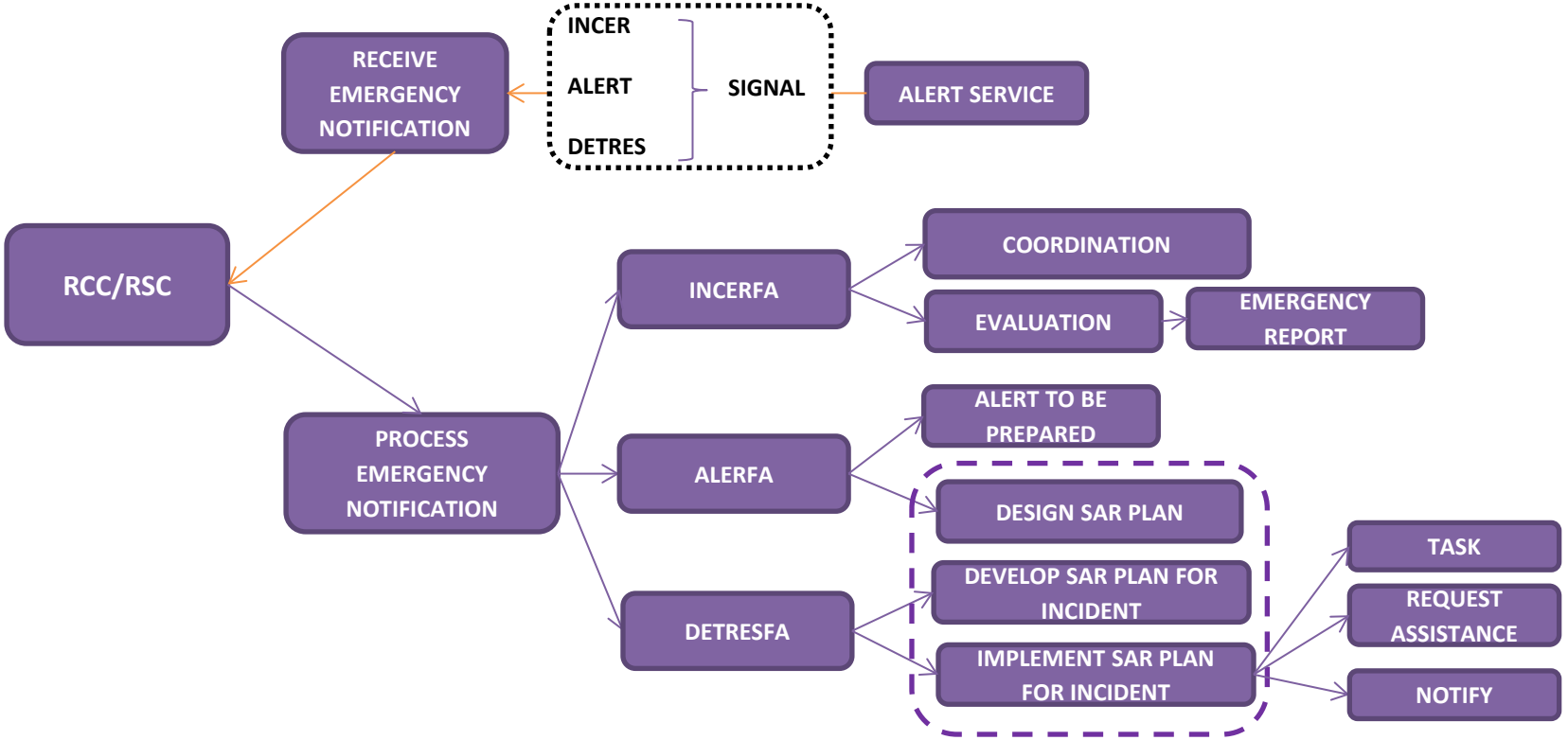
SEARCH AND RESCUE SERVICES

SAR BASIC MODULES AND ELEMENTS



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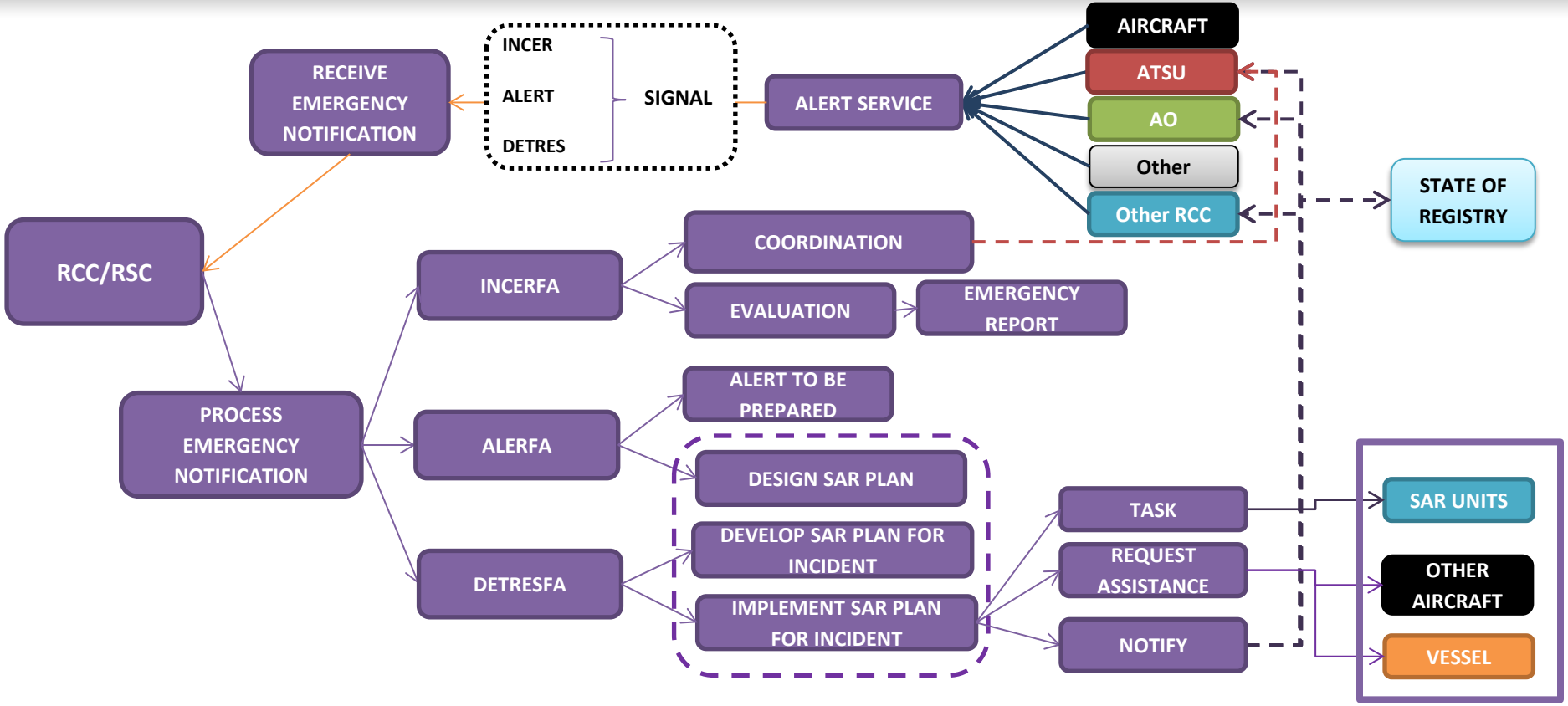
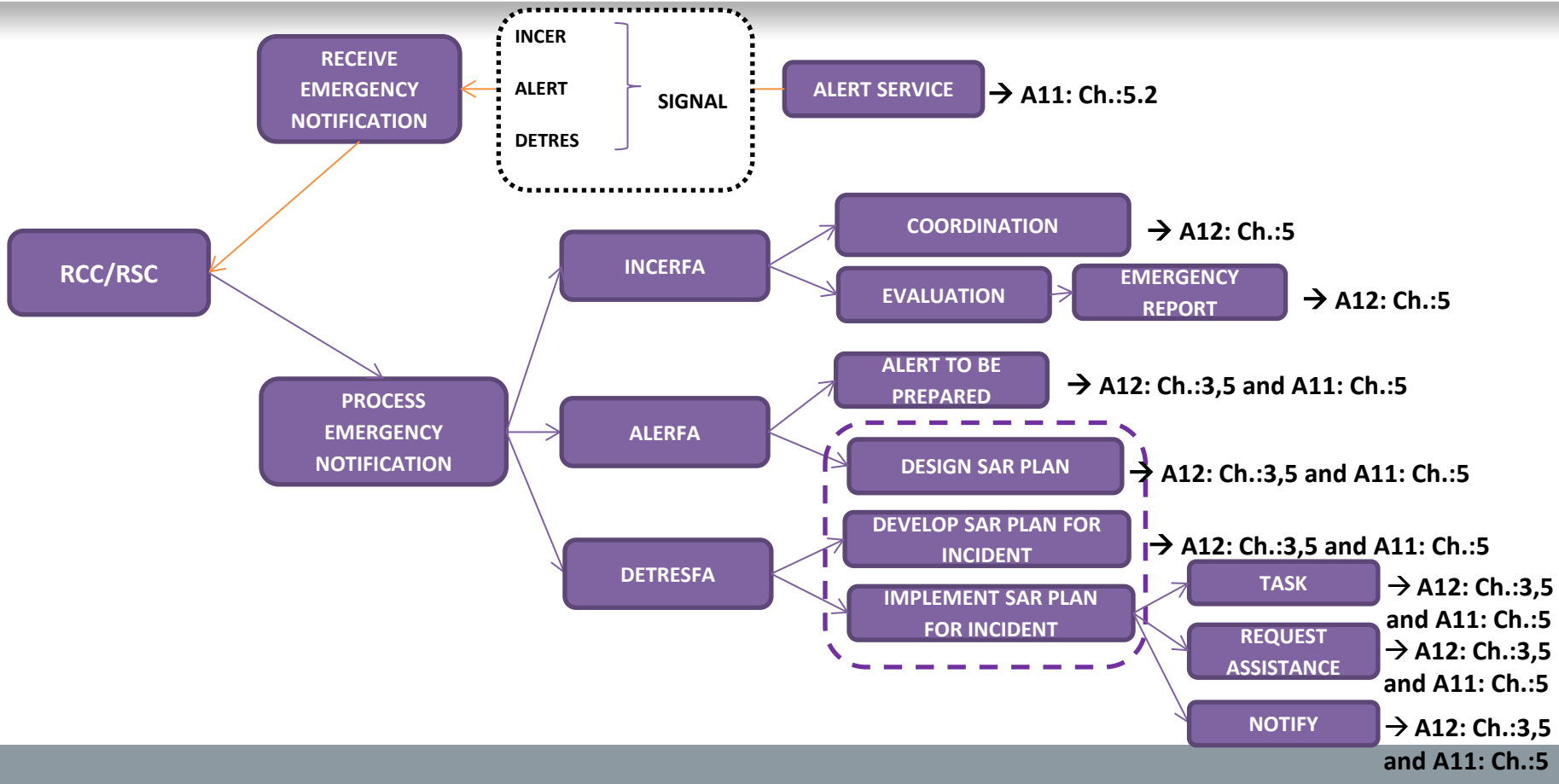
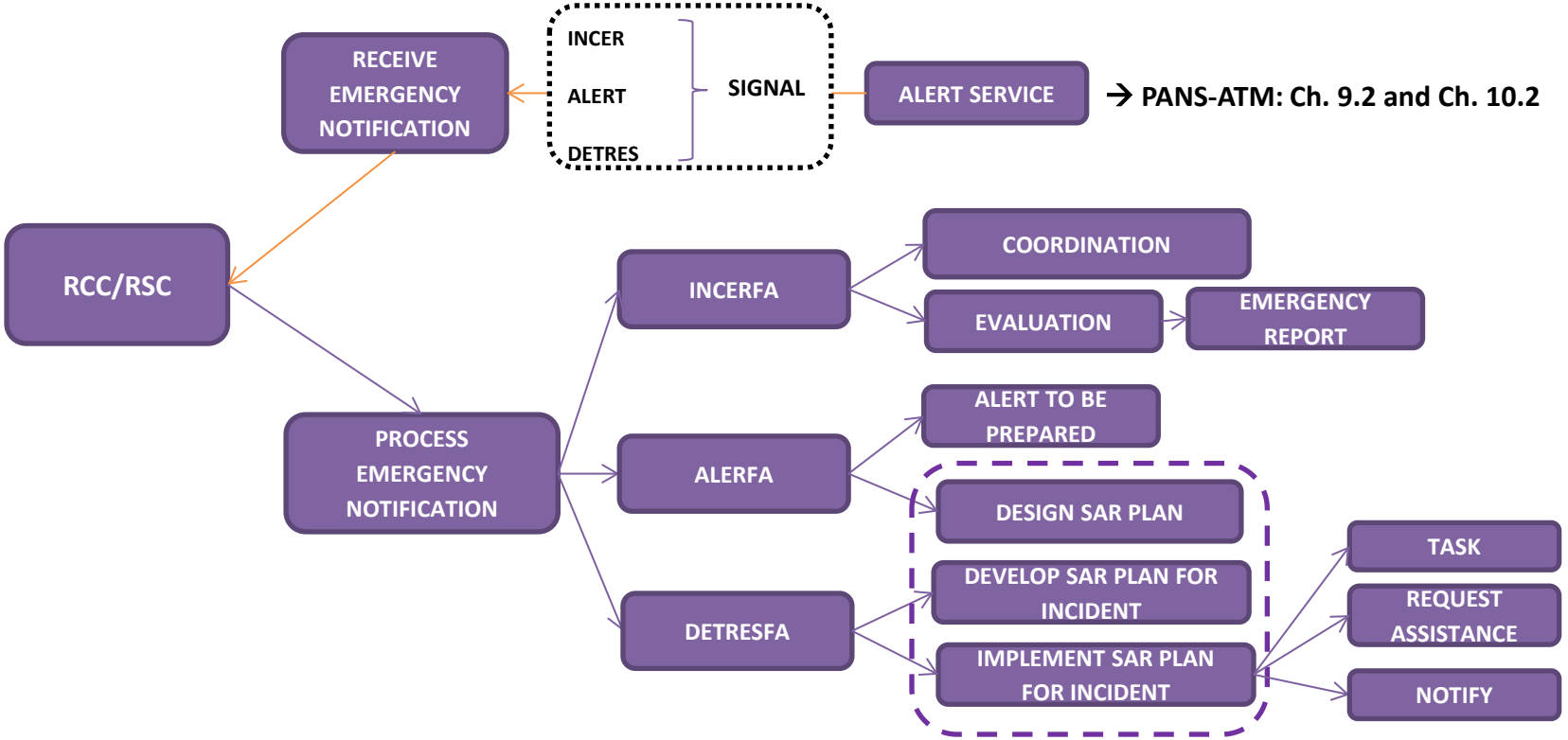
SAR SUPPORT & END USERS



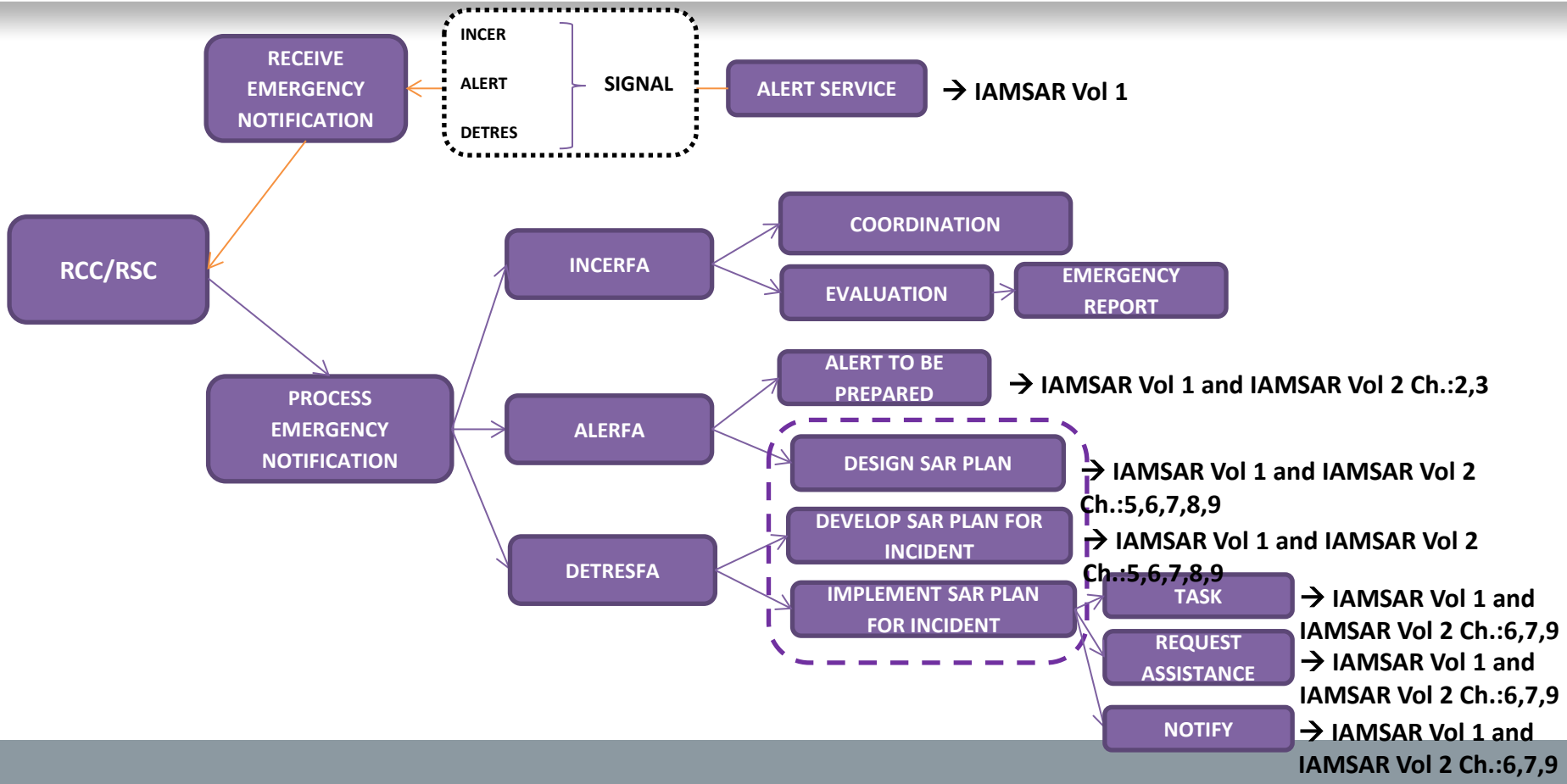
SAR BASIC ELEMENTS/REFERENCES
ICAO SARPs



SAR BASIC ELEMENTS/REFERENCES
ICAO PANS



SAR BASIC ELEMENTS/REFERENCES
ICAO GUIDANCE



SAR References

- Annex 11: Air Traffic Services
- Annex 12: Search and Rescue
- PANS-ATM (Doc 4444): Air Traffic Management
- Doc 9731: IAMSAR Manual - International Aeronautical and Maritime Search and Rescue Manual

Main Challenges

- Lack of support from States.
- Difficulties to identify proper organization responsible for SAR on behalf of the State.
- Limited understanding of SAR requirements according to Annex 12.
- Lack of establishment of SAR services according to Annex 12 requirements.
- Limited/non-existent oversight capabilities.

Link with the eANP Vols I and II

- Vol I
  - PART IV — Air Traffic Management (ATM)
    - General Regional Requirements
      - Table ATM I-1 — Flight Information Regions (FIR)/Upper Flight Information Regions (UIR) of the Region
        - Chart ATM I-1 — Flight Information Regions (FIR) of the Region
        - Chart ATM I-2 — Upper Flight Information Regions (UIR) of the Region
    - Specific Regional Requirements
  - PART VI — Search and Rescue Services (SAR)
    - General Regional Requirements
      - Table SAR I-1 — Search and Rescue Regions (SRR) of the Region
        - Chart SAR I-1 — Search and Rescue Regions
    - Specific Regional Requirements

Link with the eANP Vols I and II

- Vol II
  - PART IV — Air Traffic Management (ATM)
    - General Regional Requirements
    - Specific Regional Requirements
      - TABLE ATM II-CARSAM-1- CAR/SAM REGIONS ATS ROUTES
  - PART VI — Search and Rescue Services (SAR)
    - General Regional Requirements
      - Table SAR 1 — Search and Rescue Facilities/Rescue Coordination Centres (RCCs) and Rescue Sub-centres (RSCs) in the CAR/SAM Regions
        - Chart SAR II-1 — Rescue Coordination Centres (RCCs) and Rescue Sub-centres (RSCs) in the CAR/SAM Regions
    - Specific Regional Requirements

To-do List

- Review and update the VOLs I and II of the eANP.
- Proper description of the different airspaces and services.
- Proper coordination with Task Forces.
- Update related implementation strategies.


Questions/Comments

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