Air Operations CoE


# JTAC OPERATIONS COURSE HANDBOOK

SEP 2021

CASPOA

# Table of contents

# 101- NATO overview and publications

## 101.1 Reference documents

North Atlantic Treaty, Washington D.C., 4th April 1949
MC 324/3 January 2013
AAP-6

## 101.2 What is NATO ?

A political and military alliance whose primary goals are:

- ✓ **Collective defence** of its members (Article 5)
- ✓ **Democratic peace** in the North Atlantic Area (Article 6)
- ✓ Crisis Management
- ✓ Cooperative Security

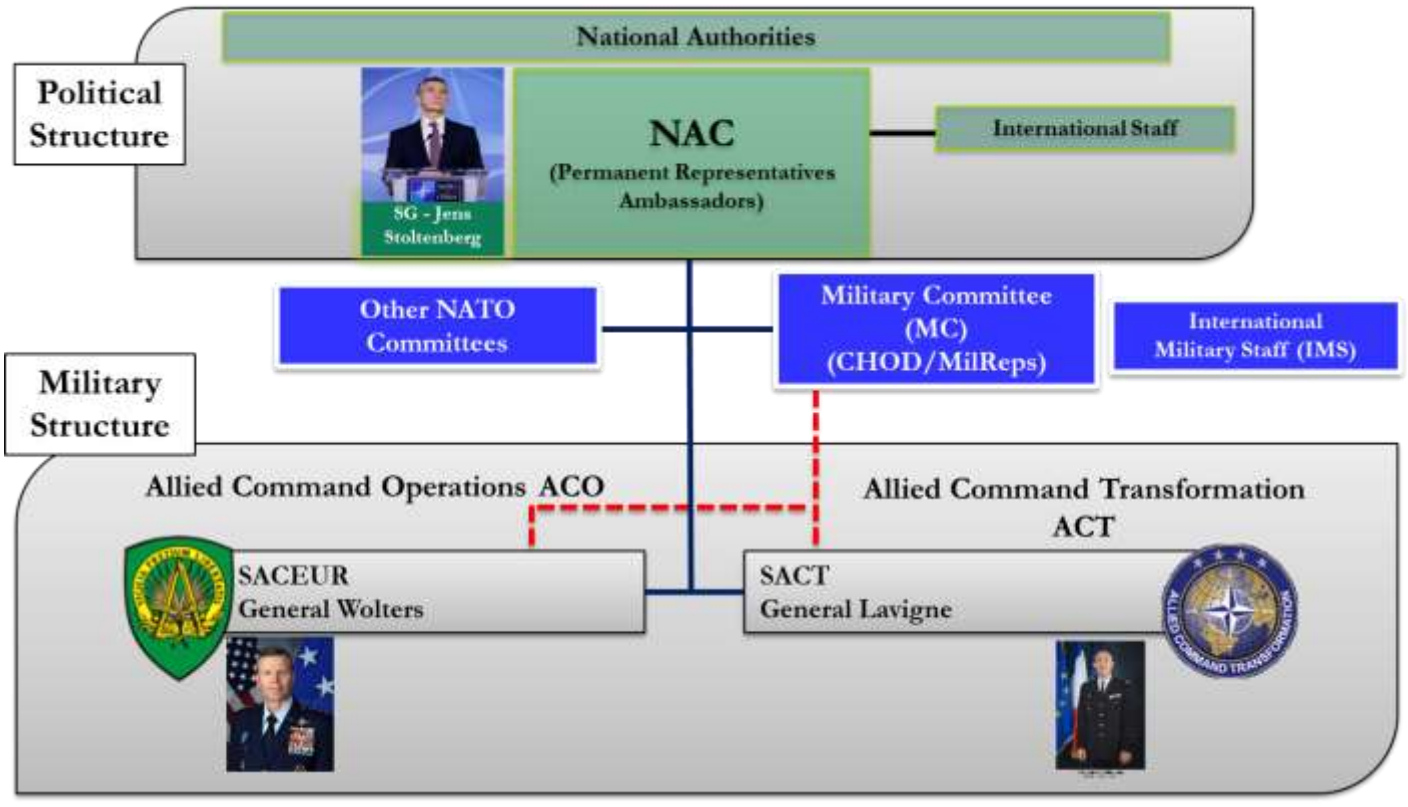
Decision Process : UNANIMOUS and CONSENSUAL

- ✓ 30 member Nations (Last one : North Macedonia 27 March 2020)
- ✓ Respectful of Democracy, individual liberty and the rule of law

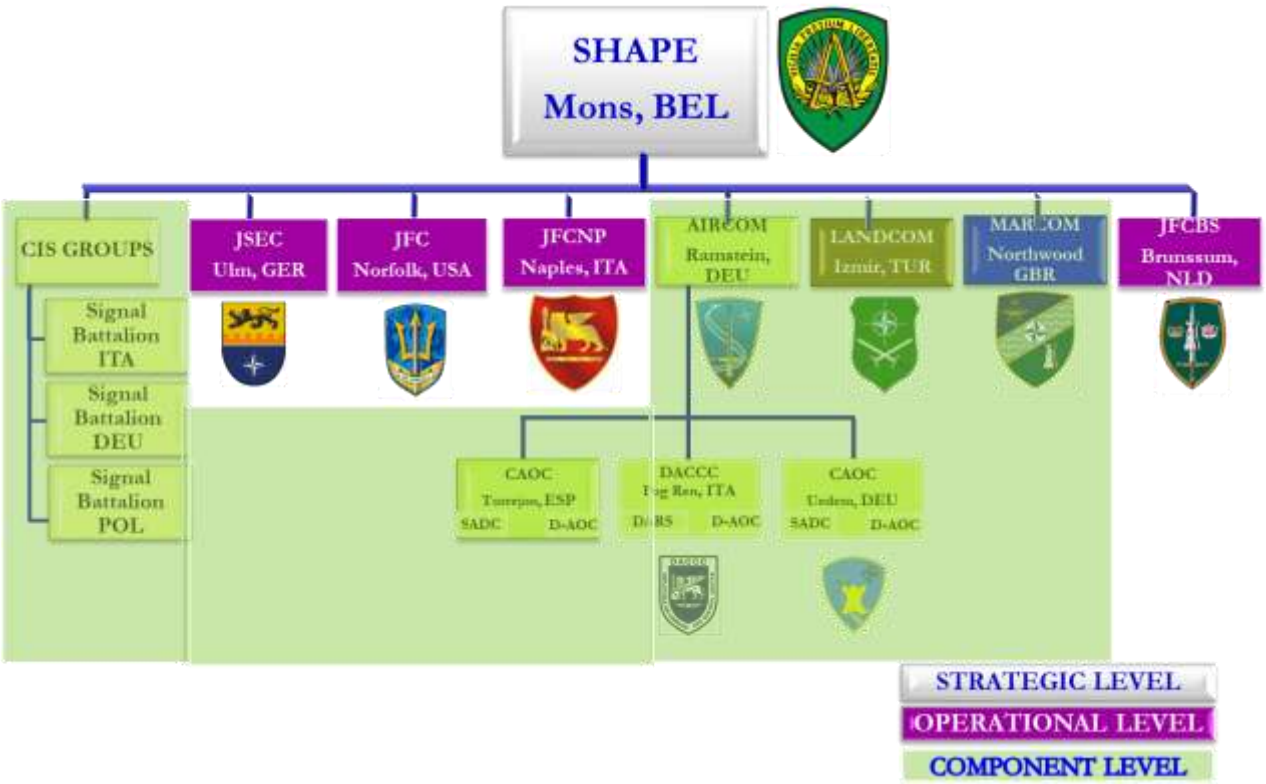
Standing Military Headquarters

- ✓ NCS = NATO Command Structure
- ✓ Few dedicated forces
- ✓ Force generation process when needed

## 101.3 NATO Structure



## 101.4 Current NATO ACO Structure




## 101.5 NATO Publications

In NATO, there are many publications and it is impossible to know them all, below some keys to help you decode and understand them.

**AAP** – Allied Administrative Publication
**AJP** – Allied Joint Publication
**ALP** – Allied Logistic Publication
**AOP** – Allied Ordnance Publication
**APP** – Allied Procedural Publication
**ATP** – Allied Tactical Publication
**AC** – Atlantic Council
**MC** – Military Committee
**STANAG** – STANdard Agreements
**Bi-SC** – Bilateral Strategic Commands
**AD** – Aco Directive
**AM** – Aco Manual
**HQ AC** – HeadQuarter Air Command
●●● – ○○○○
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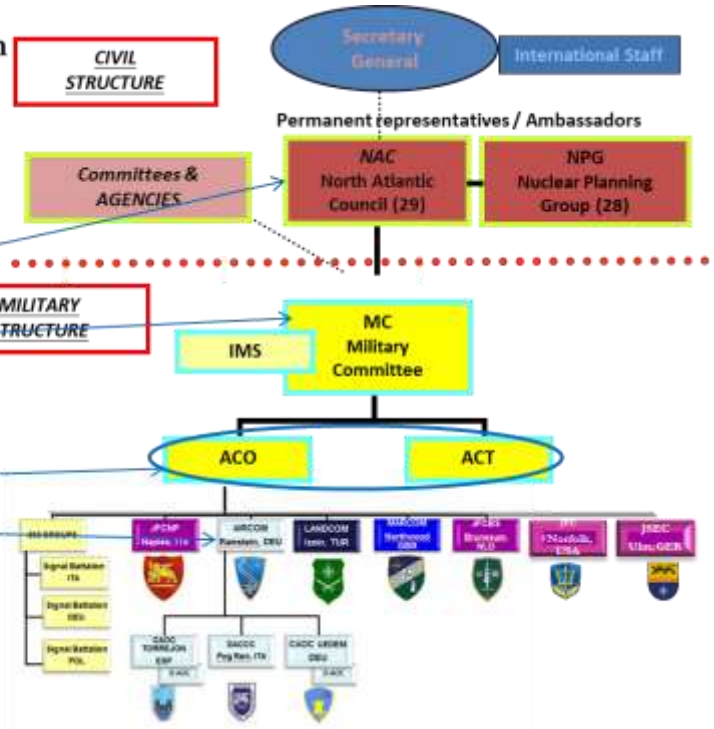


## NOTES

# 102- Fundamentals of Joint Air Power

## 102.1 Reference

AJP 3 - Conduct of Operations
AJP 3.3 - Allied Joint Doctrine for Air and Space Operations

## 102.2 Air Power

AJP-3.3: *"The ability to use air capabilities to influence the behaviour of actors and the course of events."*

- ✓ **Flexible and responsive**.
- ✓ **Inherently Joint**
- ✓ **Main attributes**
  - **Speed**: act quickly;
  - **Reach**: act anywhere;
  - **Height**: unparalleled vantage point.

  But also:
  - **Ubiquity**: everywhere at the same time;
  - **Agility**: responsive, multirole;
  - **Concentration**: in time and space, when required.
- ✓ **Limitations**
  - **Impermanence**: ground servicing / rearming;
  - **Limited payloads** : weight is the limit of flight;
  - **Vulnerability** : Fragile airframes, Weather dependant, Basing.

## 102.3 Commanders and responsibilities:

- ✓ **COMJTF - COMmander Joint Task Force**

Elaborates the Joint CONOPS or Joint Campaign Plan. Written in the OPLAN.

- ✓ **COMJFAC - COMmander Joint Force Air Component**

Integrates Joint Air effects to the Joint Campaign plan. Written in the AIR OPLAN.

- ✓ **JOA - Joint Operations Area**

Area in which the COMJTF has been given the authority to carry out the mission and the ROEs defining how force may be used.

- ✓ **ADC - Air Defence Commander**

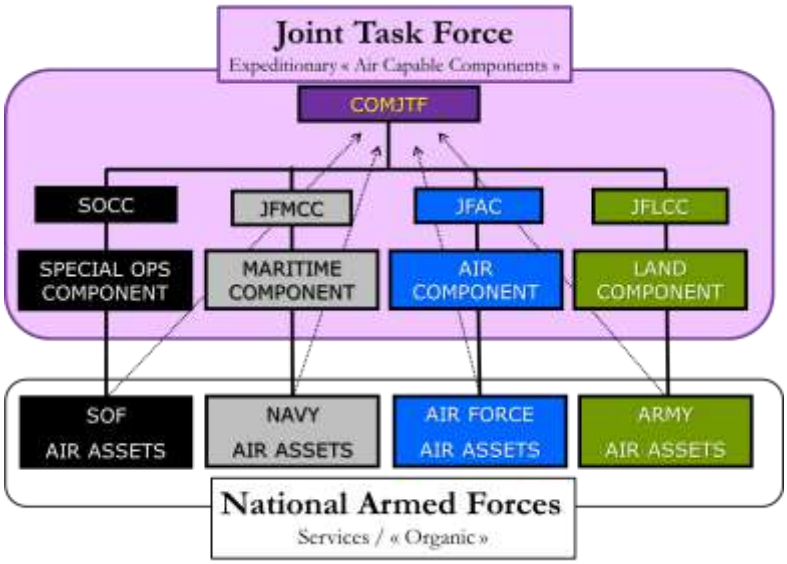
Plans & implements the JOA Air Defence Plan (= Integrated Air & Missile Defence - IAMD). This responsibility is normally delegated by the COMJTF to the component commander with the preponderance of Air Defence assets as well as the means to command & control them.

✓ **ACA - Airspace Control Authority**

Plans & implements the Theatre Airspace Control System.

This responsibility is normally delegated by the COMJTF to the component commander with the preponderance of Airspace Control assets.

✓ **Joint Task Force structure**



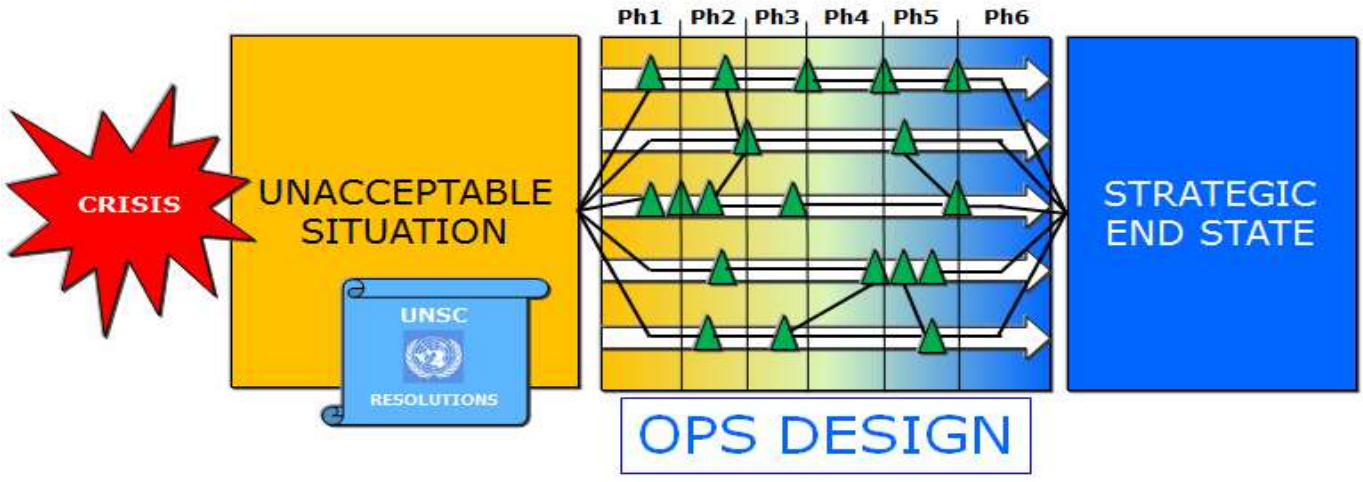

## 102.4 Strategy to Task concept

OPERATIONAL OBJECTIVES ➔ Commander's GOALS (Lines of Operations)

TACTICAL OBJECTIVES ➔ EFFECTS

TACTICAL TASKS ➔ ACTIONS

Strategy to Task = taking ACTIONS in order to generate EFFECTS to achieve GOALS allowing to reach the Desired End State.



# TAKE AWAYS

**Air Power is unique and inherently Joint;**
**Centralized Control/Decentralized Execution is KEY;**
**« Strategy to task » is the process that allows the COMJTF to control the EFFECTS generated by the Force throughout the JOA.**

**NOTES**

# 103- Command relationships in Joint Air operations

***"WHO owns WHAT***
***&***
***WHO can do WHAT with WHOM and WHEN"***

## 103.1 Reference

AJP 3.3: Allied Joint Doctrine for Air and Space Operations

## 103.2 Command Principles

- ✓ **Unity of command**
  All forces operate under a single CDR with the required authority to direct all forces employed in pursuit of a common purpose; Two CDRs MAY NOT exercise the same command relationship over the same Force at any one time.

- ✓ **Unity of effort**
  Coordination and cooperation among all forces toward a commonly recognised objective – even if not part of the same command structure.

- ✓ Unity of Command may not be possible (Multinational Ops, Interagency Ops), but Unity of effort is paramount.

  ***"Unity of Command is central to Unity of Effort"***
  *or*
  ***"Unity of Effort derives from Unity of Command"***

- ✓ **Command**
  The authority **VESTED** in an individual of the Armed Forces for the direction, coordination, and control of military forces.

- ✓ **Control**
  That authority **EXERCISED** by a commander over part of the activities of subordinate organisations, or other organisations not normally under his/her command. This encompasses the responsibility for implementing orders or directives.

- ✓ **Centralized command**
  Orders (ATO) approval, publication and monitoring are centralized at COMJFAC level in order to allow integration of joint air effects;

- ✓ **Decentralized execution**
  Allows generation of required operations tempo and provides ability to cope with uncertainty, disorder, and fluidity of combat.

## 103.3 Levels of Authority

- ✓ **OPCOM**
  AJP- 3.3 *"The authority granted to a commander to assign missions or tasks to subordinate commanders, deploy units, to reassign forces, to retain or delegate operational and/or tactical control as the commander deems necessary."*

  ➔ Strategic level commander (e.g. NATO = SACEUR; France = CEMA/CPCO; US = POTUS).

- ✓ **OPCON**
  *AJP-3.3 "The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned and to retain or assign tactical control of those units. It does not include authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative or logistic control."* ➔ Joint Level commander (in the JOA).

- ✓ **TACOM**
  AJP-3.3 *"The authority delegated to a commander to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority."*
  ➔ Component commanders e.g. COMJFAC = TASKING Air Units in the ATO.

- ✓ **TACON**
  AJP-3.3 *"The detailed and, usually, local direction and control of movements or manoeuvres necessary to accomplish missions or tasks assigned."*
  ➔ ***High***: ATO Force Execution monitoring & control ( JFAC HQ CURRENT OPS)

  ➔ ***Low***: TAC C2 Units decentralized execution & mission control (AEW/CRCs/D-CRCs

- ✓ **SUPPORTED COMMANDER**
  A commander having primary responsibility for all aspects of a task assigned by a higher military authority and who receives forces or other support from one or more supporting commanders.

- ✓ **SUPPORTING COMMANDER**
  A commander who provides a supported commander with forces or other support and/or who develops a supporting plan.

- ✓ **ADCON**
  Direction or exercise of authority over subordinate or other organisations in respect to administrative matters such as personnel management, supply, services, and other matters not included in the operational missions of the subordinate or other organisations.

## NOTES

# 104- Airspace Management

## 104.1 References

- ✓ AJP 3.3: Allied Joint Doctrine for Air and Space Operations
- ✓ AJP 3.3.5: Allied Joint Doctrine for Airspace Control

## 104.2 Definition

✓ **National airspace**

The Chicago Convention Article 1 and 2 defines "national airspace": the airspace above each nation territories (lands) and their territorial waters (up to 12 NM off the shores). The nations have sovereignty over their national airspace.

## 104.3 Airspace management

✓ **Airspace Management in peace time**

It is the responsibility of the Nations to manage their airspace. There are 3 levels of airspace management (ASM):

- Strategic: consists of a joint civil and military process to define national airspace management policy, airspace structures and procedures as describes in documents as the Air Information Publication and aeronautical charts
- Pre-tactical: performed by a civil-military entity named the Airspace Management Cell (AMC). It consists in a comparison of the needs of both military and civilian users to establish a common plan for the use of the airspace: the Airspace Use Plan (AUP).
- Tactical: it is the use of the AUP on D-Day: activation and deactivation of airspace as scheduled in the AUP. In some situations, ASM units may adapt a bit this plan when required (ex: an airspace user needs to keep an airspace few minutes more than scheduled).

✓ **Airspace Management during a crisis**

Peacetime airspace management is not flexible enough to fulfil crisis airspace management requirements.

Crisis airspace management responsibility is a Joint function named "Airspace Control Authority" (ACA) usually delegated to COM JFAC because he has the preponderance of AIRC2 and he is the main airspace user.

ACA responsibilities consist in shaping the airspace in support of the Joint campaign and all the airspace users:

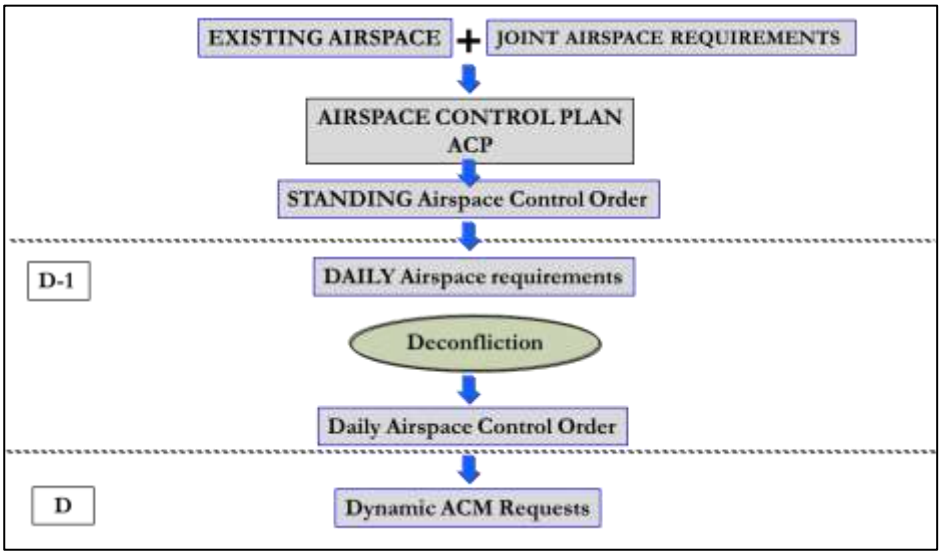
- Joint military users
- Commercial flights
- IO/NGOs

The end-state is to provide to each user the airspace it needs to fulfil its task while minimizing risks of collateral damages and fratricides. To manage these tasks, the ACA will assemble the Joint Airspace Coordination Cell. It is included in 2 of the 6 JFACC divisions: the Combat Plan Division and the Combat Ops Division.

Combat Plan Division is in charge of writing and disseminating the Airspace Control Plan and the Airspace Control Order. Combat Ops Division/Airspace Manager manages the ACO in real time (activation/de-activation of airspace as scheduled or creating new ones when the situation dictates it.

## 104.3 Documents

In an operation, 3 airspace documents are issued: the Airspace Control Plan (ACP), the Standing Airspace Control Order (SACO) and the Airspace Control Order (ACO).




✓ **Airspace Control Plan (ACP)**

The ACP is a campaign level document written by the JACC (Combat Plan Division) and approved by the Joint Force Commander. It describes how the Airspace Control System is implemented. It states the will and policy of the Airspace Control Authority (ACA) with regards to the BattleSpace coordination.
The starting points of the ACP are the existing airspace (before the beginning of the operation) and the joint airspace requirements.
The ACP describes the procedures within the Airspace Control System Area (ASC Area) considering a number of influencing factors, including the integration of civil and military flights, consultation with Host Nations (HN), integration of air defence, limitations such as equipment capabilities, mission profiles and the adversary's capability.
A notional ACP outline is provided in AJP 3.3.5 Annex A.

✓ **Standing Airspace Control Order (SACO)**

The SACO is a document prepared by the JACC (Combat Plan Division) using ICC/ASMAN (Integrated Command & Control/Airspace Management). It lists all the potential ACMs that could be used by all the airspace users. The SACO can be presented as a list of all ACMs ( ".doc" document) or the ACMs can be visualised on a map (see example below). The SACO should be annexed to the ACP.
An Airspace Control Mean is the basic portion of airspace a user can request. ACMs can be broken down into the following groups: air corridors and routes, areas, points, and procedures.
The ACM Request (ACMREQ) is the format used to request a specific ACM to be included in a future ACO or when a change to the present ACO is needed.
A definition of possible ACMs is provided in AJP 3.3.5 Annex A.

- ✓ **Airspace Control Order (ACO)**

  The ACO is a daily document listing all ACMs used during the timeframe (24hrs) of an Air Tasking Order (time of activation, boundaries, altitudes, usage, etc.). It is prepared on ICC/ASMAN by the JACC/Combat Plan Division and approved by the ACA. Most of the daily ACO ACMs are picked from the SACO. Nevertheless, when an airspace requirement can't be fulfilled with the existing ACMs from the SACO, the JACC can create new ones.

  The JACC/Combat Plan Division has the responsibility to gather all the ACM requests and to de-conflict them. When a conflict arise, the JACC/Combat Plan Division try to find a solution with the users. If no agreement is found, the issue is elevated to the Joint Force Commander during the Joint Battlespace Management Coordination Board (JBMCB). Then, the ACO is approved by the ACA and released to all the airspace users and control agencies. During the ACO execution, the JACC/Combat OPS Division/ airspace manager follows the execution of the ACO. It consists in activating/de-activating the ACMs as fragged in the ACO. If new ACM needs arise (example: unscheduled CAS), the JACC/Combat OPS Division/ airspace manager will adapt the ACO by managing the new ACMREQs and creating/de-conflicting the new ACMs.

## NOTES

# 105 – Law Of Armed conflicts

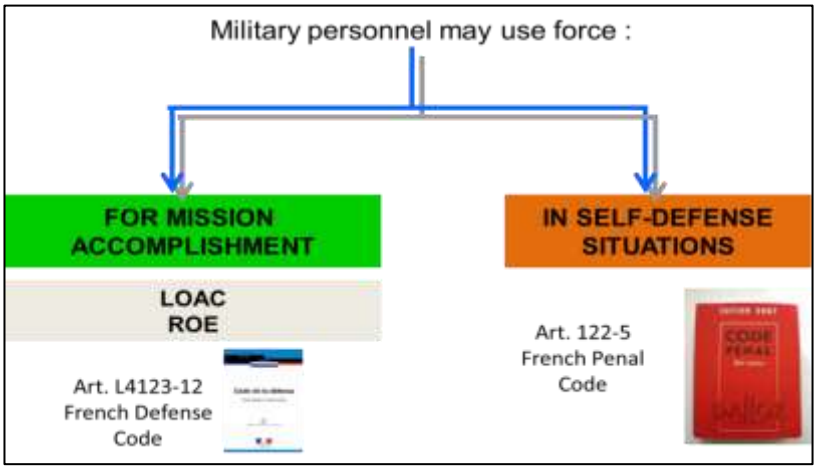
## 105.1 Use of force

✓ **Fundamental Principle** (Art 2 -4 of the UN Charter)

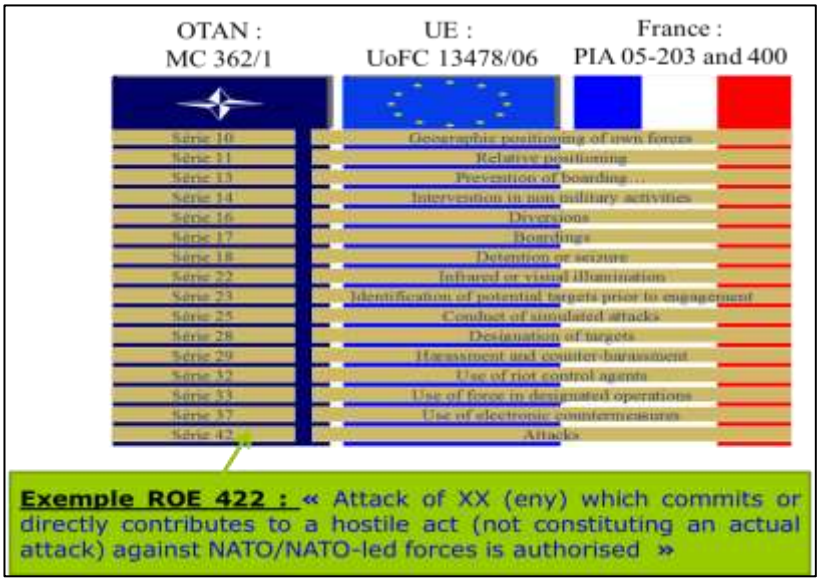
Prohibition of the use of force in international relations

✓ **Exceptions**

- **UN Charter**
  - UN Security Council mandate (under Chapter 6 or 7)
  - Self-defence (UN Charter, Article 51)
- **Customary law**
  - Upon Sovereign State request
  - Non-combatant Evacuation Operations (NEOs)




## 105.2 ROE profile



## 105.3 Main Principles

- ✓ **Law Of Armed Conflicts (LOAC)**
  A set or body of laws regulating conduct and behaviour in armed conflicts in order to enforce the following principles:
  - *Military necessity*
  - *Proportionality*
  - *Distinction*
  - *Humanity*

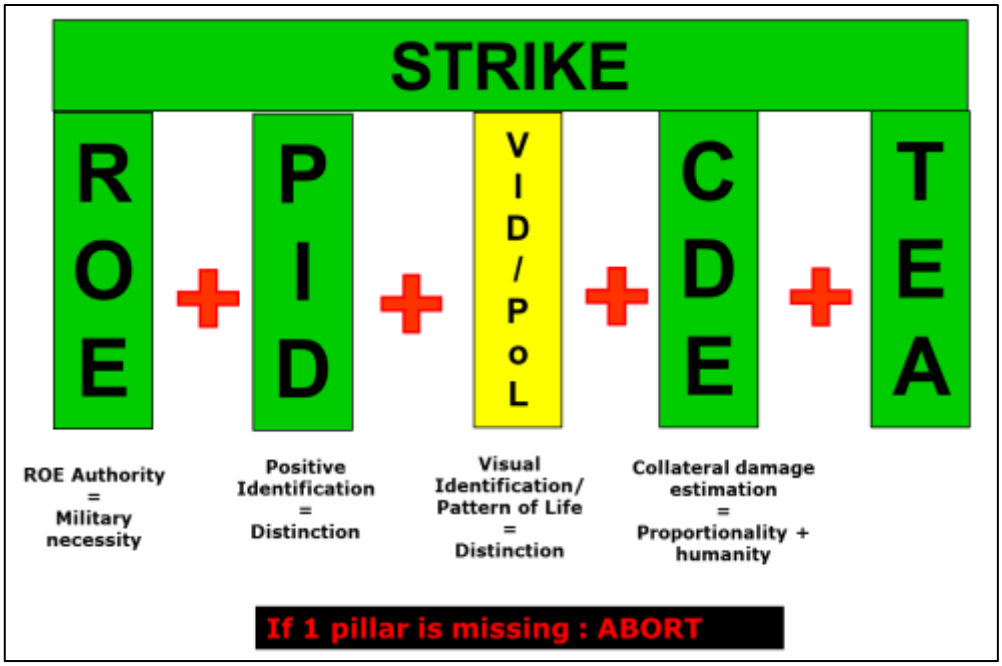
- ✓ **Higher aims of LOAC**
  - Reduce superfluous injury and unnecessary suffering resulting from armed conflicts
  - Protect victims of armed conflict - both combatants & non-combatants
  - Facilitate restoration of peace.

- ✓ **Protected entities:** Civilians, Prisoners of War (PoW), sick, wounded and shipwrecked.
- ✓ **Prohibited weapons**: Chemical, Biological and poisons.
- ✓ **Restricted weapons**: anti-personal mines, cluster munitions, incendiary weapons.
- ✓ **Prohibited methods of war**: perfidy, human shields, use of terror, torture, plunder...

- ✓ **LOAC applies to**
  - Non-international internal armed-conflicts (e.g civil war)
  - International armed conflicts

## 105.4 LOAC in air operations

**5 TARGETING PILLARS**



## NOTES

# 106 – Introduction to Joint ISR

## 106.1 References

**AJP-2**: Allied Joint Doctrine for Intelligence, Counter Intelligence and Security
**AJP-2.1**: Allied Joint Doctrine for Intelligence Procedures
**AJP-2.7**: Allied Joint Doctrine for Joint Intelligence, Surveillance and Reconnaissance

## 106.2 THE ROLE OF INTELLIGENCE.

- ✓ Role of Intelligence: to know / to understand.
- ✓ Main subjects of Intelligence: ENVIRONMENT & ADVERSARIES.
- ✓ Intelligence goal is to know / understand / analyse :
  - the adversaries' intentions.
  - the adversaries' capabilities.

- ✓ Intelligence is a support function for the Joint Air Operations :
  - contributes to provide a constantly updated situation awareness.
  - supports the targeting process.
  - provides threat analysis and assessment.
  - mainly supports the decision-making process.

## 106.3 THE INTELLIGENCE CYCLE.


### ✓ DIRECTION STEP:

Direction: questions, orders, commanders' guidance…
* from the tactical level to the strategic level (tactical units, staffs : HQs, commanders…).
* from every component (ACC, LCC, MCC, SOCC).
Key function: *Intelligence Requirements Management* [IRM].
⇨ **Joint function**.

### ✓ COLLECTION STEP:

Collection Operations: equivalent "ISR Ops".
Objective of Collection / ISR Ops: gathering data.
Key function: *Collection Management* [CM].
⇨ **Joint function**.

Collection relying on requested EFFECTS.
Collection / ISR Ops integrated within the ATO cycle.
⇨ ISR Ops of the Air component = Air missions.

- **INTEL DISCIPLINES:**

**IMINT (IMagery INTelligence)**

The result of imagery acquired by optical, thermal and radar sensors, which can be ground or sea based, airborne or space based. Analysts use imagery to locate and identify enemy activity, facilities, infrastructure, and equipment. They can also provide commanders with environmental information which may have an impact on their decision making.

**SIGINT (SIGnal INTelligence) = COMINT + ELINT**

The generic term used to describe communications intelligence (COMINT) and electronic intelligence (ELINT). SIGINT gives a lot of information about enemy forces capabilities, intentions, formations and locations.

**COMINT (COMmunications INTelligence)**

Consists in the interception of the enemy's communications (radios, SATCOM, data link, phone, etc.)

**ELINT (ELectronic INTeligence)**

Consists of the interception of the enemy's electronic activities (radar, non-communication transmissions, etc.)

**HUMINT (HUMan INTelligence)**

An intelligence category derived from information collected and provided by human sources. HUMINT sources can also provide technical intelligence and imagery, and may be vital in the preparation for operations.

**OSINT (Open Source INTelligence)**

An intelligence type coming from internet. Allows enemy network capability mapping (including social network) or prevent cyber threats.

- **TYPES OF COLLECTION MISSIONS:**

***Reconnaissance***

A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy; or to secure data concerning the meteorological, hydrographic or geographic characteristics of a particular area.
➔ A snapshot of activity at one point in time.

***Surveillance***

The systematic observation of aerospace, surface on subsurface areas, places, persons or things by visual, aural, electronic, photographic or other means.
➔ Reconnaissance over time, looking for activity patterns.

### ✓ PROCESSING / EXPLOITATION / ANALYSIS STEP:

Processing: from raw data to information.
Exploitation / analysis: from information to intelligence.
***Intelligence*** is the **product** resulting from the **analysis** of information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations.
⇨ **Tailored-product**.

### ✓ DISSEMINATION STEP:

Dissemination: to the requestors.
*Guidance*: format, level of details, recipient, time, channel, level of releasibility…
Last step: ASSESSMENT & FEEDBACK.

Joint-ISR Process: Tasking / Collection / Processing / Exploitation / Dissemination.

**NOTES**

# 107 – Introduction to Info Ops

## 107.1 Reference

AJP-3.10: Allied Joint Doctrine for Information Operations

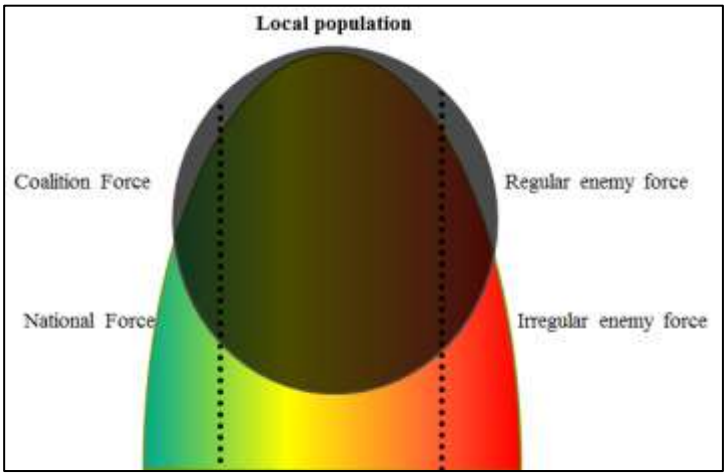
## 107.2 Roles

- ✓ Influence the perceptions, attitudes and behaviour of selected individuals or groups.
- ✓ Influence adversary's will and undermine cohesion (Question legitimacy of leadership and cause
- ✓ Undermine moral powerbase, separate from support; Must protect friendly forces against this same effect)
- ✓ Info Ops seek to affect information available to decision makers (Deny, degrade, disrupt and manipulate the information available to enemy, changing perception
- ✓ Enables friendly information superiority, better decisions; Must protect friendly C3 information)
- ✓ Info Ops seeks to affect adversary C3 Infrastructure and propaganda capabilities (Degrade, disrupt, deceive, destroy or deny enemies ability to command forces; Prevent enemy from taking initiative; Must protect friendly C3 infrastructure).

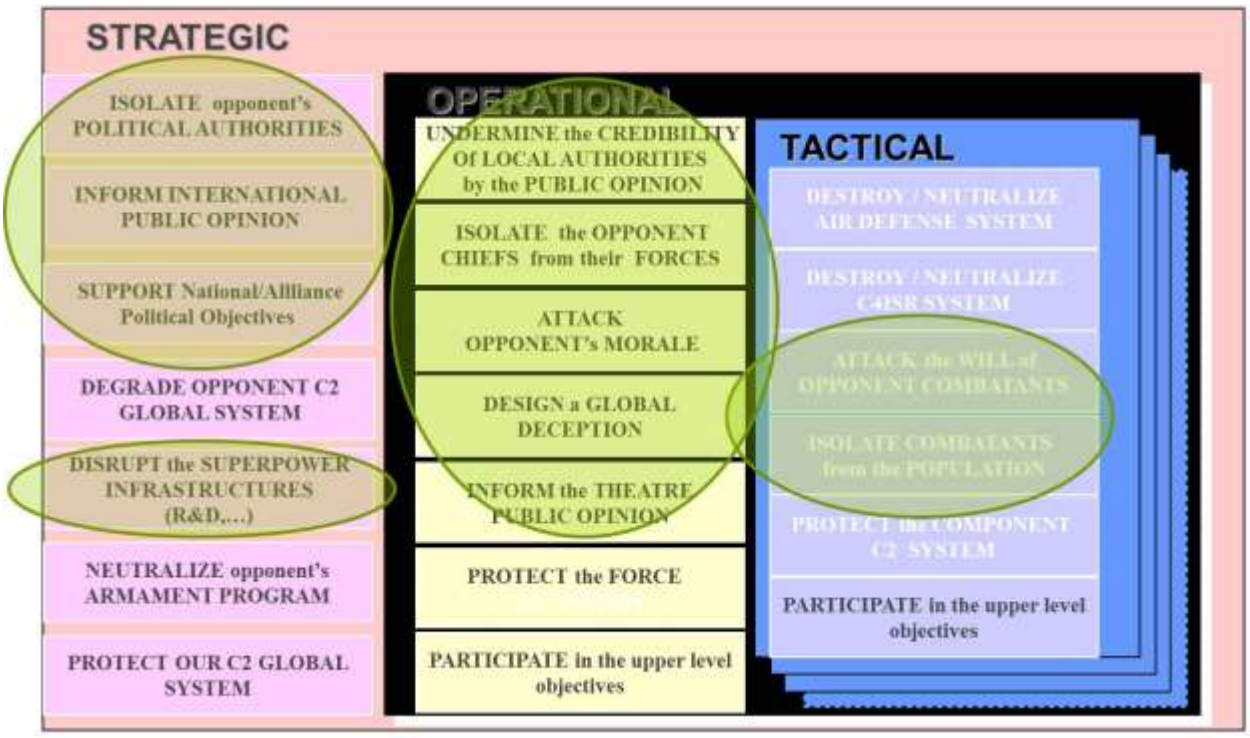
## 107.3 Principles

- ✓ Effects based approach (Cause and effect vs. target centric)
- ✓ Need Commander's involvement; Close coordination and sequencing (Inputs to Joint Targeting)
- ✓ Accurate intelligence and information
- ✓ Early Involvement and Timely Preparation (Fully involved in Operational Planning Process)
- ✓ Continuity – crisis, conflict and post-conflict
- ✓ Monitoring and Assessment

## 107.4 Targets

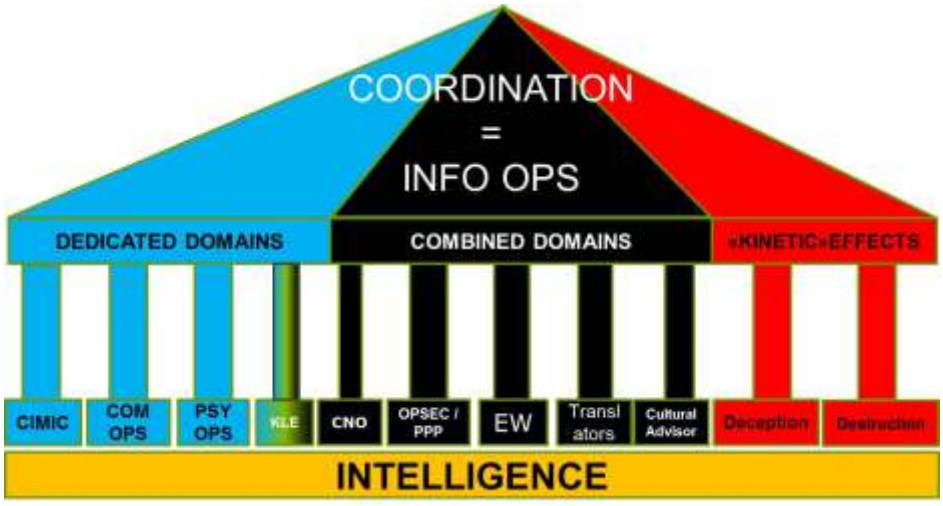


## 107.5 Objectives




## 107.6 Tools and technics/Actors

- ✓ Presence, posture, profile
- ✓ Deception
- ✓ Electronic Warfare
- ✓ Physical destruction
- ✓ Key leader engagement
- ✓ CIMIC



## NOTES

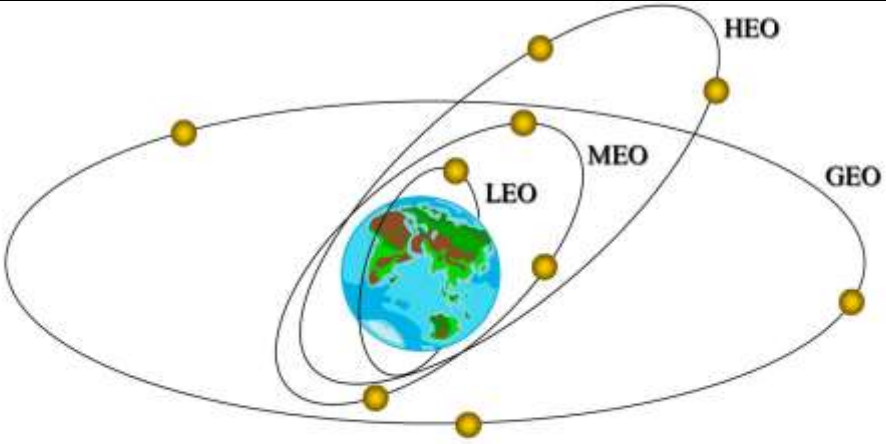
# 108 – Space in support of Joint Air operations

## 108.1 Reference

AJP 3.3: Allied Joint Doctrine for Air and Space Operations

## 108.2 Available Services

Different orbits for different use of satellites:




| | | | |
|---|---|---|---|
| LEO | Low Earth Obit | 400-2,000 km | Remote sensing |
| MEO | Medium Earth Orbit | 17,000-21,000 km | PNT |
| GEO | GEO stationary orbit | 36,000 km | Telecom |
| HEO | Highly Elliptical Orbit | 400 – 40,000km | Polar coverage |

- ✓ **Remote Sensing**
  (LEO) – Mostly IMINT oriented for situation appraisal, planning (deployment, geography, practicability, targeting), assessment (battle damage assessment), but also weather forecasting.
  Advantages: global access and good resolution;
  Disadvantages: fast scrolling and limited field of view.

- ✓ **Eavesdropping**
  Allows emitter detection, localization and characterisation, activity level assessment and Electronic Order of battle (SIGINT).

- ✓ **Positioning, Navigation and Timing (PNT)**
  (MEO) - synchronization of tactical networks (Comms, Links), precision guided munitions, navigation.
  Advantages: global coverage; number of satellites
  Disadvantages: need 4 satellites to have an accurate position

- ✓ **Telecommunication military applications**
  (GEO) - Availability (anywhere and anytime), confidentiality, resilience to avoid or to quickly recover from: jamming, hacking or radiations
  Advantages: continuous coverage; 1/3$^{rd}$ world per satellite
  Disadvantages: very far orbit, aggressive environment, poles excluded.

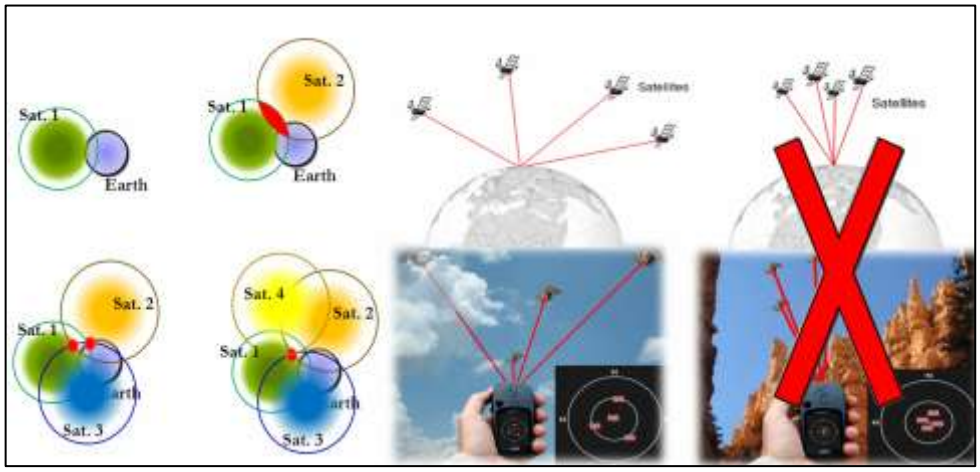
- ✓ **Shared Early Warning (SEW)**
  Combines space segment and ground capacity in order to allow ballistic missiles launch detection, mid-course tracking, terminal phase re-entry and nuclear detonation detection.

### 108.3 Space Situation Awareness (SSA)

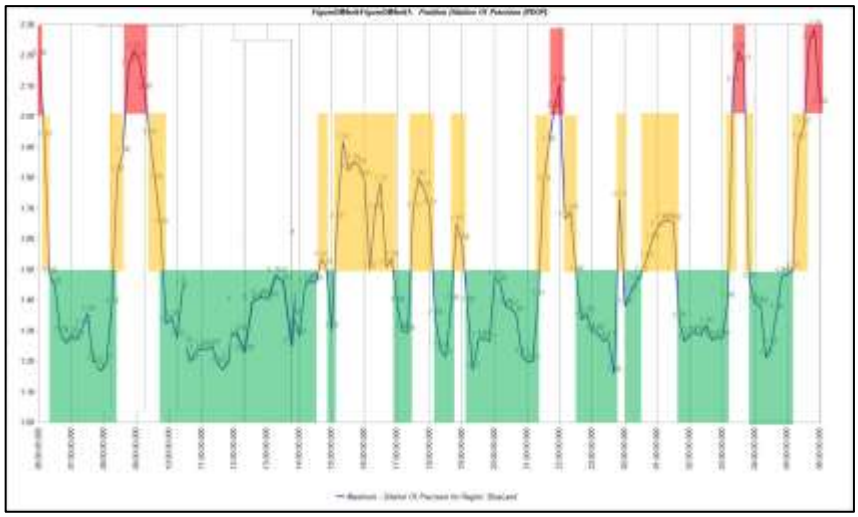
SSA federates space surveillance and space activities awareness to appraise the space situation, optimize the use of friendly space services and mitigate adversaries' use of space services.
Detect, track, identify and catalogue artificial objects orbiting allows to deal with potential collisions or re-entries in the atmosphere.

### 108.4 GPS Position Dilution Of Precision (PDOP)

The geometry of the GPS satellites constellation has a direct impact on GPS signal precision.




This precision varies with time and location, and its variation is called PDOP.



### 108.5 Space Weather

Solar activity (flares, bursts) can degrade the quality of EM signals and have an effect on very long pieces of metal such as electric cables or pipelines.

## NOTES

# 109 – Logistics in support of Joint Air Operations

## 109.1 References

- ✓ AJP 4 - Allied Joint Logistic Doctrine
- ✓ AJP 4.6 - Allied Joint Doctrine for the Joint Logistic Support Group
- ✓ NATO Logistics Handbook

## 109.2 Mission

Military logistics is the science of planning and carrying out the movement and maintenance of forces:

- ✓ Design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of material;
- ✓ Transport of personnel;
- ✓ Acquisition, construction, maintenance, operation, and disposition of facilities;
- ✓ Acquisition or furnishing of services;
- ✓ Medical and health service support.

## 109.3 Principles

Some principles must be observed from start to end:

- ✓ Primacy of operations;
- ✓ Provision and sufficiency;
- ✓ Co-operation and co-ordination;
- ✓ Flexibility;
- ✓ Transparency and visibility;
- ✓ Efficiency.

## 109.4 Functional Areas

- ✓ ***Supply***

Supply encompasses timely provision of all classes of supply necessary to ensure the sustainability of forces. Interoperability and visibility are crucial for an efficient supply function in a multinational environment. The supply function includes the determination of stock levels, provisioning, distribution and replenishment. NATO has defined 5 classes: Class I (food & water), II (Spare parts), III (POL: Petroleum Oil and Lubricants), IV (Raw material), V (Ammunition).

- ✓ ***Services***

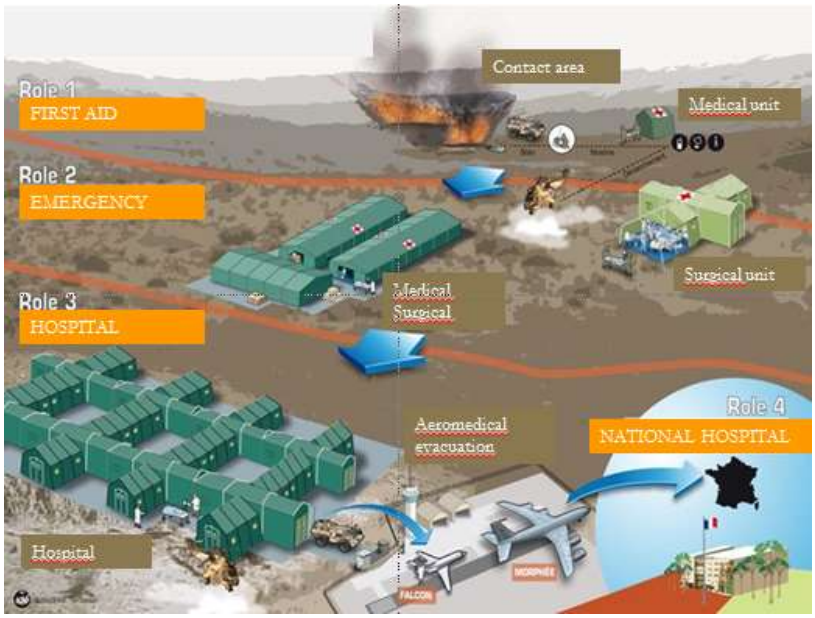
Services cover the provision of manpower and skills in support of combat troops or logistics. It includes a wide range of services such as labour resources, postal services, canteen, laundry and bathing facilities, burials… Multinational and contractor support solutions can enhance efficiency and effectiveness.

✓ ***Maintenance***

Maintenance means all preventive or corrective actions, and recovery to retain and/or restore equipment to a serviceable condition. Maintenance is executed under the responsibility of the equipment owner. In order to enable multinational logistics, formal agreements must be made prior to the exchange of services between participating nations.

✓ ***Medical support***

This function encompasses planning and provision of preventive and rehabilitative healthcare, and all level of care on operations and rehabilitative healthcare for military personnel.




✓ ***Petroleum Logistics (POL)***

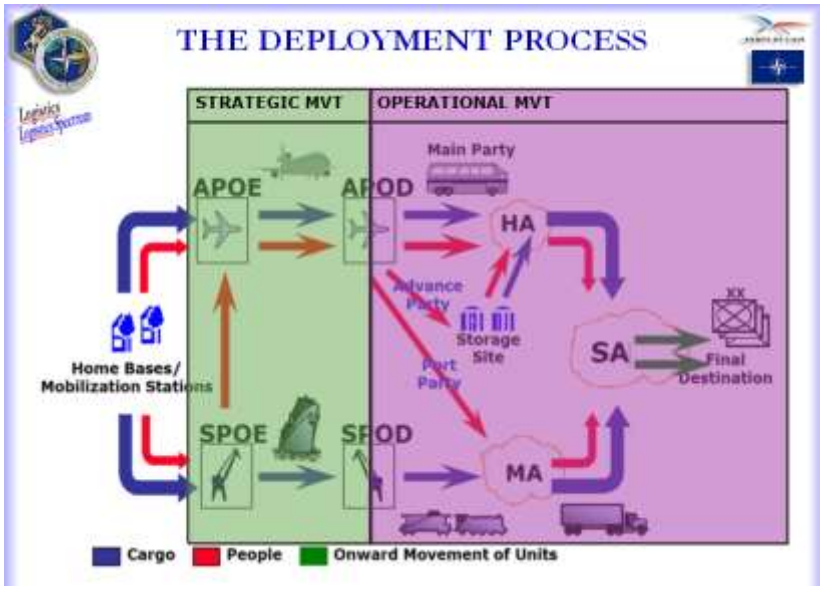
Fuel is a commodity that is essential to NATO. POL and A&E management will normally be accomplished by means of purpose-built storage areas and the employment specialist POL staff. Within the JTF headquarters and/or JLSG HQ, the staff will ensure that correct supply procedures are followed including; accounting of stocks; visibility of available assets to support operations; maintenance of safety; and quality of product.

✓ ***Infrastructure Engineering for Logistics (IEL):***

The aim of Military Engineering (MILENG) support to logistics is to monitor, maintain, restore and, if necessary, provide the infrastructure, mostly associated with RSOM/RMSD and sustaining the joint force. Particular areas of expertise are infrastructure development, mobility support and Environmental Protection (EP).

✓ ***Movement and transportation (M & T)***:

M&T is the relocation of units, personnel and materiel which is necessary for the deployment, sustainment and re-deployment of NATO forces. This must be done in co-operation between military and civil agencies. Strategic movement is the movement of units from Ports of Embarkation (POEs) to Ports of Debarkation (PODs). Operational movement is the movement of units from the PODs to the assigned area of operations during deployment and from assigned areas to POEs for redeployment.




**THE JOINT LOGISTIC SUPPORT GROUP (JLSG)**

The JLSG is a deployed, executive, theatre-level logistic organisation focusing on greater reliance on multinational solutions. JLSG should allow a corresponding reduction in the requirements placed upon each National Support Element (NSE), so reducing their size and the overall logistic footprint.
JLSG missions are:

- Conduct RSOM/RMSD operations in order to enable, sustain and maintain Alliance freedom
- Planning, coordination and execution of operational-logistic support
- Coordinate HN/MILENG/MED/CONTRACTOR SUPPORT

✓ ***Host Nation Support (HNS):***

The purpose of NATO's Host-Nation Support (HNS) concept is to provide effective support to NATO military activities and to achieve efficiencies and economies of scale through the best use of a host nation's available resources.

✓ ***Contractor Support to operations (CSO):***

Contractor Support to Operations (CSO) is the use of pre-planned and/or ad hoc contracted commercial support to operations to perform selected logistic support services. It enables industry to provide certain aspects of logistic support, which is either based on the supply of goods but also services which are not available through force generation. CSO is provided under national and/or NATO arrangements and may include rapidly usable contracts.

## 109.5 Planning considerations

Logistic activity has an important role in enabling the following phases of the campaign: deployment, sustainment and redeployment.
It is necessary to analyse the situation, especially: the political, economic, social and military aspects; the geography of the theatre; the support requirements and the potential options.

Planners will need to determine generally the overall logistic support requirements for an operation in order to prepare a coherent plan. They will determine the JOA level support and sustainability requirements. The Operational Planning Process is determined with the following considerations.

- ✓ ***Movement planning***: Development of movement plans will be an iterative process in order to arrange the arrival of forces into the area in accordance with the NATO Commander's priorities.

- ✓ ***Medical planning***: The plan must provide medical capabilities throughout the force structure, which are in balance with the size of the deployed force and the assessed risk. Planning must ensure the standard of medical care is maintained as closely as possible to peacetime medical standards, taking into account the operational environment.

- ✓ ***Host Nation Support (HNS) planning***: Coordination of HNS planning and execution is essential for operational effectiveness, efficiency and the avoidance of competition for resources. HNS facilitates the introduction of forces into an area of operations by providing essential RSOM support. HNS may also reduce the amount of logistic forces and material. The NATO Commander's logistic staffs are responsible for the development of HNS arrangements.

- ✓ ***Infrastructure planning***: infrastructure planning evaluates operational and logistic requirements against existing infrastructure. Shortfall to the requirements may be met by organisational re-arrangements, HNS, contractors and/or engineer support. It includes security issues such as ammunition storage.

- ✓ ***Contracting and funding***: The logistics staff will need to work closely with the financial staff to arrange contracts for required services not provided by military means.

- ✓ ***Contributions of NNN***: Non NATO-Nations should be brought into the force generation process at the earliest possible stage and, where appropriate, their logistic capabilities should be identified within the force planning process.

- ✓ ***Concluding the operation***: planning for the conclusion and long term consequences of the operation must be considered from the outset. Re-deployment may involve environmental issues, real estate management, repackaging of ammunition stocks and equipment, and the accounting for and disposal of NATO-owned equipment.

## NOTES

# 111 – Multinational Operations

## 111.1 References

US JP-3.16 "Multinational Operations"

## 111.2 Alliance vs Coalition

✓ ***ALLIANCE***
Formal agreement based on a TREATY.
- Enduring;
- Broad and long term objectives;
- Pool their security
- Promote and defend common interests

✓ ***COALITION***
AD HOC arrangement for common action.
- Usually limited in time and scope;
- Narrow sector of common interest.

**ALLIANCE**

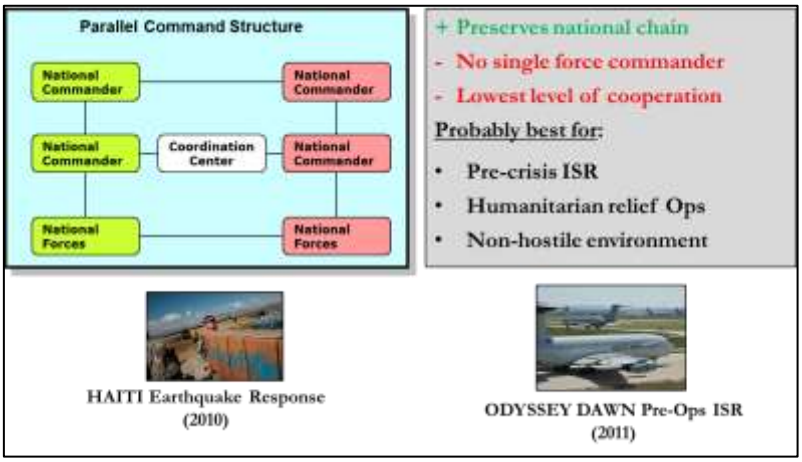
- **Benefits:**
  - Interoperable
  - Standardized
  - Trained
- **Difficulties:**
  - Bureaucratic Inertia
  - Usually requires consensus
- **Examples:**
  - NATO (1949)
  - ANZUS (1951)
  - US-Korea (1953)

**COALITION**

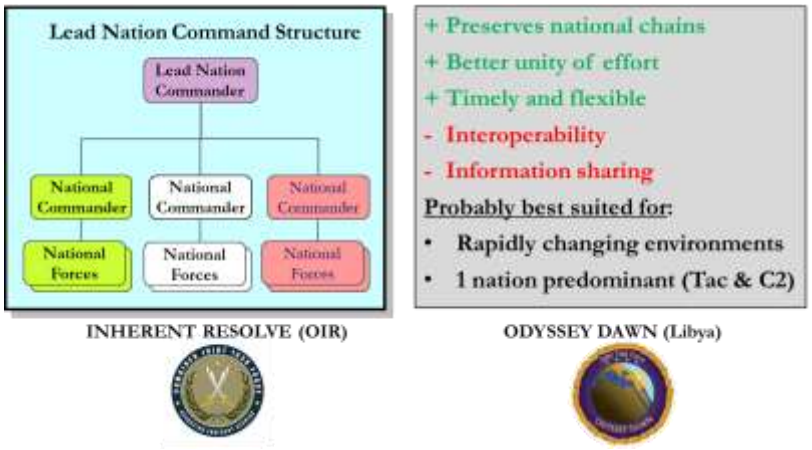
- **Benefits:**
  - Reactive
  - Flexible
  - Willing
- **Difficulties:**
  - Less formalized
  - Less standardized
  - Information sharing
- **Examples:**
  - WW I & II "Allies"
  - Libya (2011)
  - OIR

## 111.3 Types of multinational command structures

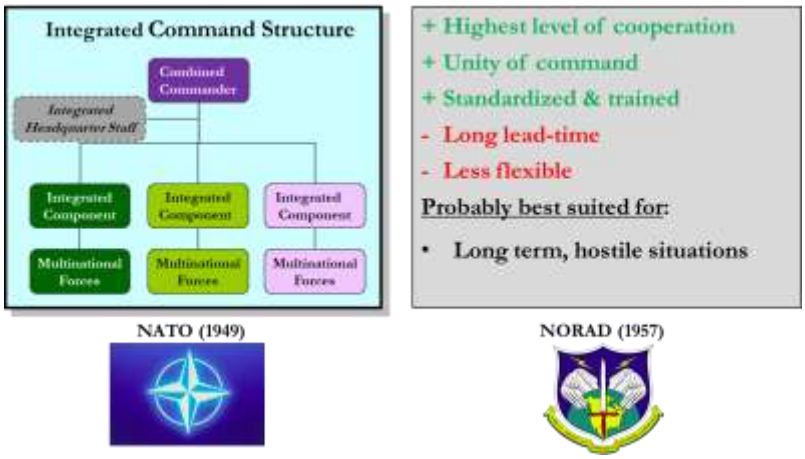
✓ ***Parallel Command Structure***




✓ ***Lead Nation Command Structure***




✓ ***Integrated Command Structure***



## 111.4 Mechanics of multinational operations

- ✓ **Principles of successful multinational operations**

| |
|---|
| RESPECT |
| RAPPORT |
| KNOWLEDGE of PARTNERS |
| PATIENCE |
| TRUST AND CONFIDENCE |
| MISSION FOCUS |

*"In war it is not always possible to have everything go exactly as one likes. In working with allies it sometimes happens that they develop opinions of their own."*

**Sir Winston Churchill**

- ✓ **Criteria of selection**

| POLITICAL CRITERIA | MILITARY CRITERIA |
|---|---|
| ▸ International reputation | ▸ Integration into the intervention (large numbers of troops and reduced caveats) |
| ▸ Regional expertise | ▸ Quality of the armed forces |
| ▸ Diplomatic competence | ▸ History of cooperation |

## NOTES

# 201 – Joint Air Operations key Documents

## 201.1 References

- ✓ AJP-3.3 : Allied Joint Doctrine for Air and Space Operations
- ✓ AJP-3.9 : Allied Joint Doctrine for joint targeting

## 201.2 Campaign Level documents

- ✓ ***Joint Operations Plan (OPLAN)***
  COMJTF overall Joint campaign plan.

- ✓ ***Air Operations Plan (AIR OPLAN)***
  COMJFAC subplan integrating and coordinating Joint Air Operations into COMJTF Joint Campaign Plan. Normally annexed to the OPLAN (Annex H).

- ✓ ***Air Defence Plan (ADP)***
  Air Defence Commander (ADC) subplan integrating Air and Missile Defence into COMJTF Joint Campaign Plan. Normally annexed to the OPLAN.

- ✓ ***Airspace Control Plan (ACP)***
  Airspace Control Authority (ACA) subplan for implementing the Theater Airspace control system in the Joint Operations Area (JOA). Normally annexed to the OPLAN.

- ✓ ***Rules Of Engagement (ROEs)***
  Set of rules defining the use of force within a specified JOA.

- ✓ **Air Operations Directive *(AOD)***
  COMJFAC directive for a specific period. It is the foundation for a series of ATOs and associated documents.

## 201.3 Daily Air Planning and Execution document

- ✓ ***Air Tasking Order*** **(ATO) – NATO AdatP-3 format**
  Regroups Air Missions from all Air capable Components (Land, Navy, SOF and Air). Allows integration of Joint Air effects, mitigation of fratricide risk and deconfliction of air missions.

```
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AMSNDAT/3FC1603/-/-/-/CAS/-/-/DEPLOC:LFKS/ARRLOC:LFKS//
AMPN/VERSION:ORIGINAL//
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NARR/MISSION NOTES/
TASKING NOTE:
- MSN 3FC1603 CS RAGE03 IS TASK IN AREA COBRA NORTH ISO JTAR-JSC
-------------------------------------------------------------
```

- ✓ ***Airspace Control Order*** **(ACO) – NATO AdatP-3 format**
  Paired with the same day's ATO, lists the daily active Airspace Control Means (areas).
  It enables all Air Capable Components to operate in an efficient, integrated and flexible manner with minimal interference. Users have to submit their requests to the JFAC HQ for deconfliction/creation/activation/ deactivation of airspace.

```
------------------------------------------------------------
//
AMSNDAT/3FC1603/-/-/-/CAS/-/-/DEPLOC:LFKS/ARRLOC:LFKS//
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/LATM:4140N00912E/LATM:4144N00900E/LATM:4205N00900E
/LATM:4206N00856E/LATM:4236N00859E//
AMPN/DESTINATION TYPE:STATION OVER AREA/OBJECTIVE:ARMED RECCE//
NARR/MISSION NOTES/
TASKING NOTE:
- MSN 3FC1603 CS RAGE03 IS TASK IN AREA COBRA NORTH ISO JTAR-JSC
------------------------------------------------------------
```

- ✓ ***COMPLAN***
  Contains all necessary information and details to ensure efficient communications in Joint Air ops (Frequency lists, C/S, codewords, crypto procedures).

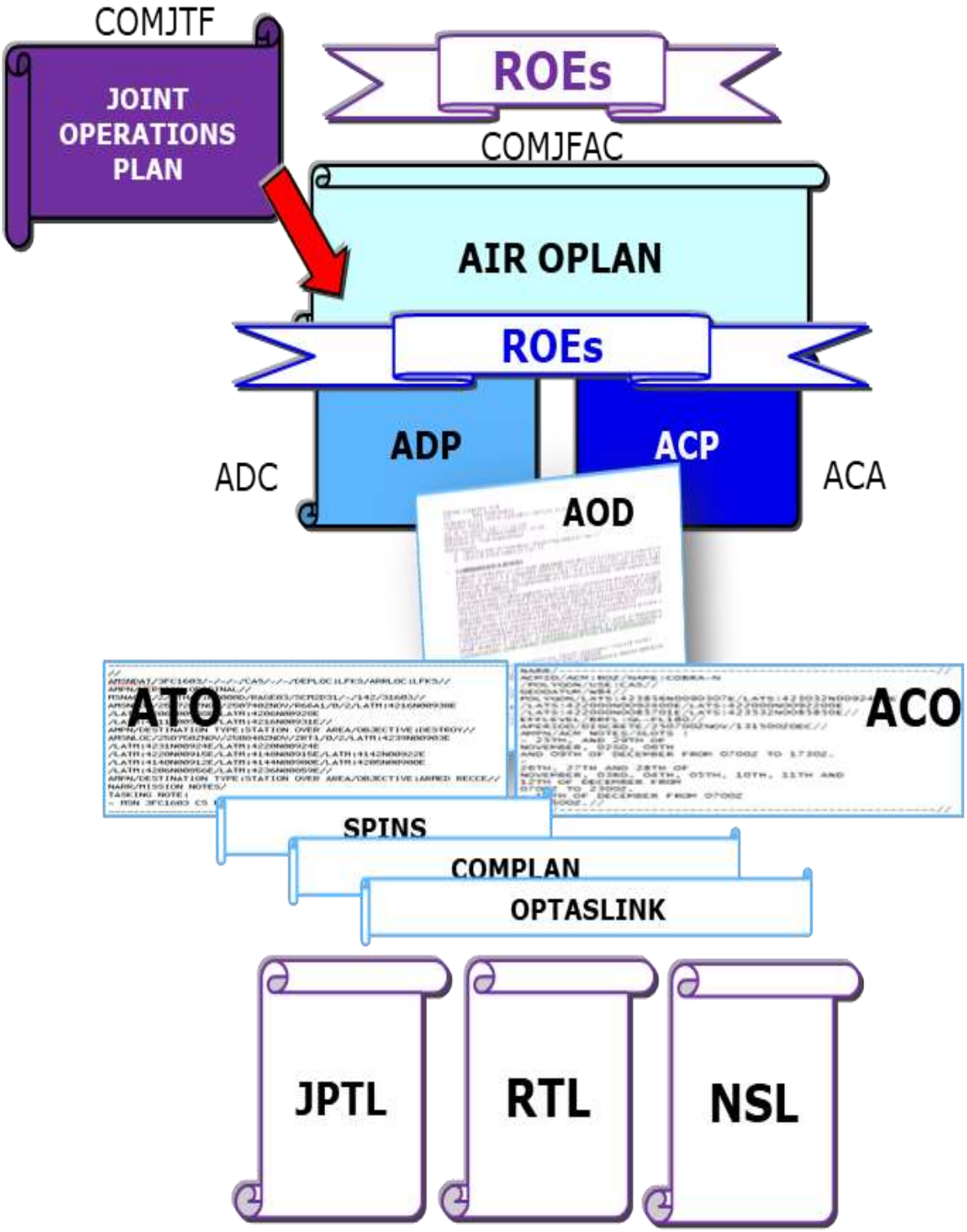
- ✓ ***OPTASKLINK*** **– NATO AdatP-3 format**
  Provides the detailed instructions to initialize and use ops data links.

### 201.4 Targeting related documents

- ✓ ***Joint Prioritized Target List*** **(JPTL)**
  A list of PRIORITIZED TARGETS approved and maintained by the COMJTF. It incorporates all joint prioritized target nominated for a given period, achieving the desired kinetic and non-kinetic effects given by the AOD.

- ✓ ***Restricted Target List*** **(RTL)**
  A list of valid targets approved and maintained by the COMJTF with temporary or permanent operational restrictions for engagement that require specific planning consideration.

- ✓ ***No Strike List (NSL)***
  A list of ENTITIES that are designated by the NAC or the coalition as protected from the effects of military operations under international law and/or ROE (e.g. include cultural, religious facilities, hospitals, schools, embassies, etc.). Objects may be removed from this list and become subject to attack if used for military purposes by the ennemy**.** The NSL is maintained by the COMJTF.



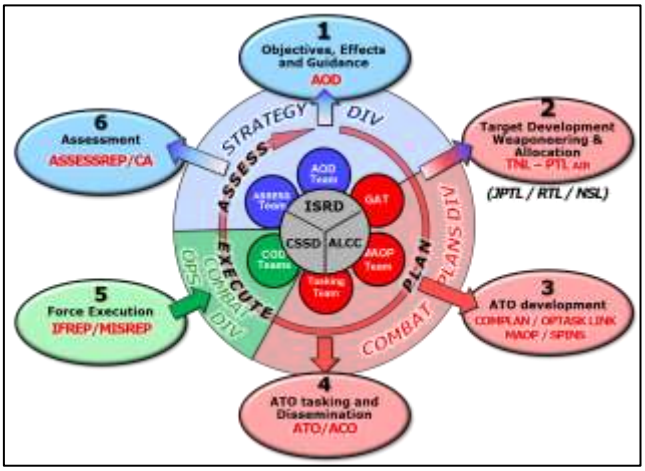
## NOTES

# 202 – Joint Air Tasking Cycle

## 202.1 References

AJP-3.3: Allied Joint Doctrine for Air and Space Operations.

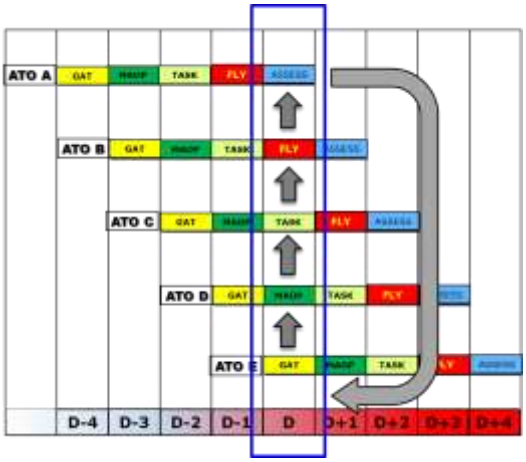
## 202.2 The Cycle




- ✓ **TNL** = Target Nomination List (component needs)
- ✓ **PTL Air** = Prioritized Target List Air (those targets prosecuted by joint air assets)
- ✓ **IFREP** = In Flight Reports
- ✓ **MISREP** = Mission Reports (written and sent shortly after mission landing)
- ✓ **ASSESSREP** = Assessment Reports
- ✓ **CA** = Combat Assessment (BDA + MEA + RR)
  - **BDA** - Battle Damage Assessment
  - **MEA** - Munitions Effectiveness Assessment
  - **RR** - Re-attack Recommendations

## 202.3 Battle rhythm

There are always 5 ATOs in existence at various stages of there life cycle at any given time in the JFAC HQ. To avoid confusion which may lead to catastrophic events and mission failures, always specify which ATO you are referring to at the beginning of a briefing, an email or a conversation, using the official ATO naming convention.



## NOTES

# 203 – Introduction to Air C2 tools

## 203.1 Reference

- ✓ AJP-3.3: Allied Joint Doctrine for Air and Space Operations.

## 203.2 ICC - NATO−wide **I**ntegrated **C**ommand and **C**ontrol software for air operations

ICC development was initially tasked by Supreme Headquarters Allied Powers Europe (SHAPE) to investigate functions and technologies anticipated for the ACCS programme and to evaluate their operational utility in order to improve ACCS in the future.
The software was developed by the NATO Communication & Information Agency (NCIA).
The ICC is a proven Command, Control, Communications (C3) capability that is supported, fielded and sustained NATO-wide. It provides capabilities for integrated planning, tasking, air situation monitoring and operations, information management and decision support to operational and tactical levels of air operations during peacetime, exercises, crises and conflicts.

The ICC provides functional support for the most critical Air Command and Control (Air C2) functions at Air Component Command and CAOC levels, such as:

- ✓ Planning;
- ✓ Resource allocation;
- ✓ Tasking.

ICC also supports the preparation and use of:

- ✓ Air Operations Directives (AOD);
- ✓ Airspace Control Order (ACO);
- ✓ Released Target List (from JTS);
- ✓ Air Task Order (ATO);
- ✓ Air Task Message (ATM).

Furthermore, ICC allows for a number of automated status reporting messages for planning and execution of operations (offensive and defensive). This includes display of a Recognized Air Picture provided from various sources through the NATO Interoperable RASP Information System (NIRIS) as well as support of Air Status Reporting, Air Surveillance and Control Status, Surface to Air Missile Status Reporting, etc.

- ✓ ***ICC/ASMAN: Air Space MANagement***
  ICC module dedicated to the building and management of the ACO in which ACMs (Airspace Control Means) can be created with the benefit of having a user-friendly interface enabling to display the ACO on a map and generate automatically the formatted ACO message. Once validated and released, the ACO is available on the ICC network or it can be exported as a text message to be disseminated to any recipient who can then read it or import it into another system complying with the Adatp-3 (Allied Data processing Publication 3) NATO standard.

- ✓ ***ICC/SALTO: SHAPE technical centre Air Logic Tool***
  The SALTO application is the core ICC application that assists the planner in both building and generating an ATO according to the functional description of the ATO generation process. SALTO essentially uses the elements produced during the previous steps of the cycle in order to task missions, such as:
  - o Assets, the air units to be tasked;

- Areas, lines, points, coming from the ACO;
- Targets coming from a PTL (Prioritised Target List);
- The MAOP (Master Air Operation Plan) telling who does what, where and when.

Just as the ACO, once the ATO is validated and released it becomes available on the ICC network or as an exported text message to be disseminated to any recipient who can then read it or import it into another system complying with the Adatp-3 NATO standard.

✓ ***ICC/Mission TOTE***

The ATO Mission Tote is an ICC module supporting the Current Operations Room and all users that need to monitor or visualise ATO Missions. The MTote module allows the operator to easily monitor the tasked missions, by listing all the missions or show them on a sortie flow graph. Mission status is automatically changed as soon as mission report has been received, or as a consequence of automatic checks. At the end of the ATO execution, MTote can be used to fill in Mission Reports (MISREPs) with a template complying with the standardized message format. Additionally as ICC and JTS - the targeting tool - are linked, the result of a mission conducted over a target can update the matching target folder in JTS to establish the BDA (Battle Damage Assessment). Moreover, to feed the reports used by the Assessment team of the Strategy Division of the JFAC HQ, MTote can generate statistic charts with various templates to provide figures on the air activity.

✓ ***ICC/Track TOTE***

This ICC module gives the user the capability to display the Recognized Air and Surface Picture (RAP/RSP). It provides a tabular view (or tote) of all tracks, and the RAP/RSP can also be displayed on any ICC Map as a RAP layer in combination with other layers such as the ACO. Track TOTE relies only on information processed by Tactical Data Links and does not use any raw input coming from the sensors. Furthermore and as the refresh rate of Track TOTE is not fast enough, it cannot be used to perform tactical control and can only serve to monitor the air situation for situational awareness.

### 203.3 JCHAT – Joint Chat

The Joint Tactical Chat is a stand-alone software enabling to transmit brief reports and instructions in dedicated chat rooms in order to have a better common situational awareness not only for the Combat Ops Division of the JFAC HQ but for any entity or actor involved in the Air Operations as well.

### 203.4 JTS - Joint Targeting System

JTS is a stand-alone system that serves as the integrated targeting tool to:

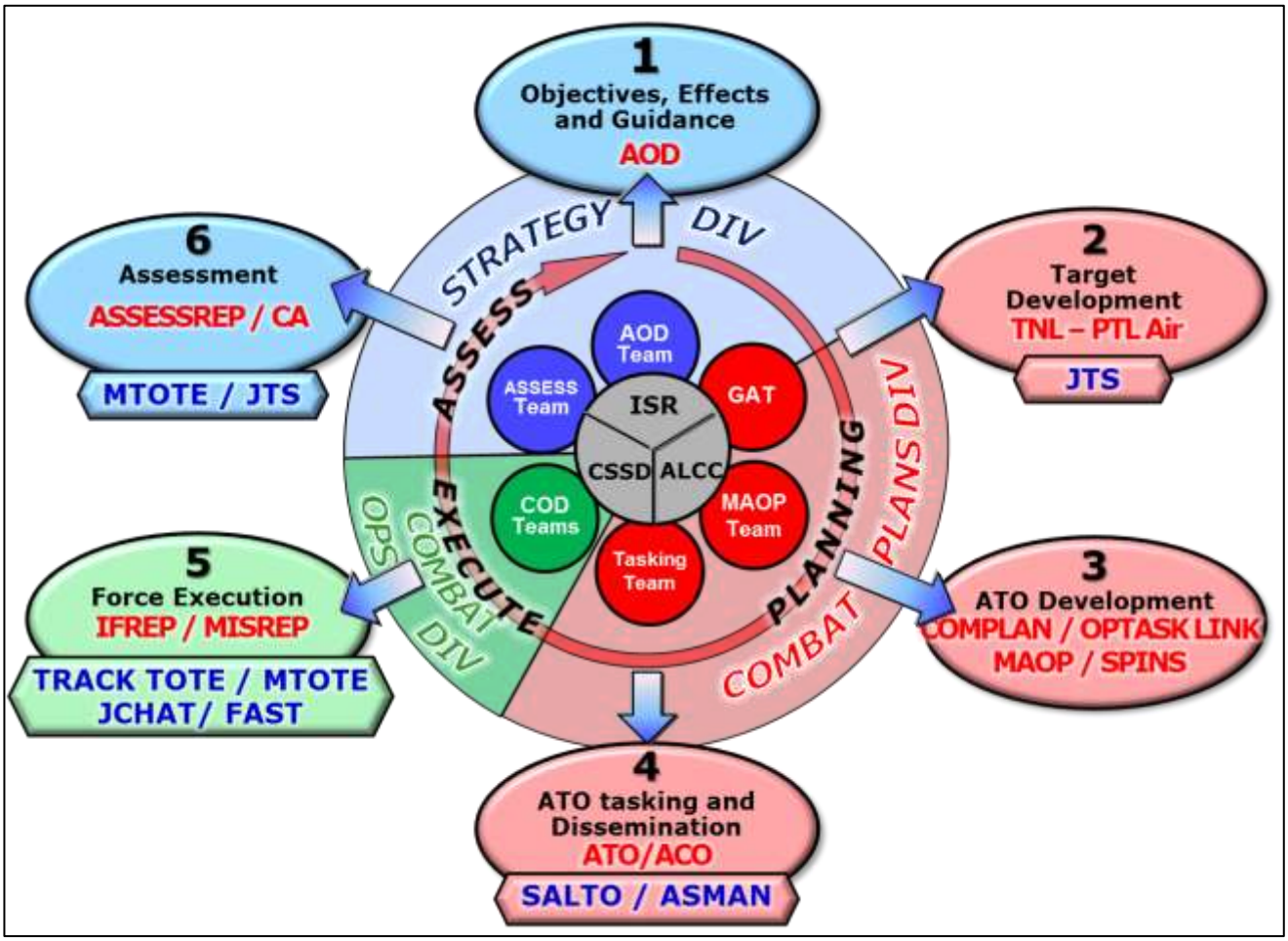
- ✓ Store and share complete Electronic Target Folder (ETF),
- ✓ Create and manage target lists (JTL, TNL, JPTL, RTL, NSL, CC's PTL),
- ✓ Create and manage campaign objectives, phases and tasks,
- ✓ Store combat assessment reports,
- ✓ Manage campaign assessment.

JTS and ICC are linked and both systems can share information used by one another. For instance, the Prioritised Target List (PTL) for the Air Component generated by JTS will be used by ICC to

build the ATO and at the end of the cycle for the assessment step, the MISREPs coming from ICC will feed the BDA process of the targeting cycle.

### 203.5 FAST - Functional Area Service for DT (Dynamic Targets) and TST (Time Sensitive Targets)

FAST is a NATO collaboration and coordination tool, designed to ease the prosecution of Time Sensitive Targets. It is dedicated to the "Find Fix Track Target Engage Exploit Assess" (F2T2E2A) dynamic process used on JFC's validated targets.



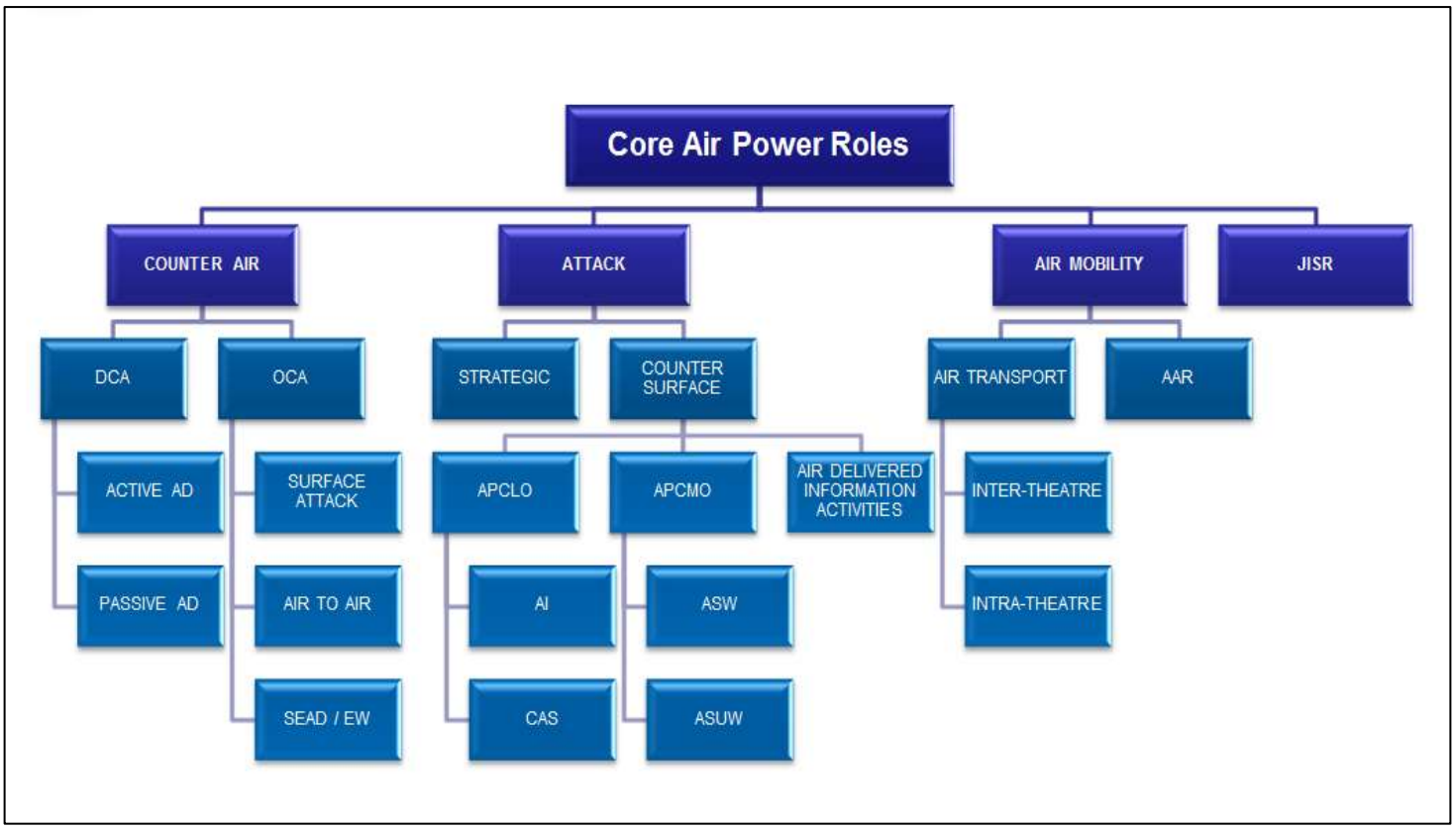
## NOTES

# 204 – Core Air Power roles and Air Mission Types

## 204.1 References

- ✓ AJP-3.3 : Allied Joint Doctrine for Air and Space Operations;
- ✓ AAP-6: NATO Glossary of terms and definitions

✓ **Core Air Power Roles**




### COUNTER AIR

All actions to gain and maintain control of the air to counter opposing air-threat. Not an end in itself, but a means to a greater end.

- ✓ ***Air Superiority***: That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force.

- ✓ ***Air Supremacy***: That degree of air superiority wherein the opposing air force is incapable of effective interference.

  - ***DCA (Defensive Counter Air)***
    Air operations conducted to protect friendly forces and vital interests from enemy air and missile attacks.
    - **Passive DCA:** Camouflage, stealth, deception, hardening, dispertion, reconstitution, early warning, etc.

- **Active DCA:** Fighters (CAP, QRA), SBAD, TBMD

- ***OCA (Offensive Counter Air)***
  Offensive actions taken to destroy, disrupt or degrade the effectiveness of hostile air and missile threats.
  - **Surface Attack :** Intended to inflict damage on or destroy soft and hardened land targets, underground targets, and selected maritime units that contribute to the adversary's air and missile capabilities.
  - **Air to Air:** Sweep or escort
  - **SEAD /EW**
    - **SEAD *(Suppression of Enemy Air Defences)*** - Activity which neutralizes, temporarily degrades or destroys adversary air defences by destructive and/or disruptive means.
    - **EW *(Electronic Warfare)*** - Military action to exploit the electromagnetic spectrum encompassing: the search for, interception and identification of electromagnetic emissions, the employment of electromagnetic energy, including directed energy, to reduce or prevent hostile use of the electromagnetic spectrum, and actions to ensure its effective use by friendly forces.

**ATTACK**

- ✓ ***Strategic Attack*** - JTF-directed offensive action against a target, whether military, political, economic or other, that is specifically selected to achieve military strategic objectives. Defined by the expected effects at the Strategic level of War.

- ✓ ***Counter Surface*** - Counter-surface force operations comprise counter-land and counter-maritime operations and are conducted to defeat an adversaries' fielded forces, destroy their supporting infrastructure or generate psychological effects to shatter their cohesion or will to fight.

  - **APCLO *(Air Power Contribution to Counter-Land Operations)***
    - **AI** (Air Interdiction): air operations conducted to divert, disrupt, delay, degrade or destroy an adversary's military potential before it can be brought to bear effectively and at such distance that detailed integration of each air mission with the fire and maneuver of friendly forces is normally not required.
    - **CAS** (Close Air Support): air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces for fratricide avoidance and targeting guidance performed by a certified and qualified Joint Terminal Attack Controller (JTAC).

- **APCMO** ***(Air Power Contribution to Counter-Maritime Operations)***
  - **ASW** (Anti Submarine Warfare) - operations conducted with the intention of denying the adversary the effective use of submarines. Antisubmarine includes searching, locating, classifying and attacking submarines as well as their support assets.
  - **ASUW** (Anti Surface Warfare) - AntiSUrface Warfare operations are conducted to destroy or neutralize adversary naval surface forces.
- **Air Delivered Information Activities -** Primarily focus on non-lethal effects to influence an adversary's will, understanding and subsequent behaviour.

**AIR MOBILITY**

- ✓ **Air Transport**
  - Inter-theater Air Transport (Strategic)
  - Intra-theater Air Transport (Tactical)
- ✓ **AAR** (Air-to-Air Refueling)

**JISR** (Joint Intelligence Surveillance and Reconnaissance)

- ✓ **Reconnaissance** : a snapshot of activity at one point in time
- ✓ **Surveillance** : reconnaissance over time, looking for activity patterns
- ✓ **Intelligence** : the product resulting from the analysis of information
- ✓

## TAKE AWAYS

**Air ops are:**

- **Joint by nature, Complex, EFFECT based.**

**Environment is:**

- **always a factor for Joint Air Ops.**

**Defence of our assets and personnel is**:

- **vital to start execute any Joint Campaign.**

**NOTES**

# 205 –Air Mobility

## 205.1 References

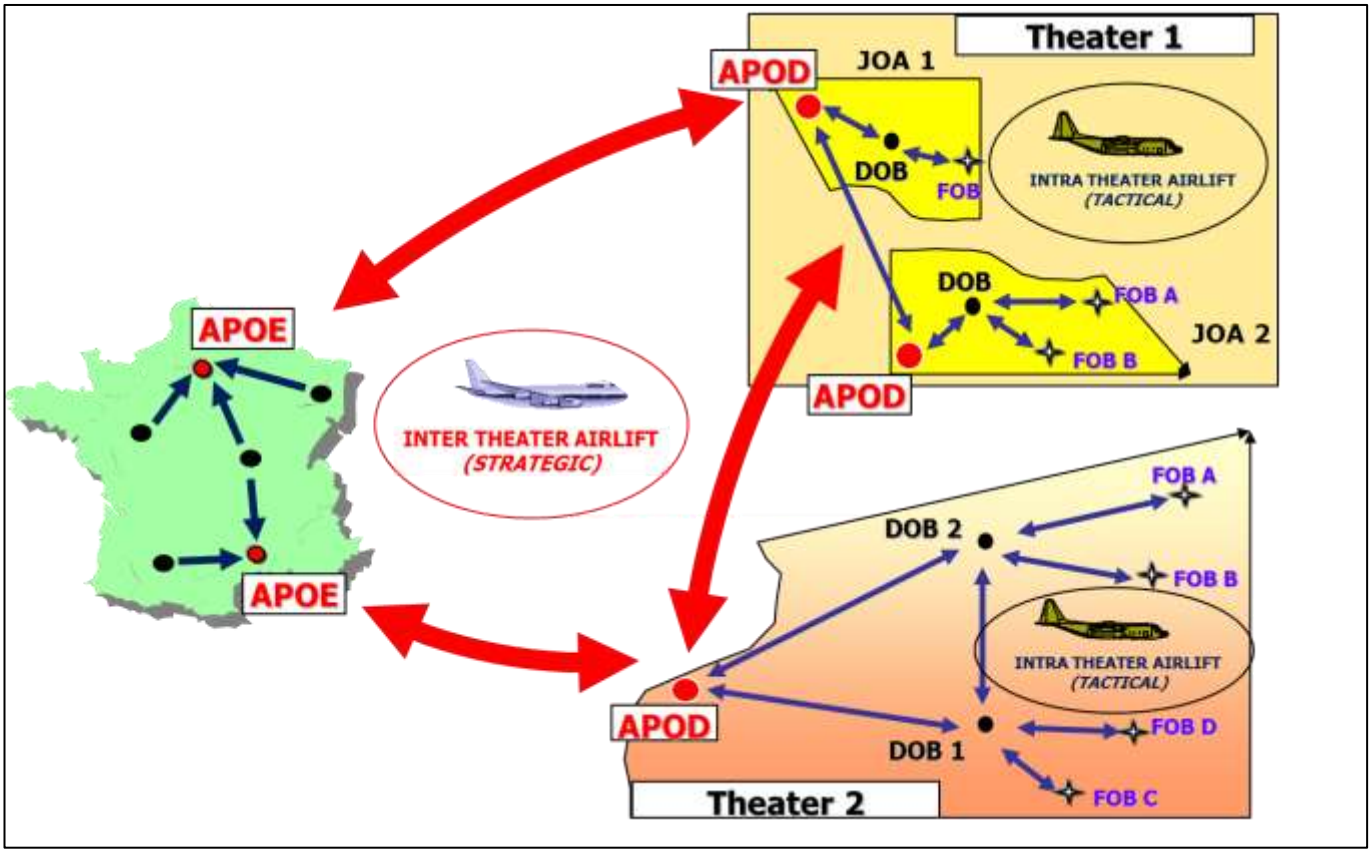
- ✓ ATP 3.3.4 Vol I : Air Transport Doctrine
- ✓ ATP 3.3.4 Vol II : Air to Air refuelling Doctrine

## 205.2 Definitions

- ✓ ***Air Mobility*** **= Air Transport + Air to Air Refuelling**
  - ***Air Transport (AT)*****:** The rapid movement of personnel and materiel to and from a theatre of operations and within that theatre by air across the full spectrum of operations.
  - ***Air to Air Refuelling*** **(AAR):** in-flight transfer of fuel between tanker and receiver aircraft.

- ✓ ***Inter-theatre AT***
  Airlift between the theater/JOA and bases located outside of the theater/JOA => *Strategic Airlift*.

- ✓ ***Intra-theatre AT***
  Airlift within a specific theatre/JOA => *Tactical Airlift*




- ✓ ***Airborne Operation*****:** provide air-delivered combat power to seize ground or installations through the airdrop or airland delivery of forces directly into an objective area.

- ✓ ***Types of missions***
  - Routine AT (pax/fret)

- Air Logistic Support
- Airborne operations
- Aeromedical Evacuations
- Support to other missions

✓ ***Types of deliveries***

- "Air land" (when landing is possible)
- "Airdrop" (when landing is not possible)

**NOTES**

# 206 –Introduction to IAMD

## 206.1 References

- ✓ AJP 3.3: Allied Joint Doctrine for Air and Space Operations.

## 206.2 Definitions

- ✓ ***Critical Assets List (CAL)***
  A prioritized list of assets or areas normally identified by phases, that should be defended against air and missile threats
  - Joint Forces assets (APODs, SPODs, DOBs, FOBs, HVAAs, HQs, etc.);
  - HN & coalition assets;
  - Geopolitical assets;
  - Highly populated area.

- ✓ ***Joint Prioritized Defended Assets List (JPDAL)***
  The list of those assets from the CAL that receive theatre level protection. Approved by the COMJTF.

- ✓ ***Air defence Plan (ADP)***
  The Air Defence Commander (ADC) plan for a comprehensive Theatre Air and Missile Defence which is *approved by the COMJTF*. This one delegates the task to the Component Commander which has the preponderance of AD assets and the ability to command & control (C2) them.

- ✓ ***Air defence design***
  - Found in the Air Defence Plan (ADP).
  - The air defence design describes the following:
    - Air defence regions and sectors;
    - Primary sensors nature and location;
    - Ground/Sea based or airborne TAC C2 (CRCs, D-CRCs, AEW orbits);
    - SBAD and TBMD units, location and associated MEZs;
    - FAOR location, associated FEZs and ground alerts (QRAs);
    - Comms, SATCOM and Tactical Datalink availability;
    - C2 Battle Management Functions delegation matrix (see notional example below).
  - Factors determining the air defence design include:
    - Threat nature and location;
    - CAL / JPDAL;
    - Force availability;
    - C2 organisation and management;
    - Regional civilian radar detection and links network;

## C2 Battle Management Function (BMF)

(Phase 4 Stabilization)

| Authority | JFC | COM JFAC | CCO | SADO | C2 Control Agency (sector) | Cockpit | Firing Unit | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | ABT | TBM |
| Identification | | | | | X | | | |
| Hostile Declaration | | | X | | | | | |
| Scramble | | | | X | | | | |
| Border Crossing | X | | | | | | | |
| WCS* | | | X | | | | | |
| Warning** | | | | X | | | | |
| Commit | | | | X | | | | |
| Engagement | | X | | | | | | X |

*Weapons Control Status:
- Hold: fire in self defense or on order
- Tight: fire on hostile (ID IAW ROEs)
- Free: fire on everything non FID friendly (IAW ROEs)

**Warning Conditions:
- White: attack is improbable
- Yellow: attack is probable
- Red: attack is imminent or in progress
- All Clear: end of attack

- ABT = Air Breathing Threats (aircraft +CMs)
- TBM = Theatre Ballistic Missiles

## TAKE AWAY

- ✓ Theatre Air Defence is a JOINT function, normally delegated to the Component Commander with the preponderance of:
  - AD assets
  - C4I (Command, Control, Communications, Computers and Intelligence)
- ✓ Theatre Air Defence must be INTEGRATED to be efficient:
  - C2
  - Datalinks
  - LNOs
- ✓ The ADP is the JOA Air & Missile Defence Plan developed by the ADC for the COMJTF.

No leakers - No fratricide

**NOTES**

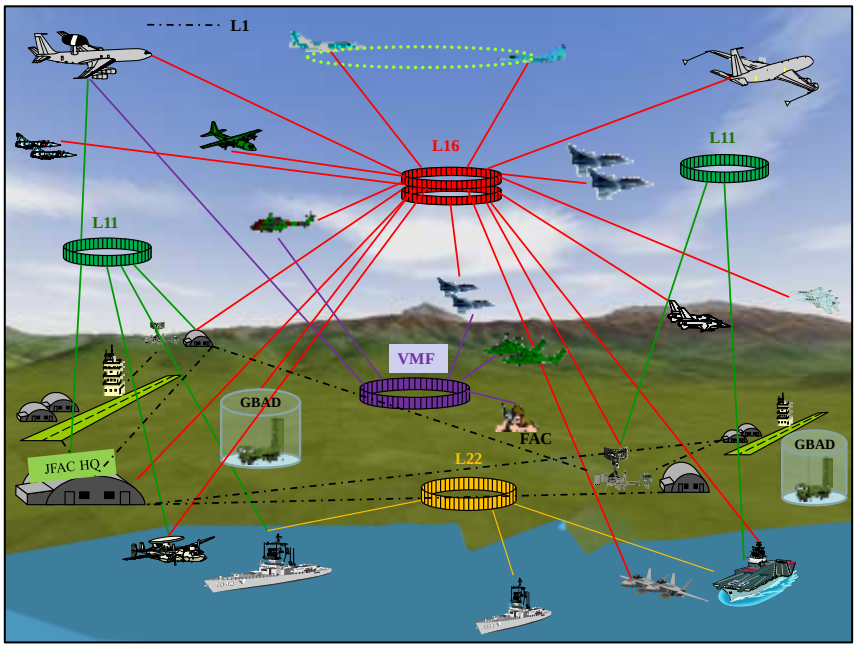
# 207 –Tactical Data Link overview

## 207.1 References

- ✓ Technical aspect: STANAG 5501, 5511, 5516, 5518, 5522
- ✓ Employment/Security aspects & procedures: AdatP-1, 11, 16, 22, 33
- ✓ NATO Message Catalogue: APP-11

## 207.2 Generalities

A TDL is an automatic digital means to transmit data between entities in a specific format, over a common medium and close enough to operations real time, for tactical situation.




## 207.3 Types

- ✓ **Link 1**
  Designed in the late 1950s to cater for point-to-point data communication.

- ✓ **Link 11 (A,B)**
  Designed in the 1960s, provides high speed computer-to-computer digital radio communications in the high frequency (HF) and ultra-high frequency (UHF) bands among Tactical Data System (TDS) equipped ships, aircraft and shore sites.

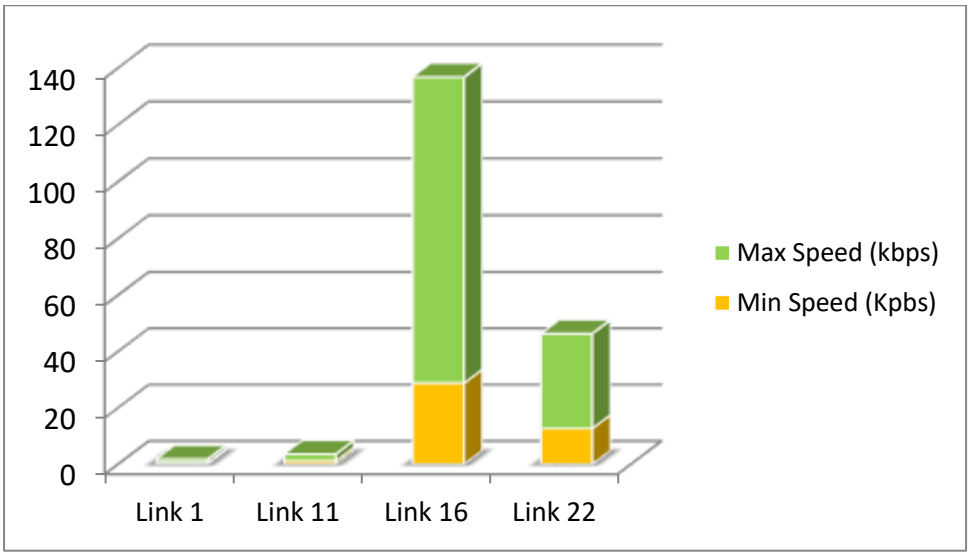
- ✓ **Link 16**
  U.S. program launched in 1975 after the Vietnam War. Developed essentially for aircraft position reports to avoid friendly fires, Link 16 became operational in the US Military during the late 1980s. In 2015, there was an estimation of about 5000 platforms equipped with L16 worldwide.

- ✓ **Link 22**
  During the late 1980s, NATO, agreeing on the need to improve the performance of Link 11, produced a mission need statement that became the basis for the establishment of the NATO

Improved Link Eleven (NILE) Programme. 7 NATO nations regrouped to design NILE TDL, renamed Link 22 in the 1990s.

✓ **VMF**

Variable Message Format is not a formal TDL, but its "K" Series messages are compatible with "J" Series message. VMF was designed by the US in the late 1990s to support various needs for volume and detail of information. VMF is employed extensively for Close Air Support (CAS) missions.




## 207.4 DLM/ICO (Data Link Manager / Interface Control Officer)

✓ ***Multi-Link Network management***

TDL Management is under the responsibility of Joint Force Commander (JFC). This Joint responsibility is usually delegated to the Air Defence Commander (ADC) who gives this task to the DLM/ICO :

- Delegated Coordinating Authority for TDL Management.
- DLM/ICO is an acronym describing an individual, a function and a staff.
- DLM/ICO has to plan, task and conduct TDL in support of operations.

✓ ***OPTASKLINK message***

- Tactical order for daily TDL employment (described in AAP-11);
- Technical parameters for TDL Units (AdatP-3 format)

```
/GENTEXT/TIMBERPU/E3X1-CDCDX1-JFACX1-
GROUNDC2X1-COUGARX1-CNHMX1-NCSX1-RAFALEX6-
F18SPX2-F16BEX2//
/JNETWORK/FRFE0004B-U00/27SEPT10/-/Z/PLUS5MIN//
/JCRYPDAT/001/AMST264/-/0/1//
/JTRNMODE/NOTEST/EXER/NOR/MODE1//
/JSTNETS/VOICE A/12/010/EXCEPT F16MLU //
/JSTNETS/CNTRL/9/010/ALL//
/JUDATA/AC:E3F/CS:BANDSAW/JU:00020/16/-/06200-06377/-
/E3F/001/NORM/0200/PRI/Y/AG/-/-//
/LKSXDUTY/812/815/826//
/JUDATA/GS:CDCD/CS:CASCADEUR/JU:00151/16/-/04600-
05377/-/CDCD/002/NORM/0200/PRI/Y/-/-/-//
/LKSXDUTY/812S/815/826S//
```

## NOTES

# 208 – Joint Targeting Effects & Cycle

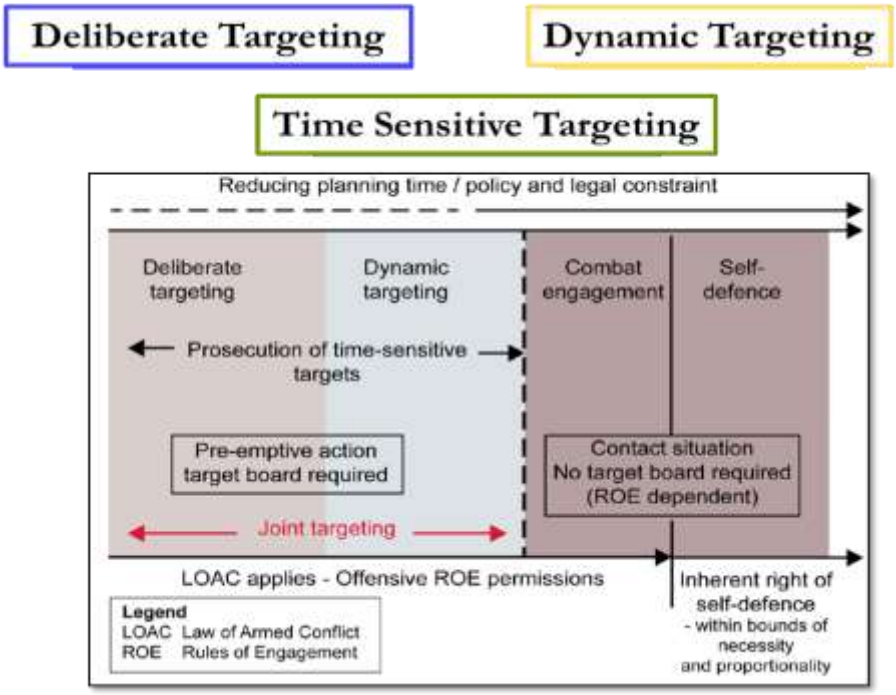
## 208.1 References

- ✓ AJP 3.9: Allied Joint Doctrine for Joint Targeting
- ✓ AJP 3.3 Allied Joint Doctrine for Air and Space Operations

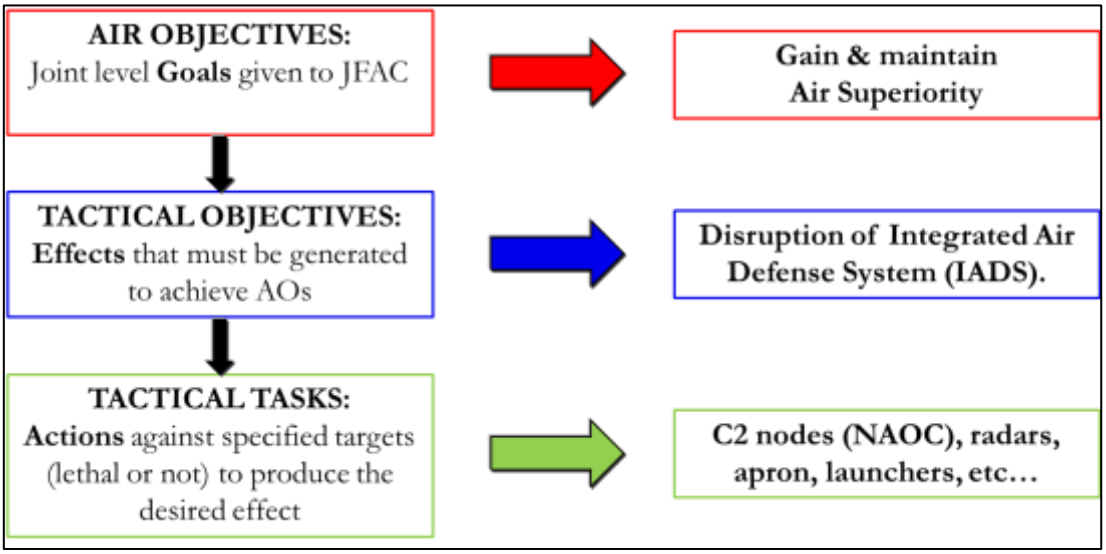
## 208.2 Target Definition:

Target: *Facility, Individual, Virtual, Equipment and Organization.*
⇨ against which lethal and/or non-lethal capability can be employed to create specific psychological or physical **EFFETS**.

## 208.3 Main Types Of Targeting:

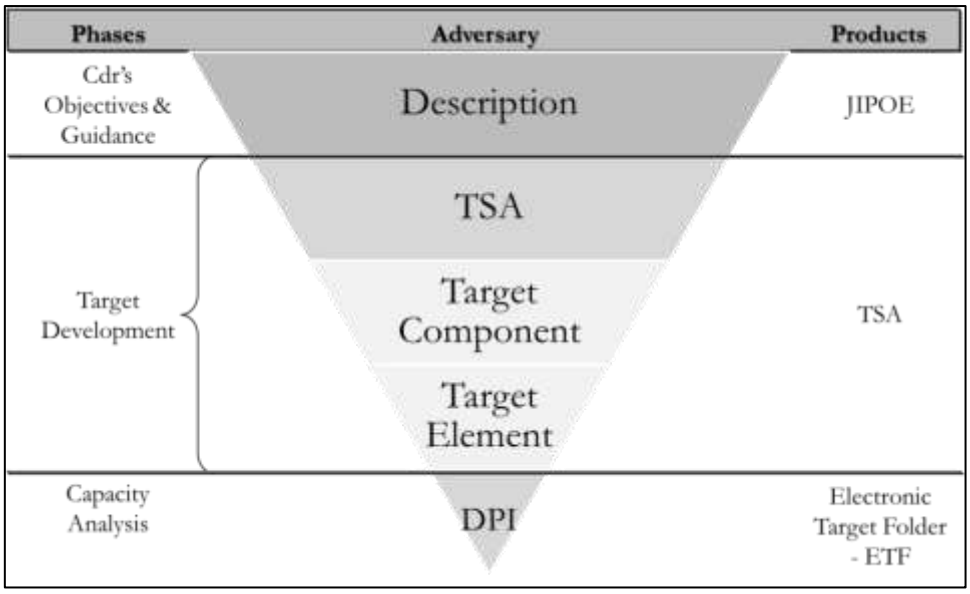


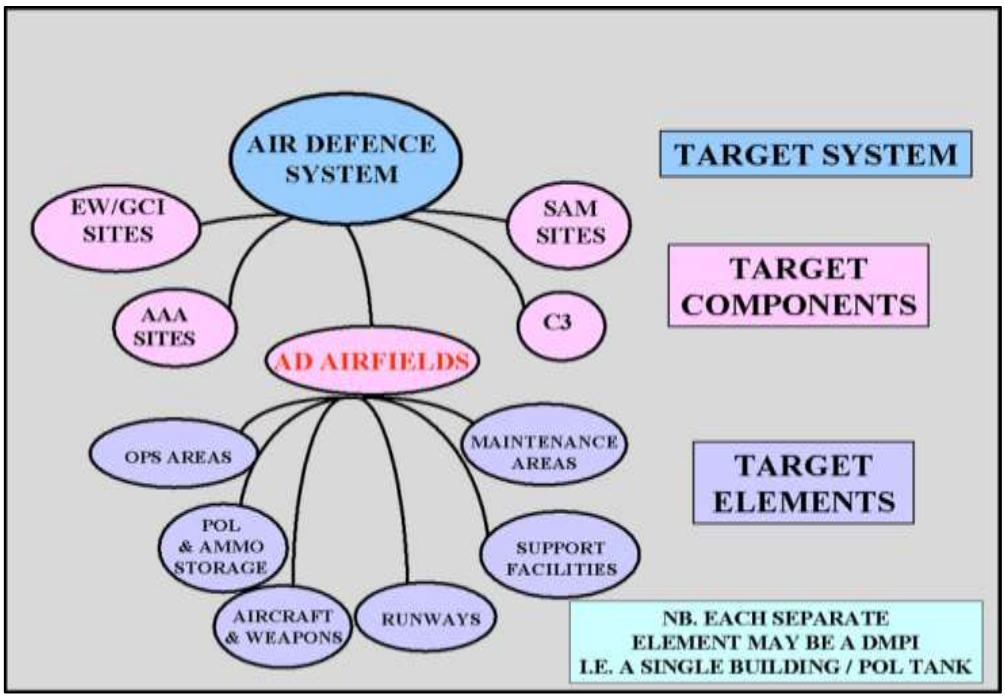

## 208.4 Strategy to Task philosophy:



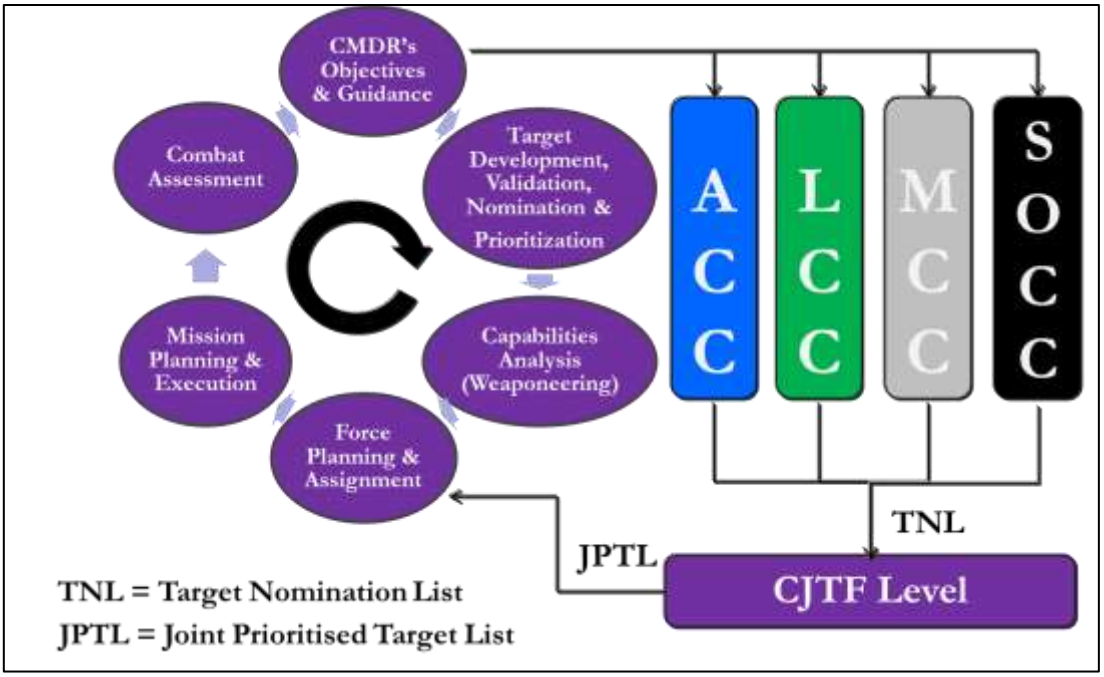
## 208.5 Target System Analysis (TSA):

- ✓ A complete analysis of the various targets within an area, linked by a common function
- ✓ Objective of the TSA : Identify the links and common components of the targets and how they are dependent upon one another.
- ✓ Effect-based analysis.



## 208.5 The Joint Targeting Cycle




- ✓ Targeting cycle = a **joint function**.
  Contribution of all components = TNL from ACC, LCC, MCC & SOCC.
  Parts of the JPTL assigned to the involved components.

- ✓ **Capabilities Analysis**: make the choice between different effects.
  ⇨ Thought on expected end state, on ammunition selection, on risk for friendly forces, on expected damage (*CDE, additional, environmental*)…

- ✓ **Assessment** = BDA + RR + MEA
  - BDA = Battle Damage Assessment (phases 1, 2 and 3)
  - MEA = Munition Effectiveness Assessment
  - RR = Re-attack Recommandation

- ✓ **Measures of Performance (MOP)** = assessing ACTIONS
  *"Are we doing the things right?"*

- ✓ **Measures of Effectiveness (MOE)** = assessing EFFECTS
  *"Are we doing the right things?"*

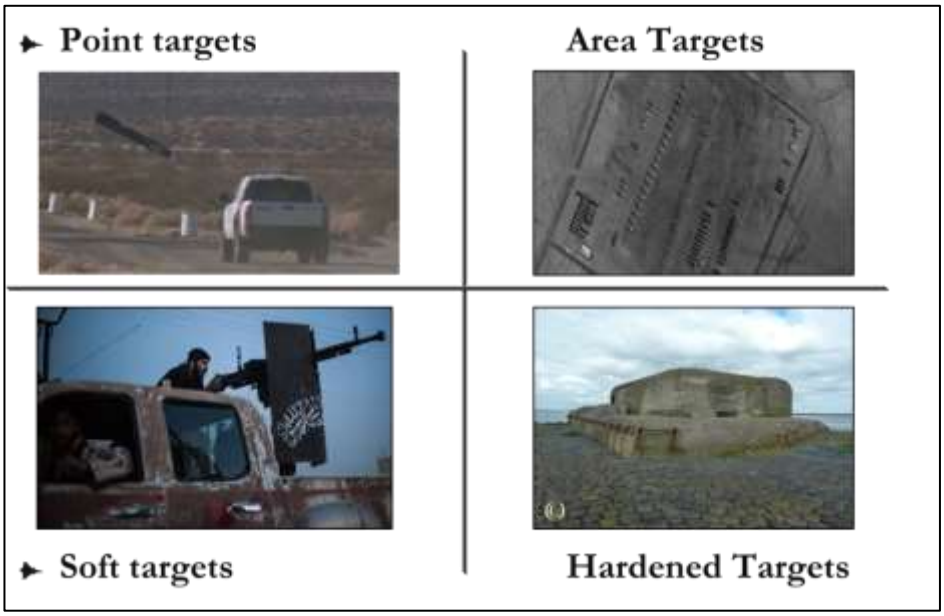
## NOTES

# 209 – Air to Ground Weapons Overview

## 209.1 Weapon Choice

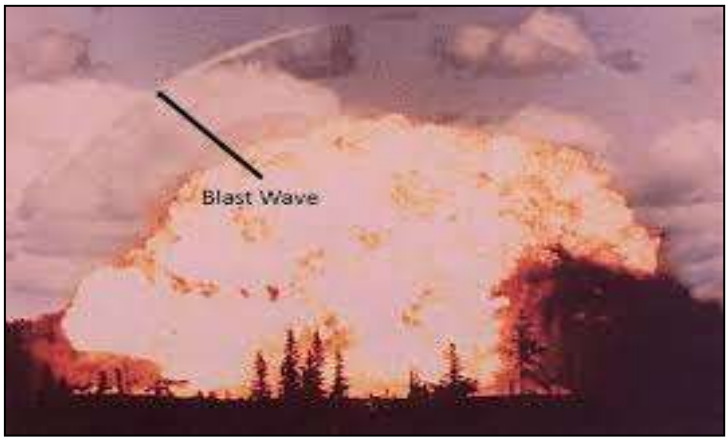
- ✓ Target type,
- ✓ Desired effect,
- ✓ Collateral damage concerns
- ✓ Environmental limitations

## 209.2 Target Types



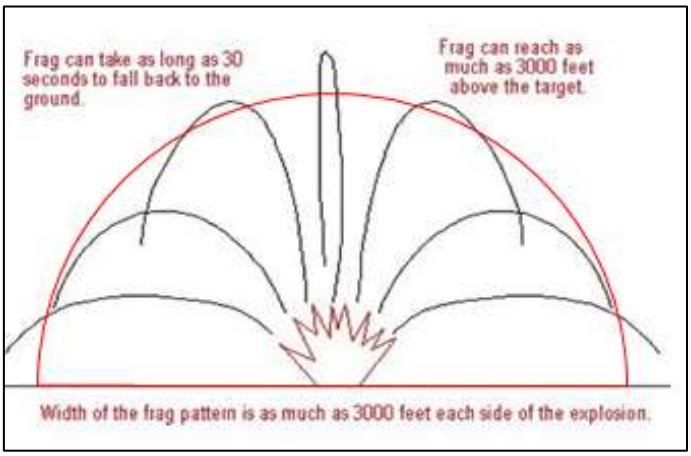

## 209.3 Weapons effects

- ✓ **Blast**
  - Expansion of gases ➔ bomb case swells (x1,5)
  - Up to 700 tons / cm2
  - 3000 C° < T < 4500 C°
  - Best against structures, buildings, machinery



✓ **Fragmentation**

- High velocity fragments of bomb casing (shrapnel)
- Out to 3000 feet / 30 seconds (Mk 82 – 500 lbs)
- Fragments size depends on case (thickness, material, scoring) and explosive
- Best against soft targets (troops, vehicles, aircraft)

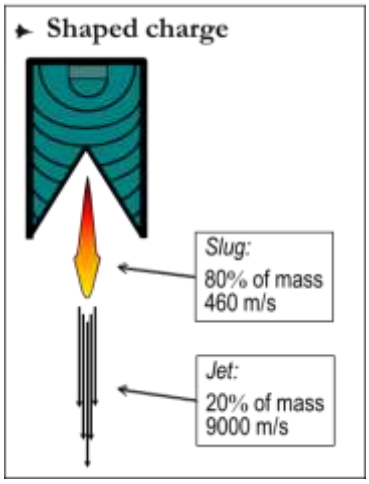



✓ **Cratering**

- Delayed weapon detonation (fusing)
- Difficult to repair
- Best against roads, runways, taxiways

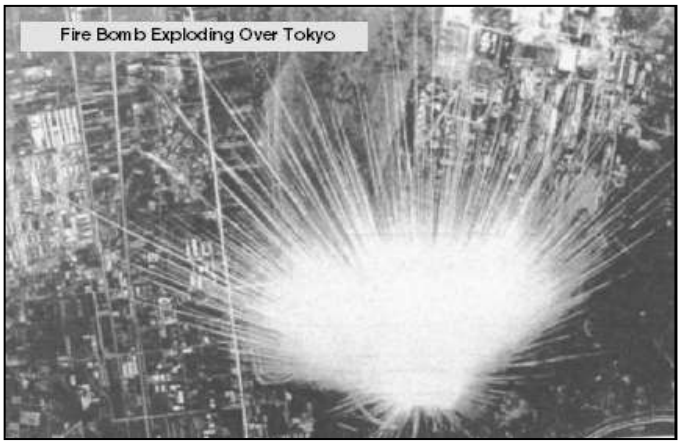
✓ **Armour penetration**

- Shaped charge designed to pierce armor
- Main charge penetrating inside the target before explosion
- Best against hardened targets (armored vehicles, bunkers)

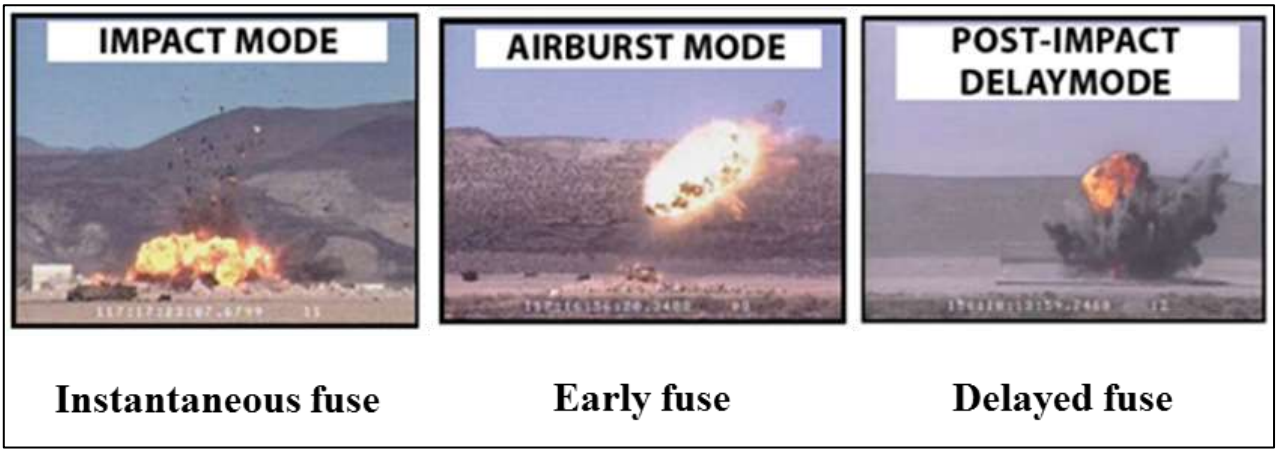



✓ **Incendiary**

- Intense heat, relatively small fireball"
- Burning or melting surrounding material
- Best against uncovered supplies and combustibles (fuel, personnel, open storages).



✓ **Fusing options**




## 209.4 Air to ground Weapons

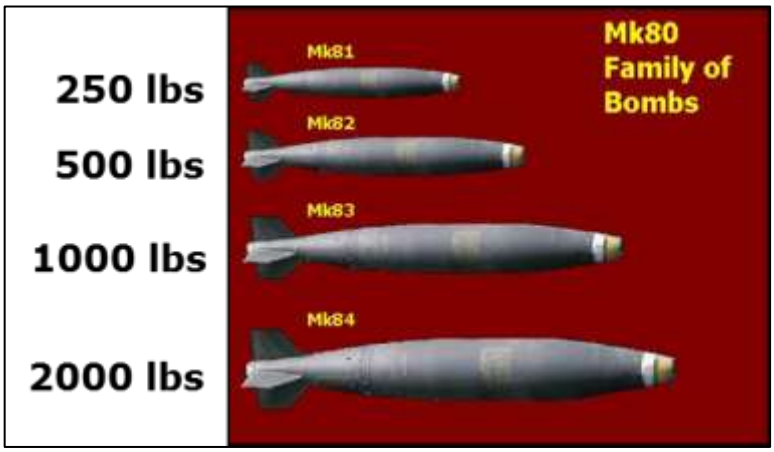
✓ **Guns**

- Various calibers (20/25/27/30/40 or 105 mm) & effects;
- Low Collateral damage
- Increased risk to Force (close range)



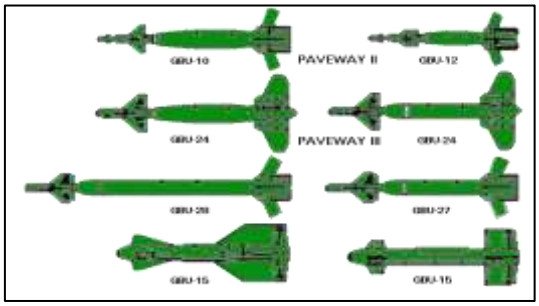
✓ **General purpose Bombs**

- Unexpansive/abundant
- Low maintenance
- Multiple delivery options



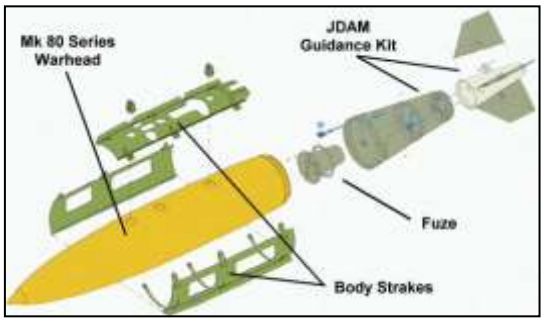
✓ **Laser guided bombs**

- Guided into a laser spot (self or buddy lasing)
- Requires line of sight
- Environmental restrictions (weather, dust, smoke)
- 8 to 10s of flight minimum for stable lasing in final



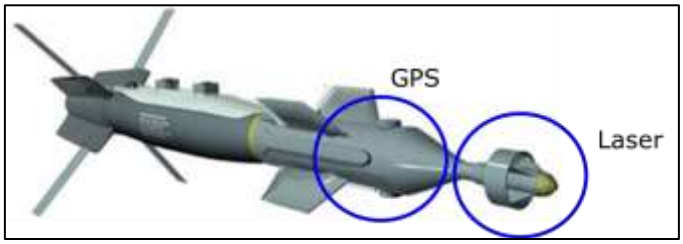

✓ **GPS aided bombs**

- Use of GPS or GPS/INS
- Excellent against fixed targets
- Work in bad weather conditions
- Requires accurate coordinates & good GPS signal (PDOP)
- 30s time of flight minimum to integrate GPS input.




✓ **Dual Mode Guided Bombs**

- Offer both LASER and INS/GPS guiding modes
- Allow increased flexibility in weapon planning (MAOP)
- More expensive



✓ **Air to ground missiles**

- Multiple guiding technologies and options (INS, TV, Rdr, IR)
- Very accurate
- Low collateral damage
- Fire and forget
- Flexible tactics/easy mission planning.


✓ **Cruise missiles**

- Long range/stand-off/
- Surprise effect
- Excellent against heavily defended targets
- Require very accurate route and target data
- Intensive mission planning.


✓ **Anti-ship missiles**

- Sea skimming cruise (600 kts/6 ft)
- Stand-off attack (>40 Nm)

## TAKE AWAYS

**A/G Weapons choice is dictated by several parameters:**

- **Target nature**
- **Desired effect**
- **Collateral damage concerns**
- **Environmental limitations**

**There are various types of A/G weapons:**

- **Unguided / Guided**
- **Ballistic / Propelled**
- **Close range / Stand-Off**

**NOTES**

# 210 – Introduction to Dynamic Targeting (DT)/ Time Sensitive Targeting (TST)

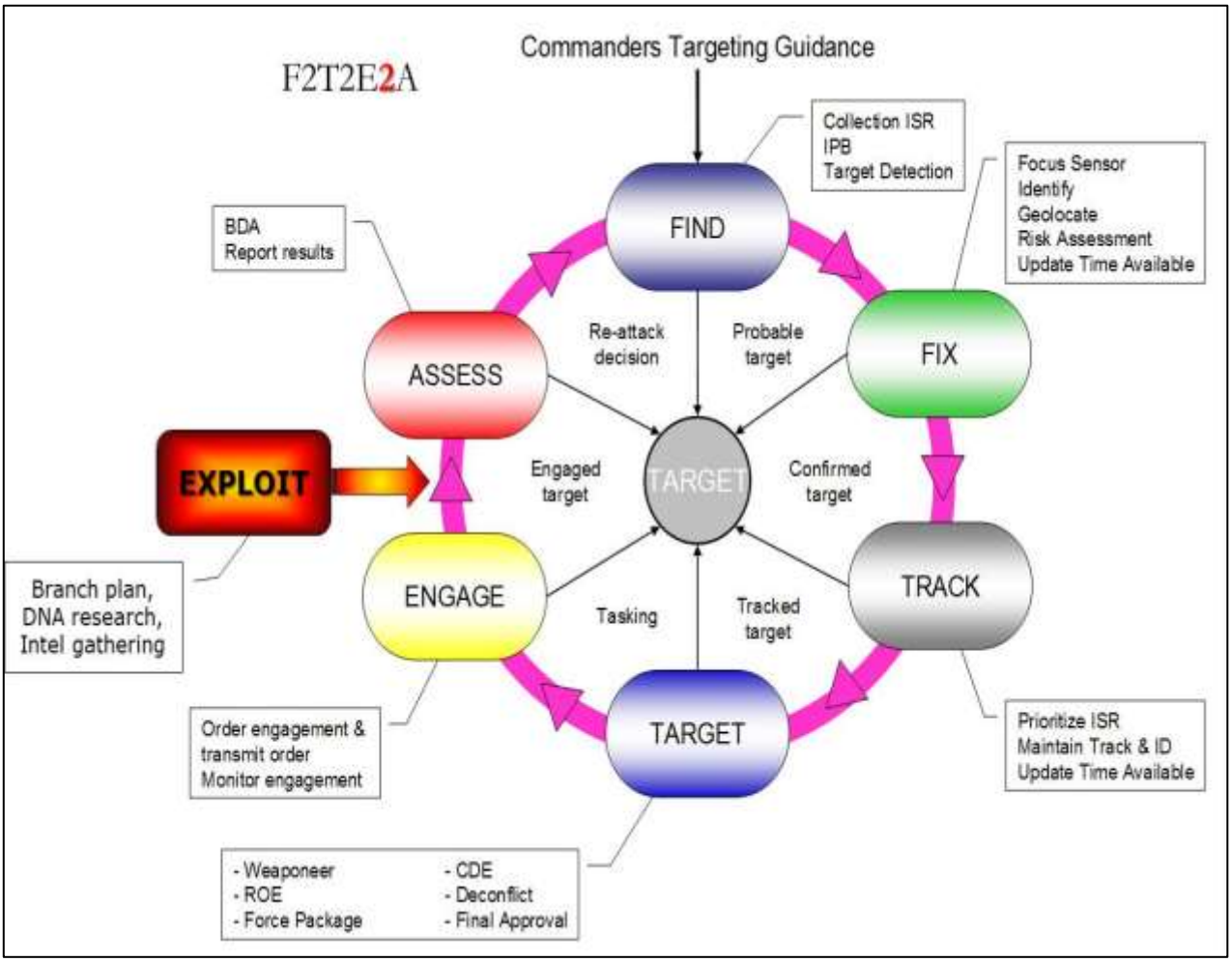
## 210.1 References

- ✓ AJP 3.9 : Allied Joint Doctrine for Joint Targeting
- ✓ AD 80-70: Campaign synchronization and joint targeting in ACO
- ✓ ACO Manual 80-70: tactics, techniques and procedures to prosecute TST

## 210.2 Definitions

- ✓ Deliberate targeting:
  - Scheduled.
  - On call prosecution.
- ✓ Dynamic targeting:
  - Anticipated: **known** target (OoB, Intel…) but location is pending
  - Unanticipated: **unknown** target (emerging threat)

## 210.3 Dynamic Targeting Cycle



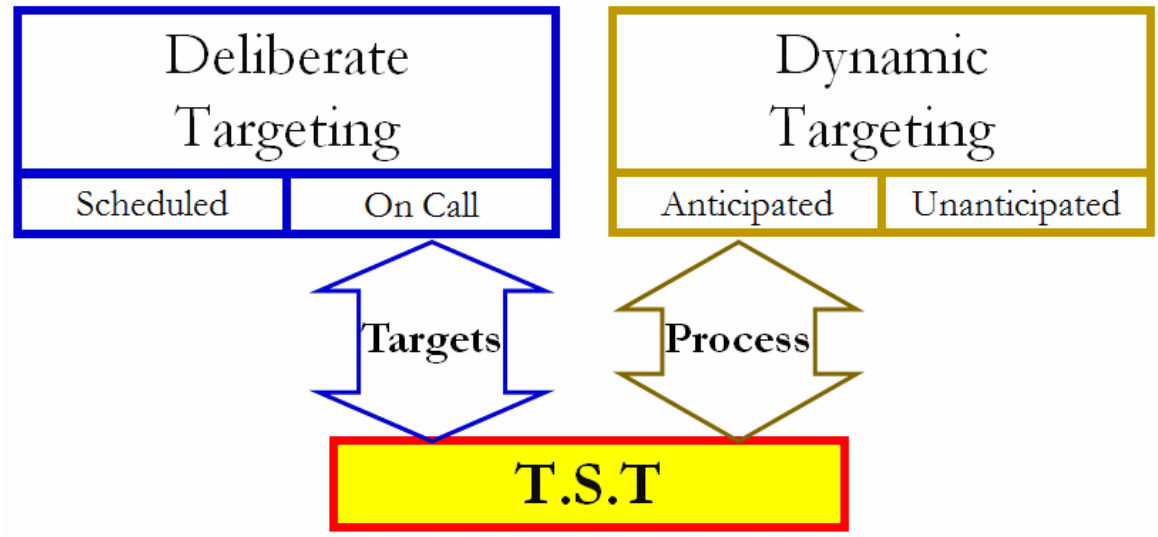
## 210.4 Time Sensitive Targeting (TST)

✓ Characteristics of targets:

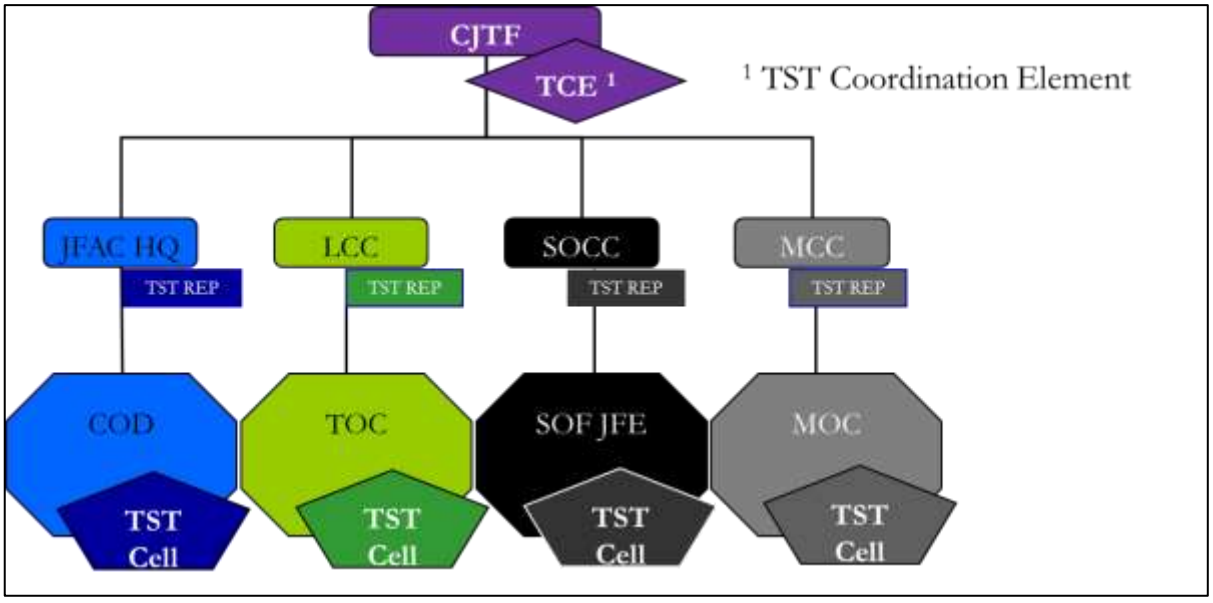
**TIME SENSITIVE + SENSITIVE TARGET**

- Targets that require an **immediate response**
- Targets that are **highly lucrative** and **fleeting targets** of opportunity
- Targets whose **successful prosecution will have a direct impact on the Joint Campaign End State (effect on adversary Center of Gravity)**.

✓ Follows the standard targeting process for DT: **F2T2E2A**.
✓ Time-sensitive targets validated by COM CJTF and grouped in the TST Matrix.
✓ Time-sensitive targets included into the JPTL and overall ops documentation.




## 210.5 TST Command Structure



Each TST cell composed of:
- TST Chief.
- TST Fusion.
- TST Attack Coordinator.
- TST Targeteer.
- TST Intel.

## 210.6 TST Matrix example

**TST MATRIX: OPERATION STRONG EAGLE**

**EFF DATE/TIME:** D – D+1

| JFC Priority / URGENCY | TST Target Type | Approval Authority | Acceptable Risk Level | Acceptable CDE | Other requirements or Notes | Desired Effect |
|---|---|---|---|---|---|---|
| 1 / A | SCUD | CJTF | HIGH | 4 | Notify JAT CBRN | Prevent Use |
| 2 / A | "KARMANDI" Leadership East tribes | CJTF | HIGH | 3 | In all JOA | Detention |
| 3 / A | "PLAUREGAN" Leadership East tribes | CJTF | MED | 3 | Inside IPANA (Detention only in THY) | Detention / Kill/ Destroy |
| 4 / B | BM21 + Chemical Support Vehicle | CC Commander | LOW | 3 | In all JOA | Kill/ Destroy Capability |

| | |
|---|---|
| **Approval Authority** | Approval authority when criteria are in line with those on the JTST matrix.<br>When any of the criteria exceed those on JTST matrix, coordination with TST Coordination Element is required for COM CJTF decision. |
| **Risk Level** | See OPLAN |
| **URGENCY** | A = IMMEDIATE – Preemption right has to be used without restriction<br>B = URGENT - Preemption right has to be used with the coordination of appropriate authorities |
| **CDE** | See OPLAN |

**NOTES**

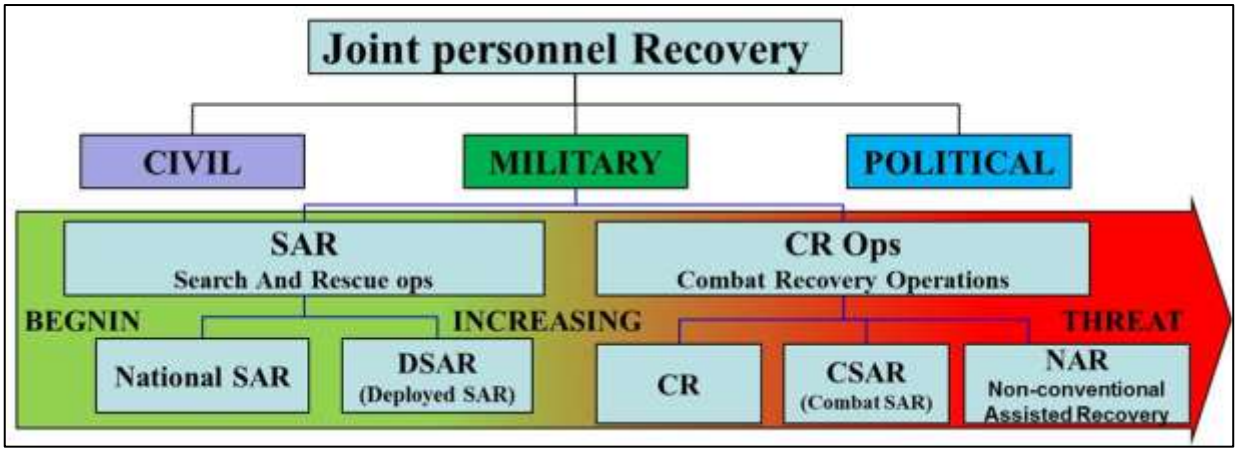
# 211 – Joint Personnel Recovery Overview

## 211.1 References

- ✓ AJP 3.7: Allied Joint Doctrine for recovery of personnel in a Hostile Environment

## 211.2 Principle

- ✓ PR is a joint function.
- ✓ Nations have different PR philosophies, policies, priorities and capabilities.
- ✓ In a multinational force, differences should be reconciled in order to facilitate unity of effort.




## 211.3 Definitions

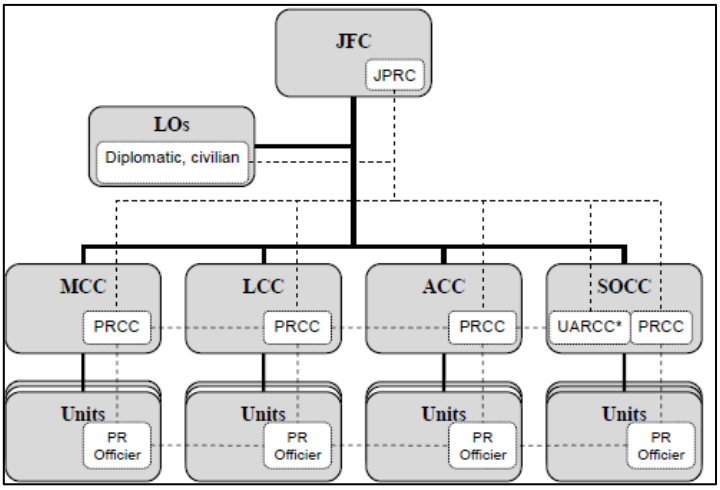
- ✓ ***Isolated Personnel*** **(ISOP)**

  Military or civilian personnel, who are separated from their unit or organization in a situation that may require them to survive, evade, resist exploitation, or escape while awaiting recovery.

- ✓ ***Survival, Escape / Evasion, Resistance and Extraction (SERE)***

  Defines the set of tactics, techniques, and procedures that will give isolated personnel the tools to survive in any environment and to evade capture where such a threat exists.

## 211.4 PR Chain structure




## 211.5 Operation – The 5 Tasks

- ✓ REPORT

- ✓ LOCATE
- ✓ SUPPORT
- ✓ RECOVER
- ✓ REINTEGRATE

## 211.6 Conclusion

- ✓ PR is not limited to CSAR
- ✓ A PR operation is an event that can deeply hinder an air campaign
- ✓ The priority given to PR operations must be properly defined by the COMJTF

**NOTES**

# 212 – RPAS in support of Joint Air Operations

## 212.1 References

AJP 3.3 Allied Joint Doctrine for Air and Space Operations
AJP 2.7 Joint Intelligence Surveillance and Reconnaissance
ATP-3.3.8.2 Unmanned Aircraft System Tactics, Techniques and Procedures (*draft*)

## 212.2 Different classes of RPAS:

| Class | Category | Normal Employment | Normal Operating Altitude | Normal Mission Radius | Primary Supported Commander | Example Platform |
|---|---|---|---|---|---|---|
| Class III (> 600 kg) | Strike/ Combat * | Strategic/National | Up to 65,000 ft | Unlimited (BLOS) | Theatre | Reaper |
| | HALE | Strategic/National | Up to 65,000 ft | Unlimited (BLOS) | Theatre | Global Hawk |
| | MALE | Operational/Theatre | Up to 45,000 ft MSL | Unlimited (BLOS) | JTF | Heron |
| Class II (150 kg - 600 kg) | Tactical | Tactical Formation | Up to 18,000 ft AGL | 200 km (LOS) | Brigade | Hermes 450 |
| Class I (< 150 kg) | Small (>15 kg) | Tactical Unit | Up to 5,000 ft AGL | 50 km (LOS) | Battalion, Regiment | Scan Eagle |
| | Mini (<15 kg) | Tactical Sub-unit (manual or hand launch) | Up to 3,000 ft AGL | Up to 25 km (LOS) | Company, Platoon, Squad | Skylark |
| | Micro ** (<66 J) | Tactical Sub-unit (manual or hand launch) | Up to 200 ft AGL | Up to 5 km (LOS) | Platoon, Squad | Black Widow |

## 212.3 RPAS Basic Components:

- Unmanned Aircraft.
- Payload.
- Control element (composed of MCE / LRE / ITC / IA).
- Communications.
- Support element.

## 212.4 RPAS Payloads:

**RPAS: multi-sensors systems.**
**ISR payload**: EO/IR, SAR, GMTI, SIGINT...
Cross-cueing capability.
Limitations:
* Weather (ceiling, visibility, rain…).

**Offensive payload**:
- laser designation capability : self-lasing & buddy-lasing.
- air-to-ground bombs & missiles.

Limitations:
* Weather (ceiling, visibility…).

### 212.5 RPAS Comms & Data links:

02 ways to control RPAS: LOS & BLOS (SATCOM).
LOS: take-off & landing.
Near real-time video (FMV) capable.
Near real-time INTEL analysis.
Reach-back capable (for C2 & ISR processing, exploitation & dissemination).
Downlink capable for combat units (ex: ROVER).
**RPAS: assets capable to accelerate the decision loop.**

Limitations:
- datalink & video delays with SATCOM.
- datalink & video vulnerable to EW (no ECM)

### 212.6 RPAS Persistence & Discretion:

Main characteristics of MALE / HALE assets: long endurance.
Due to service ceiling = discretion (HALE : high discretion).

Limitations:
- weather (wind, icing, turbulences…): impacts on playtime.
- offensive payload: reduced playtime.
- endurance limited by human resources.
- MALE vulnerable due to flight at medium altitude / low speed.
- RPAS not self-protected against Air & Surface-to-Air threats (especially high altitude SA).

### 212.7 RPAS Missions:

**RPAS: multi-missions assets.**
* ISR Collection.
* Targeting support.
* Convoy security & movement support.
* AI.
* CAS (including XCAS).
* PR support.
* DT/TST support.

### 212.8 RPAS in the Joint Air Tasking Cycle:

Planning: IRM & CM Team (CPD).
Execution: SIDO (& eventually SODO) Team (COD).
Reactive assets.
Support to TIC events, PR events, DT/TST events, detection of HVI (SOF)…

**Used acronyms:**

AI: Air Interdiction
ASR: Air Support Request
BDA: Battle Damage Assessment
BLOS: Beyond Line of Sight
CAS: Close Air Support
CDE: Collateral Damage Assessment
CM: Collection Management
DT: Dynamic Targeting
EO/IR: Electro-Optical / Infra-Red
ECM: Electronic Counter-Measures
GMTI: Ground Moving Target Indicator
HALE High Altitude Long Endurance
IA : Imagery Analyst
IRM & CM : Intelligence Requirements Management & Collection Management
ISR: Intelligence Surveillance & Reconnaissance
ITC: INTEL Tactical Coordinator
LCC: Land Component Command
LOS: Line Of Sight
LRE: Launch & Recovery Element
MALE: Medium Altitude Long Endurance
MCE: Mission Control Element
PID: Positive Identification
Pol: Pattern of Life
ROVER: Remotely Operated Video Enhanced Receiver
RPAS: Remotely Piloted Aircraft Systems
RSO: Remote Split Operations
SAR: Synthetic Aperture Radar
SIDO: Senior Intelligence Duty Officer
SODO: Senior Offensive Duty Officer
SOF: Special Ops Forces
TST: Time Sensitive Targeting
UAS: Unmanned Aircraft Systems

**NOTES**

# 213 – Rotary wings in support of joint air operations

## 213.1 Fundamentals

- ✓ AIR is not synonymous with Air Component

## 213.3 Rotary Wings (RW) attributes

- ✓ **Landing nearly everywhere**
- ✓ **Speed -** act quickly, in comparison with LCC / MCC rhythm + hovering
- ✓ **Reach –** acting in the 3rd dimension
- ✓ **Firepower -** Attack Helicopters (AH)
- ✓ **Additional attributes**
  - Versatility: multi role helos (AH & UH)
  - Flexibility: tactical rearming and refuelling on FARPs (Forward Arming & Refueling Points)
  - Surprise: operate at very low altitude during both day and night using terrain masking

## 213.4 RW limitations

- ✓ **Impermanence**
  - Range : up to 600 Nm with combat tanks
- ✓ **Limited payloads -** Limit is weight / armored - hot conditions - high mountains…
- ✓ **Vulnerability**
  - Speed (150 Kt) & hovering IVO ground ENY threats
  - Fragile airframes (SALW ; RPG ; ATGM) ; urban area's threats
  - Weather dependant (Freezing conditions)
  - OPS depending on " cleaned " LZ's
  - CBRN (helos not CBRN-tight).

### 213.5 RW roles and missions

| TRANSPORT | ATTACK | ISR |
|---|---|---|
| Air Movement | Air Interdiction | Recce |
| Air Mobile | Close Air Support | Surveillance |
| Airborne | Close Combat Attack | Tactical Security |
| Aero Medical Evacuation | ASW/ASuW | AAW |

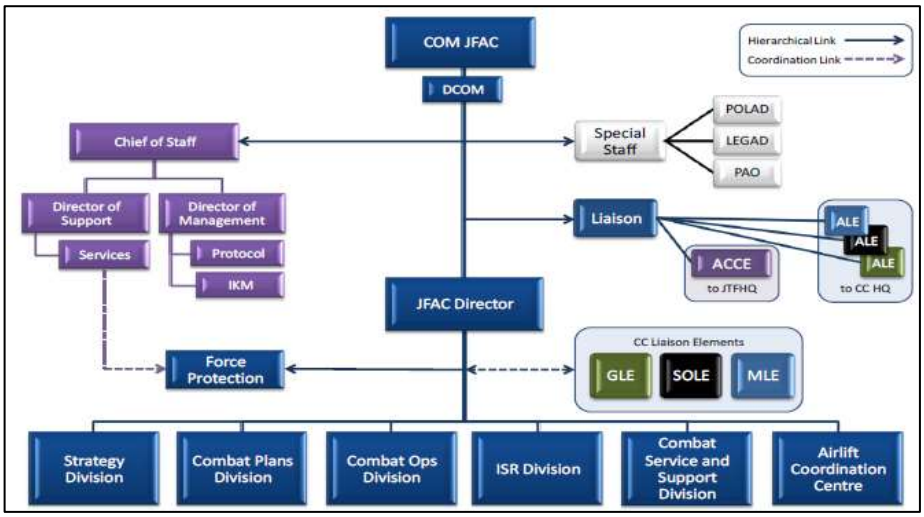
**NOTES**

# 301 – JFAC HQ Organisation

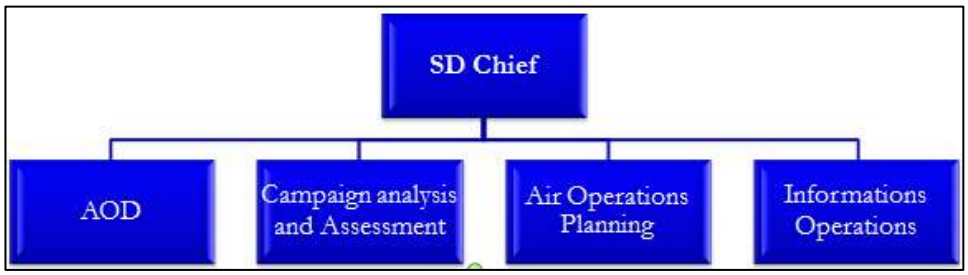
## 301.1 References

- ✓ AJP 3.3: Allied Joint Doctrine for Air and Space Operations

## 301.2 JFAC HQ Structure




## 301.3 *STRATEGY DIVISION (SRD)*




- ✓ **Air Ops planning Team**
  - Air OPLAN[1]
  - Branch plans & sequel plans
  - special projects/studies, as required

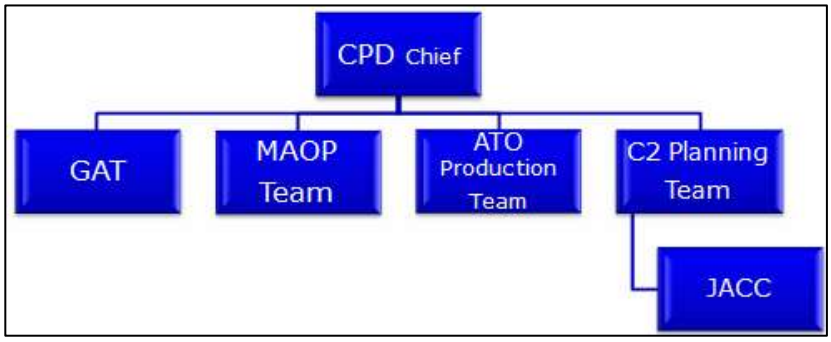
- ✓ **Campaign Analysis and Assessment Team** : Air Operational Assessment and Analysis summaries

[1] You could also hear or work an Air SUPPLAN (SUPPLementary PLAN)

- ✓ **AOD Team** : Air OPLAN ➔ AOD = initiation of Air Tasking Cycle

- ✓ **Info Ops Team** : recommendation and advice (Air delivered information) to Joint Effects Team.

### 301.4 *COMBAT PLAN DIVISION (CPD)*



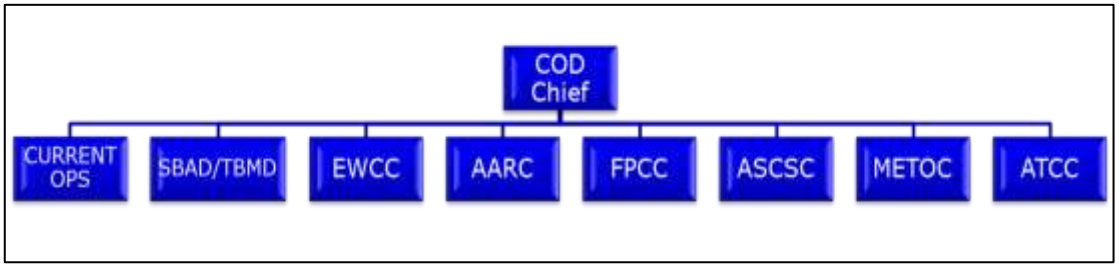

- ✓ **GAT Team** (Guidance Apportionment & Targeting)
  - Joint Air Apportionment recommandation
  - AIR TNL (Target Nomination List)
  - Target folders
  - Daily ATO planning guidance (based on AOD)
  - GAT to MAOP briefing

- ✓ **MAOP Team** (Master Air Operations Planning)
  - MAOP flow & worksheets
  - MAOP approval briefing

- ✓ **ATO Production Team**
  - DATABASE management
  - ATO Msg

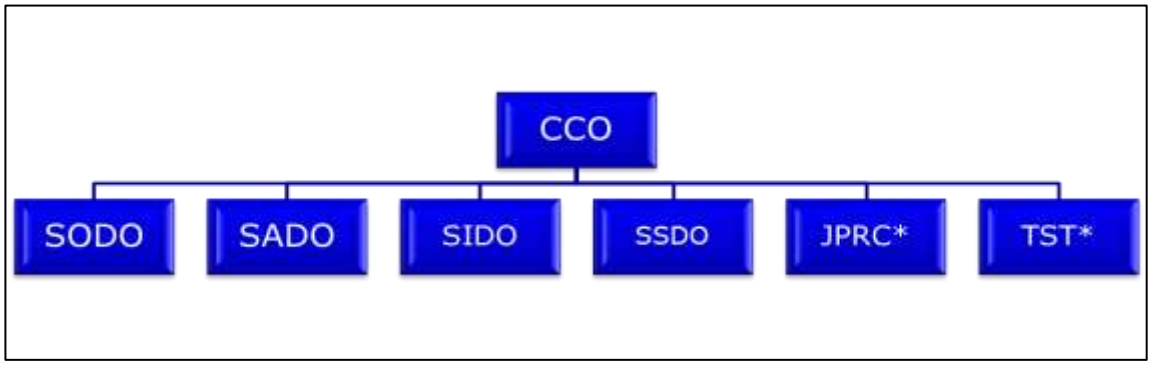
- ✓ **C2 Planning Team**
  - ADP
  - ACP (JACC – Joint Airspace Coordination Center)
  - ACO Msg (JACC)
  - OPTASLINK Msg
  - SPINS
  - COMPLAN

## 301.5 *COMBAT OPS DIVISION (COD)*




- ✓ SBAD/TBMD = Surface Based Air Defence / Theatre Ballistic Missile Defence
- ✓ EWCC = Electronic Warfare Coordination Cell
- ✓ AARC = Air to Air Refuelling Cell
- ✓ FPCC = Force Protection Coordination Cell
- ✓ ASCSC = Airspace Surveillance and Control System Cell
- ✓ METOC = Meteorological Support
- ✓ ATCC = Air Transport Coordination Center

- ✓ **Current Ops** ("Combat Ops Floor")

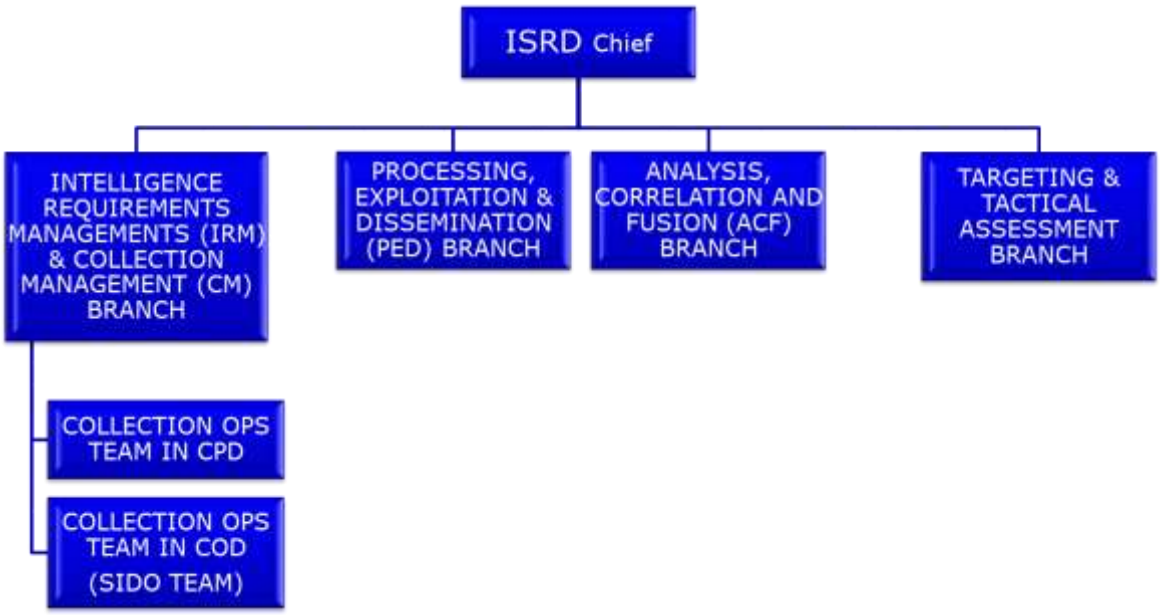



- o **SODO** - Senior Offensive Duty Officer (Attack, AI, CAS)
- o **SADO** - Senior Air Defence Officer (CAP, AEW, SBAD, TBMD)
- o **SIDO** - Senior Intel Duty Officer (ISR assets, Dynamic target support and threat warning)
- o **JPRC*** - Joint Personnel Recovery Cell (in charge of PR)
- o **JTST*** - Time Sensitive Targeting cell

* when delegated to COMJFAC by COMJTF

## 301.6 *ISR DIVISION (ISRD)*

The ISR Division is dedicated to provide predictive and actionable intelligence to the COMJFAC, the JFAC HQ and the subordinate units.
The ISR Division provides the context for understanding the adversary's intentions and capabilities and provides a common threat and targeting picture in order to support the planning and execution of Joint Air Operations.
The ISR Division plans, conducts, monitors execution of airborne ISR operations, lead collection management efforts and dynamically adjust ISR plans as required.
The ISR Division manage the progressing and exploitation phases and contributes to the assessment phase.




- ✓ **IRM & CM Branch** (including ISR Ops team in CPD and ISR Ops team in COD) – management of intelligence requests, management of Collection / ISR Ops, support to ATO development and mission planning, reactive support to Force Execution.

  Key deliverables: Reconnaissance, Surveillance and Target Acquisition (RSTA) Annex, contribution to ISR Synchronization Matrix…
- ✓ **P.E.D. Branch** – processing & exploitation of ISR results (collected data).

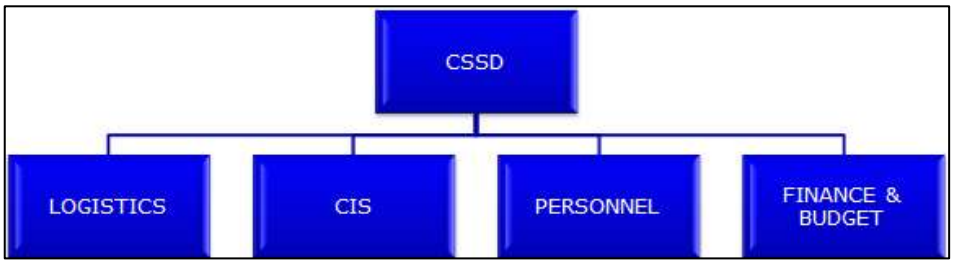
  Key deliverables: ISR products, Intelligence Reports (INTREP)…
- ✓ **ACF Branch** – contribution to the Joint Intelligence Analysis, contribution to the Air Component Situation Awareness, Threat Assessment.

  Key deliverables: Intelligence Summaries (INTSUM), Threat assessment products, Orders of battle (OoB)…
- ✓ **Targeting & Tactical Assessment Branch** – support to the Component-level Targeting, support to the Assessment phase.

  Key deliverables: Target Nomination Lists, Weaponeering solutions, Battle Damage Assessment summaries & briefings…

## 301.7 *COMBAT SERVICE SUPPORT DIVISION (CSSD)*

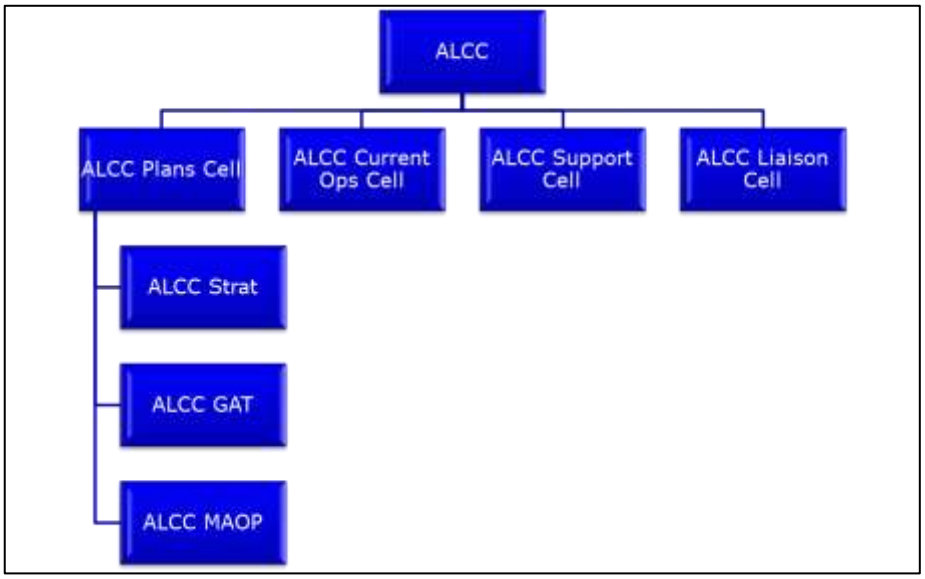
Sustains the Air power contribution to the joint campaign; integrated within the processes applied in other JFAC Divisions.




- ✓ **LOG** - coordinating the Air Component logistic effort to enable and sustain the Air campaign
- ✓ **CIS** - security and the employment of CIS dedicated to the operation
- ✓ **PERS** - personnel and administrative matters for all Air C2 structures home-based or deployed
- ✓ **FIN & BUDGET** - correct and efficient application of all funds approved and delegated for the Air Component mission

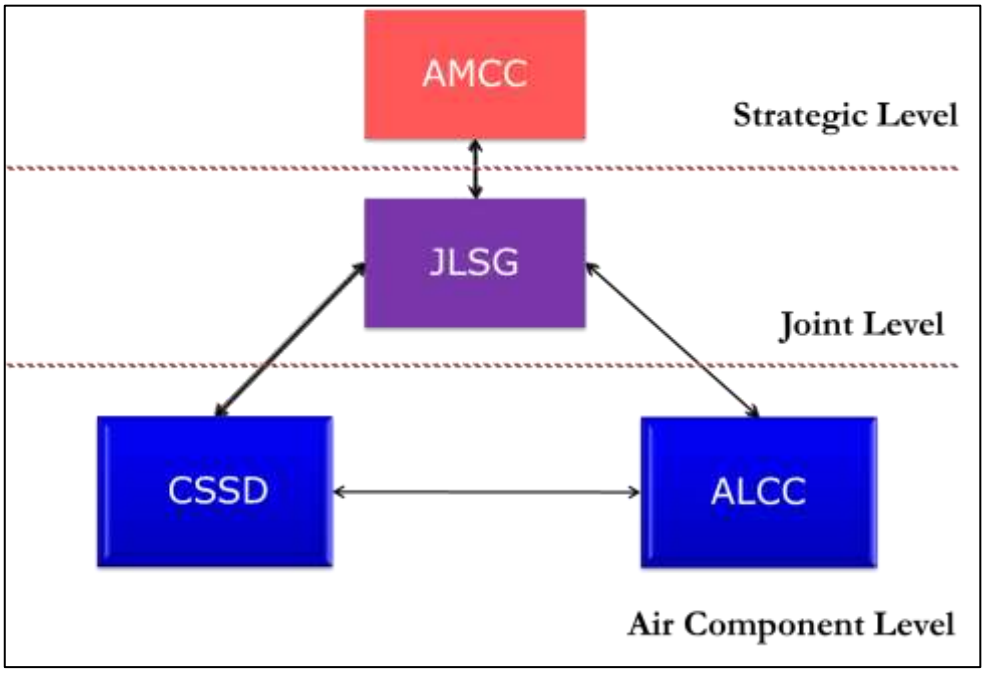
## 301.8 *AIR LIFT COORDINATION CENTRE (ALCC)*

ALCC coordinates, executes and controls intra-theatre Air Transport operations




- ✓ **ALCC PLANS** (Strat, GAT, MAOP) - integrating AT missions in the ATO and maintaining support to the Strategy and Combat Plans Divisions
- ✓ **ALCC CURRENT OPS** - monitoring and executing the current ATO and maintaining support to the Air Transport Coordination Cell in the Combat Operations Division
- ✓ **ALCC SUPPORT**
- ✓ **ALCC LIAISON**

ALCC receives AT tasking from the Joint Logistic Support Group (JLSG) and may coordinate with the Allied Movement Coordination Centre (AMCC) from the SHAPE.



## NOTES

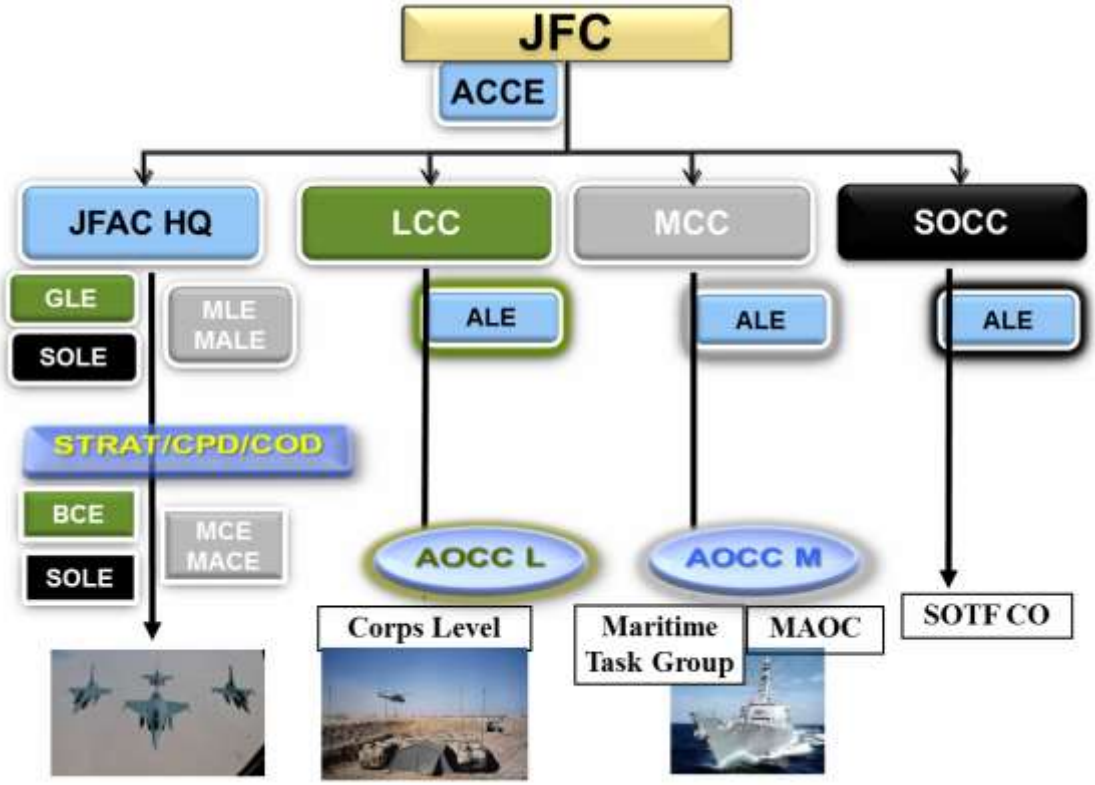
# 302 – JFAC HQ Liaisons

## 302.1 References

- ✓ AJP 3.3: Allied Joint Doctrine for Air and Space Operations
- ✓ AJP 3.3.3 : Allied Joint Doctrine for Air Maritime Coordination
- ✓ ACO Directive 080-065 : Concept of Operations for Air Operations Coordination Centres Land and Maritime in Allied Command Operations

## 302.2 Basic liaison principles

Facilitate interactions and communication between the JFAC HQ and the other components in order to better integrate the Air Component effects within the Joint campaign.




| | JFAC HQ ➔ JTF & CC's | Other CC's ➔ JFAC HQ | |
|---|---|---|---|
| HQ Level | * ACCE to JTF HQ<br>* 3 ALE's to the 3 other CC's | * GLE<br>* MLE / MALE<br>* SOLE | JFAC HQ/COM |
| Tactical Level | * 2 AOCC<br>➔ Land & Maritime | * BCE<br>* MCE / MACE<br>* SOLE | JFAC HQ /3 x Div. |

### 302.3 JFAC HQ liaisons ➔ other C2 structures

- ✓ **ACCE – Air Component Coordination Element**

The COM JFAC's on-site personal representative to the COMJTF.

- ✓ **ALE - Air Liaison Element**

The COM JFAC's primary liaison and personal representative to the other component Commanders (LCC, MCC, SOCC). Provide the means for effective component-to-component liaison and primary conduit for information flow between the component commands.

- ✓ **AOCC - Air Operations Coordination Center**

Functionally subordinate to the COMJFAC, collocated with and an integral part of an army corps (AOCC-L) or maritime task force (AOCC-M). Provides air expertise and integrates the liaison and coordination functions relating to air operations.

### 302.4 LCC Liaisons ➔ Air Component

- ✓ **GLE - Ground Liaison Element**

The LCC Commander's representative to the COMJFAC (= ALE counterpart).

- ✓ **BCE - Battlefield Coordination Element**

Provides land expertise and liaison with regards to Joint Air mission planning and execution (= AOCC-L counterpart).

### 302.5 MCC ➔ Air Component

- ✓ **MLE (Maritime Liaison Element) / MALE (Maritime Air Liaison Element)**

The MCC Commander's representatives to the COMJFAC (= ALE counterparts).

- ✓ **MCE (Maritime Coordination Element) / MACE (Maritime Air Coordination Element)**

Provide maritime expertise and liaison with regards to Joint Air mission planning and execution (= AOCC-M counterparts).

### 302.6 SOCC Liaisons to JFAC HQ

- ✓ **SOLE - Special Ops Liaison Element**

Coordinates, integrates, deconflicts and synchronizes special operations force air, surface and sub-surface operations with conventional air operations.

## NOTES

# 303 – JFAC HQ CIS Overview

## 303.1 References

- ✓ AJP 6: Allied Joint Doctrine for Communication and Information Systems
- ✓ MC 0593: Minimum Level of Command and Control (C2) Service Capabilities in support of Combined Joint NATO led Operations.

## 303.2 *Different type of CIS*

- ✓ Communication systems


- ✓ Informations systems


- ✓ Cryptographic systems

- ✓ The role of CIS in C2 structure :

  facilitate the clear, timely, and secure distribution of guidance/orders, situation reports, and coordinating information.

## 303.3 CIS major principles

- ✓ **CIS domains**

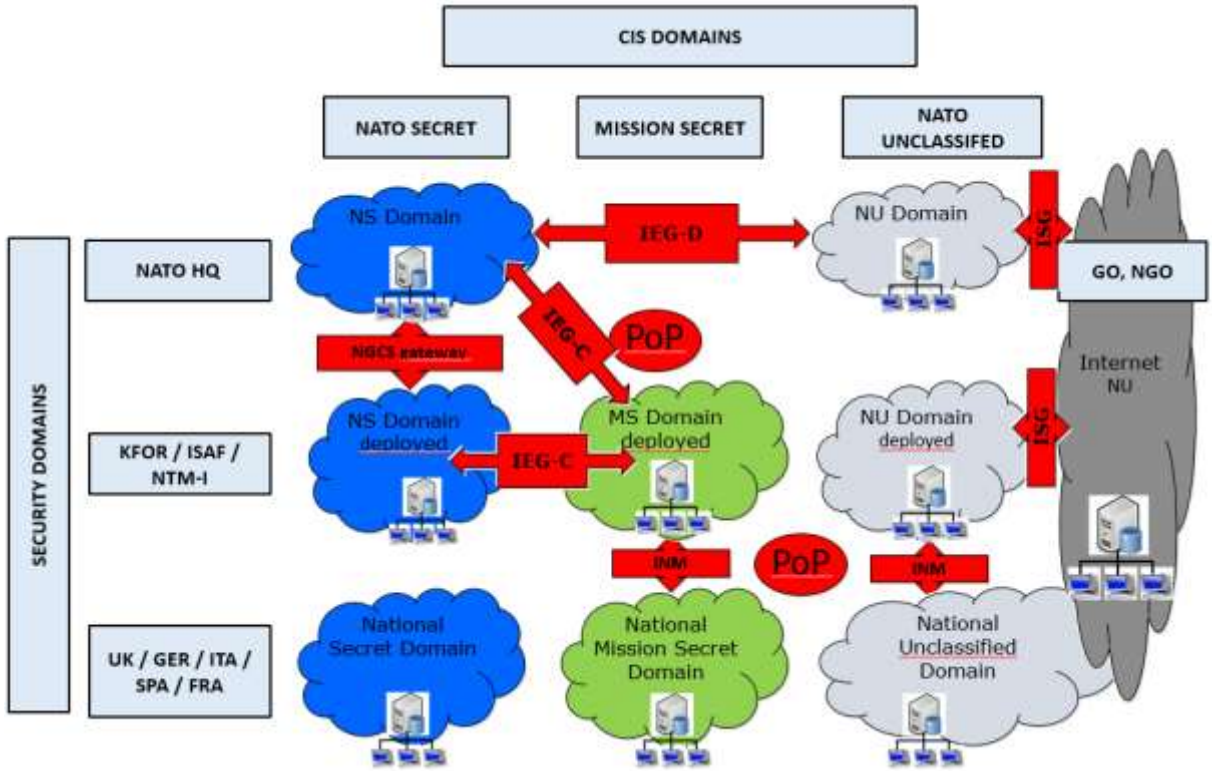
  Are a way to sub-divide CIS-supporting capabilities attending to some particular criterion (i.e. NATO, Mission and nation domains).
- ✓ ***Security domains***

  Compartmentalize CIS attending to the sensitivity of the information that the CIS domain will process, store and forward (i.e. Secret, confidential, Restricted, Unclassified, INTERNET).

## 303.4 Gateways

CIS gateways are a way to interconnect different CIS domains. In NATO led operations:

- ✓ **Internet Services Gateway (ISG)**
  It provides connectivity between the NATO Unclassified network and the Internet.
- ✓ **NGCS gateway**
  It interconnects NS between the strategic level and the deployed components (2 different domains).
- ✓ **Interface Exchange Gateway-type C (IEG-C)**
  Gateway between NATO Secret (NS) and Mission Secret (MS) networks.
- ✓ **Interface Exchange Gateway-type D (IEG-D)**
  Gateway between NATO Secret (NS) and NR/NU domain might be required to support NATO led operations
- ✓ **Interface to Nation Module (INM)**
  Generic deployable gateway tailored to connect to collocated national networks.




## 303.5 Federated Mission Networking (FMN)

FMN enables the rapid implementation of mission networks by federating NATO, NATO nations and mission partners capabilities. FMN defines 4 levels of graduated capability:

- ✓ Option A = Mission Network Element (MNE). It contains networking and information infrastructure and services for self-provisioning (incl. mission essential services). It provides interconnection to Option B and Option C.
- ✓ Option B = Mission Network Extension (MNX). Similar to MNE but may not include sufficient mission essential services.
- ✓ Option C. Hosted User (HU). It does not have any capability and will be embedded in an MNE or MNX.
- ✓ Option Z. Other entities. Specific arrangements on a case by case basis may apply.

## 303.6 Information Exchange Requirements (IER)

- ✓ Operational requirement (IER) are defined by users.
- ✓ Defines the information exchange needs between two or more parties that support a given process.
- ✓ Describes the source and destination of the information flow, the content, and other information flow characteristics (format, security classification, etc…).

IER example from MC 0593 dated Jul 17
(diagram)

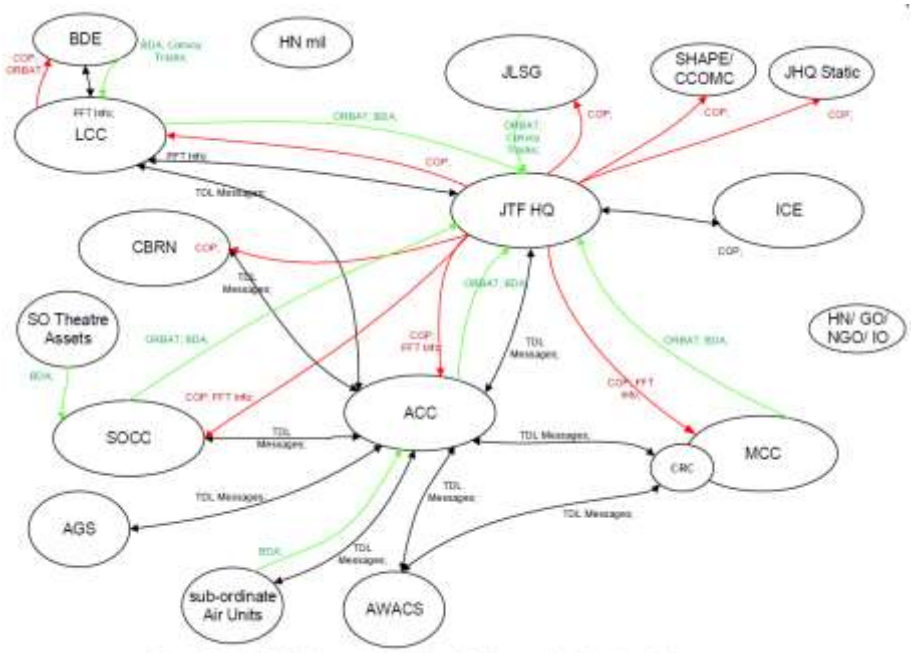



Figure D-II-1: C2 Information Product Exchange for Situational Awareness

(table)

Table D-III-4-1: ACC/JFAC Bi-directional IERs

| exchanged between | | IE-Product | Service | Operational Capability |
|---|---|---|---|---|
| ACC | AGS | Voice (Non-Secure) | Audio-Based Communication Services | Voice |
| ACC | AGS | Voice (Secure) | Audio-Based Communication Services | Voice |
| ACC | AGS | Directory Sync | Directory Storage Services | Directory Services |
| ACC | AGS | Informal Message | Informal Messaging Services | Informal Messaging |
| ACC | AGS | ISR Sync Matrix | JISR Services | Plans |
| ACC | AGS | INTREPs | JISR Services | Reports |
| ACC | AGS | ISRR | JISR Services | Requests & Responses |
| ACC | AGS | RFI | JISR Services | Requests & Responses |
| ACC | AGS | GMTI | JISR Services | Situational Awareness |
| ACC | AGS | Formal Message | Military Messaging Service | Formal Messaging |
| ACC | AGS | TDL Messages | Situational Awareness Service | Live Tracks |
| ACC | AGS | Instant Message | Text-Based Collaboration Services | Instant Messaging |
| ACC | AWACS | RAP | Air Services | Situational Awareness |
| ACC | AWACS | Voice (Non-Secure) | Audio-Based Communication Services | Voice |
| ACC | AWACS | Voice (Secure) | Audio-Based Communication Services | Voice |
| ACC | AWACS | TDL Messages | Situational Awareness Service | Live Tracks |
| ACC | AWACS | Instant Message | Text-Based Collaboration Services | Instant Messaging |
| ACC | CBRN | Office Collaboration (Audio) | Audio-Based Communication Services | Collaboration |
| ACC | CBRN | Voice (Non-Secure) | Audio-Based Communication Services | Voice |
| ACC | CBRN | Voice (Secure) | Audio-Based Communication Services | Voice |
| ACC | CBRN | ID TOKEN | CIS Security Services | CIS Security Information |

## NOTES

# GLOSSARY OF ABBREVIATIONS

This list is not exhaustive and a more comprehensive one is contained in **AAP-15** and **AAP-6**.

| | |
|---|---|
| **A/A** | Air to air |
| **AAA** | Anti-Aircraft Artillery |
| **AAI** | Attack-Attack Interface |
| **AAP** | Allied Administrative Publication |
| **AAR** | Air to Air Refuelling, |
| **A/C or AC** | Aircraft |
| **ACA** | Airspace Control Authority |
| **ACC1** | Air Component Commander |
| **ACC2** | Air Control Centre |
| **ACCE** | Air Component Coordination Element |
| **ACCS** | Air Command & Control System |
| **ACE** | Allied Command Europe |
| **ACM** | Airspace Control Means |
| **ACO1** | Allied Command Operations |
| **ACO2** | Airspace Control Order |
| **ACP** | Airspace Control Plan |
| **ACT** | Allied Command Transformation |
| **AD1** | ACE Directive |
| **AD2** | Air Defence |
| **ADC** | Air Defence Commander |
| **AEW** | Airborne Early Warning |
| **AEW&C** | Airborne Early Warning & Control |
| **A/G** | Air-to-Ground |
| **AGL** | Above Ground Level |
| **AGS** | Air to Ground Surveillance |
| **AI** | Air Interdiction |
| **AIRCOM** | NATO AIR COMmand Ramstein |
| **ALCC** | AirLift Coordination Cell (JFAC) |
| **ALE** | Air Liaison Element |
| **ALO** | Air Liaison Officer |
| **ALTBMD** | Active Layered Theatre Ballistic Missile Defence |
| **AMRAAM** | Advanced Medium Range Air-to-Air Missile |
| **AMRL** | Acceptable Minimum Risk Level |
| **AOC** | Air Operation Centre |
| **AOCC (L)** | Air Operations Coordination Centre Land |
| **AOCC (M)** | Air Operations Coordination Centre Maritime |
| **AOD** | Air Operations Directive |
| **AOII** | Area Of Intelligence Interest |
| **AOIR** | Area Of Intelligence Responsibility |
| **AOO** | Area Of Operations |
| **AOPG/T** | Air Operations Planning Group/ Team |
| **AOR** | Area Of Responsibility |
| **APCLO** | Air Power contribution to Counter-Land Ops |

| | |
|---|---|
| **APCMO** | Air Power contribution to Counter-Maritime Ops |
| **APOD** | AirPort of Debarkation |
| **APP** | Allied Procedural Publication |
| **AR** | Air Route |
| **ARM** | Anti-Radiation Missile |
| **ARS** | ACC + RPC + SFP |
| **ARW** | Air Raid Warning |
| **ASACS** | Air Surveillance And Control System |
| **ASFAO** | Anti-Surface Air Operations |
| **ASM** | Air-to-Surface Missile |
| **ASOC** | Air Support Operations Centre |
| **ASSESSREP** | ASSESSment REPort |
| **ASR** | Air Support Request (from other CCs) |
| **ASUW** | AntiSUrface Warfare |
| **ASW** | AntiSubmarine Warfare |
| **ATACMS** | Army Tactical Missile System |
| **ATM** | Air Task Message |
| **ATO** | Air Tasking Order |
| **AWACS** | Airborne Warning and Control System |
| **BCA** | Border Crossing Authority |
| **BCE** | Battlefield Co-ordination Element |
| **BDA** | Battle Damage Assessment |
| **BDZ** | Base Defence Zone |
| **BICES** | Battlefield Information Collection and Exploitation System |
| **BMD** | Ballistic Missile Defence |
| **BMOA** | Ballistic Missile Operating Area |
| **BS** | Battle Staff |
| **BSA** | Border Shoot Authority |
| **BSD** | Battle Staff Director |
| **BVR** | Beyond Visual Range |
| **CAOC** | Combined Air Operations Centre |
| **CAL** | Critical Asset List |
| **CAP** | Combat Air Patrol |
| **CAS** | Close Air Support |
| **CBRN** | Chemical, Bacteriological, Radiological, Nuclear |
| **CC (s)** | Component Command (s) |
| **CCIRM** | Collection, Coordination and Intelligence Requirements Management |
| **CCT** | Component Critical Target |
| **CDE** | Collateral Damage Estimate |
| **CDEM** | Collateral Damage Estimate Methodology |
| **CDOS** | Combat Day Of Supply |
| **CEP** | Circular Error Probable |
| **CIMIC** | CIvil-MIlitary Co-operation |
| **CIS** | Communication & Information Systems |
| **CISSM** | CIS Service Matrix |
| **CJF** | Combined Joint Force |

| | |
|---|---|
| **CJFAC** | Combined Joint Force Air Component |
| **CJSOR** | Combined Joint Statement Of Requirement |
| **CJTF** | Combined Joint Task Force |
| **CMO** | Coverage Mission Order (Order for SBAD units) |
| **COA** | Course of Action |
| **COE** | Consequence Of Effect |
| **COD** | Combat ops Division (JFAC HQ) |
| **COG** | Centre of Gravity |
| **COMAO** | COMposite Air Operations |
| **COMJFC** | Commander of the JFC |
| **COMJTF** | Cdr of the Joint Task Force |
| **CONOPS** | CONcept of OPerationS |
| **COP** | Common Operational Picture |
| **COS** | Chief of Staff (JFAC HQ) |
| **CP** | Control Point |
| **CPD** | Combat Plan Division (JFAC HQ) |
| **CPX** | Command Post eXercise (no flight) |
| **CRC** | Control and Reporting Centre |
| **CRO** | Crisis Response Operation |
| **CSAR** | Combat Search And Rescue |
| **CSSD** | Combat Service Support Division (JFAC HQ) |
| **CV** | Carrier Vessel / Aircraft Carrier |
| **CVBG** | Aircraft Carrier Battle Group |
| **C2** | Command and Control |
| **C2IS** | Command and Control Information System |
| **C2ISR** | Command, Control, Intelligence, Surveillance and Reconnaissance |
| **C3I** | Command, Control, Communications and Intelligence |
| **DACCC** | Deployable Air Command and Control Centre |
| **D-AOC** | Deployable Air Operations Centre |
| **DARB** | Daily Assets Reconnaissance Board |
| **DARS** | Deployable ARS |
| **DE** | Desired Effect |
| **D&G** | Direction and Guidance |
| **DCA** | Defensive Counter Air |
| **DDG** | Guided Missile Destroyer |
| **DJTF HQ** | Deployable Joint Task Force Headquarters |
| **DLM/ICO** | Data Link Manager /<br>Interface Control Officer |
| **DOB** | Deployable Operating Base |
| **DPI** | Desired Point of Impact |
| **DT** | Dynamic Targeting |
| **EAD** | Extended Air Defence |
| **ECAS** | Emergency Close Air Support |
| **ECR** | Electronic Combat & RECCE |
| **EEFI (CCIR)** | Essential Elements of Friendly Information |
| **ELINT** | ELectronic INTelligence |
| **EOB** | Electronic Order of Battle |

| | |
|---|---|
| **EPAA** | European Phased Adaptive Approach |
| **EPM** | Electronic Protection Measures |
| **ESM** | E/W Support Measures |
| **EW** | Electronic Warfare |
| **FAC** | Forward Air Controller |
| **FAC (A)** | FAC (Airborne) |
| **FAOR** | Fighter Area Of Responsibility |
| **FEZ** | Fighter Engagement Zone |
| **FFIR (CCIR)** | Friendly Forces Information Requirements |
| **FLIR** | Forward-Looking InfraRed |
| **FLOT** | Forward Line of Own Troops |
| **FOB** | Forward Operating Base |
| **FOC** | Full Operational Capability |
| **FP** | Force Protection |
| **FRAGO** | FRAGmentary Order |
| **FSCL** | Fire Support Co-ordination Line |
| **GARS** | Global Area Reference System |
| **GAT** | Guidance Apportionment Targeting |
| **GBAD** | See SBAD (replacing GBAD) |
| **GCAS** | Ground CAS (A/C on alert on ground for CAS) |
| **GCI** | Ground Control Intercept |
| **GEOREF** | GEOgraphic REFerence |
| **GLE** | Ground Liaison Element |
| **GMTI** | Ground Moving Target Indication |
| **HAE** | Height Above Ellipsoid |
| **HALE** | High Altitude Long Endurance |
| **HARM** | High-speed Anti Radiations Missile |
| **HF** | High Frequency |
| **HNS** | Host Nation Support |
| **HPT** | High Payoff Target |
| **HUMINT** | HUMan INTelligence |
| **HVAA1** | High Value Air Asset |
| **HVAA2** | High Value Asset & Area |
| **HVT** | High Value Target |
| **IADS** | Integrated Air Defence System |
| **IAMD** | Integrated Air and Missile Defence |
| **ICC** | Integrated Command and Control |
| **IED** | Improvised Explosive Device |
| **IEL** | Infrastructure Engineering for Logistics |
| **IER** | Information Exchange Requirements |
| **IFF** | Identification Friend or Foe |
| **IFREP** | In-Flight REPort |
| **IMINT** | IMagery INTelligence |
| **IM** | Information Management |
| **IMS** | International Military Staff |
| **INS** | Inertial Navigation System |
| **INTSUM** | Intelligence SUMmary |

| | |
|---|---|
| **IO** | International Organisations |
| **IOC** | Initial Operational Capability |
| **IR** | InfraRed |
| **IS** | International Staff |
| **ISOPREP** | ISOlated Personnel recovery REPort |
| **iso** | In support of |
| **ISR** | Intelligence, Surveillance and Reconnaissance |
| **ISRD** | ISR Division (JFAC HQ) |
| **ivo** | in vicinity of |
| **JCB** | Joint Coordination Board |
| **JCO** | Joint Coordination Order |
| **JDAM** | Joint Direct Attack Munition |
| **JFAC HQ** | Joint Force Air Component HeadQuarters |
| **JFC** | Joint Force Command |
| **JOA** | Joint Operations Area |
| **JPRC** | Joint Personnel Recovery Cell |
| **JDAWG** | Joint Defended Asset List Working Group |
| **JLSG** | Joint Logistic Support Group |
| **JPTL** | Joint Prioritised Target List |
| **JPCAL** | Joint Prioritised Critical Asset List |
| **JPDAL** | Joint Prioritised Defended Asset List |
| **JTAC** | Joint Terminal Attack Controller |
| **JTL** | Joint Target List |
| **JTS** | Joint Targeting System |
| **JTWG** | Joint Targeting Working Group |
| **LCC** | Land Component Command |
| **LEGAD** | LEGal ADviser (to COMJFAC) |
| **LGB** | Laser-Guided Bomb |
| **LGM** | Laser-Guided Missile |
| **LL** | Lower Layer |
| **LoA** | Level of Ambition |
| **LOAC** | Law Of Armed Conflict |
| **LOC** | Lines Of Communications |
| **LOCE** | Linked Ops-Intel Centres in Europe |
| **LOGCON** | LOGistics CONtrol |
| **LOGS** | LOGistic Information System |
| **LOS** | Line Of Sight |
| **M&T** | Movement and Transportation |
| **MACE** | Maritime Air Coordination Element |
| **MALE** | Maritime Air Liaison Element |
| **MALE** | Medium Altitude Long Endurance |
| **MAOC** | Maritime Air Operations Centre |
| **MAOP** | Master Air Operations Plan |
| **MC1** | Military Committee |
| **MC2** | Mission Commander |
| **MCC** | Maritime Component Command |
| **MCE** | Maritime Co-ordination Element |

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|---|---|
| **MD** | Missile Defence |
| **MEDEVAC** | MEDical EVACuation |
| **MEZ** | Missile Engagement Zone |
| **MHQ** | Maritime Head Quarters |
| **MISREP** | MISsion REPort |
| **MJLC** | Multinational Joint Logistic Centre |
| **MFFO** | Mixed Force Fighters Operations |
| **MLE** | Maritime Liaison Element |
| **MLRS** | Multiple Launch Rocket System |
| **MOB** | Main Operating Base |
| **MOE** | Measure of Effectiveness |
| **MOU** | Memorandum Of Understanding |
| **MPA** | Maritime Patrol Aircraft |
| **MSL** | Mean Sea Level |
| **MSR** | Main Supply Road |
| **NAC** | North Atlantic Council |
| **NAI** | Named Area of Interest |
| **NATINAMDS** | NATO Integrated Air and Missile Defence System |
| **NATO** | North Atlantic Treaty Organisation |
| **NCIA** | NATO Communication and Information Agency |
| **NCIO** | NATO Communication and Information Organisation |
| **NCISG** | NATO CIS Group |
| **NCS** | Nato Command Structure |
| **NCTR** | Non-Co-operative Target Recognition |
| **NEO** | Non-combatant Evacuation Operation |
| **NGO** | Non-Governmental Organisation |
| **NM** | Nautical Mile |
| **NPG** | Nuclear Planning Group |
| **NRF** | NATO Response Force |
| **NSB** | NATO Signal Battalion |
| **NSE** | National Support Element |
| **NSL** | No Strike List |
| **OCA** | Offensive Counter Air |
| **OLRT** | Operational Liaison and Reconnaissance Team |
| **OoB** | Order of Battle (cf. ORBAT) |
| **OODA (loop)** | Observe Orient Decide Act (tasking Cycle) |
| **OPCOM** | OPerational COMmand |
| **OPCON** | OPerational CONtrol |
| **OPFOR** | OPposing FORces |
| **OPLAN** | OPeration PLAN |
| **OPORD** | OPeration ORDer |
| **OPP** | Operations Planning Process |
| **OPTASK LINK** | Operational TASK (message) for data LINK |
| **ORBAT** | Order of BATtle |
| **OSC** | On-Scene Commander |
| **PAO** | Public Affairs Officer |
| **PCAL** | Prioritised Critical Assets List |

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|---|---|
| **PfP** | Partner for Peace |
| **PGM** | Precision-Guided Missile |
| **PID** | Positive IDentification |
| **PIR (CCIR)** | Priority Intelligence Requirement |
| **POD** | Port Of Debarkation |
| **POL (LOG)** | Petroleum Oils and Lubricants |
| **POL (Msn)** | Pattern Of Life (surveillance) |
| **POLAD** | POLitical Advisor (to COMJFAC) |
| **POW** | Prisoner Of War |
| **PR** | Personnel Recovery |
| **PRCC** | Personnel Recovery Coordination Cell |
| **PRT** | Prohibited / Restricted Target |
| **PSC** | Political and Security Committee (EU) |
| **PSYOPS** | PSYchological OPerations |
| **PTL** | Prioritized Target List |
| **PTL (MD)** | Primary Target Line |
| **QRA** | Quick Reaction Alert |
| **RAI** | Reconnaissance-Attack Interface |
| **RALCC** | Regional Airlift Coordination Centre |
| **RAMCC** | Regional Air Movement Coordination Centre |
| **RAP** | Recognised Air Picture |
| **RDR** | RaDaR |
| **RECCE** | Reconnaissance |
| **RESCAP** | REScue Combat Air Patrol |
| **RESCORT** | Rescue ESCORT |
| **RFI** | Request For Information |
| **RMC** | Rescue Mission Commander |
| **RMP** | Recognised Maritime Picture |
| **ROE** | Rules Of Engagement |
| **RPC** | Recognised air picture Production Centre |
| **RSOM** | Reception, Staging and Onward Movement |
| **RTB** | Return To Base |
| **RTL** | Restricted Target List |
| **RWR** | Radar Warning Receiver |
| **SA** | Situation Awareness |
| **SACA** | Sub-area Airspace Control Authority |
| **SACEUR** | Supreme Allied Commander, Europe |
| **SACT** | Supreme Allied Commander Transformation |
| **SADC** | Static Air Defence Centre |
| **SAM** | Surface to Air Missile |
| **SAR** | Search And Rescue |
| **SBAD** | Surface Based Air Defence |
| **SC** | Special Corridor |
| **SCL** | Standard Conventional Load |
| **SD (JFAC)** | Strategy Division |
| **SEAD** | Suppression of Enemy Air Defence |
| **SEW** | Shared Early Warning |

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|---|---|
| **SERE** | Survival, Escape/Evasion, Resistance and Extraction |
| **SFP** | Sensor Fusion Post |
| **SHAPE** | Supreme Headquarters Allied Powers Europe |
| **SIDO** | Senior Intelligence Duty Officer |
| **SIGINT** | SIGnals INTelligence |
| **SLOC** | Sea Lines Of Communications |
| **SOCC** | Special Ops Component Command |
| **SODO** | Senior Offensive Duty Officer |
| **SOF** | Special Operations Forces |
| **SOLE** | Special Ops Liaison Element |
| **CCO** | Chief Current Operations |
| **SOR** | Statement Of Requirements |
| **SPINS** | Special INStructions |
| **SPOD** | SeaPort Of Debarkation |
| **STANAG** | STANdard AGreement |
| **TACON** | TActical CONtrol |
| **TACOM** | TActical COMmand |
| **TAT** | Tactical Air Transport |
| **TACP** | TActical Control Party |
| **TBM** | Theatre Ballistic Missile |
| **TBMD** | Theatre Ballistic Missile Defence |
| **TCE** | TST Coordination Element |
| **TDL** | Tactical Data Links |
| **TEA** | Target Engagement Authority |
| **TEL** | Transporters Erector Launcher |
| **TLE** | Target Location Error |
| **TNL** | Target Nomination List |
| **TOA** | Transfer Of Authority |
| **TST** | Time Sensitive Targeting |
| **THAAD** | Terminal High Altitude Area Defence |
| **AV** | Unmanned Aerial Vehicle |
| **UHF** | Ultra High Frequency |
| **UL (MD)** | Upper Layer |
| **UNSC** | United Nations Security Council |
| **UTM** | Universal Transverse Mercator |
| **VFR** | Visual Flight Rules |
| **VHF** | Very High Frequency |
| **VID** | Visual Identification (Air msn) |
| **VTC** | Video Tele Conferencing |
| **WAN** | Wide Area Network |
| **WEZ** | Weapons Engagement Zone |
| **WFZ** | Weapons Free Zone |
| **WMD** | Weapon of Mass Destruction |
| **WOE** | Weight of Effort |
| **XCAS** | Airborne Alert for CAS mission |