



AIRDEF

Indra's in-service last generation Air Command & Control System (AirC2)

AirDef constitutes a suite of products able to provide support to all levels of the Air Command & Control from planning (JFAC/AOC level) to execution (ARS level) of offensive, defensive and support air operations.

The system has been designed to meet NATO ACCS functionalities, and is composed at the execution level (ARS) by:

- Sensor Fusion (SFP - Sensor Fusion Post),
- Recognized Air Picture production (RPC - RAP Production Centre),
- Air Mission control (ACC - Air Control Centre).

AirDef provides interoperable and scalable Surveillance, Air Battle Management and Airspace Control capabilities to exercise the sovereignty of the national air space.

Integration and interoperability throughout the implementation of all type of

international standard interfaces and tactical data links have been the design drivers. This is key to provide the functionalities to carry out no-real time and real time missions in peacetime, crisis and conflict.

The system is scalable both in terms of the number of operator positions and capabilities. It features a revolutionary Human-Machine Interface (HMI): clear, attractive, intuitive and with a 3D view, that allows the interaction of the operators with the core of the AirC2 functionalities for planning and execution of air operations.

The AirDef system architecture has been designed from the ground-up to be extensible. The guiding rationale behind the architecture is to permit new external data source, such as sensors or new TDL protocols, to be plugged into the system without disrupting the RAP production based on existing external data sources.

The system allows evolution, in terms of:

- Capacity growth, to allow addition of new centers, servers, communications and working positions in a modular way.
- Capability evolution, according to new AirC2 requirements.
- Integration with other C2 systems and/or third party Systems due to its Open System architecture, the use of recognized standard interfaces and the use of interoperable data models.

AirDef fulfills the most demanding accreditation requirements in the field of cybersecurity, such as robustness, threat detection, confidentiality and integrity among others.

The AirDef system consists of multiple physical and virtual servers to provide hardware and software redundancy. This architecture is designed to avoid any single point of failure.



Relevant Planning Functions

- **Airspace Coordination Management:** Definition, distribution and activation of the NATO Airspace Control Orders (ACO) that governs the Airspace Employment.
- **Operations Management:** Development of defensive/offensive plans through the definition of the associated NATO Air Tasking Orders (ATO).
- **Assets Management:** Information and management of available resources, and intelligence assets considered relevant to air operations.
- Exporting the ATO/ACO, using the automatic generation tool ADatP-3.

Sensor Data Fusion

- Association, correlation and combination of data from active and passive multiple sources to create a single track, estimating position and identity.
- Integration of different types of standard radar protocols, like civil/military ASTERIX.

Recognized Air and Surface Picture (RASP)

- AirDef RASP is established by correlating local air pictures from the fusion of data from subordinate active and passive sensors with tracks and surveillance data received from external sources via "native" integration of tactical data links (Link-1, Link-11A/Link-22, Link-11B, Link-16 and JREAP) and flight plans from ATM systems. The system also provides an Automatic Airspace Supervision to keep the information updated as well as early identification of potential risks and threats.

Simulation and Training

- **Scenario Generation:** provide operators with the capability to define the different elements whose detection is simulated.
- **Simulation Control:** Initialization, monitor and control of simulations automatically generated from a scenario modelled in the Scenario Generation function.

Air Battle Management

- **Threat Evaluation:** automatic and periodic analysis of which Tracks pose a threat based on the potential influence/impact they can have against predefined Critical Points.
- **Weapons Allocation:** provide a list of suggested weapons prioritized by time for destruction assuming that such weapons able to combat the Threat.
- **Air Mission Control:** compile and keep updated all the information associated to Mission assignments in the RASP, and help/advise Operators in the control of those Missions.