

ATM CAPABILITIES

Leonardo capabilities span over the CNS paradigm of Communication, Navigation, and Surveillance (air traffic and meteo) to ensure safe, fast, and efficient air traffic flow, security of people and goods, effective exchange of information between Operators.

COMMUNICATION

Leonardo supplies complete, reliable, and redundant ground-to-air voice and data multimode communication systems. Leonardo proposes broadband ground Data-Links to exploit benefits of IP and VoIP radio networks for voice and data communications. Key benefits include:

- Faster, safer, and more efficient air traffic thanks to the ability to communicate using different voice and data modes
- Efficient coordination in traffic flow management
- Increased operation effectiveness and efficiency

Leonardo solutions include:

- Radio base stations
Multi-mode VHF/UHF ground-air-ground communications
- Data-Links
Ground-air-ground Data-Link support for air traffic management
- Communication network management systems
Solutions engineered to help Operators and Controllers to

manage networks and devices from remote control centres
Communications include VDL2/ACARS & ATN integrated Data-Link ground systems for AOC communications, current CPDLC communications, and future VDL-2 applications.

NAVIGATION

Leonardo provides a complete set of ground-based navigation systems. Key benefits include:

- GNSS to improve safety levels during all flight phases. GNSS ATC interface monitors satellite performances (e.g. GPS, EGNOS, Glonass, Galileo) over the airways of the controlled airspace.
- Total turnkey solutions for En-Route, precision landing, and airport guidance to fulfil the most challenging operational scenarios

SURVEILLANCE

Leonardo surveillance services provide reliable positioning information and unambiguous identification of targets thanks to high-performance sensors and sophisticated data fusion algorithms. Track/call sign association can be based on multilateration data, Mode-S and traditional SSR codes. Key benefits include:

- Maximum flexibility to integrate numerous and heterogeneous surveillance sources such as radars, multi-lateration, ADS-B and ADS-C
- Enhanced situational awareness by means of integrated traffic picture and aircraft-derived data
- Expanded operations on closely spaced parallel runways

Leonardo solutions include:

- ATCR-33S and ATCR-44S primary surveillance radars
- SIR-S modular secondary surveillance Mode-S radar
- SMR magnetron and solid state surface radars
- MXC ADS-B Ground Station for gate-to-gate control (1090 MHz standard)
- ADAM local and wide-area multi-lateration solutions for Airport and En-Route control

WEATHER

Leonardo is world leader in design, manufacture and installation of weather radar sensors and weather systems. Leonardo weather systems integrate data received from various sensors and sources to provide a complete weather picture, meteorological forecast, and real-time alerts. Key benefits include:

- Reliable weather products for heterogeneous meteorological aviation services
- Composite real-time presentation of weather situation and related hazards
- Ability to integrate several third-party sensors

Leonardo solutions include:

- METEOR
Advanced Doppler weather radar system
- RAINBOW 5
Multi-radar network management

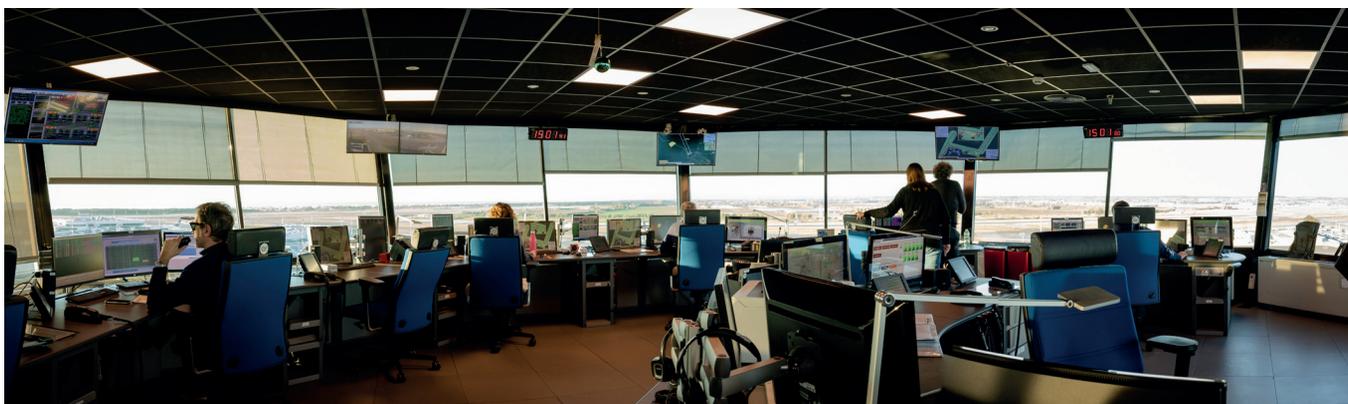
OPERATION AND CONTROL CENTRES

Leonardo Operation and Control Centre integrate actual and predicted traffic information from airside and landside sources, field and communication infrastructures, interoperability services. Those provide decision support tools for Controllers to navigate and separate aircraft in all flight phases. Key benefits include:

- High degree of automation and interoperability
- Improved operational efficiency
- HMI flexibility for different operational needs (ground, tower, APP, ACC)
- Tight integration between ground/ground, ground/air, and airside/landside services

Leonardo solutions include:

- LeadInSky system for ATC automated services and management, integrating:
 - Flight Data Processor
 - Arrival manager
 - Short and medium term conflict detection
 - Air/ground Data-Link
 - Controller Working Position
- GAINSTM advanced surface movement guidance and control system, integrating:
 - Ground safety nets
 - Path monitoring
 - Ground route and departure planning
 - Aircraft and vehicle guidance
 - Tower Working Position



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