



Catalogue of
commercial
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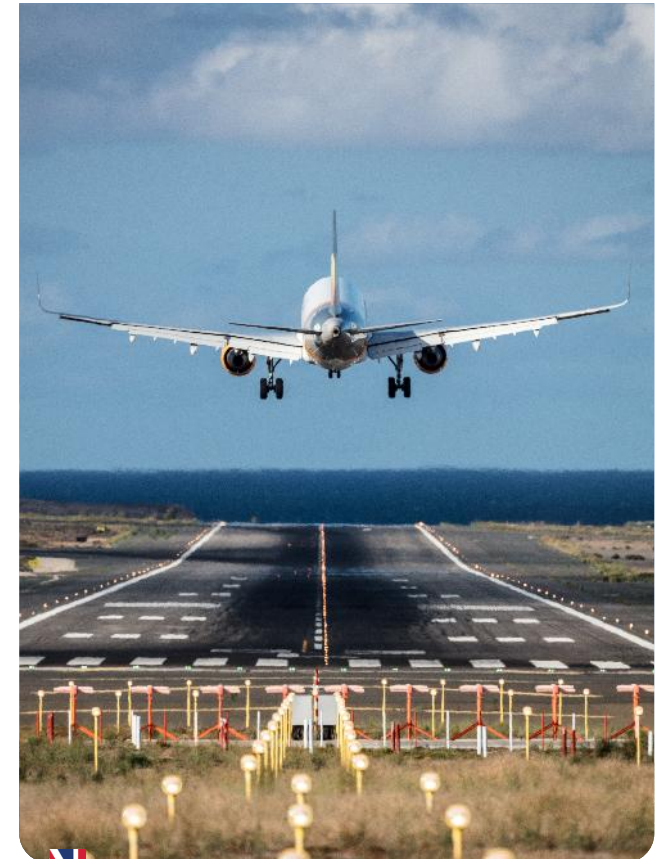
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Consultancy

Through its highly trained human team, ENAIRE offers its clients a vast catalogue of consultancy services for engineering and technical services, including the following:

1. Air Traffic Control (ATC) and runway (RWY) capacity studies determining the number of aircraft per minute based on the controller's workload, and implementation of efficiency measures, optimising existing resources.

2. Aeronautical feasibility studies of new obstacles, including impact on landing/take-off manoeuvres and radioelectric analysis on nearby CNS facilities.

3. Implementation of new processes and procedures (technical, management, planning, safety, verification, environment and site security) in the ANSP's organisation.

4. CNS/ATM systems specialised consultancy, as Air Navigation Master Plans, implementation of RNAV/PBN (GNSS, DME-DME), SBAS, GBAS, analysis of system performance and quality of the broadcasted signal, CNS coverage studies, electromagnetic compatibility, remote systems monitoring, service quality assessment, MPLS based ATC data networks, migration to VoIP services, ATN datalink services, Air-Ground VDL2 subnets deployment, ADS-C, ADS-B and SATVOICE services in oceanic areas, CNS/ATM systems mock-ups and laboratory validation tests.

5. ATC staff training consultancy advising ANSPs on how to organise and define the contents of the different courses required by the air traffic controllers.

6. AIS transition to a digital environment (AIM-SWIM) National strategy definition of the transition to a digital AIS environment.

Training

1. Air Navigation Services Management Programme: Face-to-face and online modes. Modular structure. Duration: an academic course. Recognized by ICAO (TRAINAIR PLUS). Collaborators: Eurocontrol (IANS), CANSO (protocols of excellence) and the Autonomous and Polytechnic Universities of Madrid. More info at: MasterNA@enaire.es

2. Seminars:

i) Advanced Operations for Air Traffic Control in Airports and Control Centres (Airport Collaborative Decision Making (A-CDM), assessment and management of capacity).

ii) Safety Management System (SMS).

iii) Implementation of new processes and procedures (technical, planning, management, safety, verification, environmental and site security).

3. ATC training:

i) Certified ATC training (instructors, evaluators and pseudo-pilots.)

ii) Courses: simulation exercises design, TRM (Team Resource Management), rating endorsement, Assessment of Previous Competence (APC).

SW Tools

1. MWM (Multiple resources Workload Model): air traffic controller workload algorithm (Route, TMA and Tower).

2. PICAP (Programme of Investigation of runway Capacity): runway capacity computation programme.

3. GAMMASIM®: Air traffic control simulator for training ATC personnel in Tower, Approach and En-Route.

4. DRONES: Online drone operations planning tool.
<https://drones.enaire.es>

5. Flow Tools Ecosystem: Analysis software tools made to support operational decisions, optimize space, air traffic capacity and management, by using SWIM data sources. Jane's ATC Awards winning project in 2019.

CNS-ATM systems

These systems constitute the technical basis for optimal provision of air navigation services.

1. SACTA (Automated Air Traffic Control System): system responsible for managing air traffic control. Its mission is to facilitate the ATS provision.

2. ITEC (interoperability Through European Collaboration): latest generation of the Air Traffic Control system developed by Indra in collaboration with the air navigation service providers of Spain (ENAIRE), the United Kingdom (NATS), Germany (DFS), the Netherlands (LVNL), Norway (Avinor), Lithuania (Oro Navigacija) and Poland (PANSNA).

3. ICARO XXI (Integrated COM/AIS/AIP & Reporting Office Automated System) integrates and manages the aeronautical information generated in Spain and received from the rest of the world through the European Aeronautical Database (EAD), Flight Plan and Slot information messages from Spanish airports and Meteorological information from the State Meteorological Agency (AEMET).

4. COMETA (VoIP integrated into SACTA): Voice communications system over IP protocol.

5. PERSEO (Analysis Platform of Sector Network Effects in Operation): tool based on air navigation systems' data mining to facilitate the air traffic management decision-making process.

6. GNSS Monitoring: quality control system for GNSS multiconstellation (GPS/Galileo) and multifrequency (DFMC) signals. **DYLEMA:** land-based system for detection and location of frequency inhibitors (jammers).