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# 01

## The ENAV Group

The Group's companies include ENAV S.p.A., Techno Sky S.r.l., the SICTA consortium and ENAV Asia Pacific Sdn. Bhd.. ENAV is a public corporation entrusted by the Italian government to provide national civil ATC (Air Traffic Control) and management services. **ENAV** - the former National Flight Assistance Agency - was transformed into a public limited liability company in January 2001. The company is under the supervision of the Ministry of Infrastructure and Transport and is entirely owned by the government's Economic and Finance Ministry.

ENAV's main purpose is to contribute towards national transportation system efficiency by ensuring that aircraft fly safely and regularly through Italian controlled airspace - in accordance with the Country's international commitments. This objective is to be achieved by ensuring the company is economically efficient and successfully addresses demand for quality and efficacy of service. In directly providing ATC and management services, along with other crucial navigation services, in the Italian controlled airspace and at national airports, ENAV ensures the best technical and system standards in terms of flight safety.

**Techno Sky**, a wholly-owned subsidiary of ENAV, is responsible for the conduct and maintenance of flight assistance systems and relevant software.

**SICTA** (Innovative Systems for Air Traffic Control) - the Group's Consortium (60% ENAV - 40% Techno Sky) - develops research projects on systems for air traffic services.

**ENAV Asia Pacific** - based in Kuala Lumpur and incorporated under Malaysian law - is responsible for ENAV's commercial activities in the area.



# 02

## Techno Sky



Techno Sky installs, manages, and maintains equipment, software and ENAV systems used in Italian air traffic control, ensuring full operational efficiency 24 hours a day, 365 days a year.

Techno Sky is responsible for the engineering of the “mission critical” system, of Air Traffic Management working on both the hardware and software areas of radar technology, radio-assistance, telecommunication (also via radio), information and meteorological systems.

Thanks to their own integrated logistic system, to the UNI-EN ISO9001:2008 certificate, to the NATO AQAP-2110/160 declaration, to CMMI-DEV v1.2 and to the ACCREDIA accreditation from the LAT department (calibration activity laboratory), Techno Sky fulfils its corporate mission towards ENAV and together they broaden their quality proposals to national and international airport managements and institutions.





# 03

## SICTA



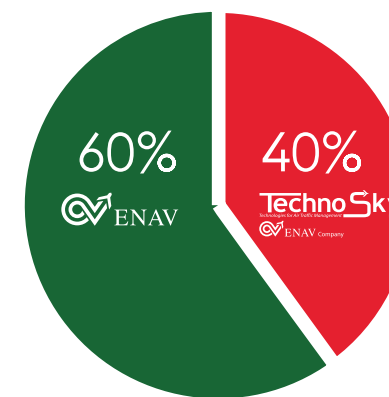
SICTA was founded in 1993 and became an ENAV Group Consortium in July 2012.

SICTA area of expertise encompasses:

- Pre-Engineering Services
  - ATS Infrastructure analysis for airspace optimisation
  - New CNS/ATM systems prototypes development
  - Design and development of new CWP/HMI solutions
- Support Services to the implementation of New ATM Solutions
- Support Services to Verification and Validation
- Support Shareholders in International Projects/Activities

SICTA's main activities include:

- Design, analysis and validation of Operational Concepts and scenarios
- Airspace/Airport modelling and optimisation through Model Based Simulation
- Design and development of innovative CWP/HMI prototypes
- ATM System Architecture development
- HP & Safety related studies on new ATM Concepts and Operations





# 04

## ENAV Asia Pacific



Founded in Malaysia in 2013 with the aim of supplying high quality services to operators from the aeronautic sector in the Asia-Pacific area, the company operates with a multicultural team of professionals, highly qualified to support local organisations in reaching their institutional, strategic and operational goals.

From Kuala Lumpur ENAV Asia Pacific assists the Malaysian Civil Aviation in managing programmes focused on reaching the highest operational and technological standards and acts as strategic partner in a region of the world, which is presently recording the highest growth rate in air transport.



# 05

## Shares in other companies



In December 2013, ENAV acquired 12.5% (for \$61 million) of Aireon - the US company of the Iridium Group that is set to develop the first global air traffic satellite surveillance system by 2018.

ENAV takes a stake in Aireon entering a joint venture with service providers NAV CANADA (Canada), IAA (Ireland) and Naviair (Denmark). The company will play a crucial part in developing the service towards service providers operating in the Mediterranean area and in South-East Asia (home to Kuala Lumpur-based subsidiary ENAV Asia Pacific).

The first satellites of the new surveillance platform for air traffic control and management will be launched in 2015. The service will be fully operational by 2018. A constellation of 66 orbiting satellites will monitor the identity, position and altitude of aircraft anywhere in the world, including oceans, deserts and the poles (all currently lacking surveillance and hence active control over flights).

Implementation of this new technology has many advantages including: increased air traffic volumes, route optimisation and exceptional levels of flight safety and efficiency. Route optimisation will lead to improved fuel economy, benefiting the environment and reducing costs for airlines.





# 05.1

## Shares in other companies



ENAV (with a 16.67% stake) and other major European ANSPs (AENA, DSNA, DFS, NATS, Skyguide and NAV Portugal) are founder members of the European Satellite Services Provider (ESSP SAS) - a company incorporated under French law.

Following an international procurement process, the European GNSS Agency (GSA) and ESSP SAS signed a €450 million contract in June 2013 for the exclusive provision of European Geostationary Navigation Overlay Services (EGNOS) until 2021.

EGNOS augments the GPS satellite navigation system: improved levels of signal accuracy, availability, integrity and continuity make the system suitable for civil aviation use and enables approaches with vertical guidance.

In addition to the Safety of Life (SoL) service (dedicated to airspace users), ESSP manages other EGNOS positioning services developed for multi domain users (e.g. road, train and sea transport) and applications requiring position accuracy and integrity.

As an ESSP shareholder, ENAV participates in the meetings held by the BoD and receives annual dividends according to the Company's financial performance. ENAV also manages important parts of the EGNOS system such as one of its two Mission Control Centres (operational until 2021).



# 06

## ENAV Group in figures

Control Towers:	43
Area Control Centres (ACCs):	4
Airspace controlled by ENAV:	751,742 Sq Km
Flights controlled in 2015*:	1,567,030
ATM Punctuality Index 2015:	0.009 (average delay per flight assisted ENR)
Peak of flights managed in one day in 2015**:	6,113
Employees:	4,235
Hours of training provided in 2015:	76,312

\*IFR GAT Instrument Flight General Aviation at 31 December 2015

\*\* 1 August 2015





# 07

## The Air Traffic Controller

An Air Traffic Controller (ATCO) is a highly specialised professional whose main purpose is to ensure the safe, orderly and expeditious flow of air traffic.

An Air Traffic Controller manages and provides support to aircraft in the Italian controlled airspace and airports. This delicate task is performed 24/7, 365 days a year.

ENAV's meticulous recruiting process is implemented in accordance with international best practices and reflects the delicacy of the position and the complexity of the duties involved.

Following selection, aspiring controllers undergo training and are required to take several exams so that their professional suitability may be assessed.

Throughout their career, Air Traffic Controllers regularly attend training and update courses as new technology is implemented.





# 08.1

## What we do

ENAV personnel working in the Control Towers of 43 airports assure air traffic management and other navigation services during take off, landing and approach.

Area Control Centres in Brindisi, Milano, Padova and Roma manage the en-route phase of flight in the Italian controlled airspace.

In the interest of air navigation safety, ENAV provides these services and countless other activities round the clock. Maintenance, technical support and the relevant engineering and software skills are provided by Techno Sky personnel.

Further engineering skills, particularly those concerning the Group's core business, are developed by SICTA personnel.



# 08.2

## What we do



### Aeronautical information

ENAV's Aeronautical Operational Information System (AOIS) ensures operational aeronautical information is received, processed and distributed to internal and external users, specifically information on flight plans, Air Traffic Flow Management (ATFM) messages, weather and NOTAM information through technological platforms and on-line databases integrated with the National and international ATM system.

Aeronautical information is published by ENAV according to ICAO standards and is available for the aeronautical community by means of 'AIP Italia' paper and cd-rom editions and the enav.it website. Enav.it includes a "Self Briefing" service that allows aeronautical users, pilots and accredited organizations to perform briefing activities in full autonomy by connecting to the new AOIS WEB system and accessing pre-flight information via the internet.





# 08.3



## What we do

### Airspace Design

The ENAV's Airspace Design Department studies, defines and designs instrument flights procedures and the airways network within the airspace under its jurisdiction in accordance with business objectives like safety, efficiency, capacity and environment protection. It shapes and optimizes the aircraft overflying routes as well as landing and departing trajectories from and to the Italian Airports managed by ENAV.

It analyzes , along with Enac and the Italian Air Force, temporary restrictions within its airspace related to special flight activities.

In order to guarantee the maximum level of safety during the process of conventional and RNAV (Satellite Navigation) flight procedures design, the Airspace Design Unit collects topographic data related to aerodrome obstacles position as well as other obstacles that may interfere with air navigation and other significant elements around airports and earth geography. This task is carried out using the most advanced satellite technologies. This survey activity is preparatory for Aerodrome Chart Production and database update in order to make it available to designers along the process of flight procedure design. The Airspace Design Department also develops, together with the Marketing Department, projects and feasibility studies related to flight procedures and airspace organization as well as electromagnetic compatibility analysis in the field of marketing projects both on a national and international sphere.





# 08.4

## What we do



### Flight Inspection

ENAV's Flight Inspection Service performs in-flight inspections to ensure civil and military nav aids comply with national and international standards and regulations.

ENAV's Flight Inspection Service follows a strict inspection schedule when checking the in-flight radio signals used by aircraft to navigate, land and take-off during all weather conditions. These radio signals are broadcast by ground and satellite radio stations and are necessary for instrument navigation and for the approach phases of flight. Visual guidance systems are also regularly checked.

The Flight Inspection Service uses a modern fleet of Piaggio P180 "Avanti II" aircraft equipped with high precision measurement systems. Highly qualified personnel and advanced technology do the rest, enabling ENAV to provide world-class levels of safety and quality.

The Flight Inspection Service also provides support to National and European ATM research programmes.





# 08.5

## What we do



### **Airport meteorological service**

ENAV's Meteorological Service produces observation and aeronautical weather forecast reports on a daily basis at pre-established times, in addition to safety communications, given both when the risk of adverse weather conditions could cause damage to airport infrastructure, and to aircraft on the ground, as well as, when there are particular wind conditions in low atmospheric layers, which are potentially dangerous for air navigation. Radar-meteorological observations and meteorological syntactic results complete the service.

ENAV's weather observers have the task of producing weather reports for over 40 Italian airports, while the weather forecasters develop safety communication and airport weather reports over a 9, 24 and 30 hour period, supporting air traffic control operations with continual updates on weather conditions at the airports, at the terminal areas and on flight routes.

All products issued by ENAV's meteorological service are available on the international aeronautical telecommunications network; the meteorological information service guaranteed by ENAV's ARO-CBO office which assures the distribution to all interested aeronautical users.



# 09

## Academy



In Italy, ENAV is the only company authorized to select, train and update the different professional profiles required for all the activities relative to civil air traffic control services. (Civil ATC services).

The ENAV Academy provides world-class training courses in accordance with national and international technical standards and regulations in this sector.

The training courses provided by ENAV's Academy are designed specifically for air traffic controllers and professionals operating in the aeronautical sector.

The Academy, which provided 68,200 hours of training in 2015, carries out its didactic activities in its dedicated training centre in Forlì, mainly concentrating on "ab initio" and advanced training courses for ATCOs including activities for external clients.

Courses at the Academy are taught by internal trainers with experience in managing and using state of the art didactic and simulation methods and use of the most recent technology, such as: 2 radar simulators for 24 stations, a procedural simulator for 8 stations, 8 tower simulators 270° 3D, a CRJ certified flight simulator and 26 radars and tower simulator stations for self-learning (part task trainer).





# 10

## Technological Equipment and Systems

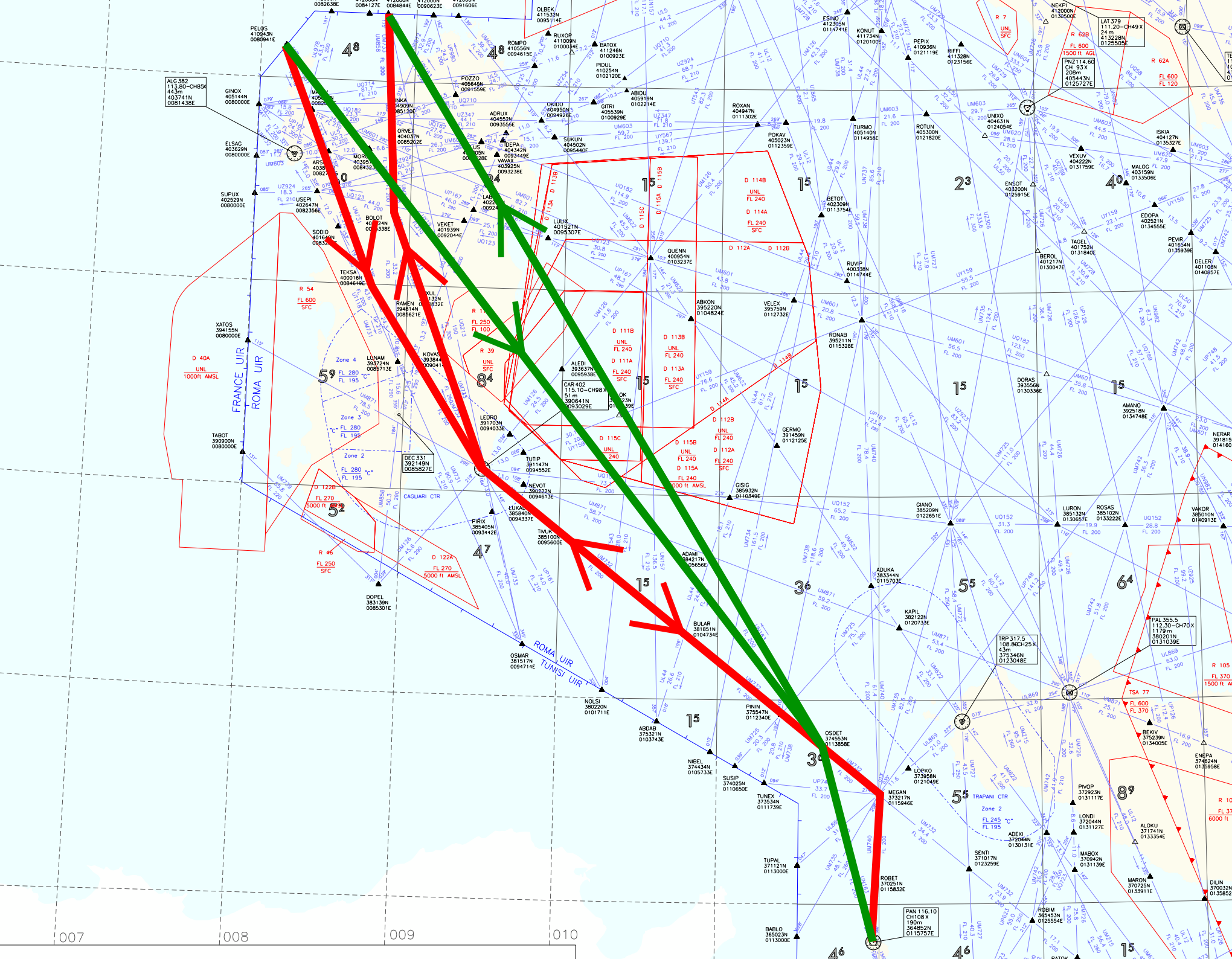
Area Control Centres (ACCs) and the Company's Control Towers are equipped with cutting edge technologies, which work with important communication, navigation and surveillance systems, located throughout the national territory and directly in airports.

Air Traffic Controllers oversee aircraft management and guide them using the data coming from approx. 62 primary and secondary radars and 10 ground radars.

ENAV also owns 2 MET radars, 50 VORs (VHF Very high frequency Omni Range), 90 DMEs (Distance Measuring Equipment), 42 ILSs (Instrument Landing System), 53 NDBs (Non Directional Beacon), 33 VDFs (Very high frequency Direction Finder) and 3 MLATs (Multilateration System).

ENAV also manages ground/air/ground communications and radio links among fixed points necessary for aeronautical telecommunications.





# ENAV and the Environment

In full compliance with international policies focusing on the reduction of the environmental impact of air transport, ENAV, Airline companies and airports strive to improve the efficiency of flight operations and promote the sustainable growth of air transport.

With a customer orientated approach, ENAV - through its Flight Efficiency Plan (FEP) - designs and implements ATS Network optimisation and air traffic management procedures that enable - while adopting the highest levels of safety - a reduction in planned distances and flight times, thus leading to lower fuel consumption and carbon dioxide emissions.

Following the implementation of FEP 2015, concerning 2014, Airline companies saved € 9 million, 12.3 million kg fuel and cut their CO2 emissions by approx. 27 million kg.

The implementation of ENAV's Green Policy builds on the successful experience of its Flight Efficiency Plan and of its first photovoltaic system at the Control Tower in Ancona Falconara airport and focuses on an increased use of renewable sources of energy along with the promotion of an efficient and smart use of energy, paper and consumables at its offices.





# 12.1

## International Strategy



ENAV is a leading Air Navigation Service Provider at European and global level. In Europe, ENAV participates in key partnerships, cooperation agreements, multilateral projects and programmes, and is actively part of initiatives and activities promoted by the European Commission, EASA and EUROCONTROL.

At international level, ENAV is involved in a wide range of industrial partnerships and plays an essential role in ICAO (International Civil Aviation Organization) and CANSO (Civil Air Navigation Services Organisation) working groups.

The Company is strongly committed towards the Single European Sky ATM Research (SESAR) Programme, participating in the SESAR Joint Undertaking at the Development phase - SESAR 1 and SESAR 2020 (2008-2024) – as well as in the Deployment Manager for the deployment phase (2014-2023), making best use of existing funding opportunities. In this respect, ENAV is full member of the SESAR Deployment Alliance (SDA), a group of air navigation service providers, airports and airlines entrusted by the European Commission to be the Deployment Manager in charge of the synchronisation and coordination of the Deployment phase of SESAR.

In this context, ENAV effort aims at accelerating the ATM system modernisation through a result-oriented approach which will ensure that tomorrow's operational procedures and technological enablers deliver the solutions to fulfill the Single European Sky objectives.



# 12.2

## International Strategy



ENAV plays an outstanding role in the A6 Alliance, the strategic partnership of key European Air Navigation Services Providers – DFS (Germany), DSNA (France), ENAV (Italy), NATS (United Kingdom), PANSAs (Poland), NORACON Consortium, B4 Consortium and COOPANS Alliance.

A6 contribution is essential to the European processes and it is key for leading institutions and EU stakeholders in the definition of new strategies for the SES goals.

Furthermore, ENAV takes part in important technological programmes: in partnership with DSNA, ENAV is developing the COFLIGHT programme, aimed at delivering the next generation Flight Data Processing System, and the wider 4FLIGHT programme for the realization of a modern ATM system.

ENAV is also investor in AIREON that will deploy a global satellite-based system capable of tracking and monitoring aircraft around the globe and providing 100 percent surveillance coverage of ADS-B equipped aircraft in real-time.

ENAV leads the BLUE MED FAB initiative, aimed at creating a Functional Airspace Block (FAB) in the Mediterranean basin, also establishing partnerships with non EU Countries at the interface with Africa and the Middle East.







# 13.1

## Commercial Offer

The expertise and competence acquired in all functional areas of air traffic management enable ENAV to be a reference point, nationally as well as internationally, for development projects, which can satisfy the needs of operators working in different areas in the aeronautical field.

ENAV's commercial offer arises from this experience and from these results, working in synergy with two other fundamental players, Techno Sky, an ENAV Group company responsible for the management, support and maintenance of installations and systems used for Italian air traffic control, and ENAV Asia Pacific based in Kuala Lumpur (Malaysia) which provides targeted services to S.E. Asia clients.

Professionalism, experience and technology are the pillars of a global offer of high value added services provided by ENAV.

*ENAV Worldwide.*

*The Group operates in 28 different countries (left)*





# 13.2

## Commercial Offer



**Aeronautical Consulting and Design**  
Whether rationalising operations in a single airport or modernising a country's entire ATC infrastructure, ENAV has the ability to develop cutting-edge solutions across the world.



**Flight Inspection**  
With its upgraded aircraft fleet and advanced data processing systems, ENAV provides a wide range of flight inspection services, ensuring standards of excellence, reduced flight times and competitive prices.



**Training**  
The ENAV Academy is a world-class training centre for personnel involved in the provision of air navigation services. The quality of training provided by ENAV ensures exceptional levels of efficiency and efficacy in the learning process.





**A GLOBAL  
LEADER**  
IN AIR NAVIGATION SERVICES

13.3

## Commercial Offer



### **Maintenance**

ENAV brings its experience in the management and maintenance of air traffic control systems and technology to all those organisations aiming to improve their logistics and maintenance processes.



### **Engineering**

ENAV supports organisations working in “mission critical” sectors by providing services and solutions in:

- Installation, integration and setting-up of CNS systems
- ATM software development
- Meteorology systems development, supply and installation