



# CONSULTANCY OFFICE



Founded by



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# ABOUT US

Founded by the Direction Générale de l'Aviation Civile (DGAC) and the Ecole Nationale de l'Aviation Civile (ENAC), FRACS is the expertise and consultancy office of the French civil aviation. FRACS provides worldwide consultancy services, defines operational concepts, identifies prospective technologies, technical solutions and applications to various aviation clients (civil aviation authorities, airlines, air navigation providers, airport authorities).

FRACS' domains of expertise are: regulation and safety oversight, ATM operations optimisation, innovative solutions and operational training to meet ICAO and EASA standards, reinforce operational performance and reach capacity building strategic goals.

The company relies on 11,500 experts operating on the five continents mostly in the fields of air traffic control, certification, supervision and regulation. Our experts are in-house professionals and provide on-demand consultancy. They have an extensive experience in international affairs through their participation in various projects or high-level committees (ICAO, CANSO, EUROCONTROL). All experts involved in our projects have a proven experience of several years within French DGAC and French Air Navigation Services Provider (DSNA) technical and operational units.

For more information, please consult our website on [www.fracs.aero](http://www.fracs.aero).

# AVIATION SAFETY

## ICAO Standards Compliance

Maintain regulation in line with ICAO Standards

Why this service ?

Every year, ICAO communicates via States Letters proposals for **new ICAO Annexes** or **amendments** to existing **Standards and Recommended Practices** (SARPs).

Unfortunately, many Civil Aviation Authorities, due to their size, do not have the capacity to follow up on ICAO state letters. Comments on draft amendments to the **Annexes** are rarely provided and obligation to **notify differences** is not always respected.

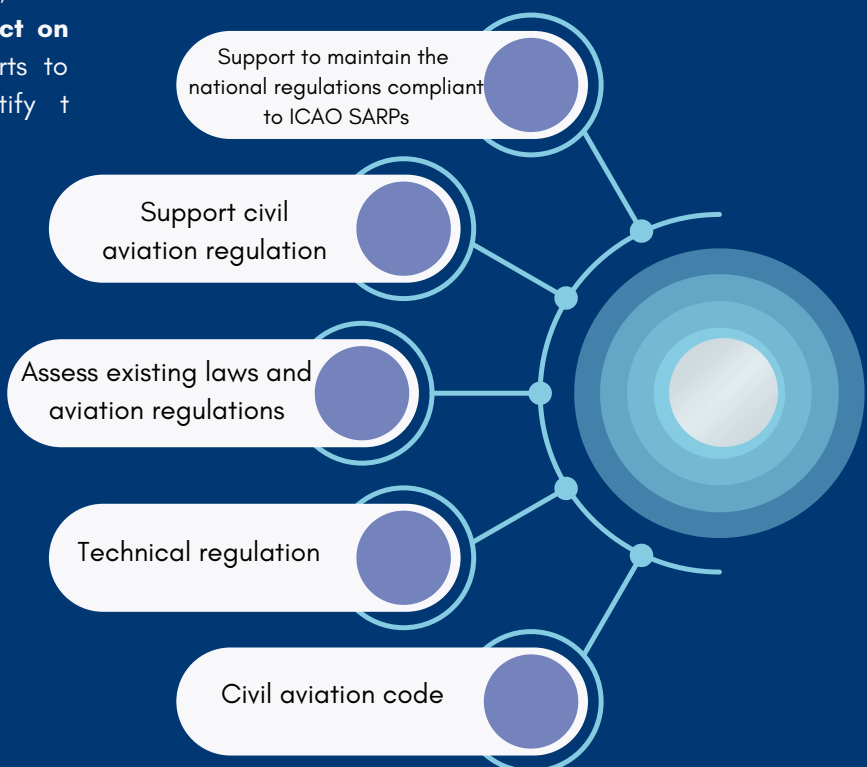
**FRACS offers its expertise to Member States to support them in this task.**

How does it work?

We will help state to ensure **regular monitoring** of the release of letters to the States and **anticipate** future amendments to the ICAO Annexes.

All Air Navigation regulation

For each Letter informing of proposed amendments or communicating an adopted amendment, **our experts** will analyse the letter and its **impact on your regulations** and work with your experts to prepare a response to ICAO or to notify differences.



# AVIATION SAFETY

## Safety Oversight

Support implementation of an effective, high performing safety system



### INSTITUTIONAL FRAMEWORK

Support for a better organisation of the Civil Aviation Authority to fulfil its safety oversight obligations

Assistance to help to set up an operators safety oversight plan and associated procedures

### INSPECTOR'S ACTIVITIES

Development of adapted material needed to conduct surveillance audits: surveillance manuals, checklists...

Tailored-made training for the inspector's (Theoretical and OJT)

# AVIATION SAFETY

## METEOR a platform serving safety oversight

The application for Supervisory Authorities

A Web platform developed and used by French DSAC

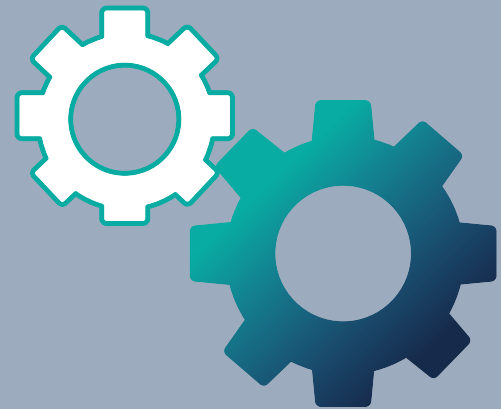
### WHAT IS METEOR?

METEOR is an application created in 2019 by the DSAC which is the French Safety Oversight Organisation

It is a tool that allows you to dematerialise all exchanges related to surveillance activities while guaranteeing access to data regardless of your location.

METEOR is an essential application to ensure the traceability of surveillance acts and the monitoring of regulatory compliance of organisations.

It facilitates the management of compliance with regulatory standards and contributes effectively to the demonstration of the Authority's conformity with ICAO standards.



#### Civil Aviation Authorities

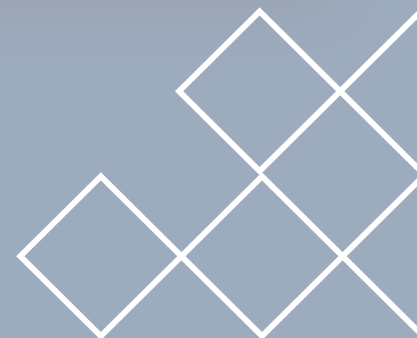
All Civil Aviation Authorities to improve their safety oversight system

#### Organisations

Overseen organisations to facilitate the follow-up of their files with the Authority

#### Inspectors

Inspectors to follow their files, coordinate action and planning and ensure traceability



# AVIATION SAFETY

## METEOR a platform serving safety oversight

### Main functionalities

Managing document exchanges

Certificate requests, derogations, approvals...

Discussions on surveillance acts

Audit preparation, planning of dates, reports

Discussions on surveillance acts

Submission of corrective action plan...

Communication

General information to the organisation, dashboards, FAQ

### METEOR in short



### How does it work?

METEOR is an **online platform** accessible via any browser

**No** software or hardware **installation**

No technical administration

The application is **adaptable** to your organization

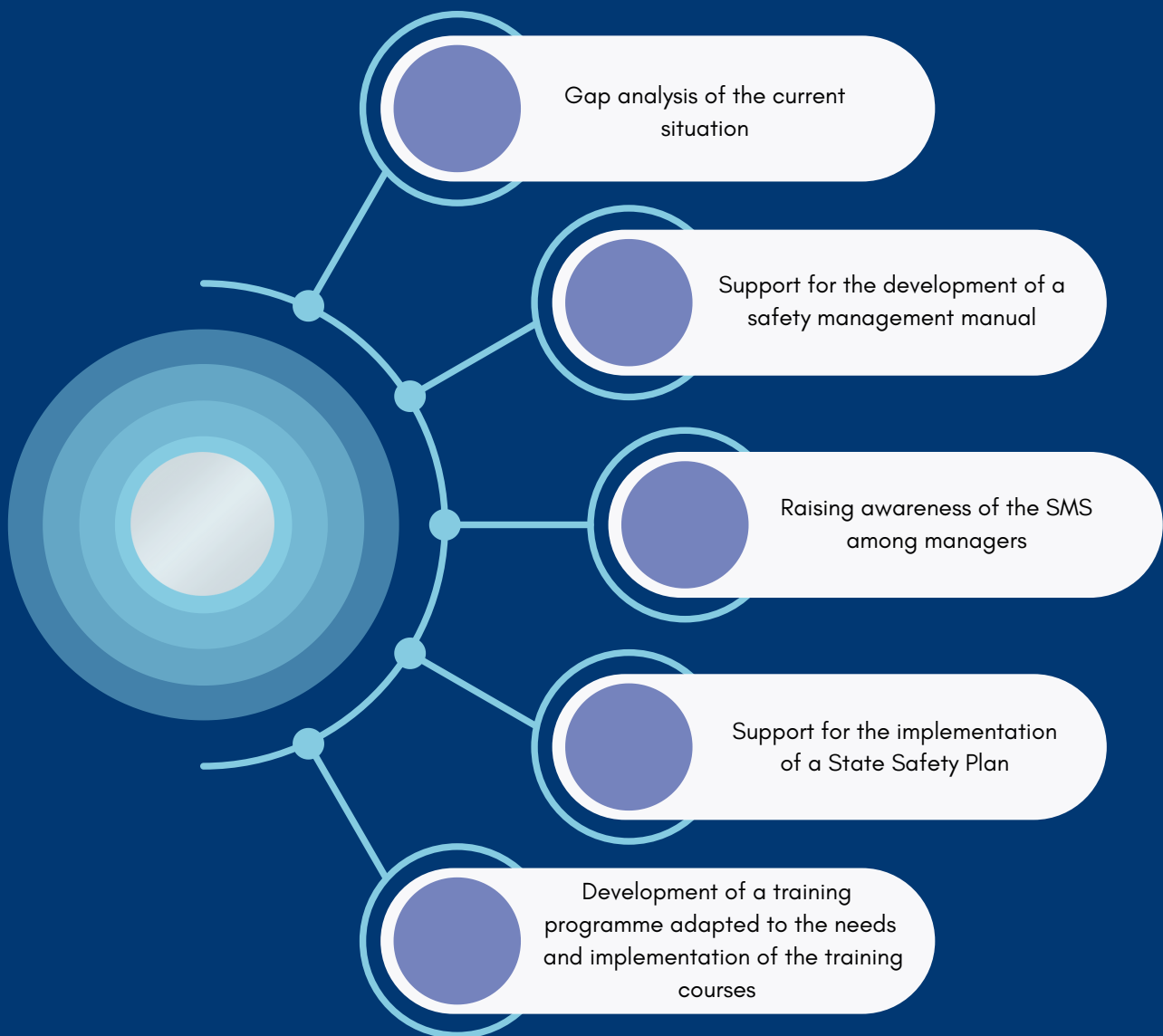
Data is stored on a **secure server**.

# AVIATION SAFETY

## Safety Management System

Design, improve and implement an ICAO compliant SMS

A tailored-made support at each stage

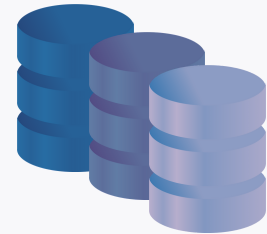




# AIR TRANSPORT ANALYSIS

## Air Transport Data ATD Analytics

Check the Past - Predict the Future



### 3 DATA BASES

#### Airlines

Detailed information from around the world since 1980:  
traffic data, financial results and fleets

#### Airports

3,000 airports worldwide, collected from various sources since 1970: passengers, aircraft movements, freight

#### Traffic flows

Country-to-country and city-to-city data for over 193 countries since 1970



**3,000** AIRPORTS

**200** COUNTRIES

**600** AIRLINES

**40 - 50** YEARS FOR THE OLDEST

Collected from different sources, including our own surveys

Annual subscription to one or more domains

Data upon request services



*Quick access to reliable data is paramount to VINCI Airports' trafficanalysts. This is why we regularly rely on the databases provided by France Aviation Civile Services. We are very satisfied with the responsiveness of their team and the quality of the data provided.*

**VINCI Airports**



# AIR TRANSPORT ANALYSIS

## Air Transport Data

### ATD Analytics

Check the Past - Predict the Future

Acces and analyse the worldwide traffic on the web

We developed ATD Analytics e-platform to support analysis of the current traffic, based on ATD "traffic flows" database.



Passenger, Movements and  
Cargo traffic

Yearly passengers worldwide  
from 2010

Monthly Passenger, Movements, and  
Cargo traffic from January 2019



Historical data since **2010**  
**Collected** and not calculated data  
**Analysis** and **comparison** mode  
Available **24/7**  
New type of **graphs**  
Based on the **traffic flows** bases

Quarterly and Yearly subscriptions  
1 Country  
2 Countries  
3 Countries  
1 Region  
Worldwide



# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Airspace Design with DIADEME

What is DIADEME ?

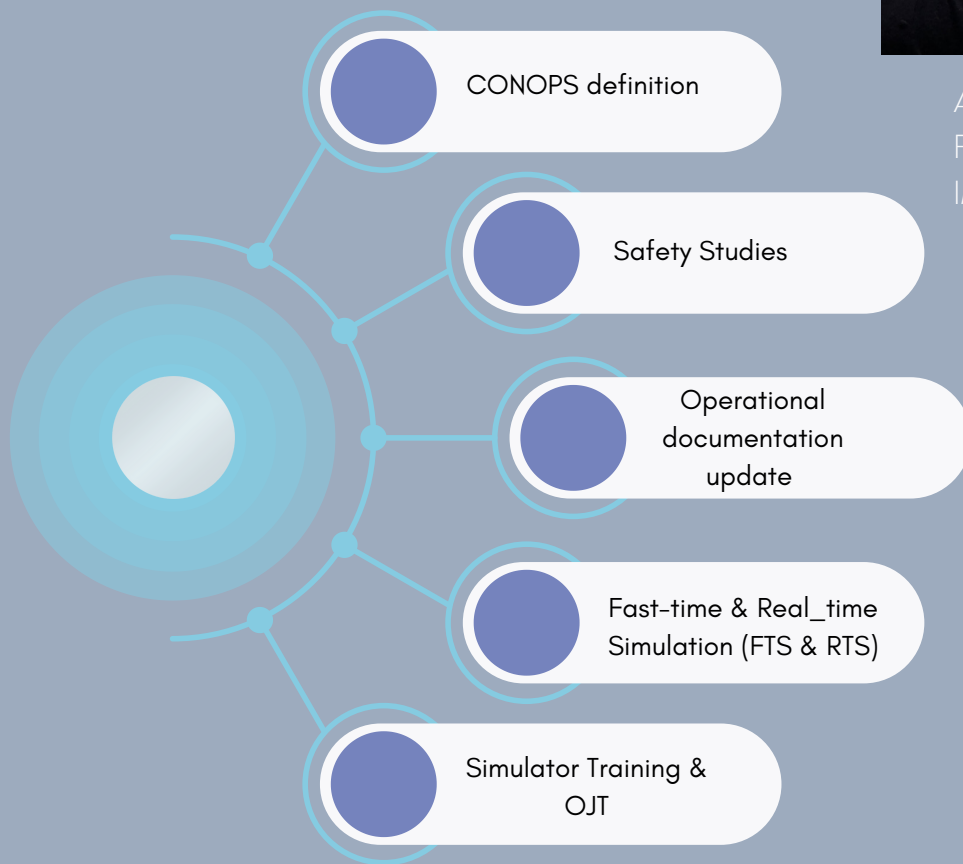
An innovative and forward-looking tool developed by FRACS to meet customer expectations.

DIADEME is a fully collaborative and online platform.

DIADEME is a tool used to optimise monitoring of airspace performance: Safety, Capacity, Noise, Gas emissions



A COMPREHENSIVE APPROACH FROM GAP ANALYSIS TO IMPLEMENTATION



Support for Airspace Design and Optimisation

Performance Analysis  
Safety, Capacity, Environment

Remotely accessible  
Can be interfaced with external tools  
Adaptable

Usable for experimentations,  
demonstration or training purpose

# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Airspace Design with DIADEME

NEW CONCEPTS

REAL CHANGE MANAGEMENT AND KNOWLEDGE TRANSFER

PBN, RNAV & unidirectional routes

Free Routes

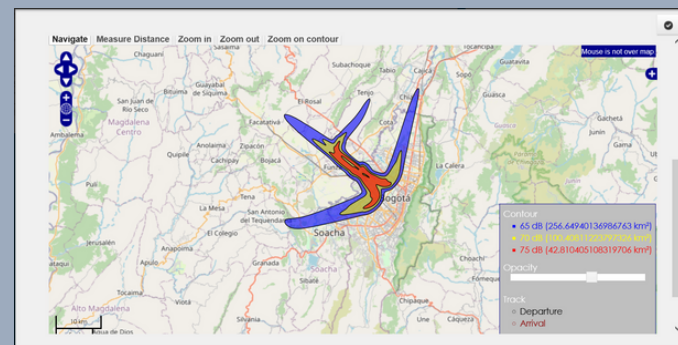
Continuous Climb & Descent Operations (CDO & CCO)

Flexible Use of Airspace

Customised approach

Fully integrated team

Awareness program for all stakeholders



OUR MOST RECENT ACHIEVEMENTS

### COLOMBIA

14 viable operational scenarios  
Deliver new concept of operations

### BOLIVIA

Migration from procedure to radar control  
Maximise benefits of new Radar

### SUDAN

New Airspace  
Safer / Efficient / Cost Effective / with increased environmental performance

### VIETNAM

GAP Analysis  
New concept of operations  
Efficiency and capacity gains

# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## ELVIRA<sup>®</sup> the Safety and Environmental management Tool

ELVIRA<sup>®</sup> is an automated Tool to :  
Record, Replay and Analyse  
Air Traffic  
with Communication records



**1**  
Detect & Analyse  
Loss of separation / safety nets  
Runway incursion  
Non-compliant approach  
Aircraft counting

**1**

**2**  
Optimise Environment  
Continuous descent operations  
Environmental protected volumes  
Dispersion envelopes

**2**

**3**  
Monitor Sensor's Performance  
Sensors' validation  
A-SMGCS reliability and accuracy in  
operating conditions

**3**

**4**  
Analyse your Performance  
Automatic Reports  
In-depth Analysis

**4**

### In-depth Analysis

Immediately & Remotely  
Accuracy & Reliability  
Time & cost saving

### ELVIRA is :

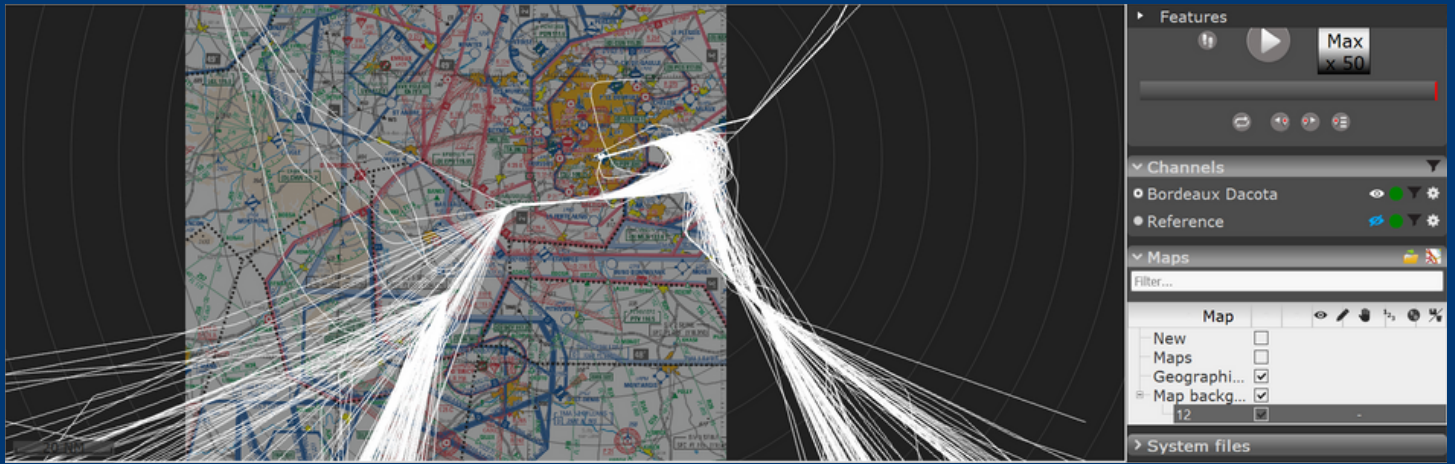
Easy to use & to install on each PC  
Available in English and French

### A user community

Continuous improvement

# AIR NAVIGATION AND OPERATIONS OPTIMIZATION

## ELVIRA<sup>®</sup> the Safety and Environmental management Tool



“

*My team is enthusiastic to use ELVIRA for A-SMGCS analysis.*

*ELVIRA is very useful to calculate the performance of new A-SMGCS systems, independent from the radar manufacturer, both during commissioning and in operation.*

*Skeyes, Radar Surveillance Supervisor, Belgium*



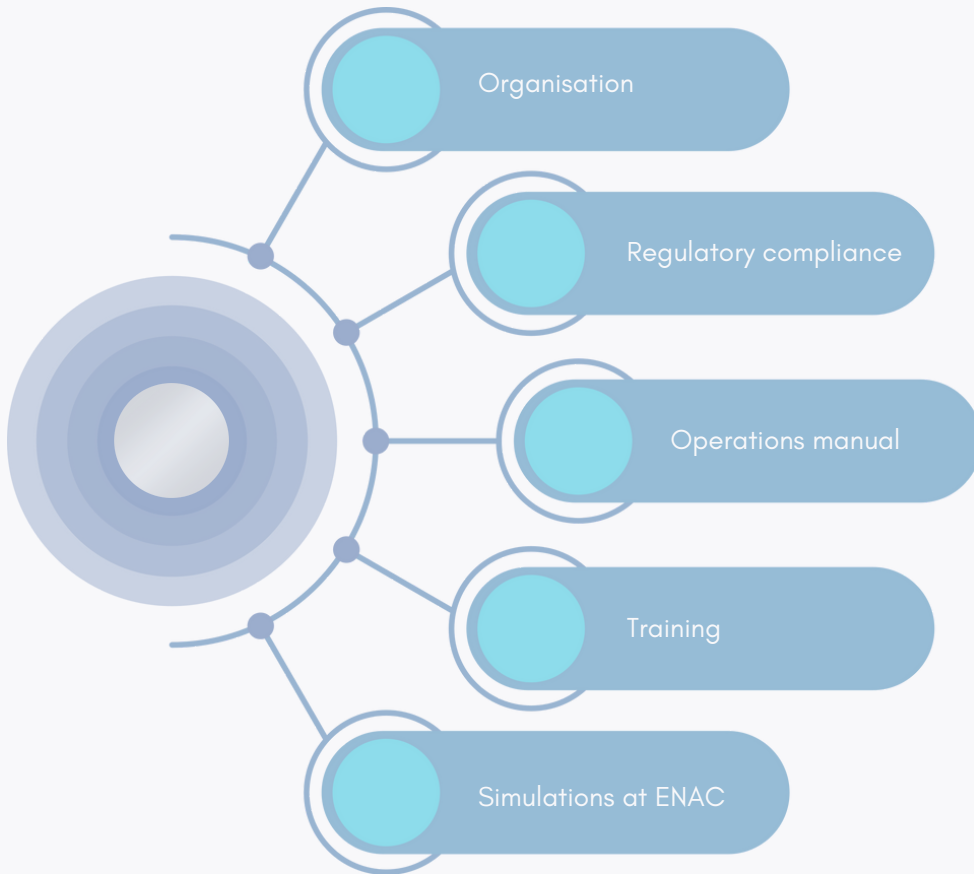
*ELVIRA is the centerpiece of Safety Management System in France and of Environmental Analysis and Studies. DSNA, CDG Airport, Safety Manager, France*



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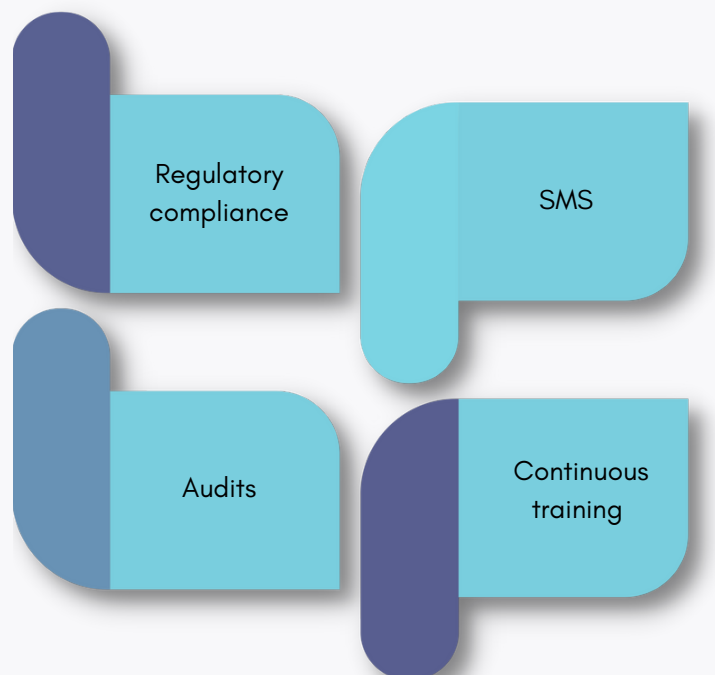
# AIR NAVIGATION AND OPERATIONS OPTIMIZATION AFIS

IMPLEMENTATION OF A FULL  
AFIS PROVISION STRUCTURE



Tailored Solutions

**FRACS & ENAC** are committed to providing you with efficient and flexible on-site solutions to meet **your needs** and to comply with **ICAO** and **National** or **Regional** regulations.



# AIR NAVIGATION AND OPERATIONS OPTIMISATION AFIS

## OUR OFFER

We offer to take on the role of your **SMS manager** and be responsible for the tracking of **regulatory conformity**.

We provide **training to maintain your skills**, either face-to-face or remotely with highly experienced experts.

We carry out **audits SMS, ANSP**, etc... and accompany you in the search for the right corrective solutions and conforming with regulations.

“

*Comprehensive continuing training from regulations to phraseology to RNP procedures.*

*It is refreshing with all the regulatory reminders on ALERT, SERA, VFR regulations and at the same time enriching with the RNP/Baro Vnav procedures and the CHEA.*

”

Wallis airfield

Amiens airport

Vannes airport

Futuna airfield



# AIR NAVIGATION AND OPERATIONS OPTIMIZATION

## Flight Inspection

### OUR OFFER

The DSNA Flight Inspection Unit uses 2 dedicated well-equipped Beechcraft 200

compliant with ICAO recommendations and equipped with :



A Flight Inspection System (FIS) for data acquisition, monitoring and recording of received signals

Autopilot connected to the FIS, for the monitoring and precision

Flight inspection receivers and antennas dedicated to parameters measurement

VHF receiver

A CARNAC 30 flight test bench



**Save Time** thanks to ground assistance during Flight inspection  
**Knowledge transfer**  
**Experienced** Flight inspection team trained at ENAC

# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Flight Inspection

### OUR OFFER AND REFERENCES



Flight inspections



Training Activities



“

*OACA praises the professionalism of the crew members.*

*OACA appreciated the systematic presence of an inspector on the ground, facilitating exchanges between OACA maintenance teams and the crew in order to optimise equipment settings.*

*OACA, Director of Air Navigation Equipment, Tunisia*



”

# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Calibration

A SIMPLE, EFFICIENT AND COMPETITIVE SOLUTION

FRACS offers you an innovative method THE DRONE, approved by STAC for PAPI Calibration

Automatic detection of the color transition in real time, by image processing algorithms

**Advantage: Allows real-time adjustment of the PAPI**



Quick implementation

Low runway occupation time (**max 1 hour** per PAPI unit)

High accuracy

Minimal impact on operational activity

Competitive cost



CALIBRATION



“

"We appreciated the professionalism and the good mood of your two technicians."

Cédric DE BOYSSON, Technical Manager

Tarbes Lourdes Pyrénées aéroport

”

Drone equipped with **ADS-B RTH auto**  
Visual flight within the S1 scenario  
Drone evolution **area adjustable**  
Drone and **frangible** material

# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Operational Training, ATC supervisor Training

Leading edged theoretical and operational training thanks to an ENAC + FRACS cooperation

Management of psychological and relational aspects

Current technical knowledge standards for supervisor systems in use

The latest updates to aviation law, search and rescue procedures, air traffic flow and capacity management ATFCM, Collaborative decision-making (CDM), dynamic airspace management

Cross-cultural awareness training (ATCo - ATSEP) to enhance operational room / technical supervision coordination

Management of emergency procedures and unusual situations

In partnership with



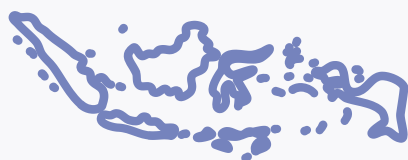
# AIR NAVIGATION AND OPERATIONS OPTIMISATION

## Operational Training, ATC supervisor Training

### OUR OFFER

3 customised training courses : Initial, Refresher and Advanced designed to meet ongoing as well as future demands

The courses can be delivered on-site or at ENAC headquarters in Toulouse, France with a visit from a French Area Control Centre.

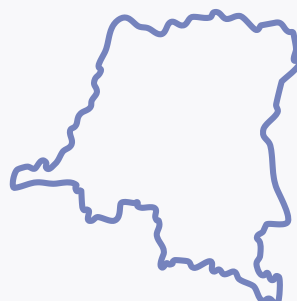
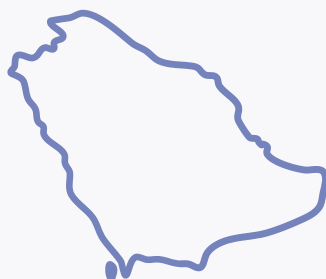


INDONESIA



SUDAN

DEMOCRATIC  
REPUBLIC OF THE  
CONGO



SAUDI ARABIA



Organisational **diagnosis** & **Creation** of an organisational blueprint for **customised** training.

Specific exercises like the **Supervisor Manual Customisation** Workshop

This level of design detail has paid off immensely for trainees.



*The training is a success thanks to the complementarity between the excellence of ENAC pedagogy and high-level expertise of FRACS.*

*Deputy Director of Kinshasa-Ndili International Airport,  
Democratic Republic of Congo*



# OUR PERMANENT TEAM



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