

**indra**

# Creating Skies Together

Indra ATM Presentation

Indra  
is a  
world  
leader  
in ATM

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At Indra ATM  
we connect  
people,



# The Future of ATM is here

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# Indra in Air Traffic Management

## Global player

Guaranteeing safe, efficient and profitable flights, in a difficult context with constantly increasing air traffic

## Innovative solutions

Our innovations improve the service resilience of our partners

## Environmental benefit

Enabling CO2 and noise reduction of flights, whilst improving capacity



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**6,000+**

Implementations in over 180 countries

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**100+**

Years of experience in ATM solutions

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**85%+**

Passengers worldwide travel making use of Indra ATM technology at some point during the flight

# World leaders in ATM

World leaders in ATM/CNS industry with 6,000+ installations in over 180 countries

Pioneers in the implementation of Air Traffic Management systems based in 4D trajectories, enabling more efficient flights: the reduction by 30-40 nautical miles per route makes possible annual savings of €140 million in fuel.

Indra's technology is implemented in 300+ control centres and 325+ towers across countries.

74

60% of Chinese airspace is controlled through Indra radars.

World leaders in nav aids: 900+ systems deployed in China and 300+ in Australia, among many other countries.

Indra Instrument Landing Systems have assisted so far 100 million landings in 1,200+ runways worldwide, making possible a 15% capacity increase of the Heathrow Airport runways in low-visibility conditions (from 26 to 30 landings/hour).

The world's largest remote tower programme at Norway, which includes the remote control of 15 airports by 2021 in its 1st phase, is being implemented by Indra.

Co-leaders of the Single European Sky initiative and SESAR, its technological pillar.



# Solutions for all segments

## Our solutions and services

### Indra Air Solutions

The only company in the world with a technology portfolio that covers every segment of the ATM industry

### Space-based CNS

- ADS-B surveillance + Real time VHF communications + Datalink from a satellite constellation in low earth orbit

### Indra Air Automation

- ATC Systems
- Turnkey control centers
- Advanced CWP
- ATC Simulation
- InNOVA Tower Solutions
- Remote Tower Solutions

### Indra Air Communication

- GAREX VCS
- Cometa®
- Neptuno VR

### Indra Air Navigation

- ILS
- DME & DVOR

### Indra Air Surveillance

- PSR 2D
- PSR 3D
- MSSR
- Transportable PSR & MSSR
- ADS-B
- WAM/MLAT

### Indra Air Drones

- U-space Hub CIS Platform
- U-space Connect
- ATM/UTM Integration
- Antidrone Systems

### Indra Air Information

- AIS-AIM
- MHS
- SWIM
- MET
- ATM

### Indra Air Services

- ATM Systems as a Service
- Aftermarket & Support Services
- Advisory & Consulting
- ATM & CNS Training

# Global player

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## Automation/Simulation

725+ Implementations

## Communications

700+ Implementations

## Navigation

3,400+ Implementations

## Surveillance

575+ Implementations

## Aeronautical Info

225+ Systems

More than  
**25%**  
world's  
airspace is  
managed  
with  
Indra Air  
Automation  
systems



Indra

Air

Automation

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# Indra Air Automation

700+ references in more than 70 countries

25%+ of total world's airspace is managed with Indra's ATM systems

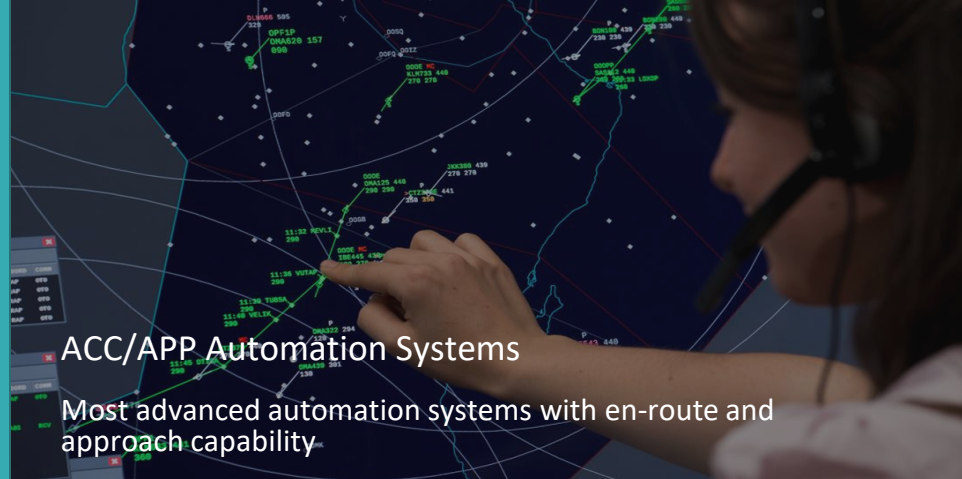
Video Air Solutions



Video Air Traffic

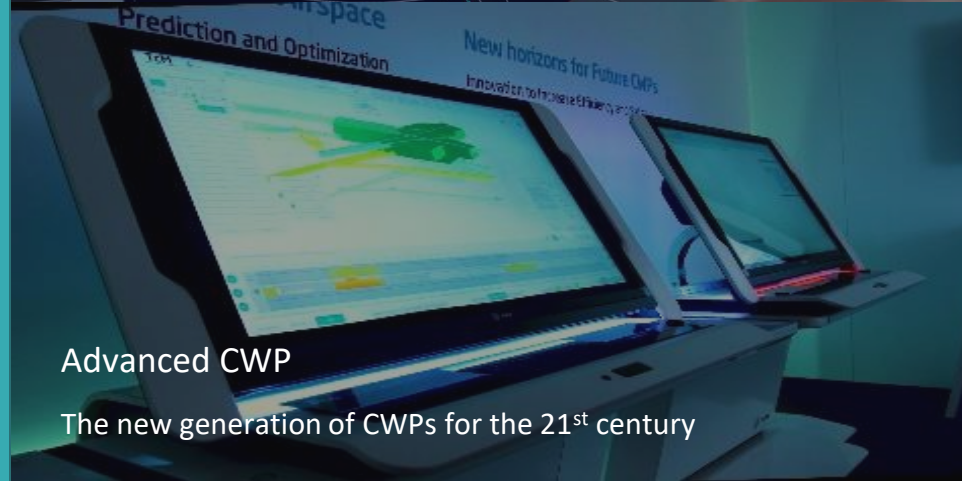


Video Control Centers



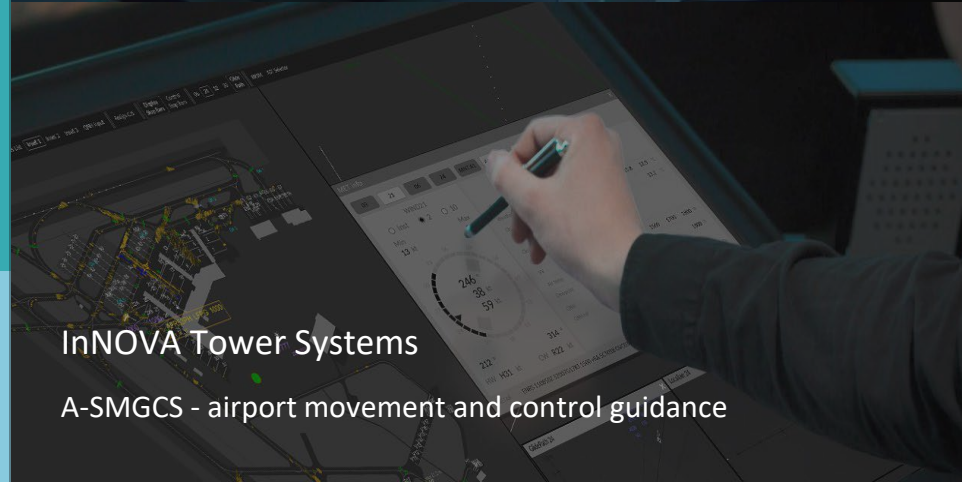
## ACC/APP Automation Systems

Most advanced automation systems with en-route and approach capability



## Advanced CWP

The new generation of CWPs for the 21<sup>st</sup> century



## InNOVA Tower Systems

A-SMGCS - airport movement and control guidance



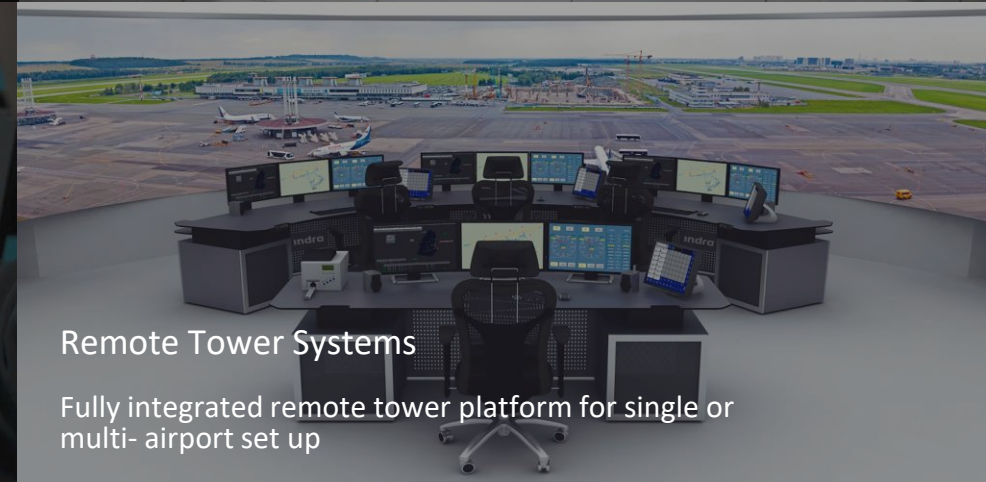
## Turnkey solution for control centers

Full ATC program implementation including integrating with multiple third-party and/or legacy systems



## Simulation Systems

2D and 3D simulators for ACC/APP and TWR



## Remote Tower Systems

Fully integrated remote tower platform for single or multi-airport set up

Indra

Air

Surveillance

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# Indra Air Surveillance

580+ references in more than 90 countries

Video PSR 3D



Video MSSR Mode S

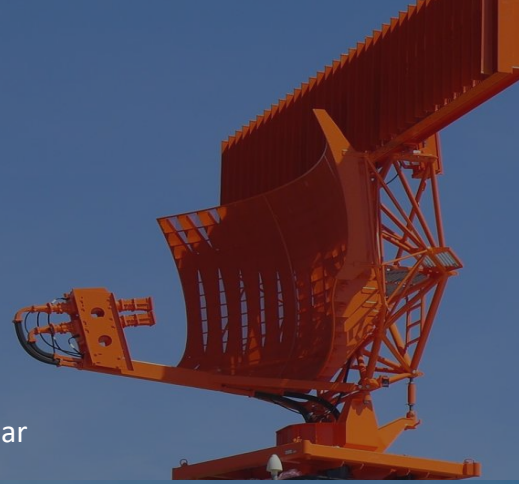


Video Transportable



PSR 2D

2D Primary Surveillance Radar



PSR 3D

3D Primary Surveillance Radar



MSSR

Fully digital system with SMART integrated ADS-B



Transportable Radar Station

Multiple standalone and co-mounted configurations



MLAT/WAM

Surface and Wide Area Multilateration



ADS-B

Automatic Dependent Surveillance



Indra

Air

Communication

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# Indra Air Communication

700+ references in  
more than 100  
countries

GAREX 300 is the  
only VoIP platform in  
the market purely  
built on IP standards

We are your reliable  
partner in ATM  
business



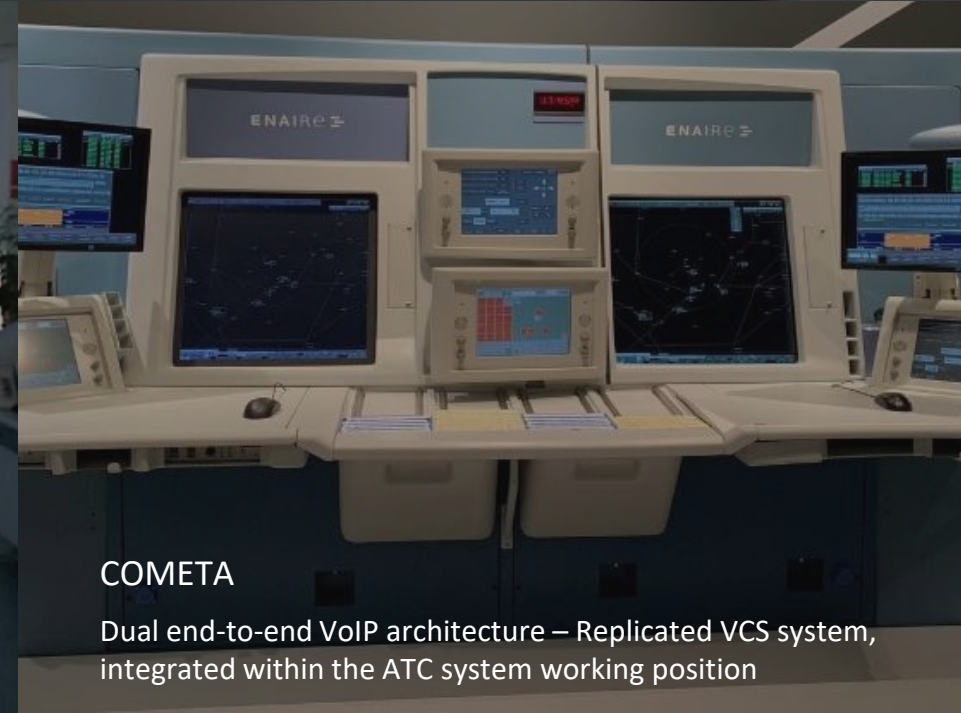
GAREX 230  
VoIP ready

GAREX 300  
Full ATM VoIP

GAREX GateVox  
Radio and telephony  
gateway



Neptuno  
Voice recording system



COMETA

Dual end-to-end VoIP architecture – Replicated VCS system,  
integrated within the ATC system working position

Indra

Air

Navigation

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# Indra Air Navigation

3,400+ references in  
more than 140 countries

Worldwide leaders in ILS



Normac ILS  
Instrument Landing System



Normac DVOR  
Doppler VHF Omnidirectional Range  
Normac DME  
Distance Measurement Equipment

Indra

Air

Drones

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# Indra Air Drones

10+ projects in less than 3 years

State-of-the-art cloud based platform for UTM

Best antidrone solution in the market

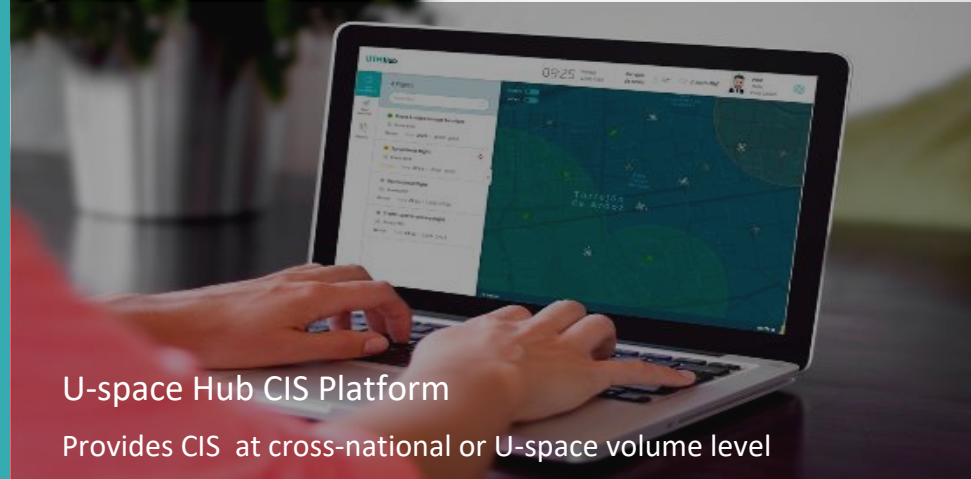
Video UTM Hub



Video Andoya

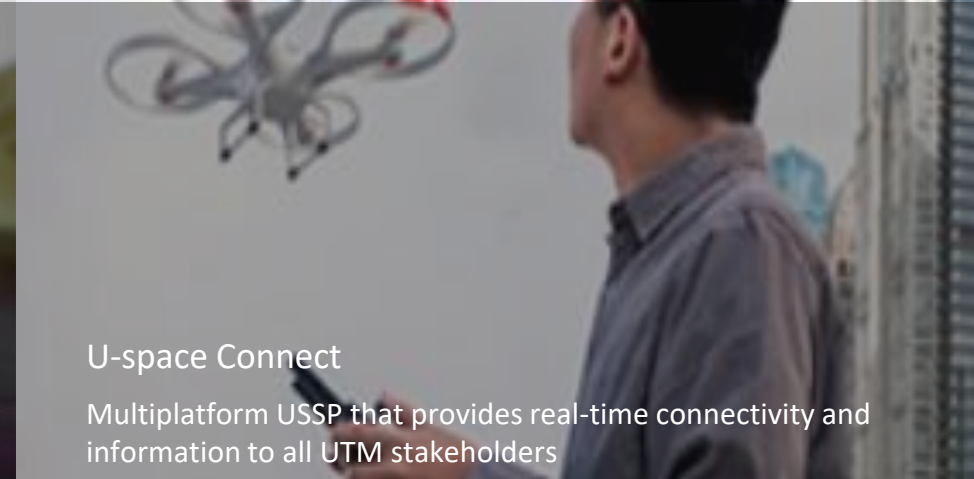


Video Crow



U-space Hub CIS Platform

Provides CIS at cross-national or U-space volume level



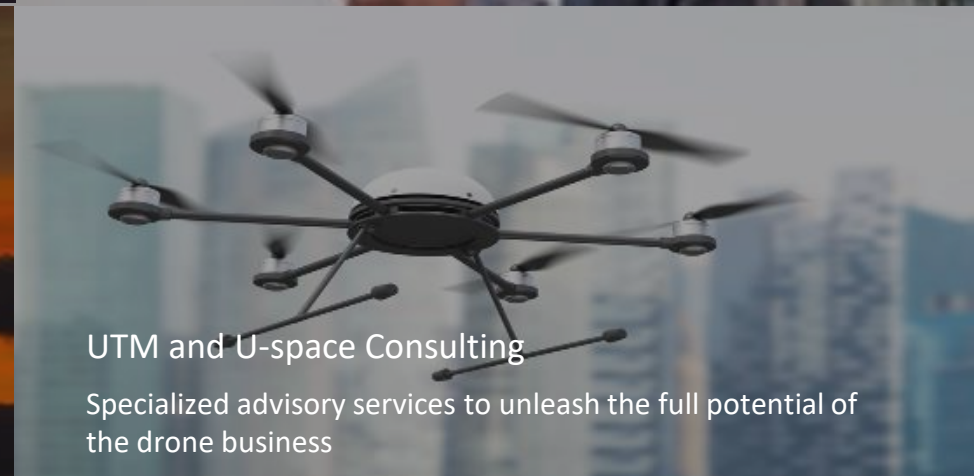
U-space Connect

Multiplatform USSP that provides real-time connectivity and information to all UTM stakeholders



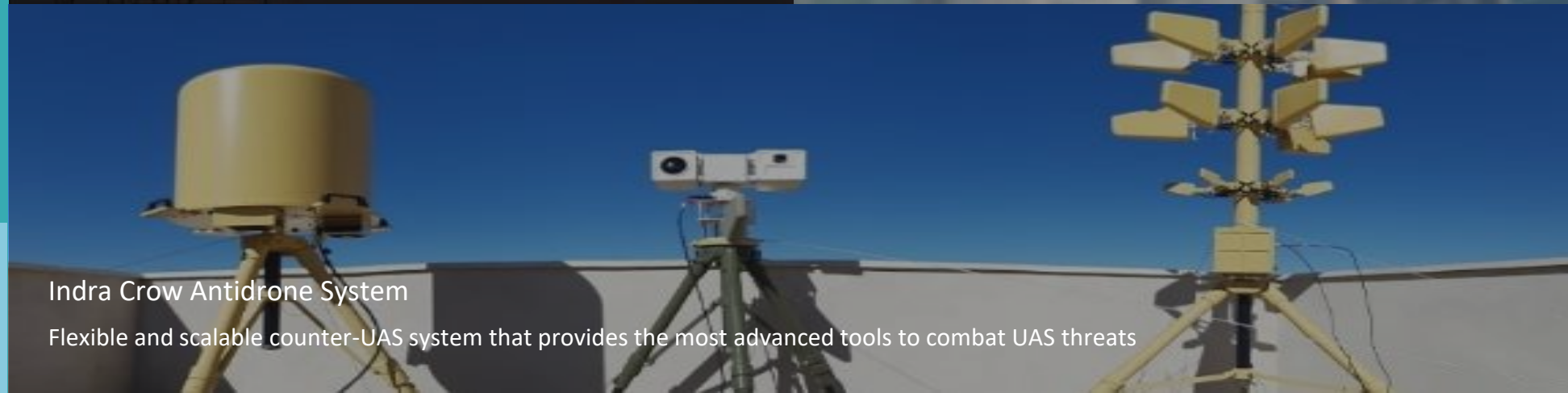
ATM-UTM Integration

Best choice for unlocking the potential of drone applications and open new skies for commercial exploitation



UTM and U-space Consulting

Specialized advisory services to unleash the full potential of the drone business



Indra Crow Antidrone System

Flexible and scalable counter-UAS system that provides the most advanced tools to combat UAS threats

# Indra Air Information

225+ references in more than 50 countries

We guarantee the right digital aeronautical information at the right time

Video Indra Avitech (Indra Air Information)



AIM

Fully customizable, reliable and innovative solutions to provide the right digital aeronautical information at the right time



AIS

Total mobility AIS services providing greater flexibility for users and efficiency of the ARO, NOF and briefing offices.



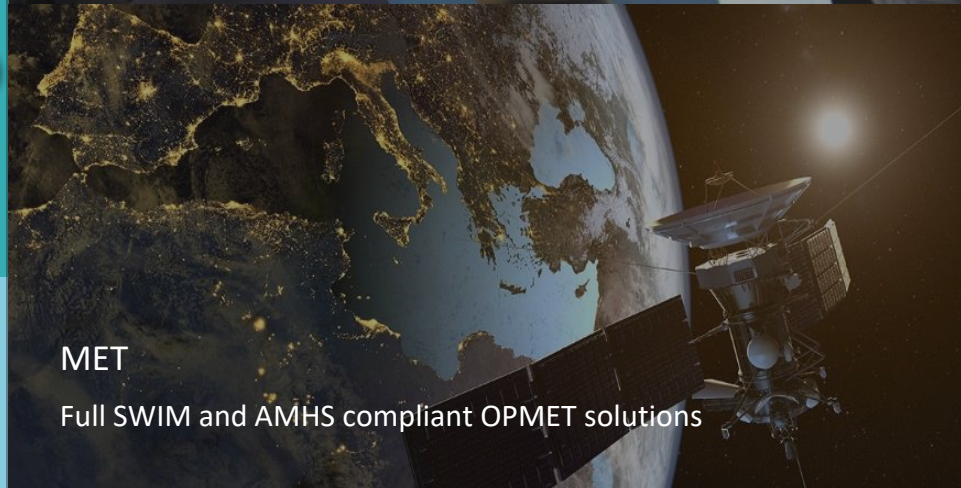
SWIM

Full SWIM compliant solutions to bring your operations to the highest level of efficiency



AMHS

AFTN-to-AMHS and AMHS-to-SWIM gateway provides optimum solutions for a safe and reliable exchange of messages across various formats and protocols



MET

Full SWIM and AMHS compliant OPMET solutions



ATM

Components and modules for ATM data and support functions

Indra  
Air  
Services

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# Indra Air Services

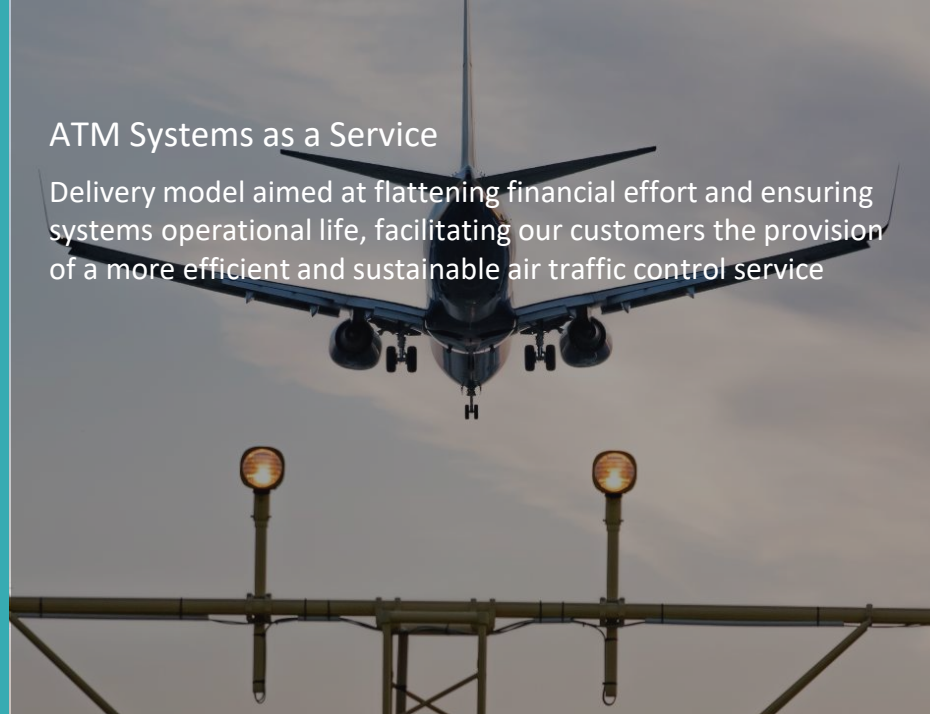
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80+ references in more than 40 countries

We understand that your operational success depends not only on superior products, but also on reliable and timely support services

## ATM Systems as a Service

Delivery model aimed at flattening financial effort and ensuring systems operational life, facilitating our customers the provision of a more efficient and sustainable air traffic control service



## Operational Support

Widest range of support services including technical support, corrective maintenance and lifecycle management



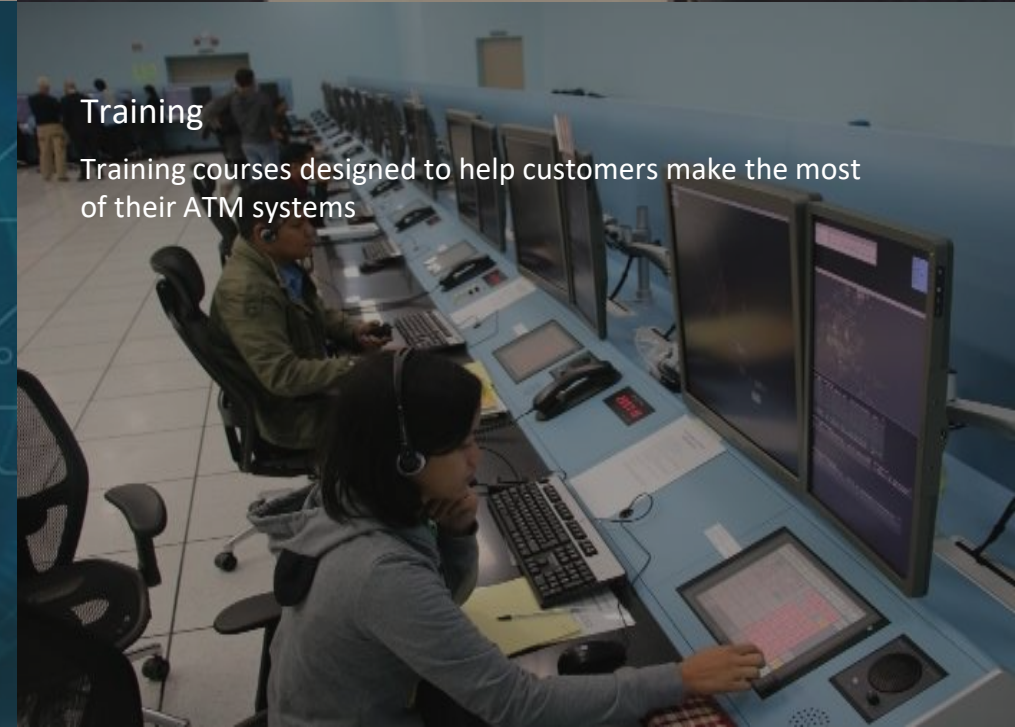
## Advisory

Strategic, management and transformation consultancy to make the right decisions and master implementation



## Training

Training courses designed to help customers make the most of their ATM systems



Rethinking  
ATM

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# Rethinking ATM

Space-based CNS

ATM in the cloud

Cybersecurity in ATM

Indra Airspace Capacity Manager (iACM)

Virtual reality in ATM:  
Looking Glass project

Video Space CNS

Video Virtual reality



Space-based CNS platform

Global ADSB surveillance coverage + VHF real time communications + CPDLC air traffic data from a LEO satellite constellation



ATM in the cloud

Technological evolution of the ATM applications towards the virtualization paradigm to offer a cloud-based infrastructure



Cybersecurity in ATM

Leading solutions and services integrated in a 360 cybersecurity model for our ATM clients



Indra Airspace Capacity Manager (iACM)

Platform to provide ANSPs strategic adaptation to demand and capacity while saving costs



Virtual reality in ATM

Large range of possibilities for ATM from training to Improve air sector design

Trust Indra



**indra**

# Indra Air Solutions

Creating skies together