

Transforming skies together



Cutting-edge ATM technology



90%+

Countries worldwide
using our systems

85%+

Passengers worldwide
benefit from Indra ATM
technology at some point
during their flights

Transforming the ATM industry



Expertise | Innovation | Digitalization | Sustainability

Indra brings together expertise, knowledge and technology to design and develop systems where safety and sustainability are at the core.

We are **leaders in ATM solutions**, involved in the most important projects around the world.

We work closely with ANSPs to understand their needs first-hand and develop solutions to meet or exceed their expectations. Indra builds **long-lasting relationships grounded on results**.

We are a one stop shop -our portfolio covers all ATC services gate to gate-, which added to our broad expertise leads us to be involved in some of the most influential projects worldwide.

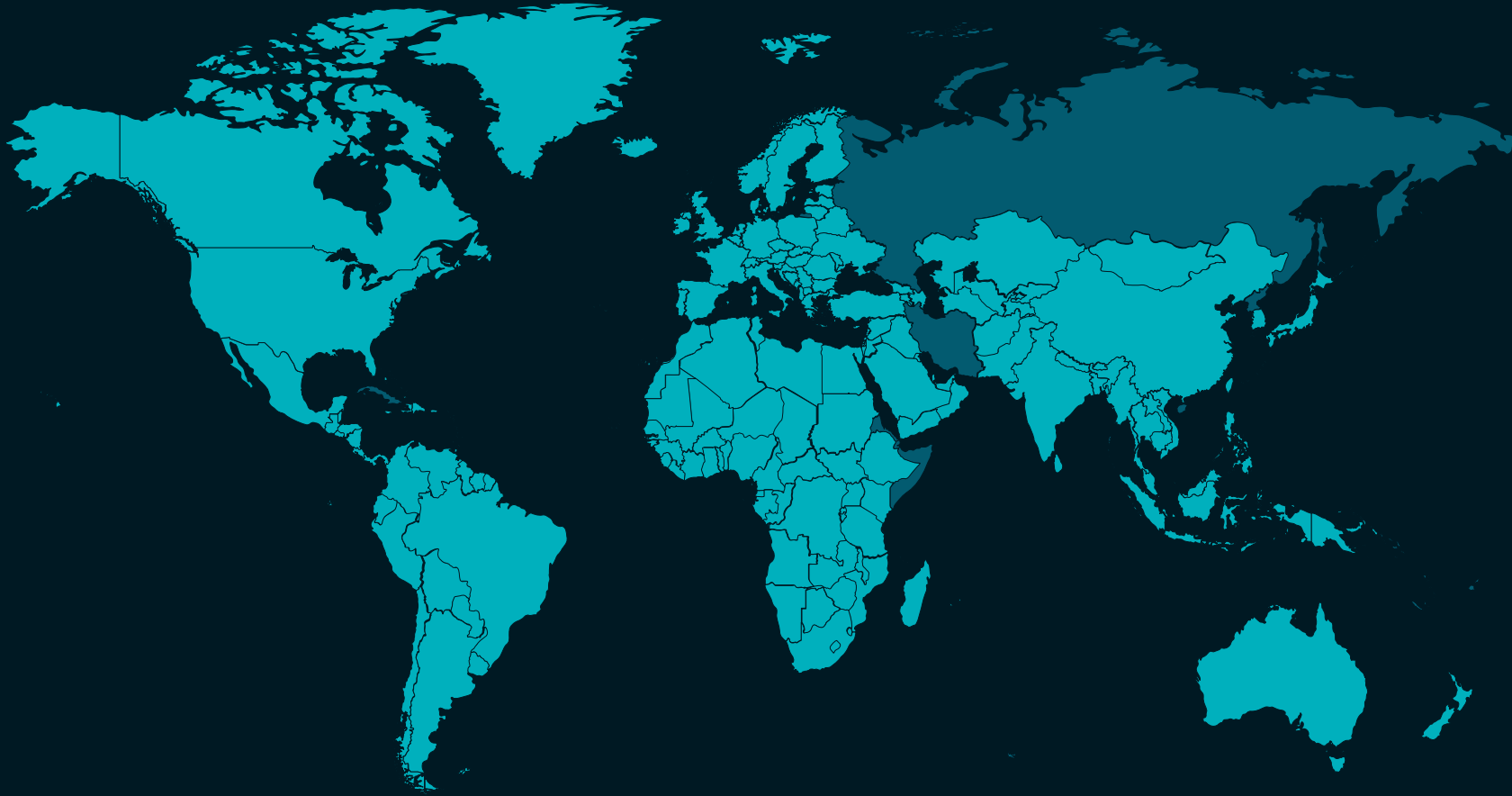
Cutting-edge technology to **avoid air traffic congestion** and enable route optimization, which **reduces CO2 emissions** significantly.

Cutting down ground operations' time such as taxiing, queueing for takeoff and landings, etc., has a direct benefit when it comes to **reducing emissions**.

Providing countries with a **complete network of air traffic management systems results in a more efficient and sustainable model**.

Reliability. Leadership.

Indra ATM solutions footprint





30%+ FIRs in the world
controlled by Indra

Indra's know-how | Broadest portfolio in ATM industry

Automation

- Flow Management
- iTEC SkyNex
- ManagAir
- Tower solutions

Communications

- Garex VCCS
- Park Air Radios
- Neptuno Voice Recorder
- Impera Voice Quality

Navigation

- ILS
- VOR
- DME
- TACAN

UTM

- GuardianUTM
- U-Hub
- U-Connect

Surveillance

- PSR-S & PSR-L
- MSSR
- Transportable Radar
- ADS-B

Simulation

- Tower
- Radar
- Insights
- Defence Simulation
- Additional tools

Space-based CNS

- Startical

Aeronautical Information

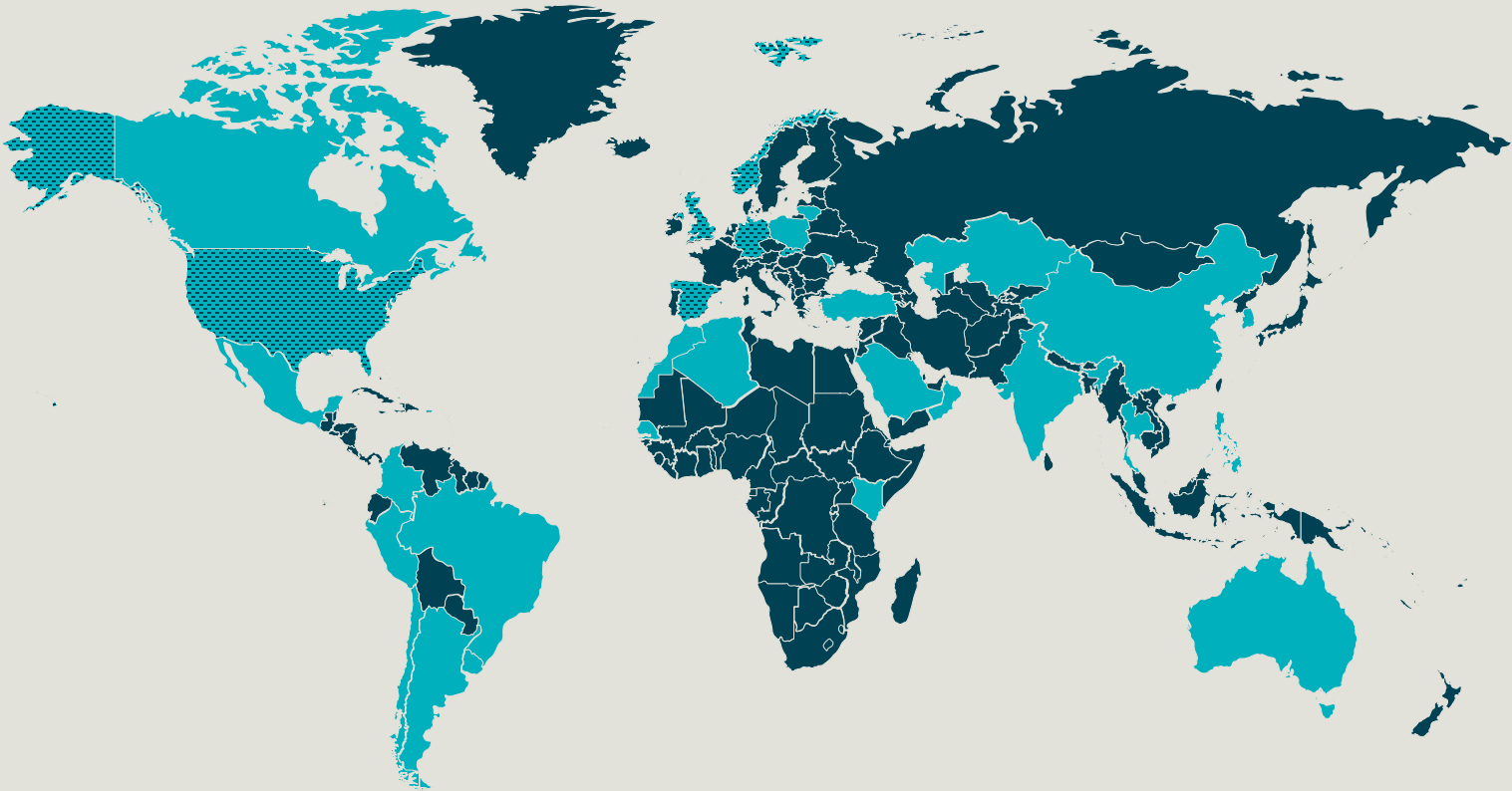
- Information Management
- Information Communication

Digital Platform

- Linkia, powered by IndraMind

ATM local teams and production centers worldwide

- **Spain**
 - Surveillance
 - Automation
 - Tower Solutions
 - Communications
- **Norway**
 - Navigation
 - Tower Solutions
- **USA**
 - Navigation
 - Surveillance
- **UK**
 - Communications
 - Simulation and Training
 - Automation
- **Germany**
 - Aeronautical information
 - iTEC
- **Slovakia**
 - Aeronautical information



Local presence



Innovation. Top worldwide projects with a decisive impact on the industry

- **Indra is a key player** in the world's leading **innovation and cutting-edge technology programs** in the industry
- These technologies such as **AI, augmented reality or data analytics** are seamlessly integrated into the life cycle of all Indra ATM and CNS solutions
- In this way, Indra contributes to more efficient and safer skies, **supporting users** making the right decisions, even in complex operational environments



SESAR | Building the Single European Sky

Indra's Strategic Objectives

- **Product:** Reduce cost of industrialization and time-to-market
iTEC SkyNex | SACTA | iACM | U-Space | IRTOS | CNS | Airports
- **Technology:** Keep the leading role as technology partner.
- **Roadmap:** Align our customers digital transformation with our product roadmaps and open ATM platforms.
- **Vision 2050:** Contribution to defining the R&D Roadmap and the European Master Plan strategic objectives.

SESAR3 Wave 1: 21 Projects + 3 European Funds Projects

Leaders in:



Roadmap I+D



Connected and automated ATM



Air-ground integration and autonomy



Capacity-on-demand and dynamic airspace



U-space and urban air mobility



Virtualisation and cyber-secure data sharing



Aviation green deal



Artificial Intelligence for aviation



Civil/military interoperability and coordination

Indra's expertise

Automation

Turnkey solutions for control centres and towers

- Broad expertise in delivering **complex ATC projects** and integrating our systems with third-party and legacy systems.
- Pioneers in the implementation of air traffic management systems based on **4D trajectories**.
- In addition to our major ACC centers, we operate a global network of state-of-the-art approach control facilities and control towers, strategically deployed to ensure optimal safety and efficiency.

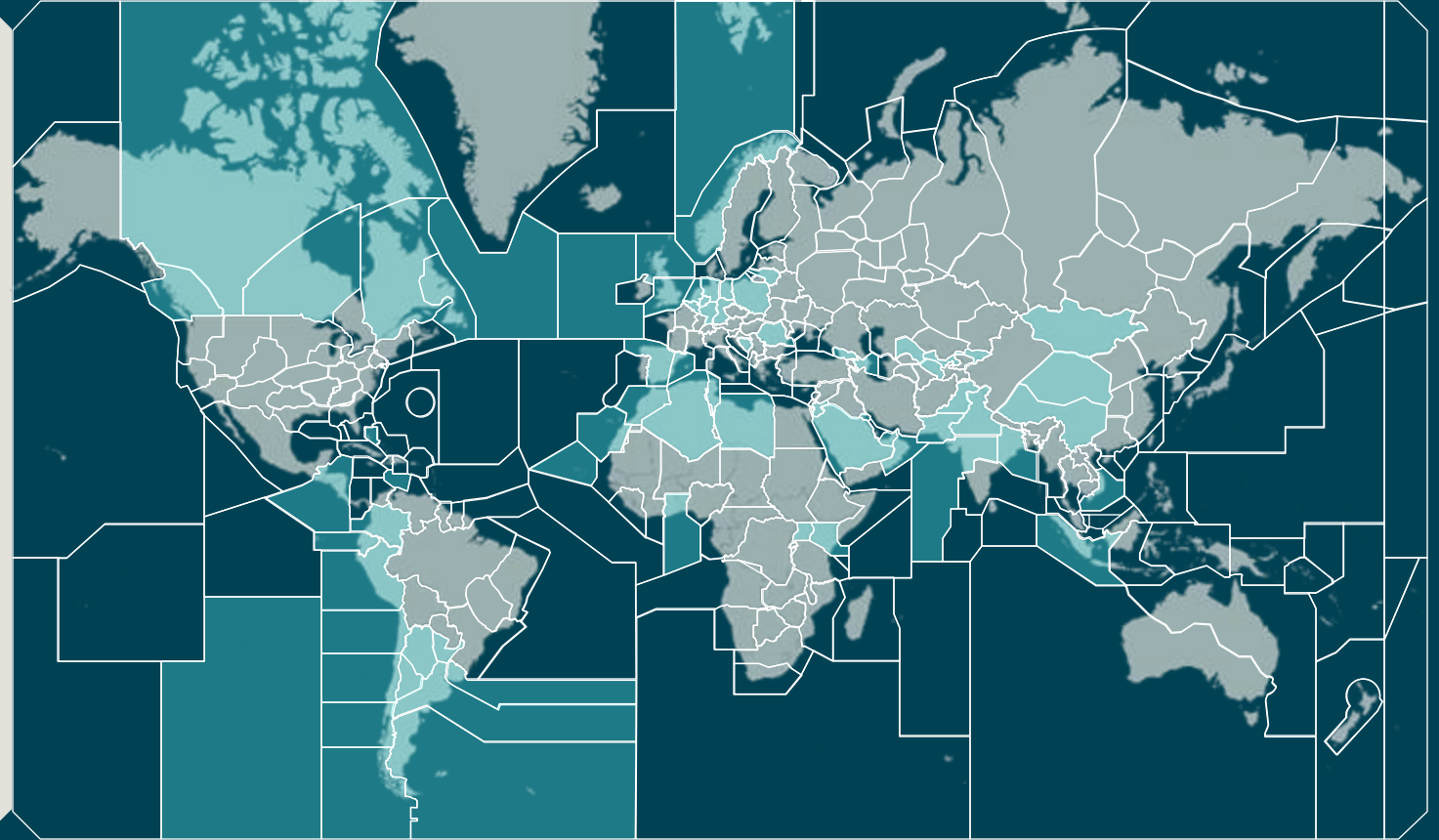
Flow
Management

ITEC Skynex

ManagAir

Tower
Solutions

Micronav
Simulation
Suite



Global
references

300+
control centres

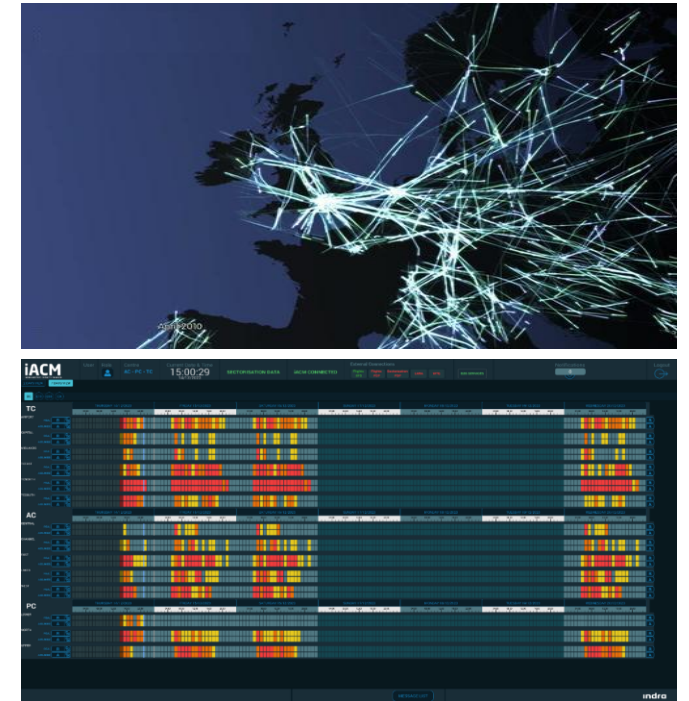
350+
towers

130+
countries

30%+
FIR of the world

Flow Management | Most advanced ATFM solution available

- Advanced ATFM (Air Traffic Flow Management) solution
- End to end trajectory and advanced demand-capacity balancing
- Shapes and organizes traffic in advance acting before traffic reaches the centre
- Real-time what-if and simulation capabilities to support decision making
- Long term planning via Post-Operational Analysis
- Improves environmental impact and passenger experience
- Standalone solution, non dependant on ATC
- Interoperable with ATC and Airlines systems



Indra ATFM provides airspace optimization during strategic, pre-tactical, tactical and post-operational phases of ATM operations

Flow Management | Key projects



NAV CANADA

Second Largest Airspace in the world.

Nation-Wide Network Management for 7 FIR and 2.9 M flights.

Pioneer full FF-ICE implementation.



INDONESIA JAKARTA

Managing whole Indonesian airspace.

Standalone product, integrates with local FDPs.

Additional features for post-operational analysis.

iTEC SkyNex | Pioneering digital transformation towards the digital single sky

- Leading position in Europe that boosts our international relevance.
- iTEC SkyNex drives new ATM functionalities and is a world-class benchmark.
- It is a multinational alliance of eight countries pursuing common targets: operations based on SESR standards; flight diversion, flight time, fuel consumption and CO2 emissions reduction; improved interoperability, and open standards.
- The largest network of control centres that manages 60%+ of the European air traffic on a single technology.
- 20+ years of cooperation.



26 M
Km2 of airspace

27
Control centres

5,000+
Miles covered with the same technology

12 M+
Flights per annum



ENAIRe

NATS



AVINOR

PANSN



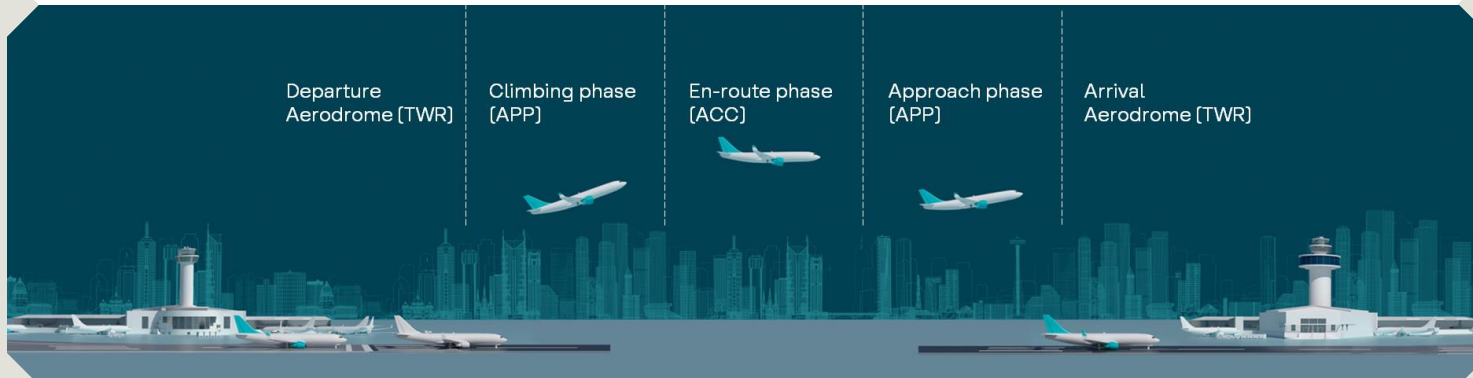
INDRA
Technology partner

ManagAir | Centralized ATM suite

- Seamless and complete provision of **ATC services gate-to-gate** for a more centralized and efficient performance.
- Ground routing and guidance, efficient departures, optimized 4D trajectories, free route, flexible use of airspace, advanced approach tools for increasing **airspace's efficiency** and **emissions reduction**
- The latest technology in the market: cutting-edge architectures and technologies -**virtualization, cybersecurity, synchronization, SOA-**.
- Constant evolution with a **roadmap** aligned with the standards from SESAR Master Plan, ICAO ASBU, and NextGen.

Full Integration across Indra's ATM Portfolio

-  Flow
-  Digital Tower System
-  Visual Tower Simulation
-  Sectorization with VCCS



ManagAir | Key projects



UAE Area Control Centre

Next Generation ATM system, a state-of-the-art system that manages air traffic in the **United Arab Emirates FIR**, including approach tools and groundbreaking interfaces such as FIXM.

+60% of the MID region controlled by ManagAir.



India

ManagAir technology controls more than **80% of the Indian airspace**, 3 out of 4 FIR in the country.

Currently Mumbai being revamped with the newest technology of En-route, approach and tower that includes A-SMGCS level 4.



COCESNA

Leading the single sky initiatives thanks to the harmonization of the network of control centres in the Central American region.

Six different countries will make use of the same ManagAir ATM technology.

Tower Solutions | Full portfolio for conventional and digital towers

Modular and scalable solutions, for any airport size or complexity:

- Conventional, Digital or Hybrid Tower Control Solution (Electronic Flight Strips, APP/TWR functionalities)
- A-SMGCS [up to level 4] for ground or apron management
 - Optimizing ground operations: **less consumption, fewer emissions, safer ground management**
- Digital and Remote Digital tower functionalities (Visual System)
 - **Increasing situational awareness** and operations safety levels by means of augmented reality [labels overlays], zoom, thermal cameras, Tracking & AI functions
 - **Increasing capacity** at night or in low visibility conditions
 - **Seamless Integration** with surveillance, communications and other airport systems

APP/TWR

A-SMGCS

IRTOS Digital TWR



350+
towers

>30
Digital Towers

Major references in terms of complexity

Madrid | Heathrow | Charles de Gaulle | Mumbai | Incheon | Budapest | Vancouver

Scalable, flexible and
compatible for
continuous growth

Tower Solutions| Key Projects (Conventional)



ENAIRE | SACTA system

50+ towers (civil and air bases) including Barajas and Prat Airports.

Integrated with APP CWP to provide TMA services improving cost and operational efficiency.

Evolution towards ITEC 4.0.



DSNA | Advanced ground surveillance at CDG

Modernizing ground surveillance at Paris' Charles de Gaulle to make it **the largest airport to comply with EU's CP1 regulation**, enhancing safety, efficiency and sustainability.



NATS | Tower and ground system at Heathrow

Europe's busiest airport operates with Indra Tower System, combining tower and ground surveillance to maximize flight safety and airport throughput.

Tower Solutions| Key Projects (Digital)



Saudi Remote Digital Tower First in the Middle East

500 km+ of desert between Al Ula airport and control centre located in Jeddah.

Remote tower Integrated with ATM system.

First step towards multi-airport hub in Saudi Arabia.



Budapest Digital Tower

Largest single-airport multi-mast project in the world, fully integrated with A-SMGCS and SIM. A complex hub in terms of traffic, large quantities of information, multiple labels, and much information on screen.



Vancouver Digital Tower

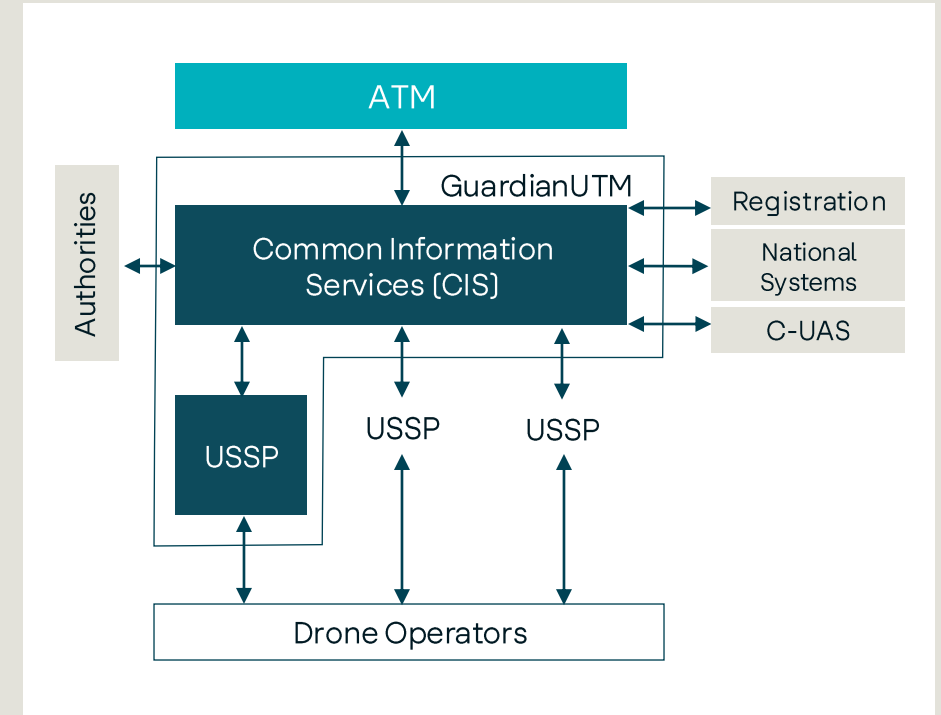
Multi- mast A-SMGCS integrated **Digital Tower System** for **Apron control**

UTM

Unmanned Traffic Management state-of-the-art suite

GuardianUTM is Indra's single strategic **suite** of Unmanned Traffic Management solutions

- GuardianUTM includes:
 - Proven U-Hub CIS platform and USSP capabilities;
 - Operational **UTM** experience across Netherlands, Spain, United Kingdom, Ireland, Romania and Norway;
 - EASA **U-Space** certification [underway in Spain].
- GuardianUTM features:
 - High level of automation, reducing workload and maximizing efficiency;
 - Flexible **Cloud** or **on-premise** deployments;
 - Seamless integrations with Indra ATM, surveillance, interoperability, cybersecurity, and data platform technologies;
 - Proven ATM/UTM integration expertise;
 - Modular and Scalable architecture tailored to customer operational needs.



Indra is leading the development of advanced UTM solutions for the safe integration of unmanned aerial vehicles in the Airspace

Key projects



Spain U-space National Platform

Centralized CISP with multi-USSP environment **aligned with European Guidelines** (2021/664).

Integrated with Spanish **ATM** system (SACTA).

Compliant with **SWAL4** ED-153.



SESAR ENSURE : ATM/UTM Integration in Europe

iTEC ATM/UTM interface and services (SWIM Yellow Profile).

Dynamic Airspace Reconfiguration.

Cooperation with EASA including specific **standardization** and **regulation** activities.



Netherlands - LVNL GoDrone Powered by GuardianUTM since 2020

Enables safe and compliant drone operations across the Netherlands.

Provides Digital Flight Planning and Approval Services in Controlled Airspace.

Enhances collaboration between Drone Operators and Air Traffic Control.

Simulation

MicroNav | Moulding the world's best air traffic controllers

- Single solution covering the **entire spectrum of ATC training**, plus validation and operational development
- Industry-leading 3D graphics with **realistic weather, lighting, and aircraft behaviour**
- **Remote Digital Tower** and **military simulation** capability
- Real-time **performance analytics** and **4D session replays**

Tower

Immersive simulated environment that combines high-fidelity 3D visuals with comprehensive ground movement radar displays.

Radar

Provides the tools to build and deliver training scenarios that reflect the complexity of their airspace.

Insights

Capture quantifiable performance metrics throughout every exercise, giving instructors evidence-based tools.

Defence simulation

From emergency flameout approaches and combat recoveries to air-to-air refuelling and CAP management.

Additional tools

- Operational ATM equipment.
- Integrated voice communication.
- 3D image generation.
- Intuitive editing tools.



35+

years of simulation
expertise

40+

countries

2400+

active licenses
worldwide

24/7

support with help desk, remote
diagnostics, and on-site expert visits

5+

year support periods
with continuous updates

MicroNav | Key Projects



Qatar Civil Aviation Authority [QCAA]

Micro Nav successfully delivered a 360° BEST 3D Tower Simulator at Hamad International Airport, supporting a new national training centre and providing over £5M of integrated simulation, training, and technical systems. Since acceptance, the simulator has enabled certified controller training and advanced research activities.

~ Ahmed Al-Eshaq, Director, Air Navigation



Royal Netherlands Air Force [RNLAf]

RNLAf is a current user of BEST, using Radar and Tower simulators, including a 360° projected tower simulation. Installation took place in 2009, and have been in operation since, with a mid-life update in 2015. I recommend BEST due to its high modularity. The realistic 3D simulations are of excellent use in our Tower Controller training.

~ Maj. R.W. van Harten, Cdt School of Air Control



Malaysian Aviation Academy [MAvA]

Multi-MAvA has a longstanding and productive relationship with Micro Nav. We use a broad range of BEST Simulator systems, including 360° and 270° aerodrome simulators, approach radar simulators, procedural systems, and search and rescue simulators. These simulators support ab initio and advanced training, significantly contributing to national training capability.

~ Dr Manjit Singh, Director, MAvA

Aeronautical information

The right digital aeronautical information at the right time

- **More than 40 years** serving the aviation industry as one of the leading international developers of aeronautical IT systems worldwide.
- Precision and reliability in air traffic management, covering all phases of a flight:
 - **Aeronautical Information Management Solutions:** Streamlining and publication of aeronautical data and information processes with AIM, AIS, and DNOTAM to ensure data accuracy and precision.
 - **Aeronautical Information Communication Solutions:** Enhancing connectivity and information exchange with AMHS and SWIM for seamless and secure communication in Air Traffic Management.



225+
references

55+
countries

ICAO Aviation System Block Upgrades (ASBUs):
Full compliance with Block 0 & Block 1 and
paving the way to Blocks 2 & 3.

Key projects



Tanzania CAA AIM Project

Country wide virtualized AIM system ensuring efficient management of aeronautical data and electronic AIP. Allowing effective flight planning, briefing, NOTAMs, and OPMET via a web-based interface. The system has been deployed as Operational and Contingency/Training system.



Dubai, dans SWIM Project

The most advanced SWIM solution in the MID region, enabling seamless data sharing and 2D/3D/4D visualization for better traffic management.



Türkiye, DHMI AMHS Project

Country wide AMHS with main Operational system in Ankara and Disaster recovery in Istanbul. They system is tried and tested in in high demanding operational environment due to lot of traffic messages generated in Türkiye.

Communications

Best in class voice solutions

Safe and seamless migration from analogue to digital with experts to overcome the high degree of complexity it entails.

GAREX 300

The only VoIP platform in the market purely built on IP standards, significantly enhancing the quality of communications.

Park Air Comms Systems

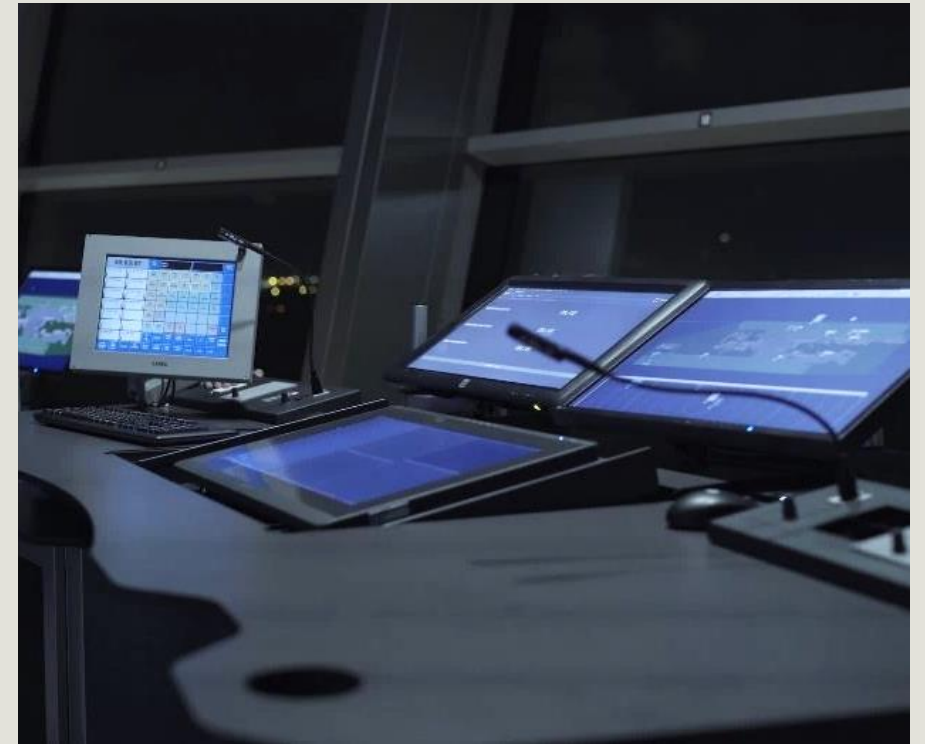
The most advanced radio communication system on the market.

Neptuno

Recording solution for air traffic management that enables multichannel signal capture in analogue and digital environments.

IMPERA

Non-intrusive quality assurance system for ATC voice communications through continuous monitoring, evaluation and reporting.



60,000+
radios

11,000+
CWP

100+
Countries

The highest levels of safety, efficiency and performance in a compact unit

World-leader provider of ground-to-air communication systems for ATM

Key projects



Communications upgrade program, FAA

Supply of up to **46,000 new ground-air radios**, to renew current analog radio systems [VHF&UHF] with next generation digital, VoIP capable systems.



COMETA programme, ENAIRE

World **most advanced Full-IP Voice Communication System migration** program in Spain (1000+ CWP's).



Complete coverage of Brazilian Airspace, SISCEAB

Indra Park Air have been supplying VHF and UHF radios to CISCEA since 2001, providing **full coverage of the Brazilian Airspace**. Over 150 sites, with more than 6.000 T6 radios.

Navigation

Leading the way in innovative solutions

- The widest portfolio of navigational aids backed by our experience and expertise installing **more than 8,000 solutions** in more than 180 countries.
- **Ensure safe flights** with the most trusted range of navigational aids:
 - High-performing and durable systems
 - Unmatched technical competence
 - World-renowned customer service
- **We provide reliable air navigation for all complexity levels and climatic conditions;** from busy international airports such as Dubai and Heathrow, to remote airfields in arctic or desert areas.

ILS

DME

VOR

TACAN



10 million+
safe landings/year

3,500+
runways worldwide

Sole provider of ILS to
UASF and USN and DME
to FAA

World leader in ILS
with > 50% market share

World's first operational
GPS-based landing
technology

Key projects



ILS + DME for ASECNA

We will deliver instrument landing system (ILS) and distance measuring equipment (DME) to 17 airports in 12 countries, all operated by ASECNA.

The systems have been in operation in several airports for more than 20 years.

Indra's **Instrument Landing System (ILS)** is the world leader with a **market share exceeding 50%**.



TACAN for US Air Force

Innovative technology for the provision of **navigation information to military aircraft** during advanced military operations in GNSS denied environments, including fixed, mobile and man portable versions.

Indra's TACAN is designed with the highest degree of commonality with the Distance Measuring Equipment (DME) of choice for the FAA.



DMEs for US FAA

Since 2011, Indra is the **sole provider of Distance Measuring Equipment (DME) to the Federal Aviation Administration.**

Surveillance

The widest range of cooperative and non-cooperative radars

- Most **advanced technologies** (GaN, ADS-B integration) to outperform in the most **challenging environments**.
- Eco-Friendly design principles
- Country wide **radar network** renewal projects in major ANSPs
- Local teams of engineers in numerous parts of the world to **respond more efficiently to our customers' needs**.

PSR
S Band

PSR
L Band

MSSR

ADS-B



450+
references

90+
countries

Best-in-class solutions for all clients and geographies
UK | Germany | Indonesia | Sweden | COCESNA | Turkey | Colombia ...

Key projects



Germany, country-wide replacement project

Indra have been chosen to **replace all the radars network in Germany**, in one of the most important projects in the country in the last years.



UK, country-wide replacement project

Indra is deploying **9 state of the art L-Band PSR3D and 10 MSSR radars** across the UK for NATS. This includes supply, installation and **20 years of support** and maintenance to enhance airspace surveillance.



Other references

Spain (27 MSSR and 4 PSR), Colombia (9 MSSR + 7 PSR)
Turkey (19 MSSR + 6 PSR)
Sweden (12 MSSR + 4 PSR)
India (9 MSSR)
Peru (8 MSSR)
Australia (11 MSSR)
COCESNA (11 MSSR)

Space-based CNS

Startical | Pioneering initiative by ENAIRE and Indra to take air traffic infrastructures to space

- Constellation of **over 200** low-earth orbit satellites
- **100% global coverage** for air navigation
- Controllers will have the **aircraft's position in real time**, promoting a more efficient and sustainable aviation.
- Pilots will be able to avoid areas under **adverse weather conditions**
- It doesn't require changes in avionics or ground systems, nor additional training for controllers and pilots.
- **New services:** ADS-B advantages compared to existing solutions, SB-VHF global voice and data coverage and Certified service from satellite



ENAIRe

INDRA

Second satellite, **IOD-2** already in orbit
Validating real-time VHF voice and
data communications

Digital platform

Linkia | The digital platform natively designed for ATM systems

- The response to the challenges of technological evolution, agility and complexity of modern operations.
- **Cloud capabilities** on a par with the best solutions in the industry, while **natively integrating the regulatory and security requirements specific to air traffic management**.
- Through a **standardised services layer**, provides the infrastructure and operational logic required by development teams.
- A **cloud-strategy-agnostic approach**.
- Gradual and secure introduction of **AI**.
- Indra's **experience in large-scale ATM systems** and its **IndraMind intelligence platform**, driving the transformation of the sector.
- A transition from a fragmented model to a **global, coherent and scalable** one.



The evolution in step with modern operations.

To adapt faster. To scale on demand. To respond in real time. To ensure critical safety remains at the heart of everything we do.

Powered by IndraMind
Indra Group's sovereign and cyber resilient intelligence platform.

Linkia | A new approach, proven in real-world environments

- **Enhanced adaptability** to regulatory and technological changes.
- **Improved operational continuity:** fewer disruptions and more stable systems.
- **Increased efficiency:** non-duplicated infrastructures and reduced operational workload.
- **Faster evolution:** quicker deployments and shorter innovation cycles.
- **Strengthened security and regulatory compliance:** integrated and centralised controls at platform level.
- **Reduced environmental impact:** optimisation of infrastructure usage and energy consumption.
- **Lower operational complexity.**
- **Safety is the central pillar of all our technology.**

Dynamic and fast releases

- Application deployment within hours.

Seamless integrations

- Standardised interfaces between applications, regardless of vendor or technology.

Hybrid application deployments

- On-premise deployments for operations and cloud-based replicas for training, simulation or experimentation, using the same model.

Continuous evolution with no operational disruption

- New features and updates can be deployed securely, minimising operational impact.

Testing of new capabilities

- Rapid experimentation environments, smooth transitions to production.

Dynamic scalability

- Real-time adaptation to operational events and peaks or troughs in demand.

