# Indra Air Automation
# IRTOS
# Remote Tower Optical System

![Indra]

**Indra** is a world leader in the industry of Air Traffic Management, with more than 100 years' experience in the sector, having supplied Automation, Surveillance, Navaids, Communication and Aeronautical Information systems in over 160 countries with more than 4,000 system installations.

Versatility, field-proven ATM technologies with innovative design concept providing amazing performances, high reliability and fully compliance with regulations.

Indra's Tower Solution is well-suited for a remote and digital tower setting thanks to the high integrity, fusion and automation obtained through years of operation at large worldwide airports. The integration of displays, sensors and information makes this solution the ideal platform for the emerging tower platforms – for digital, contingency or remotely controlled airports.

With a complete portfolio of products Air Traffic Management, Communication, Navigation and Surveillance domain, Indra covers all the stages (gate to gate).

In the field of R&D, Indra is one of the leading companies in the SESAR program, a key technology partner behind the Single European Sky initiative.

The core of the IRTOS 100% proprietary, developed and upgraded by a multi-disciplinary team of engineers from the ATM and Electro-optical Defense Systems, with more than 30 years of experience100%, is fully compliant with latest versions of ICAO regulation and Eurocae recommendations.

This offers a quantum-leap in safety and efficiency for the provision and continuity of traffic control.

## IRTOS: Beyond market standard

Subsequent versions based on Artificial Intelligent and cognitive applications will represent a huge functional leap from both precedent system and current market solutions by taking advantage of deep ATM expertise and emerging technologies capabilities.

• Aircraft smoke and fire detection.
• Abnormal aircraft configuration landing.
• Abnormal aircraft configuration taking off.
• Foreign Object Debris.
• Detection of flock of birds.
• Autonomous detection of runway clearance.

Integration with anti-drones systems to make the most of the air traffic management environment.

State of the art computer vision and cognitive applications for maximizing safety and efficiency.

With more than 4,000 ATM & CNS worldwide references, Indra offers a well-reputed, reliable and modern solution, adaptable to the client's requirements and the particular needs of each site.

## Why Digital Remote Towers make sense and Current Advantages

**Cost and Efficiency**
• More efficient than physical towers both in terms of CAPEX and OPEX.
• No need of huge physical infrastructure.
• Balanced workload among several airports.
• Most efficient location of controllers.

**Better use of airspace**
• Low traffic airports cannot afford tower control services.
• Complicated staffing in remote areas.

**Security**
• Better vision (4K, night vision, zoom, OF, etc.).
• Heads up / Situational awareness (info on screen, user friendly display and controls).

**People**
• Central control center so back up and supervision can be assured.

## Applications of digital remote towers

**Instead of physical tower**
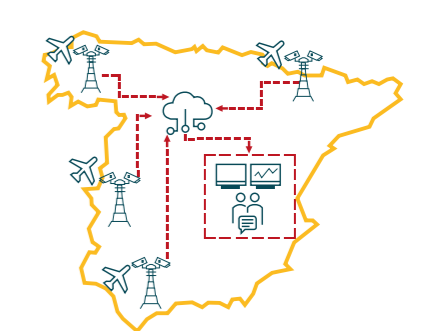Up to 60% cost reduction of "Total cost of ownership".

**Contingency tower**
Most efficient and fastest to deploy contingency solution.

**Multi-airport set up**
Makes low traffic airports financially feasible.

# Most easy-to-use system with best situational awareness

Visual Detection, Tracking and Labelling in panorama & fusion with ground track systems.

Automated detection and following of aircrafts based on visual track (AI) and/or surveillance track at more than 10 NM.

Most user friendly and interactive panorama to reduce heads down actions, InNova and ManagAir integration.

Single mouse operation, with user direct actions on both CWP and panorama and additional "quick digital zoom" functionality for faster inspection than PTZ.

Configurable and displayable Hot Spots in any part of the panorama display.

Intrusion Area flashing alert for moving object inside defined areas.
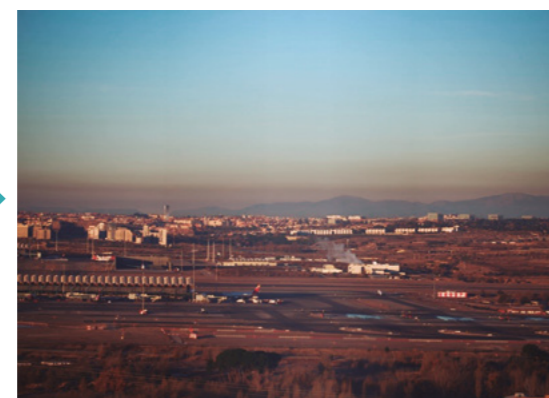
Additional information overlaid on the screen:
• Highlighted airport borderlines.
• Meteorological information.

PHWTC 2
154 33
2.0 5.5 143.9

AEA6030 2
189 57
9.0 3.6 142.6

IBE30EM 2
198 52
13.1 2.1 147.1

AVA010 2
178 42
6.0 3.2 152.5

PTZ 1 (Vis)

# Most Advanced & Best Quality Image Solution

**Ultra High Definition UHD / 4K Panorama Cameras and Monitors.**

Seamless stitched panorama display enabling M cameras to be displayed in N monitors, unbinding the number and resolution of cameras and screens.

3D projection transformation for flattening the image and displaying a natural view, avoiding the "banana effect" and mitigating controller's visual fatigue and dizziness.

High resolution and illumination night mode in panorama display (better than naked eyes). Well-proven COTS systems, very low risk. Visual & Thermal PTZ Cameras.

# Superior reliability and availability

based on full redundant architecture and high MTBF of well-proven COTS elements.

• Backup Panorama Cameras performed by PTZ with two clicks.

• Cameras integrated cleaning system.

• Intuitive Technical Maintenance HMI.

• Minimum time of replacement of critical spare components.

• Geo-referencing and Stitching auto- alignment for panorama camera replacement < 30 minutes.

**At the Glass Recording System, synchronized with ATM and voice communication.**



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## At the core

## Creating skies together

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