



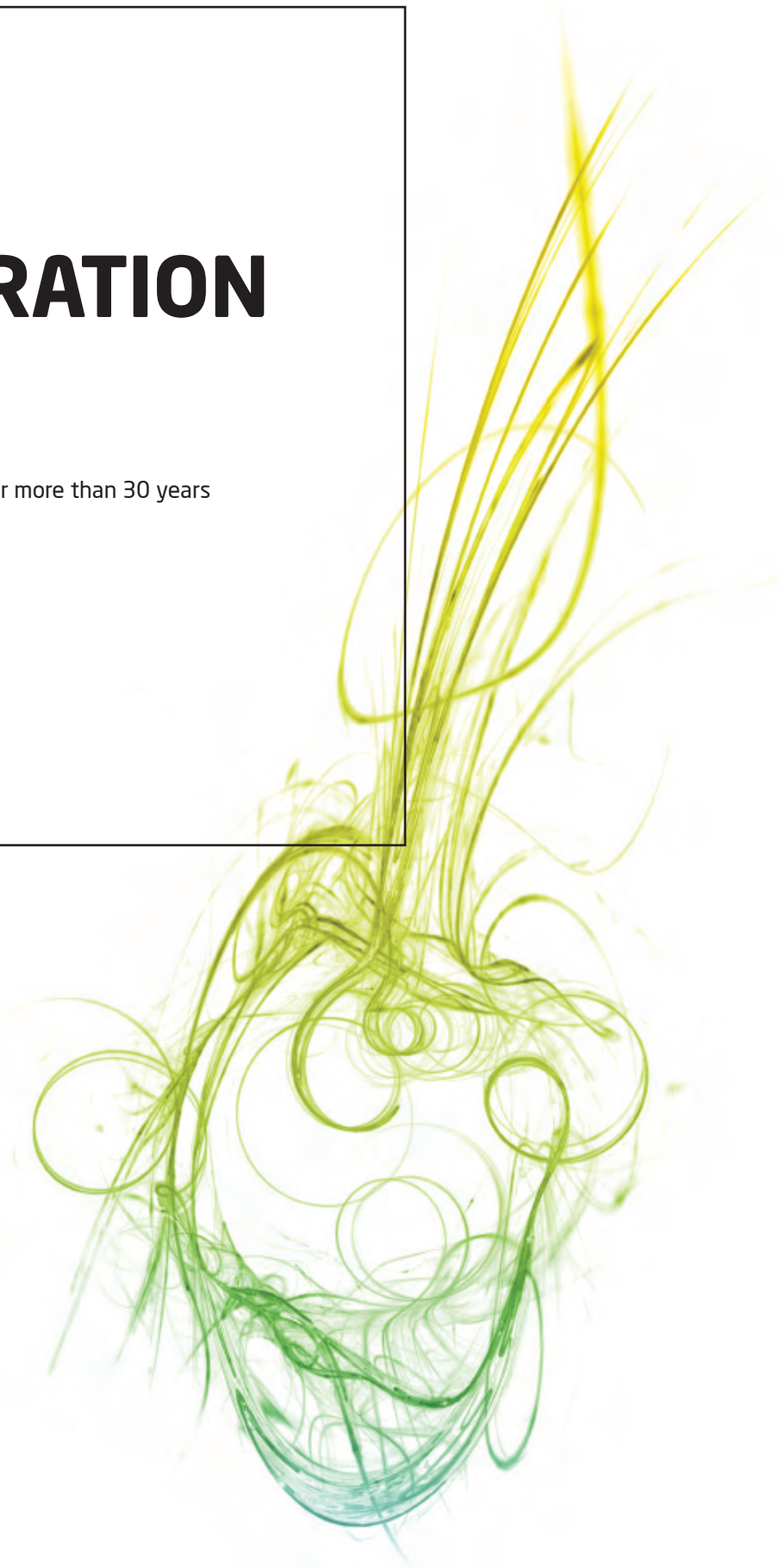
indra

AIR TRAFFIC MANAGEMENT

WIDE AREA MULTILATERATION SYSTEM

Supplying ATM systems around the world for more than 30 years

indracompany.com



WIDE AREA MULTILATERATION SYSTEM



The highest performance with lowest through-life cost

A system based in a superior technology

The WAM system calculates an aircraft's position by referencing the time difference of arrival of a signal at a collection of receiver stations in the ground.

It can synchronise – with sub-nanosecond accuracy – stations hundreds of kilometres apart using our advanced and proprietary common view GNSS synchronization.

It can fix the position and track objects in 3D for a wide range of civil and military applications at a very fast rate of renew.

Having sophisticated and accurate positioning algorithms which is obtained using a superior technology, it is achieved more flexibility in deployments. Some additional aspects to be considered when planning a multilateration system are:

- Receiver siting.
- Terrain modelling and coverage.
- Installation requirements.

An Indra's WAM system will provide a cost-effective surveillance product with low maintenance, scalable and flexible architecture to meet current and future Air Traffic Management surveillance needs, in a non-radar scenario.

Indra's WAM as is based on Roke Vigilance™ System, has demonstrated in operation as the most advanced WAM system available in the market. Its third generation of hardware gives superior characteristics:

- Highest system reliability and availability
- Fast rate of target acquisition for better positional
- Flexible, simple receiver siting and installation
- Superior coverage in difficult terrain
- Minimal maintenance

The highest performance with the lowest through-life cost

Airline passenger traffic requires new and effective surveillance that improves the safety, capacity and efficiency of airspace imperative. Indra's WAM, our extended multilateration product, helps solve these issues therefore enabling increased aviation revenue.

What is it?

Indra's WAM reliably tracks and calculates the position of an aircraft using passive surveillance techniques in total compatibility with its actual avionics equipage.

It is a proven alternative solution to secondary surveillance radar (SSR) and provides cost-effective coverage especially where existing SSR systems are impractical or need a reinforcement of them.

Compared to traditional SSR, Indra's WAM provides far greater performance, accuracy and update non dependable of range to the radar station, enabling more effective operating procedures.

Applications

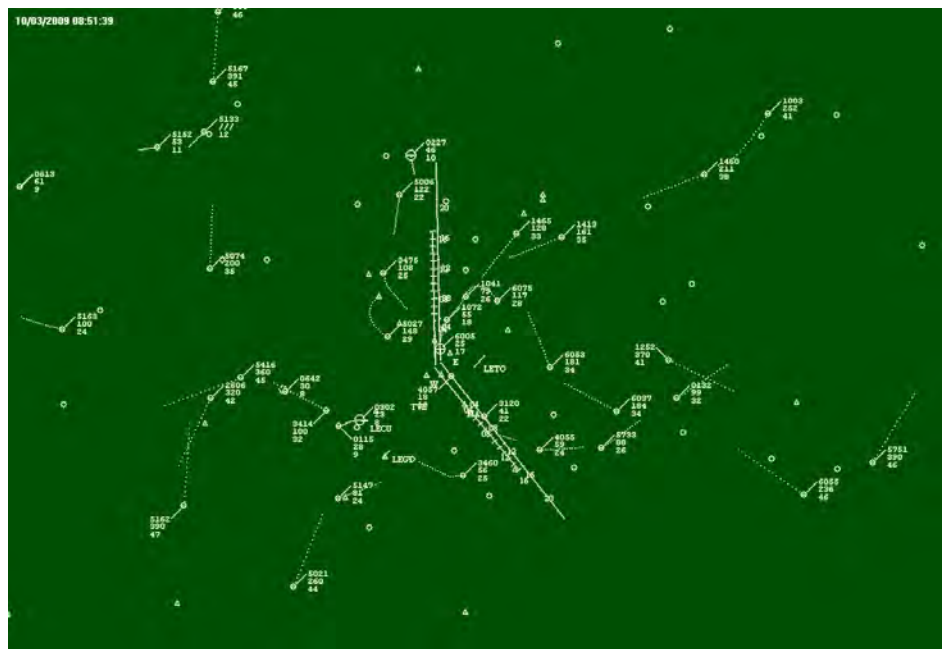
Indra's WAM is a scalable solution that is designed to cost-effectively meet your surveillance area and specific requirements.

Applications range from small airport area installations, for low cost operations control, to extensive wide area multilateration surveillance systems for regional/national Air Traffic Control (ATC).

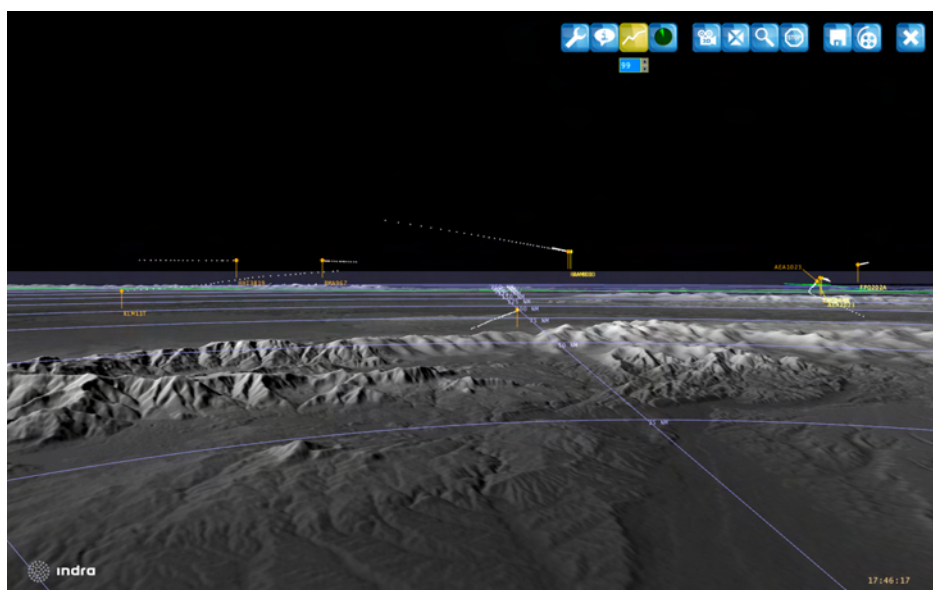
Indra's WAM is ideal for surveillance en-route, terminal area, precision approach and the new requirements for parallel or close runway monitoring.

Indra's WAM is an evolution of Vigilance™, will also give solutions, considered actually for the future of the ATM surveillance, to solve key issues in the following major programmes:

- Automatic Dependant Surveillance Broadcast (ADS-B)
- Single European Sky ATM Research (SESAR)
- Next Generation Air Transportation System (NextGen).

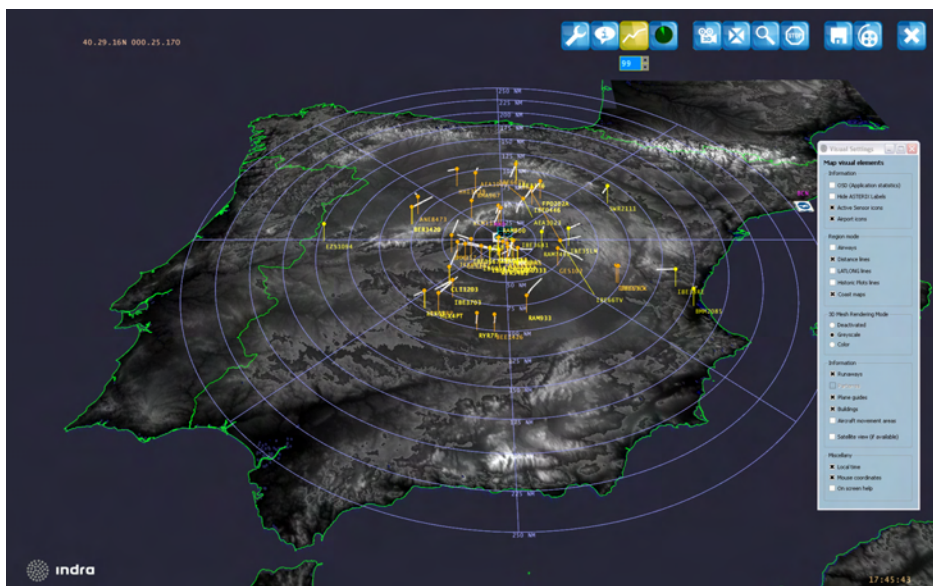


WAM Technology



Features

- Engineered for high reliability and availability.
- Smallest form-factor.
- Low power consumption and flexible power sources.
- Flexible receiver siting.
- Beyond line of sight synchronisation.
- Common view GNSS synchronisation.
- Advanced data-integrity techniques.
- Excellent local and remote fault finding and diagnostics.
- Scalable and flexible platform upgrade.
- Uses all existing avionics: Mode A/C, Mode S and ADS-B.
- Extensive, field proven modelling suite.



Benefits

- Guaranteed performance at best price.
- Ease and reduced cost of installation and operation.
- Lower life cycle cost and rapid deployment
- Greatest coverage and accuracy performance with fast rate of target detection.
- Fewer site monitors required – advantages in system cost.
- Highest availability and reliability
- Simple and easy coverage expansion
- Standard avionics used.
- High confidence in coverage, performances and siting prior to installation.
- Right first time approach helps avoid cost escalation.

Technical characteristics

RECEIVER	
Temperature	-40°C to +55°C, plus 15°C sun loading
Humidity	5% to 100% (non-condensing)
Ingress protection	IP66
Lightning protection	All interfaces
Input voltage	12-24V AC
Power consumption	<50w
Connectors	TNC
TRANSMITTER	
Temperature	-40°C to +55°C, plus 15°C sun loading
Humidity	5% to 100% (non-condensing)
Ingress protection	IP66
Lightning protection	All interfaces
Input voltage	12-48V AC
Interrogation Modes	A, C and Mode S
Connectors	TNC
SYSTEM	
Input data	Mode A/C, Mode S (DF 0, 11, 4, 5, 16, 17, 20, 21)
Output data	ASTERIX Cat 1.9/20/21
Capacity	500 targets (Mode S)
Maximum latency	250ms (surface movement)
Accuracy	500ms (wide area)
Coverage	Up to 5m horizontal
Update rate	Up to 10m vertical

Wide Area Multilateration

Choosing the right technology means:

- Wider geographic coverage performance with fewer sites.
- Flexibility in receiver siting.
- Reduced time and cost of site acquisition including: land leasing, power, communications and maintenance.
- Highest accuracy with improved performance.
- Lower through-life cost due to simple maintenance at remote sites.

Key advantages of Indra WAM over other multilateration systems:

- Greatest accuracy with unlimited coverage.
- Highest reliability with minimum maintenance and downtime.
- Safety ensured due to high integrity and availability.
- Lower total life cycle cost by a new hardware implementation.
- Interrogator as part of the system (responses generate by other interrogators are also used).

Designed for simple and cost-effective maintenance:

- High level of circuit integration.
- Very low powered units.
- Minimal number of components.
- Can be sited on existing infrastructure – reducing total costs.
- Rapid fault finding and diagnostics – ensures maximum availability.
- Monitoring with rapid reconfiguration.



ISO 9001:2000



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