

THALES

Building a future we can all trust

Enhancing surveillance capability for a seamless sky through Thales advance solution

www.thalesgroup.com

THALES GROUP INTERNAL





**Today's presenter
Mr Thomas Delalande
Strategy and business
Development
Manager**

AIRSPACE MOBILITY SOLUTIONS

Our Ambition



Supporting Aviation recovery



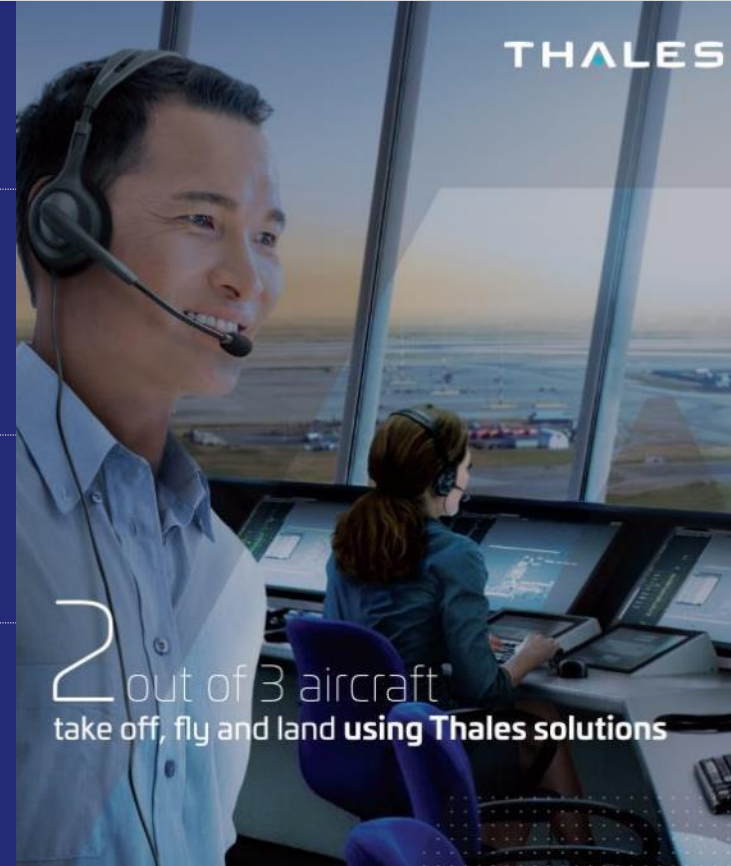
Fostering smarter Mobility of people and goods



Serving a sustainable aviation



Striving for a trusted airspace management



Our solutions and portfolio respond to all air traffic management needs

AIR TRAFFIC CONTROL

- Air Traffic Control Centres
- Control Towers
- UAS Traffic Management
- Air Traffic Sequencing
- AMHS
- Aeronautical Info Mgt
- Traffic Flow Management
- Simulators



NAVIGATION AIDS

- Fix & mobile ILS
- DME
- DVOR
- CVOR
- Fix, mobile and portable TACAN



GLOBAL SURVEILLANCE

- Radars L&S bands
- Radars S Mode
- Counter-UAV
- Simulators
- ADS-B SYSTEMS
- MLAT/WAM SYSTEMS
- Airport Multilateration
- Multi sensors tracking



SERVICES

- Sustainability
- Transition & Improvement
- Optimal Operations
- Cybersecurity
- Training & Experiment



Our ATC ambition

SUPPORTING AVIATION RECOVERY



- Tailored and **adjustable architecture** from low complexity to the most demanding environments
- Optimized overall **cost of ownership** thanks to a long-term support policy
- **Virtualization** enabling **flexible** system deployment, seamless system upgrades and scalability

FOSTERING SMARTER MOBILITY



- Towards a **UTM /ATM interface** to ensure safe airspace sharing

SERVING A SUSTAINABLE AVIATION

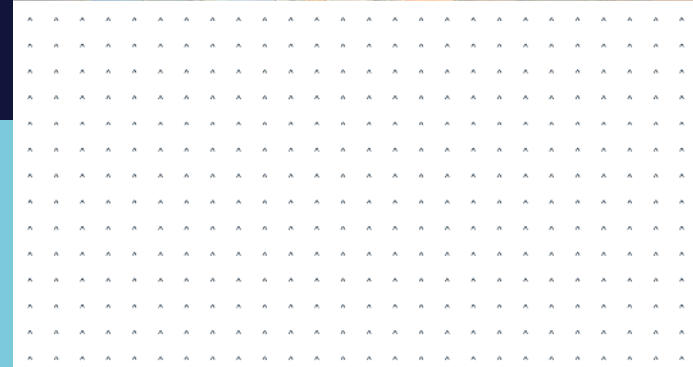


- A continuous **focus on optimizations** offering new functionalities to facilitate greener operations and enhanced architecture

STRIVING FOR A TRUSTED AIRSPACE MANAGEMENT



- **Mature and field proven solution trusted by over 100 countries**
- **Sound foundations** for a **future-proof** ATC system based on open and secured architecture
- High grade **cybersecurity** solutions based on Thales expertise
- Unrivalled approach in **safety**



Automation – Military Aviation

- Integrated and modular solutions for your military ATM
- Thales is ideally placed to ensure full interoperability between your civil and military technology to fully harmonize your solutions
- Prime system integrator from definition to full installation and integration
- Management of complex, multi contract projects and delivering in hostile environments
- We also provide network encryption solutions to ensure full data security, so that you can connect new local systems to both military and civil networks



FROM AIRPORTS, ATC CENTERS TO NATIONWIDE INFRASTRUCTURE

All aspects of these large scale projects are managed by Thales on your behalf:

- ATC system (from Tower to ACC)
- Surveillance (Radar, WAM/MLAT, ADS-B) and NAVAIDs
- AIM, AMHS solutions
- Civil works
- Third-party equipment (Radios, SMR, Meteo system, ATC consoles, Voice communication systems etc)
- End-to-end installation and system integration Training

References around the globe: Bolivia Sidacta, Mexico, Tanzania, St Maarten, South Africa, UAE, Afghanistan, Thailand, Turkmenistan, Marshall UK...



Sidacta Bolivia



St Maarten

Optimizing traffic flow management

BETTER TRAFFIC DEMAND ANTICIPATION, FOR SMARTER FLOW REGULATION DECISIONS

TopSky - Flow Manager helps FMP take the smartest decisions to solve traffic imbalance.

By anticipating the most accurate traffic demand and weather information

- **Collaborative:** Shared local data with other stakeholders for commonly improved demand accuracy
- **User-centric:** the most user friendly & intuitive application, thanks to high UX at the core of product co-construction with users
- **Quickly deployed:** fast user experience and seamless upgrades, while reducing costs of ownership. Available anytime and anywhere thanks to cloud.
- **Cybersecured:** Ensuring high levels of cybersecurity, at the same cost.



9.9%

Of flights subject to ATFM delay



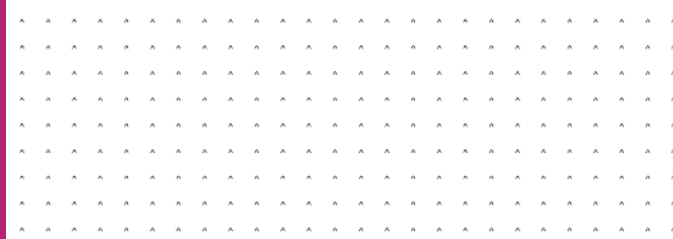
1.57 minute

of ATFM delay per flight on average in Europe (2019)



€4 Million

Worth of ATFM delay for airlines on an average peak summer day



Accelerating the deployment of UAS operations into the airspace

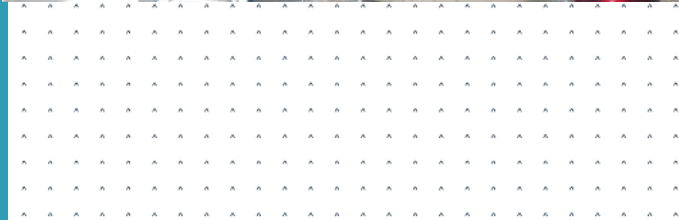
HELPING AUTHORITIES, AIRSPACE MANAGERS, UAS OPERATORS, INDUSTRY AND ANY ORGANIZATION THAT NEED TO ACCELERATE THE DEPLOYMENT OF UAS OPERATIONS, ENABLING FAST, EFFICIENT AND SAFE UAS OPERATIONS.

- Packaged offer addressing the challenges of UAS integration into the airspace.
- End-to-end suite of services for low altitude airspace management and supervision, based on a collaborative cloud platform
- Combining innovative and field-proven Thales assets together with a network of partners:
 - * Airspace Design Consulting and Services
 - * UAS Operator Business Applications Integration
 - * UAS Onboard Equipment Integration
 - * Operational and Technical Supervision Services



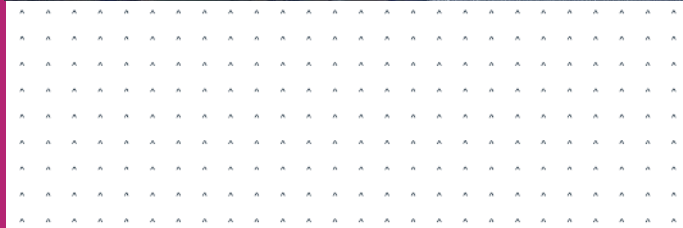
Non Radar Surveillance positioning

- Recognised world leader in Multilateration and ADS-B Ground Surveillance capabilities
- 2,300 ADS-B and Multilateration ground stations around the world in the last 20 years
- Thales, the only supplier able to provide the complete Airspace Surveillance equipment range
- Safety and Efficiency systems supporting flexible airspace design
- Robust system design to ensure high system availability
- Cyber secure



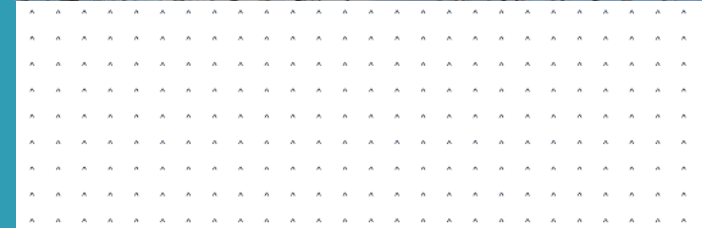
Non Radar Surveillance capabilities

- Surveillance sensors based on Aircraft Transponder
 - ADS-B – Automatic Dependent Surveillance Broadcast systems
 - MLAT – Airport Multilateration systems
 - WAM – Wide Area Multilateration systems
 - Multi-Sensor Tracking Systems
 - TopSky automation center
- Systems implementing last regulation requirements
- Latest technologies to offer cost effective architecture



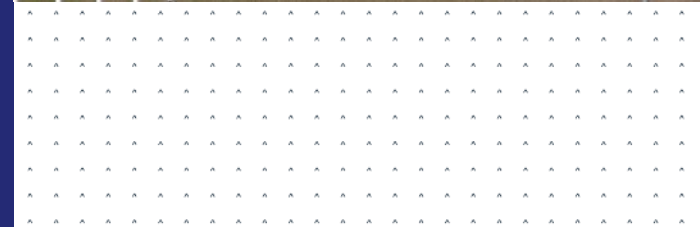
Navigation Aids positioning

- Recognised world leader in Nav aids equipment with **10.000 systems delivered in 170 countries**
- Supporting **since 20 years customers' strategy in Air Navigation Systems management** by improving operation efficiency and reducing recurring costs
- From landing systems to en-route and approach navigation systems
- Enabling the future navigation with **safer, more reliable, more integrity, more efficient, more digital navigation aids solutions**



Navigation Aids capabilities

- **Complete portfolio** of high performance and reliable **ground nav aids** products
 - **From Landing systems** with Instrument Landing Systems 'ILS' and Distance measuring Equipment 'DME'
 - **To en-route and approach systems** with VOR, CVOR, DVOR, DME and TACAN (Civil and military aviation use)
 - **Mobile and Deployable Nav aids** solutions available
- **Precise navigation** during the entire flight and contributes to optimized utilization of airspace
- **Safety and efficiency, modern and digital design** leveraging on state of the art technology



Civil Radars

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AIR TRAFFIC CONTROL

RSM

Secondary radars



STAR NG

Primary radars (approach)



TRAC NG

Primary radar (en route)



DRONE DETECTION

Gamekeeper

Holographic



COASTAL SURVEILLANCE

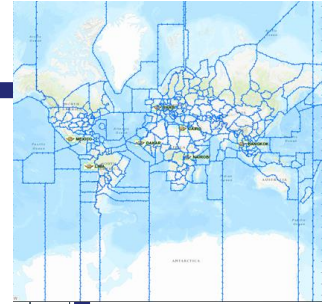
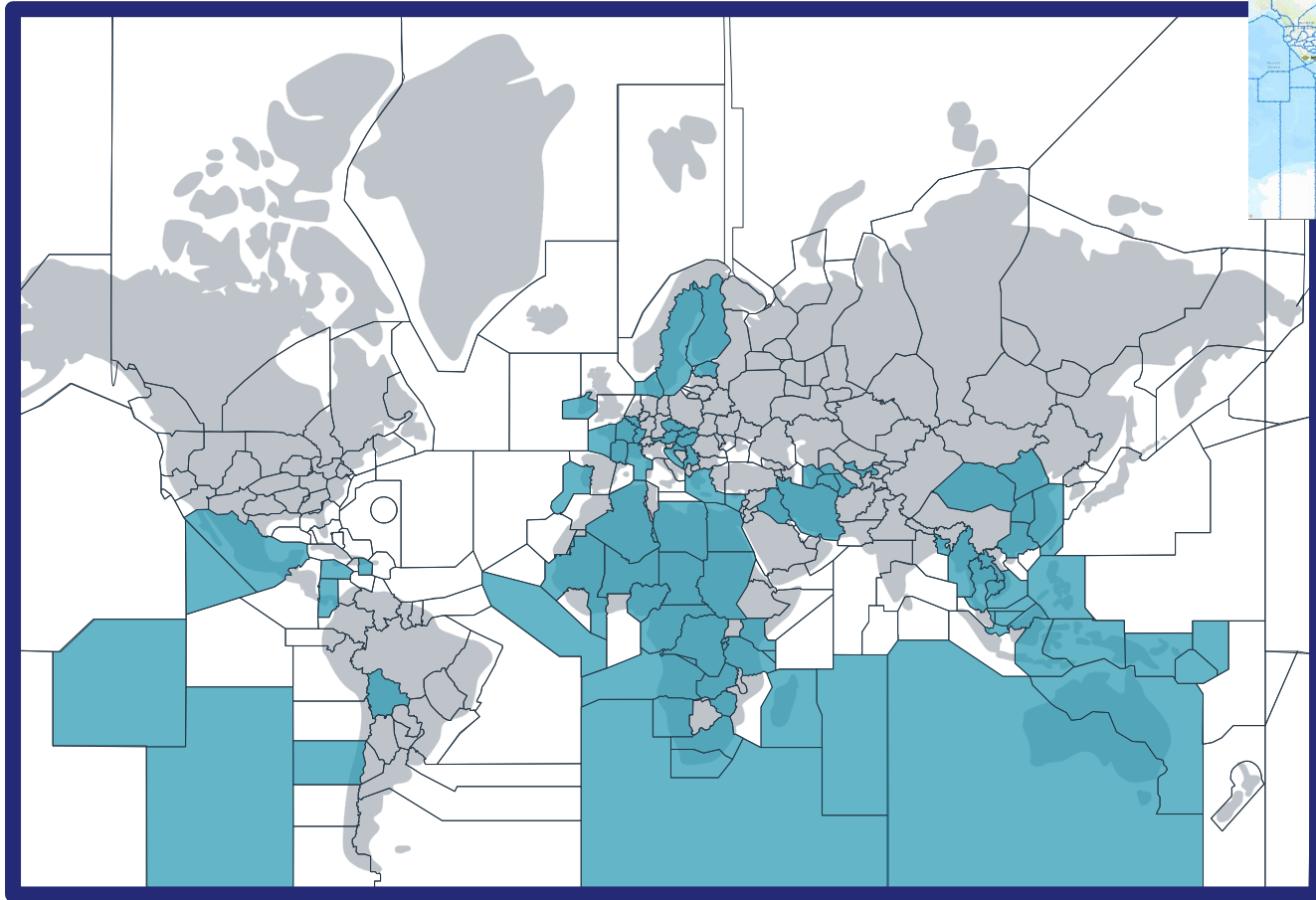
CW100

Coastal radar

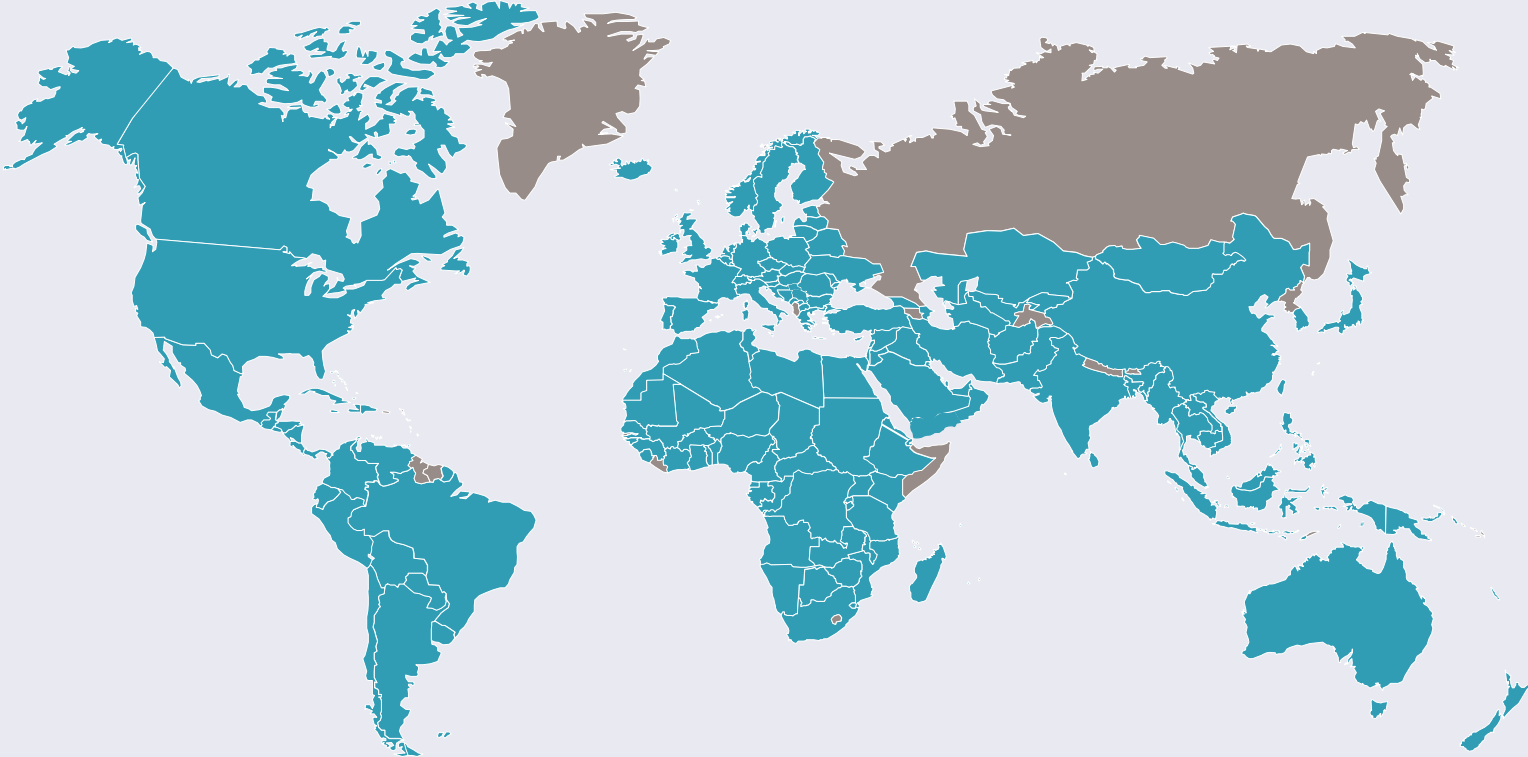


Full system available

Thales FIRs



Thales: A worldwide presence



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