

THALES

Building a future we can all trust

Better
Skies
Together

ADS-B Technologies of the future

Thales' **vision on** ADS-B solutions

ICAO APAC ADS-B Webinar
1th of September, 2021

www.thalesgroup.com



AGENDA



1

Support efficient delivery of ADS-B in APAC region

2

Innovative approaches to optimize the future ADS-B technology

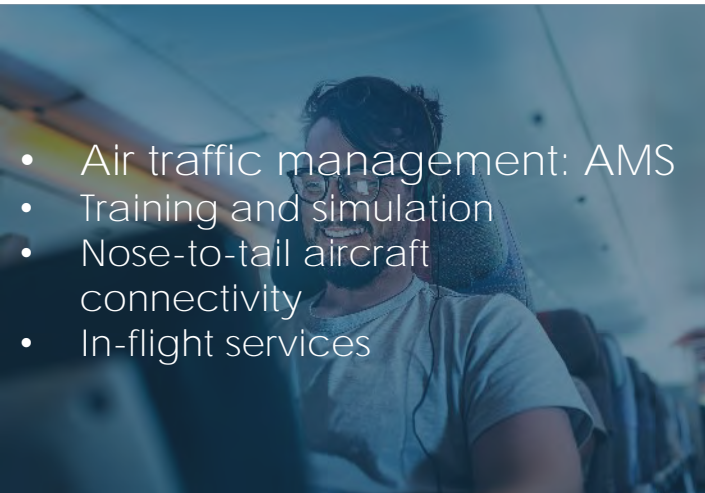
3

Thales' solutions for sustainable investments

4

Questions & Answers

Aerospace: make flying safer, easier and more efficient



- Air traffic management: AMS
- Training and simulation
- Nose-to-tail aircraft connectivity
- In-flight services

1m passengers use Thales in-flight entertainment systems every day.

Over 160 Air Traffic Management control centers around the world are equipped by Thales.

Between them, they cover more than 40% of global airspace.

60% of air traffic in China is managed by Thales solutions.

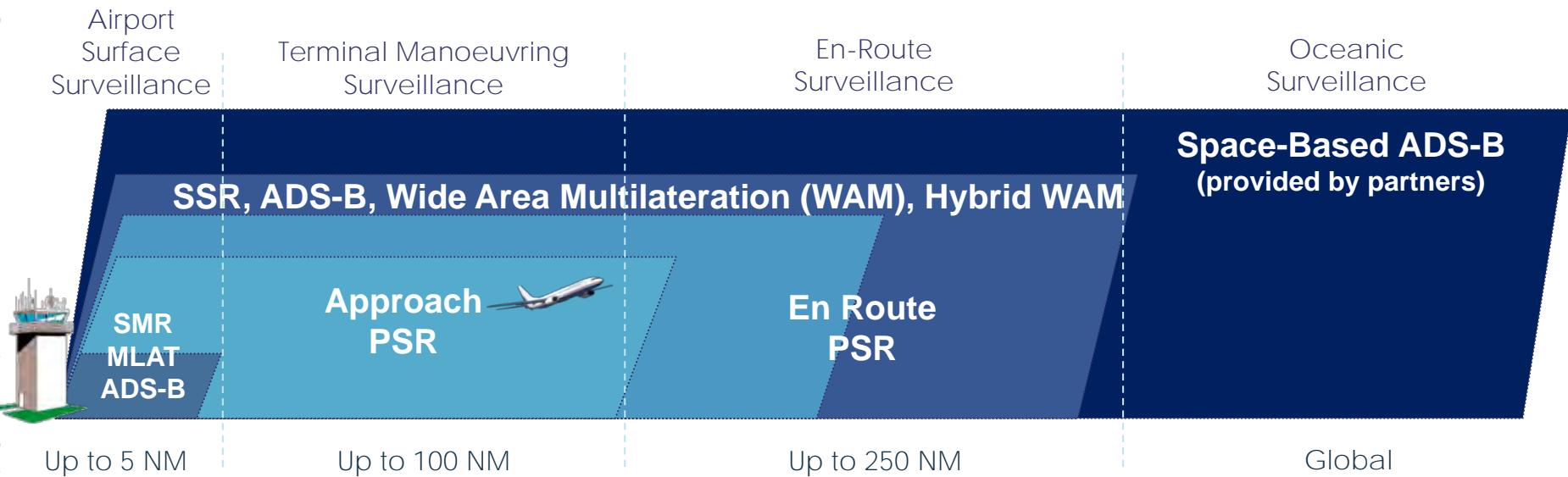
2 out of 3 aircraft in the world take off and land using Thales equipment.

Training & simulation for civil and military customers, ATM, helicopters and aircraft.



Support efficient airspace operations

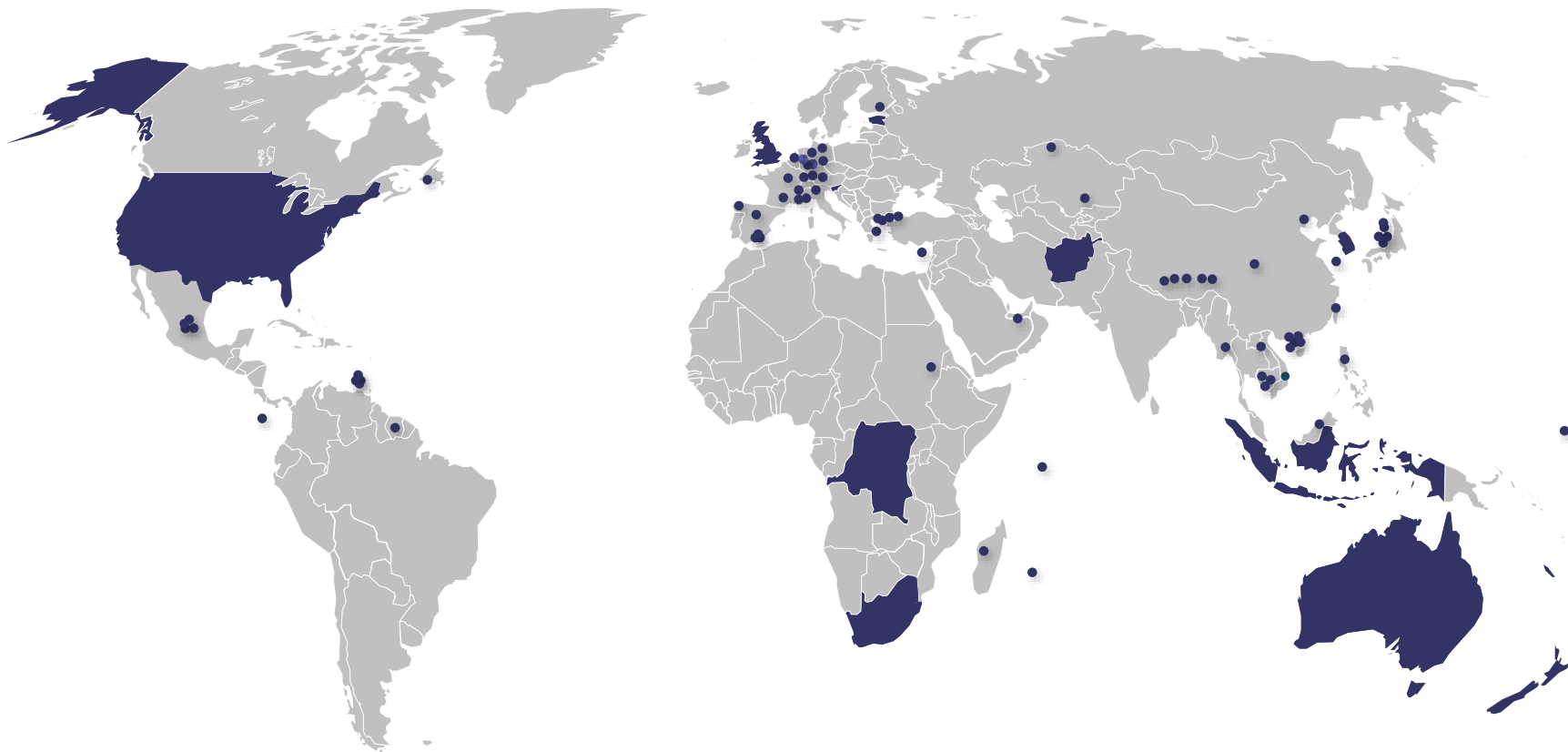
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Thales addresses a global Surveillance



ADS-B key references & expertise

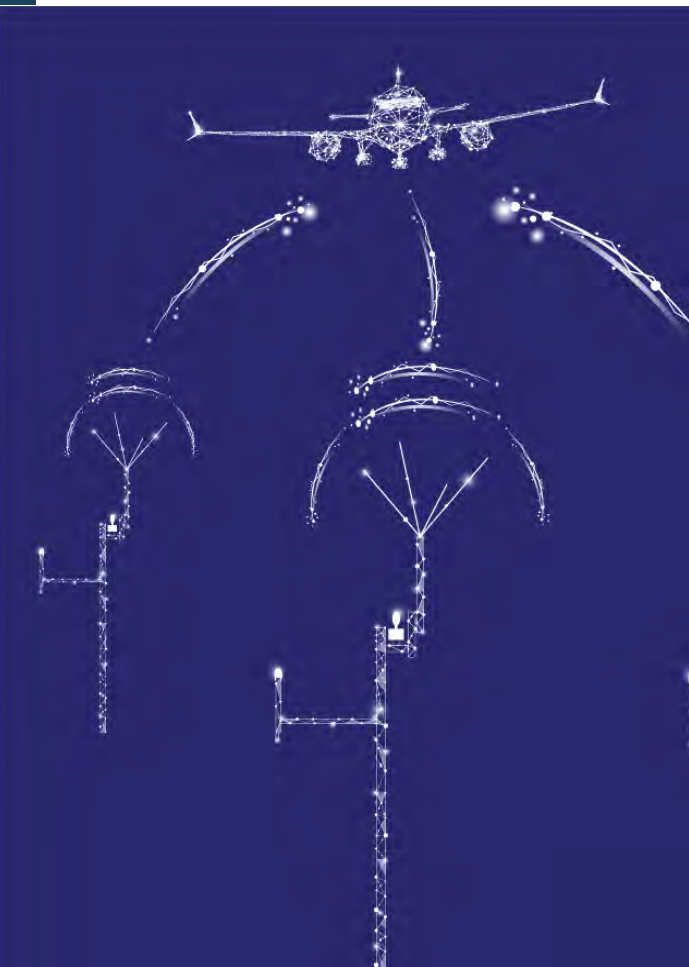


Over 2,300 ADS-B Ground Stations delivered around the World

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Accelerate the adoption of innovative solutions and technologies



ADS-B Basics

- State of the Art Technology
- ADS-B functionality, coverage/range, probability of detection
- Fulfil safety case requirements

Advanced ADS-B features

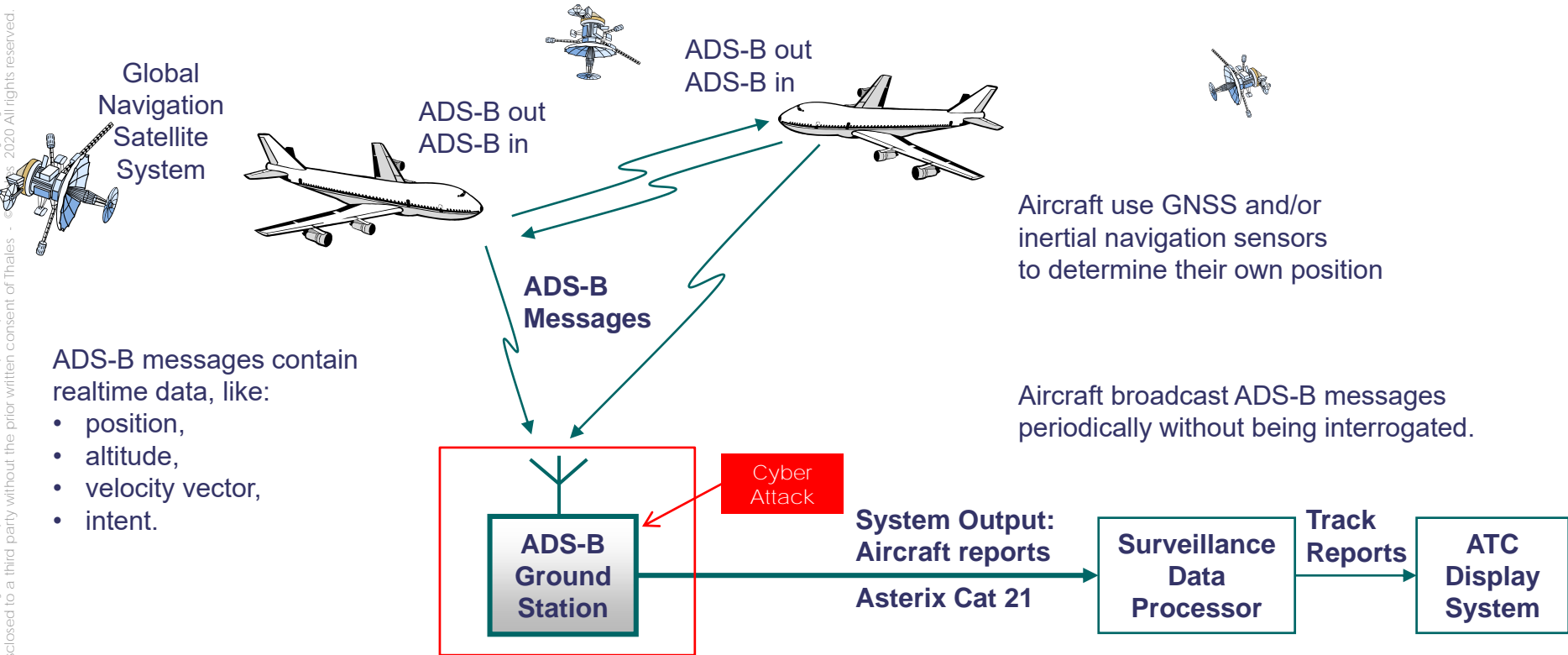
- 1090 MHz Phase Overlay with additional future data items
- New Asterix category 53 (replacing cat21)

Security features

- RF Security
- Cyber Security
- GNSS Issues monitoring

ADS-B Detecting Cyber Security Issues

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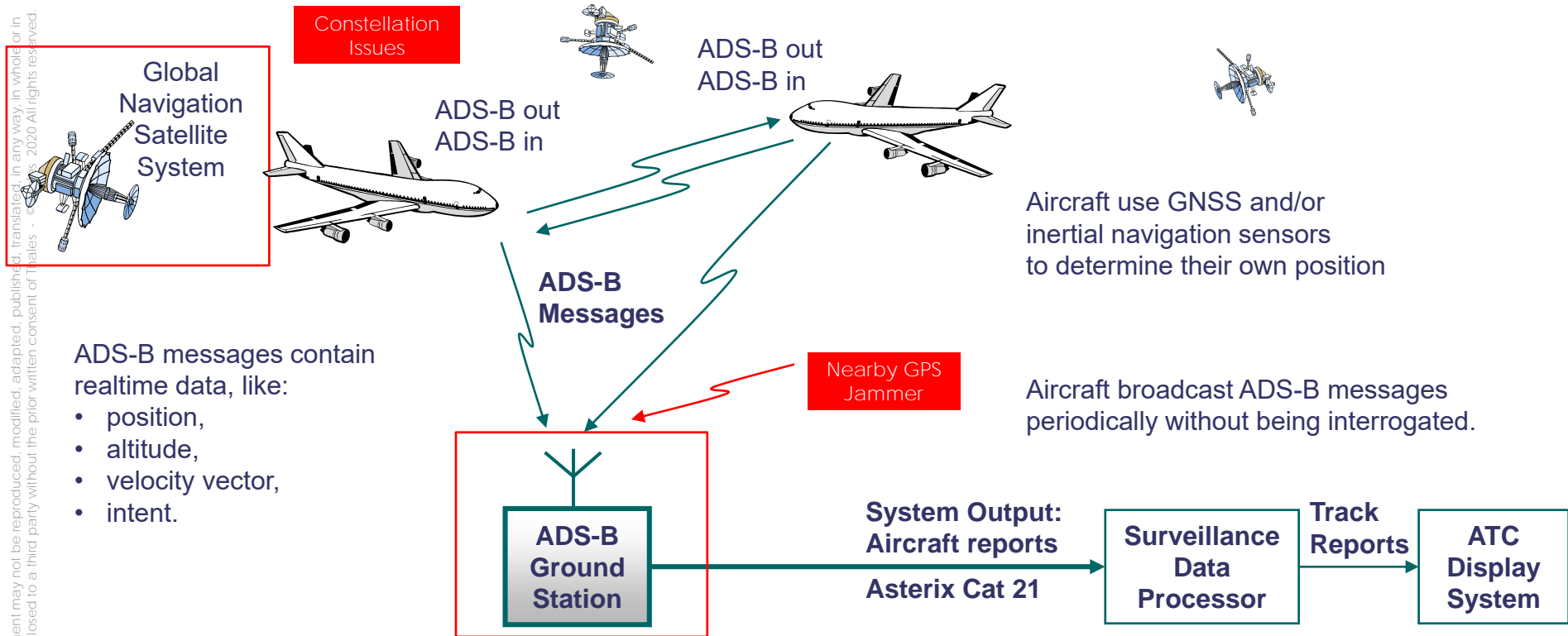


ADS-B Ground Station provides Asterix Target Reports



ADS-B Detecting GNSS Issues

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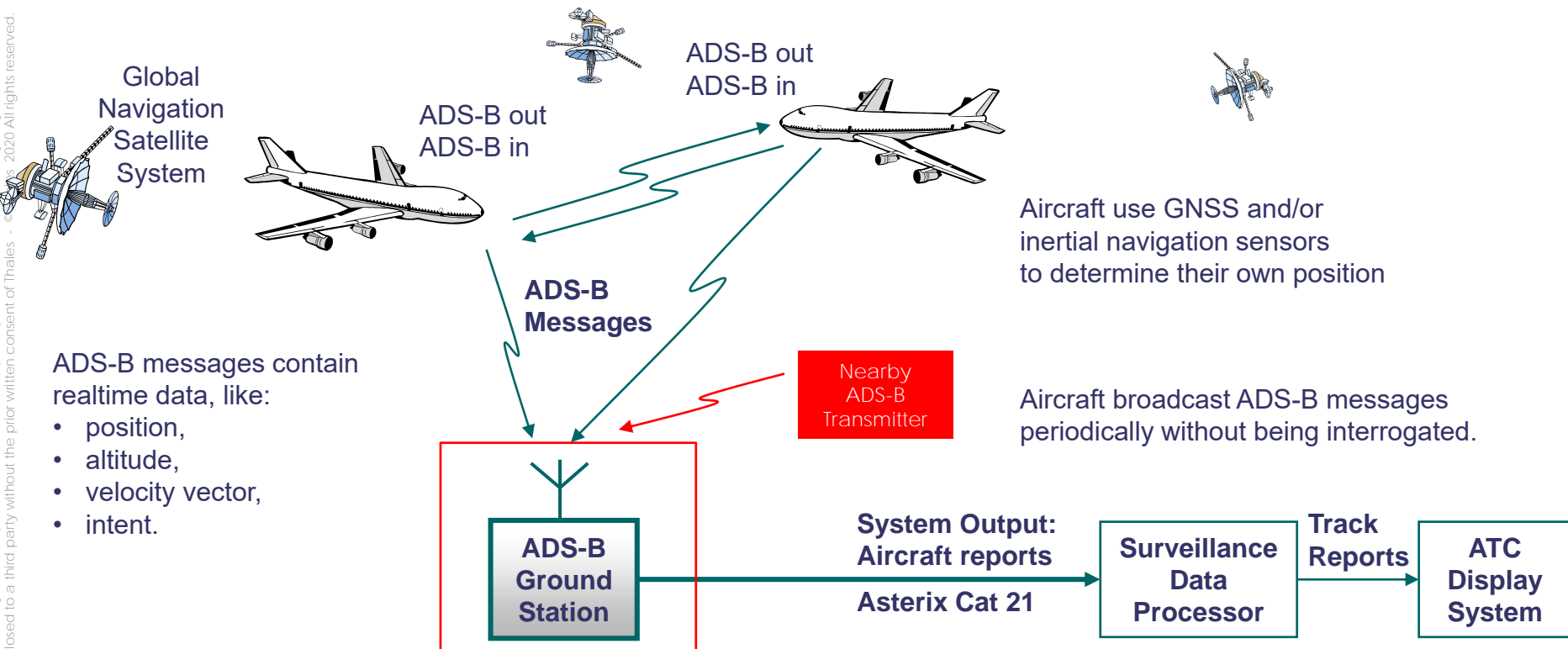


ADS-B Ground Station provides Asterix Target Reports



ADS-B Detecting GNSS Issues

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ADS-B messages contain realtime data, like:

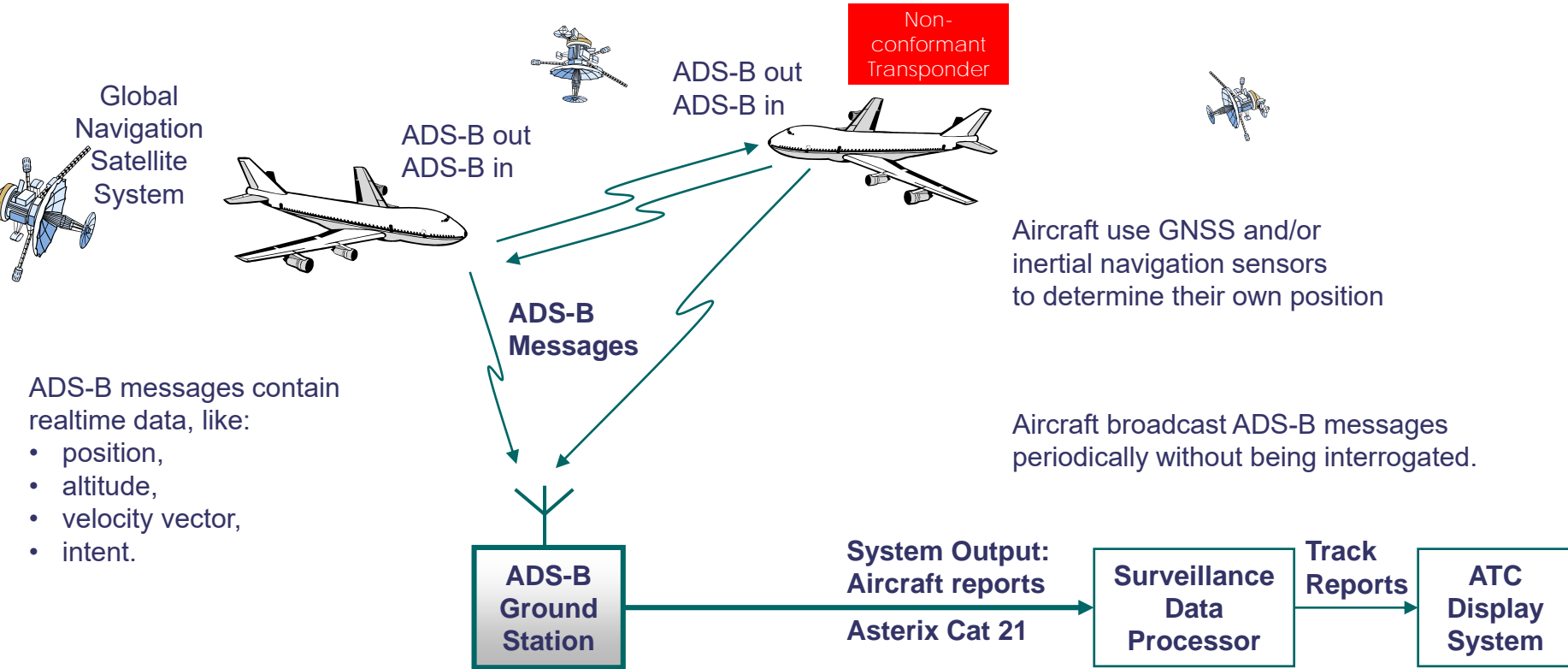
- position,
- altitude,
- velocity vector,
- intent.

ADS-B Ground Station provides Asterix Target Reports



ADS-B Detecting Transponder Conformance Issues

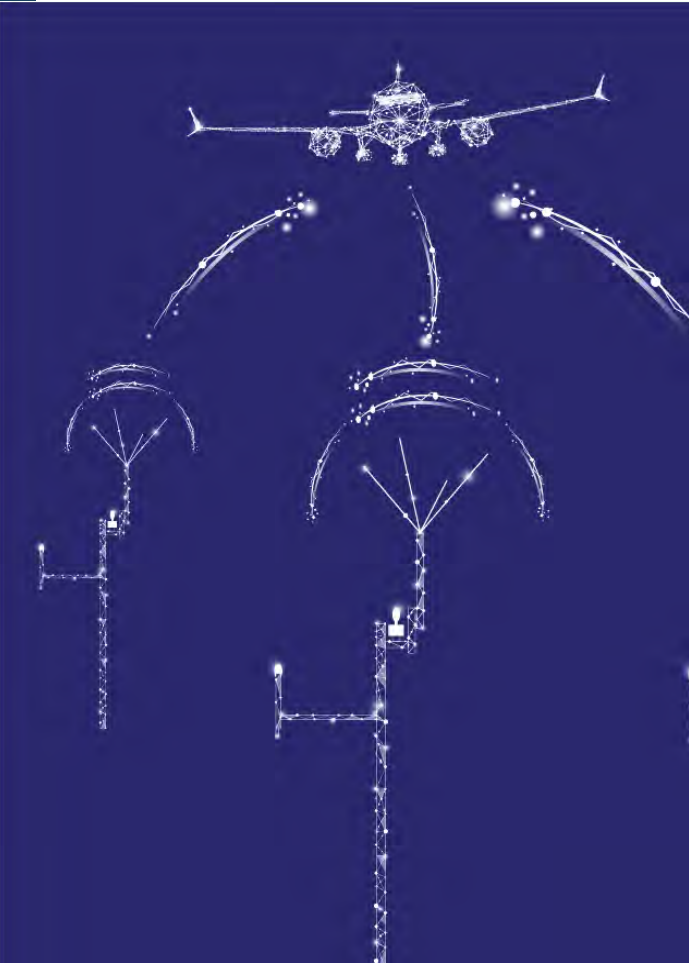
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ADS-B Ground Station provides Asterix Target Reports



ADS-B security investigations, with the right approach it will be safe



- Developed in cooperation with DFS & Eurocontrol
- Thales ADS-B secured ground station proven to detect various threats > front end
 - RF Security
 - Cyber Security
 - GNSS Issues monitoring
- Additional security features on Thales Central processing System > back end
 - Data from Ground Stations are validated against ADS-B threats
 - MLAT / WAM configuration rejects threats
- ADS-B can be used securely with appropriate protection

Spooing
Jamming
Data Modification
Target suppression

Detects also anomalies –
great for conformance
monitoring

Thales new ADS-B equipment

New generation of ADS-B ground station

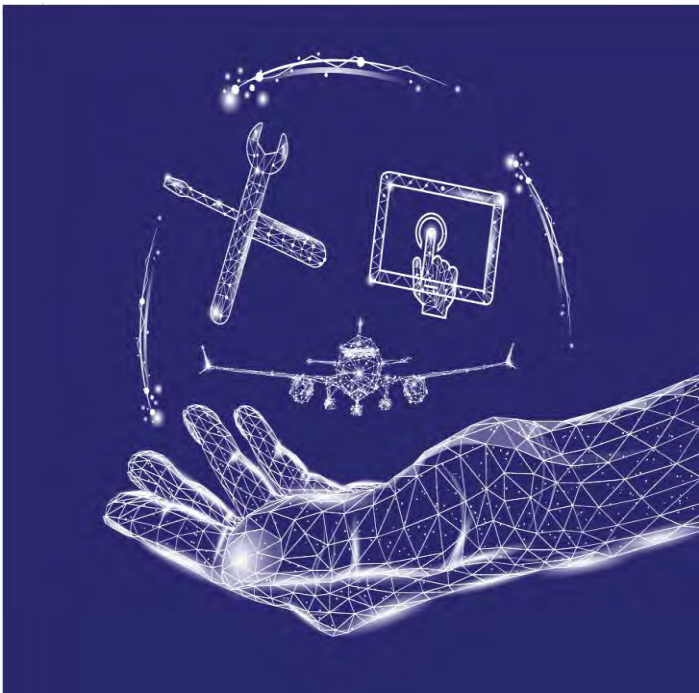
- Single/dual channel
- Optimized Indoor configuration & Outdoor configuration

New ADS-B Key features benefits

- + Core component: new SPB4
- + High Performance Receiver
- + AL4/ED109A compliant Software
- + Fully DO260B compliant
(DO260C in progress, field upgradable)
- + Autonomous ADS-B Processing
- + Dual Asterix Cat21 Output
- + Integrated security features
- + Full WAM / MLAT Processing



How to cope with non-ADS-B equipped aircraft in large airspace?



Combined ADS-B & WAM

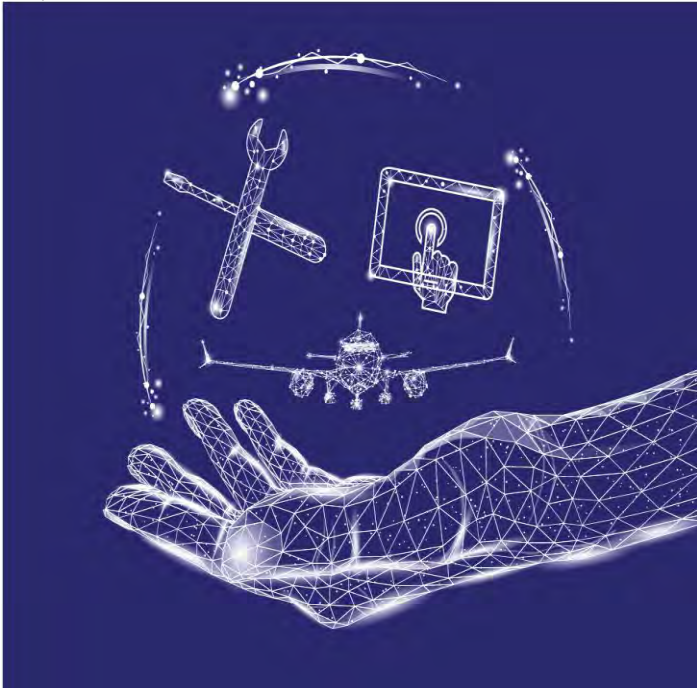
- Leverage on WAM inherent capability of Thales ADS-B ground stations

Innovate with ADS-B & Hybrid WAM

- Enlarge and extend your cross-border and shoreline coverage by combining Space-based and Terrestrial Systems
- Reduce site installations
- Achieve 100% coverage using ADS-B, Mode S, and Mode A/C transponders

With limited investments you can increase your Air Traffic Situation Awareness

Thales solution for Sustainable Investments



- Easy and flexible installation facilitating and enabling ADS-B implementation
- Combining - integrating different kind of sources (ADS-B, Mode S, Mode A/C, Space Based ADS-B) to facilitate transition to ADS-B mandate
- Delivering required Safety levels and reliable data according to defined quality of service parameters
- Future-proof, field upgradable to Phase Overlay implementation
- Supporting controlled Data Sharing using ADS-B data server
- Providing Cyber Security, Radio Frequency Security protection features and GNSS Monitoring

Let's join us and discuss on the future of ATM and register to the collaborative platform dedicated to ATCOs

<https://bst.thalesgroup.com/better-skies-together>

THALES

Launches

Better Skies Together

Empowering Controllers
for tomorrow's Air Traffic Management

Are you ready to build the future?

Air Traffic controllers making solutions
for increasingly complex airspaces

ATM made by controllers, for controllers

Pioneering a collaborative forum
to invent the future of ATM

Collaboration through every step

- Open discussions
- Share best practices
- Test future trends and systems
- Anticipate Innovation

Sky is the limit.



Question & Answer

Thank you for your
attention

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