AIDA-NG

Aeronautical Integrated Data Exchange Agent – Next Generation

AIDA-NG is Frequentis Comsoft's advanced and fully integrated AFTN/AMHS message switching system with a unified system management.

The Solution

AIDA-NG is a unified Message Handling System for AFTN, CIDIN, and AMHS, based on the ECG (EATM Communication Gateway) software designed in close cooperation with leading ANSPs, including DFS, NATS and EUROCONTROL.

AIDA-NG is the only AMHS/AFTN implementation on the market that provides fully integrated and uniform message handling facilities, such as efficient queue handling and tracing for all connected networks.

User Benefits

A harmonised supervision and message handling is possible thanks to the unified HMI which allows operators to supervise the system and handle all messages with the same operating philosophy for all components, irrespective of the message type (AFTN, CIDIN, AMHS).

This also allows incoming AFTN messages to be retrieved and related outgoing AMHS messages to be traced, and vice versa. With its easy to use SOAP interface AIDA-NG is the ideal platform for implementation of a SWIM/AMHS gateway.

Highlights

- Open and fault-tolerant architecture
- Proven interoperability and standard conformance with AFTN/CIDIN and AMHS
- Support of the Basic and Extended ATSMHS in conformance with ICAO Doc 9880
- Multi-site configuration management
- Available SOAP interface as foundation for integration with SWIM
- Excellent performance and throughput capacity service

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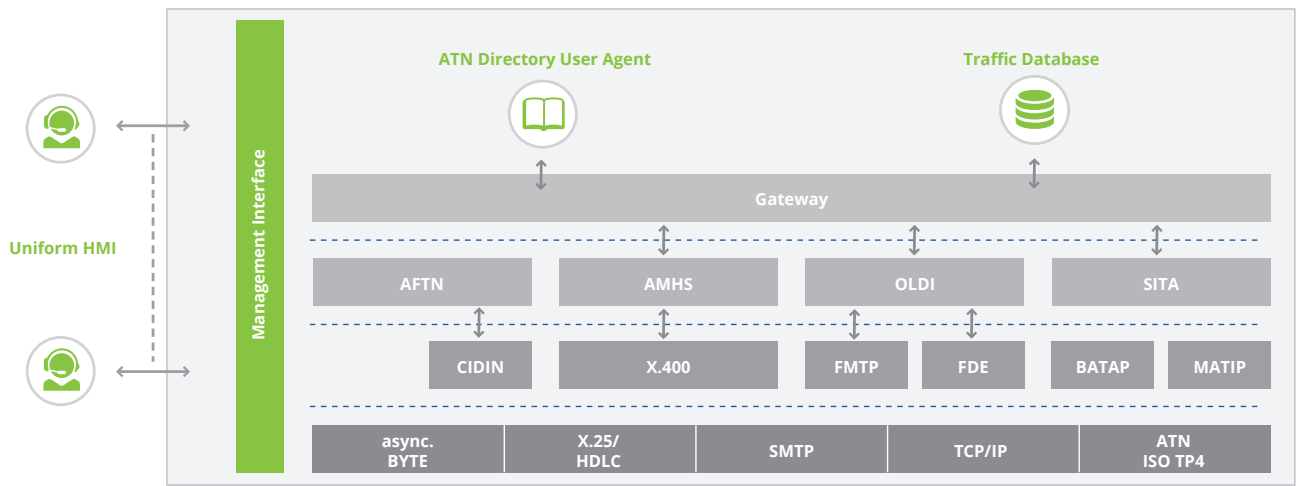
System Operation & Control

Key Features

Routing and Message Handling: Standard table-based routing functions are accomplished through the ability to copy, divert and pause messages. Pending messages in outgoing queues can be monitored online (per circuit), accessed directly and re-routed or redirected to other destinations, blocked and removed.

Best performance: AIDA-NG systems have been tested and approved to switch a permanent load of more than 900 messages per second. High message loads do not affect the exceptional response time of the Operator Working Positions. Overload situations are prevented by extensive flow control mechanisms.

Disaster Recovery: The smooth switchover from one site to another makes contingency management very swift and simple. Switching over the operational services can be performed within minutes.

System maintainability: A redundant central server for configuration and software deployment allows exchange of a failed server in approx. 15 minutes without service interruption. No manual installation required.

Ready for EDS: AIDA-NG provides access to the European Directory Service (EDS) using a fully compliant Directory User Agent (DUA).

References

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SDDS-NG

Surveillance Data Distribution

Frequentis Comsoft's SDDS-NG is a state-of-the-art solution for the easy and safe interconnection of any system that handles surveillance data.

The Solution

In ATC, the need to integrate an increasing number of surveillance systems is well-known. However, due to changing technologies and additional surveillance data users, the necessary stability of surveillance distribution environments is at risk.

SDDS-NG is the safe and scalable solution, catering for all current and future surveillance distribution needs by providing the single access point for surveillance data.

User Benefits

SDDS-NG is the result of Comsoft Solutions' long standing experience in surveillance data distribution. SDDS-NG increases the availability of surveillance data to all end users through load filtering and automatic switching.

By safely integrating legacy and new technologies into state-of-the-art surveillance networks the SDDS-NG user gains flexibility in its transition to new technologies, while still serving existing clients. The centralised monitoring, configuration and control of the entire surveillance data distribution environment supports efficient data management. As an application level gateway for surveillance data, SDDS-NG also provides security functions.

Highlights

- Centralised surveillance service provision
- Centralised system management
- Integrating homogenous system landscapes
- Transition support
- Data Validation, conversion and filtering
- Integrated ADS-B server

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Connects to any infrastructure
Flexible transition to new technologies
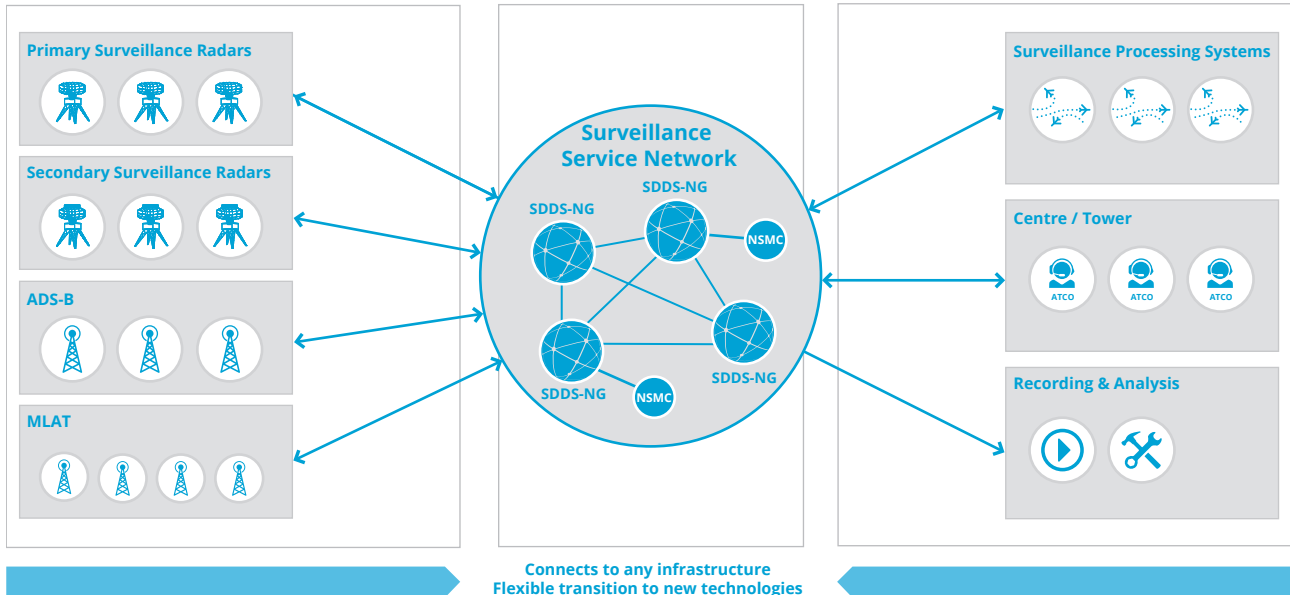
Key Features

Scalable: From one-box installations up to surveillance service networks with multiple redundant and load sharing network nodes.

Central Management: Through Frequentis Comsoft Network System Monitoring and Control (NSMC) different SDDS-NG tasks can be centrally controlled, monitored and configured.

Data Formats: Alongside its native ASTERIX, SDDS-NG supports legacy formats (CD2, Aircat, Eurocontrol, ...).

Protocols: SDDS-NG supports both LAN (UDP, TCP) and serial protocols (HDLC LAP-B, HDLC Frame and various proprietary protocols).

Conversions: SDDS-NG converts between legacy formats and ASTERIX, and between ASTERIX Categories or versions thereof.

Filtering: The flexible filter criteria of SDDS-NG also include geography and aircraft ID. Filters are configurable per end user.
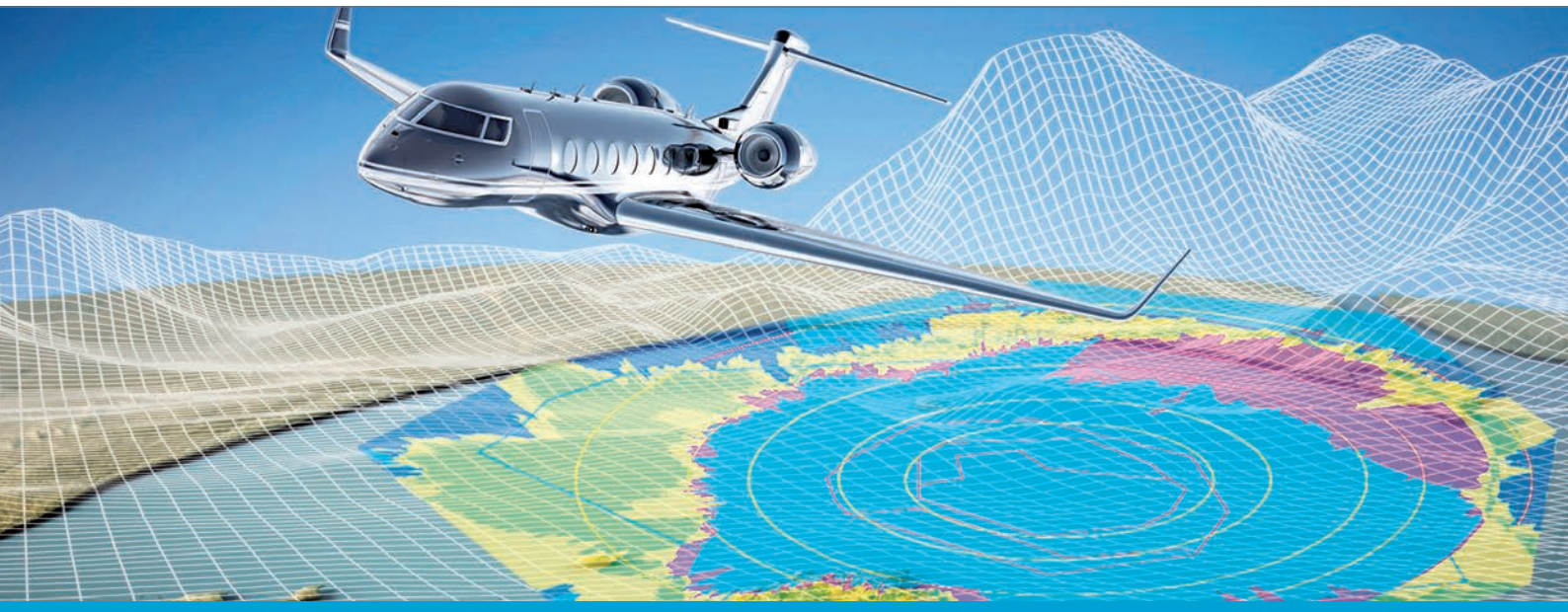
ADS-B Server: Generates a coherent, non-redundant air situation picture from multiple ADS-B sources with overlapping coverage.

Field Proven: Frequentis Comsoft has deployed turnkey SDDS-NG systems to over 35 sites worldwide.

References

Surveillance data distribution systems
& network references

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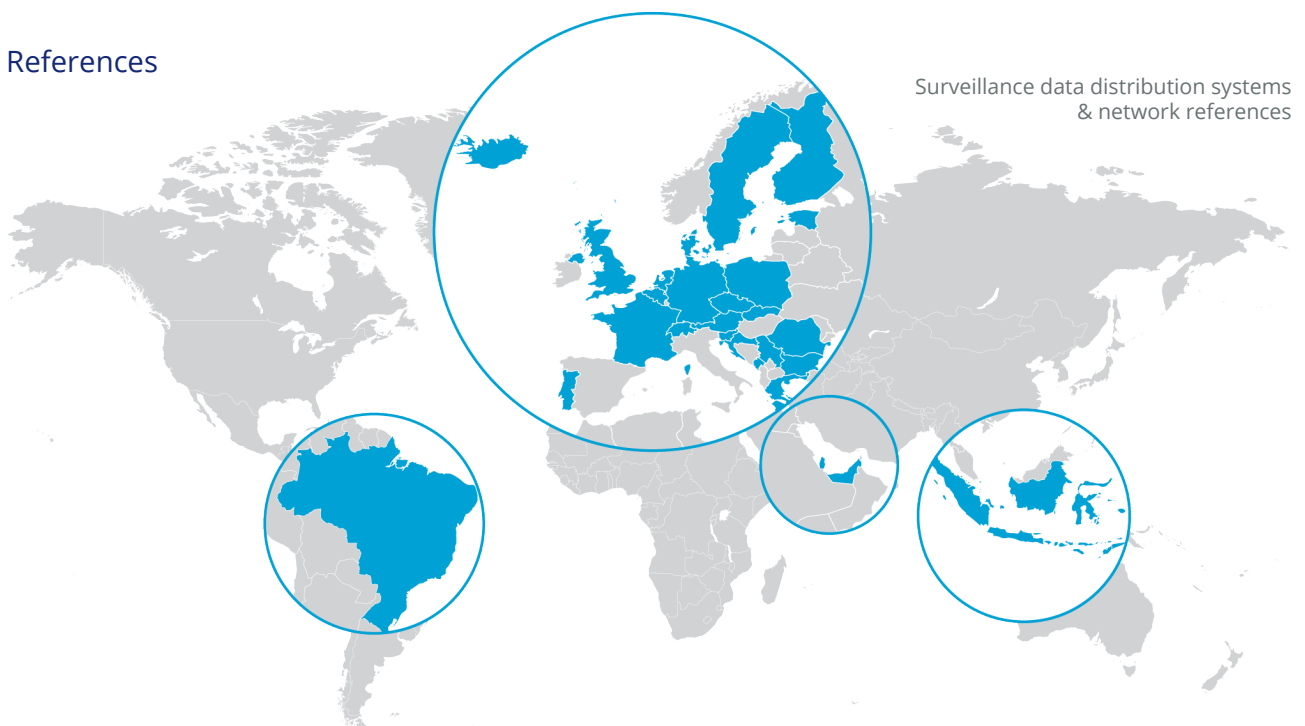
Quadrant

ADS-B and Multilateration Solution

Quadrant is a forward-thinking surveillance solution able to provide ADS-B and Multilateration on one single hardware platform.

The Solution

With Quadrant ADS-B surveillance infrastructures can be increased without costly investments like radar. Quadrant uses advanced algorithms to provide independent, genuine 3D, position measurement using Multilateration (MLAT) techniques.

A single Quadrant sensor allows surveillance coverage to be extended to areas where surveillance was previously unavailable. Adding additional sensors can inexpensively extend coverage further until overlapping surveillance allows the option to move to MLAT.

User Benefits

Quadrant is flexible, modular and scalable with the ability to transition seamlessly from ADS-B to MLAT using the same ground station equipment. It therefore also offers an attractive upgrade path to total SSR replacement.
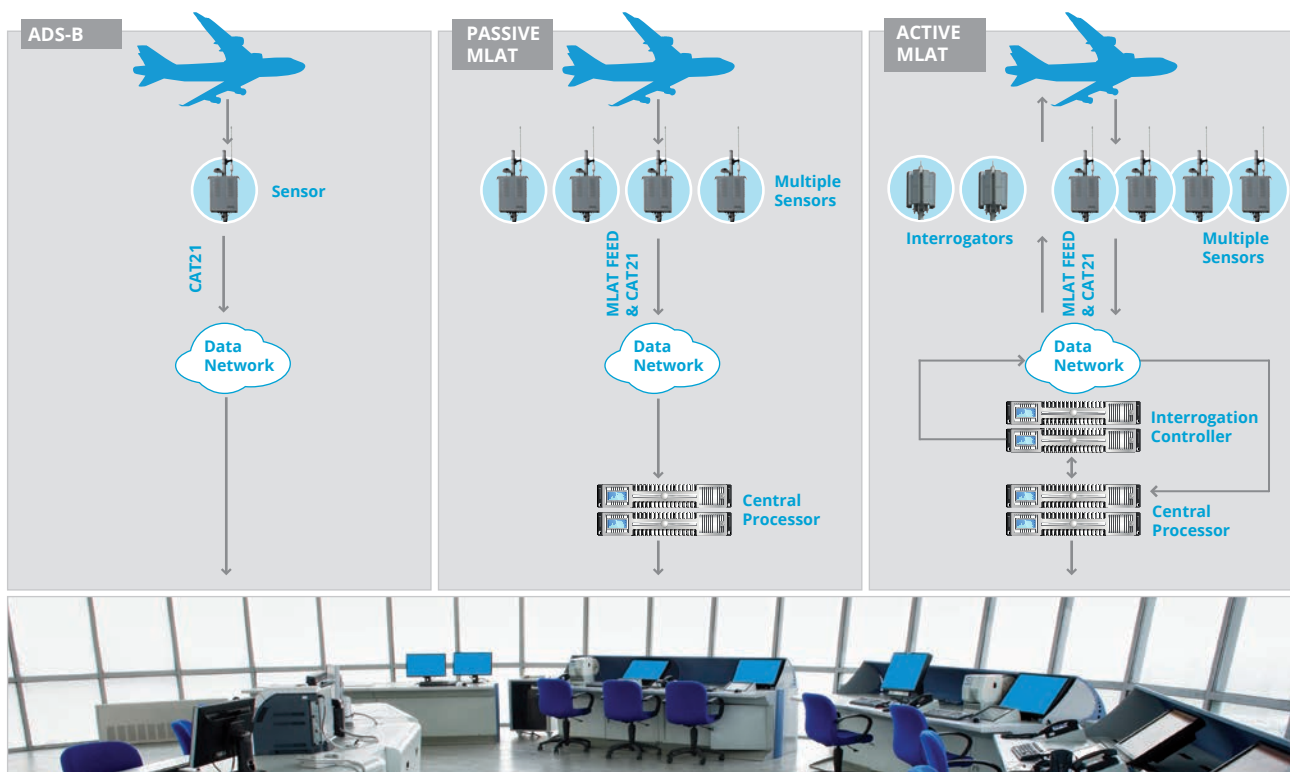
Its ability to provide a precise and high-quality air situation picture and high update rate with minimal investment, highlights it as a perfect solution for growing aviation demands.

MLAT meets the requirements for reduced separation, is suitable for surface-movement systems, and offers a level of redundancy due to its distributed network design.

Highlights

- Expandable and modular solution
- Dynamic management of interrogation patterns according to aircraft capabilities and current states
- Interrogation Power, Direction and Repetition Rate is managed dynamically
- High performance receiver
- Long term synchronisation after loss of GPS signal

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ADS-B

Sensor

CAT21

Data Network

PASSIVE MLAT

Multiple Sensors

MLAT FEED & CAT21

Data Network

Central Processor

ACTIVE MLAT

Interrogators

MLAT FEED & CAT21

Multiple Sensors

Data Network

Interrogation Controller

Central Processor

Key Features

Flexible solution: Identical hardware can be shared to support applications from A-SMGCS to countrywide Wide Area Multilateration..

Improved coverage: As an MLAT system it has an advantage for surveillance over difficult terrain, particularly mountain ranges.

Low maintenance: No moving or degradable parts, so only occasional external inspection for damage is required.

Expandable solution: Operating as a standalone ADS-B system, as a larger integrated solution, or as an MLAT network through the addition of further sensors, without upgrade or modification.

High precision: By providing more precise data, enhanced runway incursion alerts can be supported.

References

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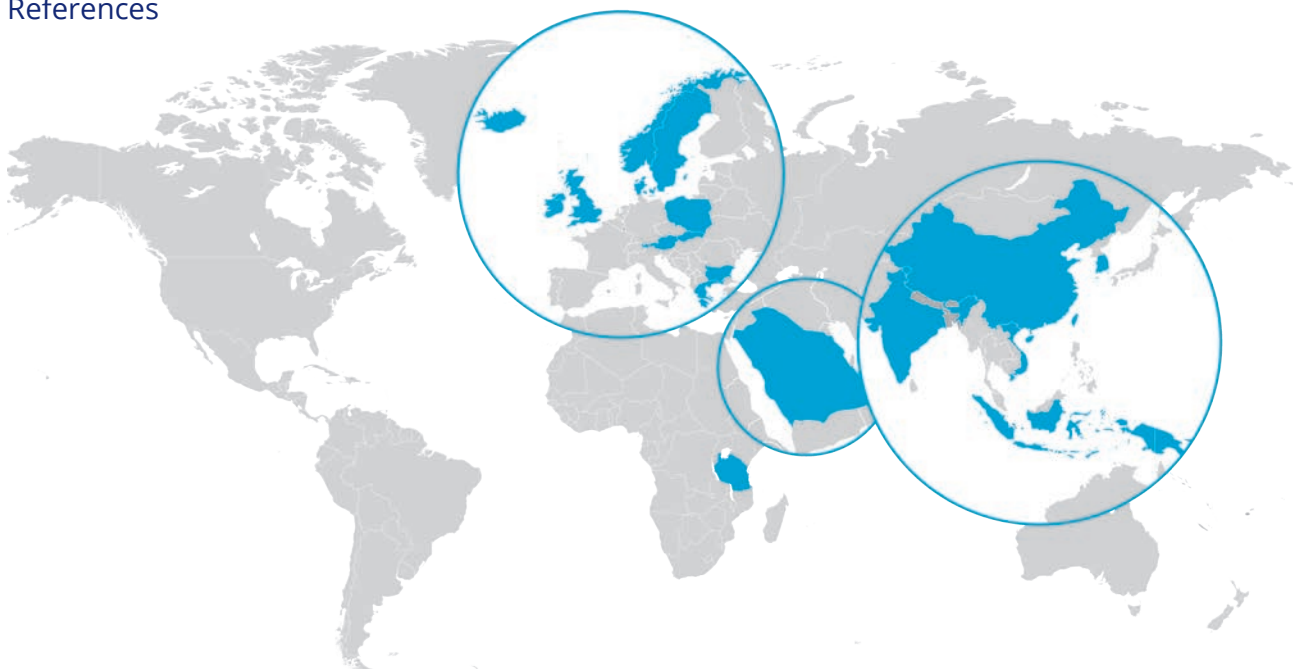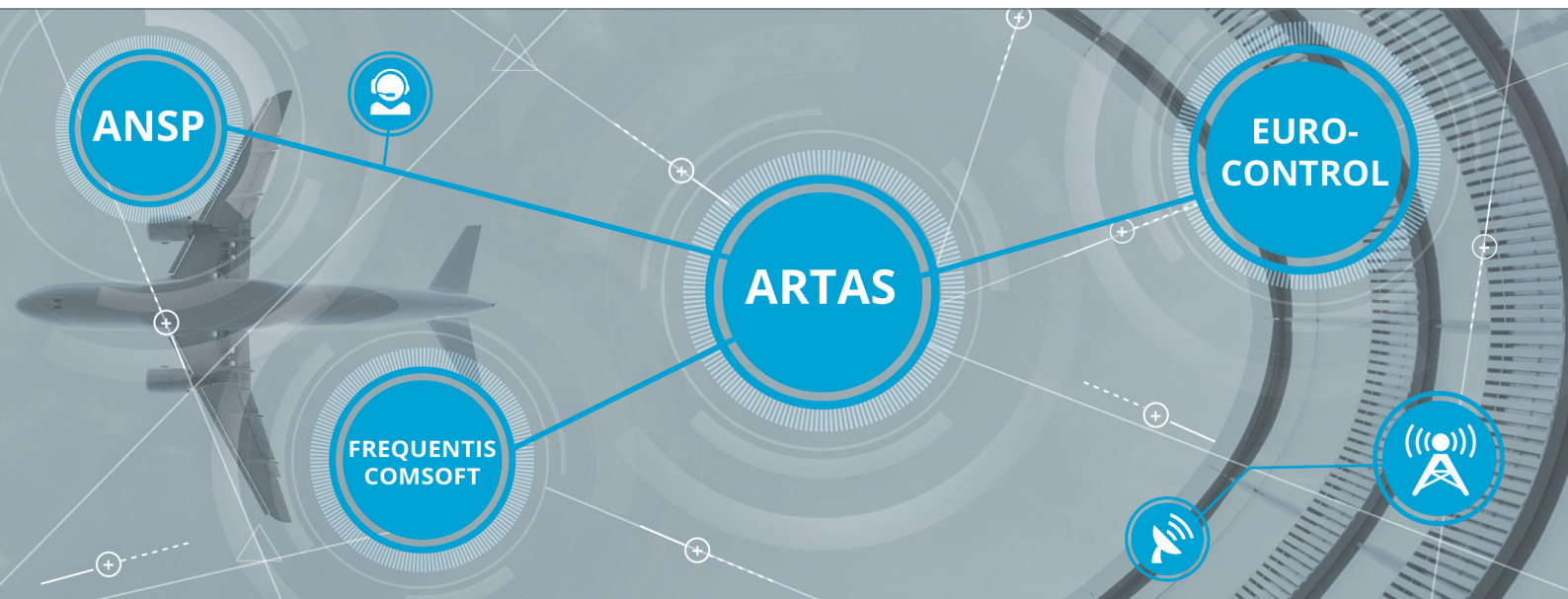
ARTAS Product & Services

EUROCONTROL's ATM surveillance tracker and server

Multi-sensor data fusion with highly-configurable track services
(PSR, SSR, Mode S, ADS-B, ADS-C, MLAT)

The Solution

Frequentis Comsoft is a turnkey supplier of EUROCONTROL's ATM Surveillance Tracker and Server, ARTAS – one of the most advanced and successful surveillance data processing systems world-wide.

ARTAS integrates all kinds of surveillance data sources and establishes a coherent and accurate Air Situation Picture for downstream systems.

User Benefits

Based on PSR, SSR, elementary and enhanced Mode S, ADS-B, ADS-C and Wide Area Multilateration (WAM) surveillance sources, ARTAS uses the latest tracking technologies to deliver an outstanding level of accuracy and reliability in data output.

ARTAS enables an efficient integration of ADS-B and Multilateration into existing surveillance infrastructures – minimising transition and maintenance risks and reducing costs. ARTAS tracking will be ready for Surface Movement Surveillance (SMS).
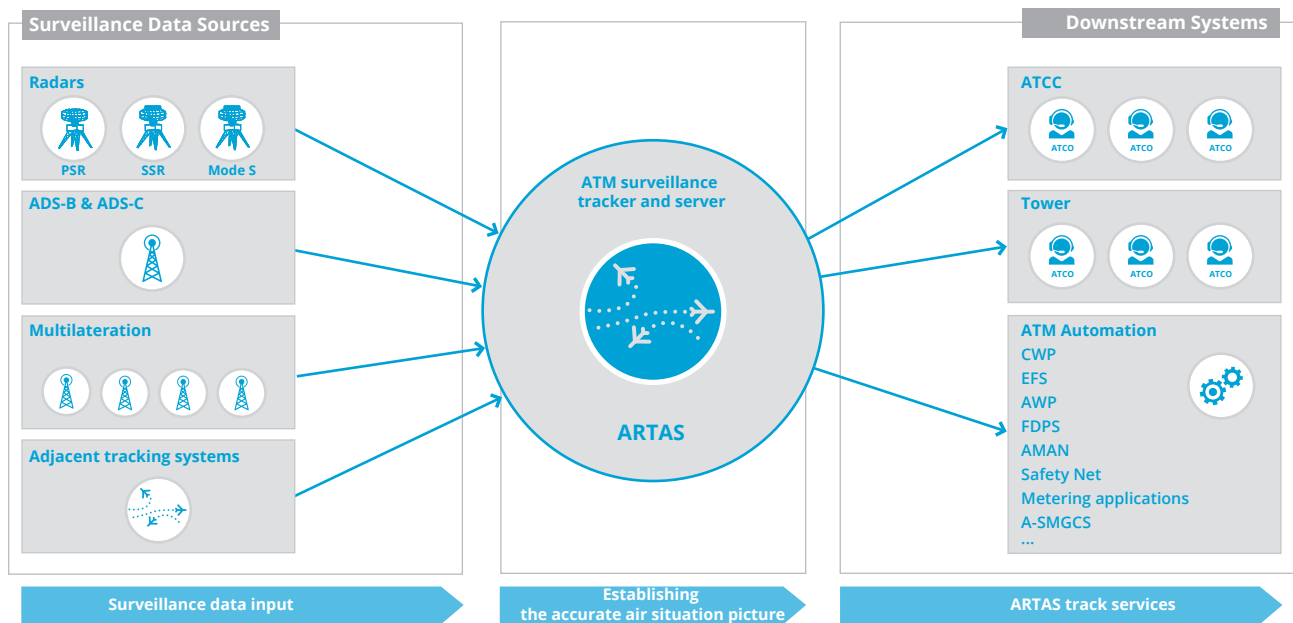
A key to the success of ARTAS is the Centralised ARTAS Maintenance and Support Service (CAMOS) for which Frequentis Comsoft is EUROCONTROL's industrial Partner.

Highlights

- Best-of-class Surveillance Tracker
- Used by almost all European ANSPs
- Proven quality & performance
- High accuracy & reliability
- Coherent surveillance coverage
- Seamless redundancy
- Centralised maintenance & support

Surveillance Data Sources / Downstream Systems

Radars
PSR | SSR | Mode S

ADS-B & ADS-C

Multilateration

Adjacent tracking systems

ATM surveillance tracker and server

ARTAS

ATCC
ATCO | ATCO | ATCO

Tower
ATCO | ATCO | ATCO

ATM Automation
CWP
EFS
AWP
FDPS
AMAN
Safety Net
Metering applications
A-SMGCS
...

Surveillance data input

Establishing
the accurate air situation picture

ARTAS track services

Key Features

Supported surveillance data sources: ARTAS processes PSR, SSR, CMB, Mode-S Elementary & Enhanced, 3D radar, ADS-B (1090 ES, VDL Mode 4, UAT), ADS-C feeds and Multilateration data.

Supported track services: ARTAS provides periodic and radar-synchronised track services, as well as asynchronous complementary track services and immediate update feeds.

Data formats: ARTAS employs ASTERIX as universal I/O format (categories 01, 02, 48, 34, 21, 23, 20, 19, 30, 31, 32, 62, 63, 65, 221, 252).

**System platforms:** ARTAS runs on LINUX platforms and standard servers, defined and validated by CAMOS.

Applications: ARTAS is intended for En-Route, TMA and approach control. ARTAS will also be enabled for Surface Movement Surveillance.

Scalable: ARTAS supports up to 255 surveillance data sources, 20+ simultaneous track services, up to 32000 concurrent tracks.

Tracking technology: Multiple Sensor Variable Update Tracker, EKF, JPDA, IMM, MHT, MSEA, DAP processing

ARTAS service portfolio: Frequentis Comsoft is EUROCONTROL's Industrial Partner for CAMOS, and offers in addition turnkey ARTAS installations, ARTAS Trainings and Tracker Tuning.

References

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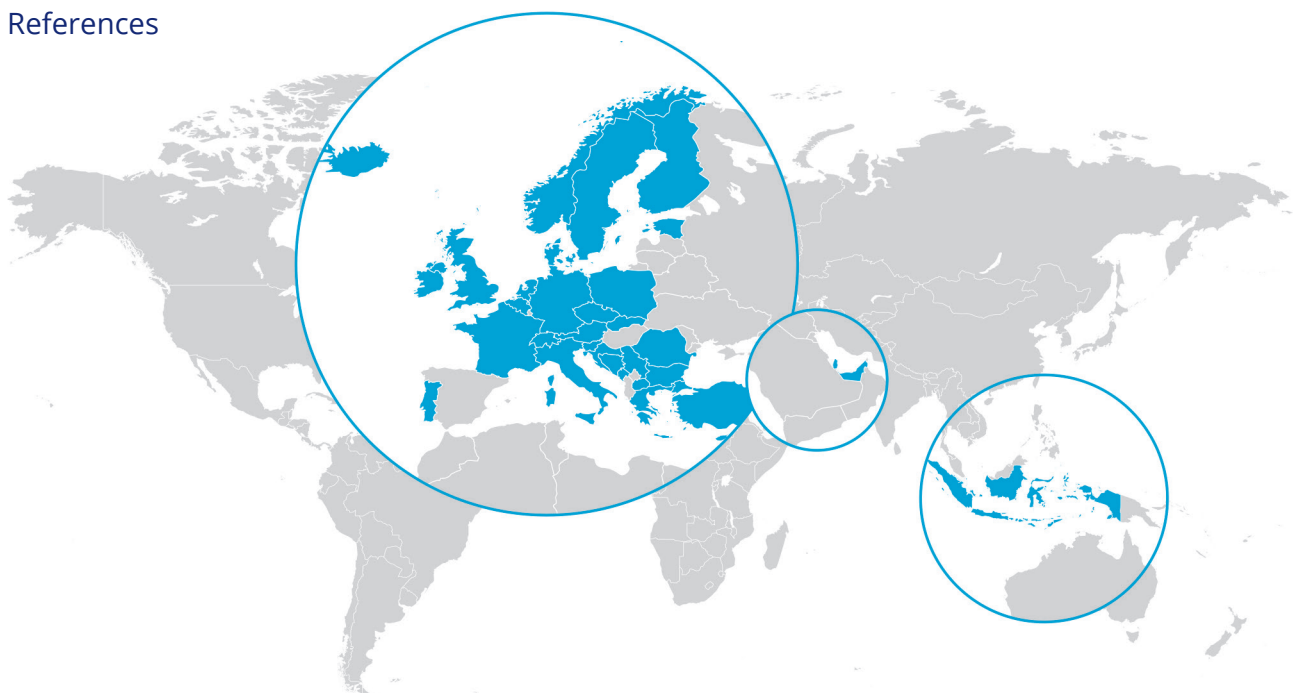
ASD

Air Situation Display

A high-performance, flexible and configurable HMI providing seamless air/ground awareness for Air Traffic Controllers and Aerodrome Flight Information Service Officers.

The Solution

Safe and efficient management of flights around aerodromes and en-route are dependent on real-time air traffic picture. The ASD consists of the main traffic window, enabling the controllers to stay focused on the traffic in the assigned area. Additional support sub-windows provide the right information at the right time, to significantly reduce controller's workload.
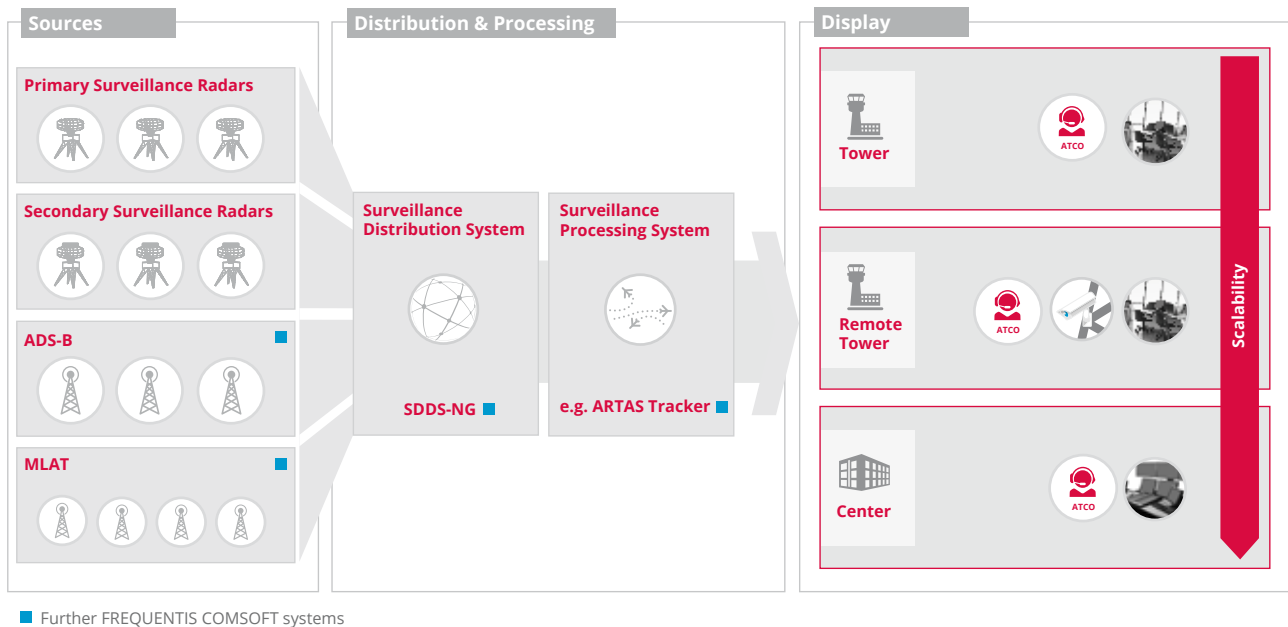
User Benefits

The optimised design of the head-up only display reduces the controller's work load. It is designed by controllers for controllers, driven by ATC operational experts. Considering both civil and military applications the ASD has also extended its range of open, flexible software modules like Safety Nets and Flight Data Processing. This enables scalability from the tower via approach to centre control applications. Tools available within the ASD allow the calculation and display of intercept vectors, and rulers to be drawn between several reference points or targets.

The built-in flight plan support allows operators to create, edit and save flight plans into an internal or external database.

Highlights

- Plug & Play installation (early operational readiness)

- Based on extensive experience in advanced air traffic automation systems

- Fully expandable and modular system design to add functionality (Buy-as-you-grow)

- Flexible configuration for tower-, approach- and en-route applications

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Sources
- Primary Surveillance Radars
- Secondary Surveillance Radars
- ADS-B ■
- MLAT ■

Distribution & Processing
- Surveillance Distribution System — SDDS-NG ■
- Surveillance Processing System — e.g. ARTAS Tracker ■

Display
- Tower — ATCO
- Remote Tower — ATCO
- Center — ATCO

Scalability

■ Further FREQUENTIS COMSOFT systems

Key Features

Modular system design: The modular system design enables optional functionality such as Short Term Conflict Alerts (STCA), Area Proximity Warnings (APW) and Minimum Safe Altitude Warnings (MSAW) to be added according to our buy-as-you grow strategy.

SafetyNet: The SafetyNet module displays a prominent visual warning on the screen, for acknowledgement by the operator, as well as a graphical representation of the conflicts while they persist.

Flight Plan Database: If a connection to the flight plan database is available data are matched against current aircraft tracks, using their call sign, Mode S address or Mode 3/A code. Additional information can be displayed in the label of the corresponding track.

Tools and applications: The ASD can be used for TWR, APP and ACC applications and contains numerous control support tools like contextual filtering.

Support information: Permanent display of critical and important information, intuitive access to ancillary information when required, highly customisable display (air situation display, labels, Flight Data display, flight lists), multiple ASD views: zoomed-in, tracking, are also available.

Selected References

Armasuisse, Switzerland: Supply of ASR and PSR display system for approach control system at military airfields at Emmen, Locarno, Meiringen, Payerne and Sion. Integrating working positions into the existing ATC and recording environment (R2D2).

GCAA, Abu Dhabi: ATC automation system at Sheikh Zayed Centre, Abu Dhabi. Pairing of surveillance data with up-to-date flight plans and presentation as integrated information to the ATCO. Includes Arrival Management (AMAN), Departure Flow Management and SafetyNets. First operational AMAN in the Middle East region.

LVNL, The Netherlands: Supply of ASD, CFEP (4x working positions per location) at Maastricht and Groningen. Major Upgrades: Mode-S integration.

AirNav, Indonesia: Backup System at Jakarta. Pairing of surveillance data with up-to-date flight plans and presentation as integrated information to the ATCO. Including Control & Monitoring, ARTAS Tracker and SafetyNets.