Drone detection and incident handling

Airport, ANSP and law enforcement

Clear KPIs, responsibilities and procedures across stakeholders

Full situational awareness integrating ATM/UTM

Efficient cross-agency incident management

FREQUENTIS

FOR A SAFER WORLD

Drones create a threat to the safety of air traffic

The rapidly growing number of UAVs also creates new challenges for the safety of air traffic. Non-cooperative UAVs (i.e. rogue drones) can cause major disruption at airports, which leads to diversion of traffic, cancellation of flights and closure of airports. Past incidents have painfully revealed this gap in security and the need for a comprehensive solution for drone detection and incident handling to recognise and manage incidents while keeping control of the situation.

Key challenges for airports and ANSPs

Collision
Rogue drones are a major threat to safe air traffic. Even a small drone crashing into an airplane can cause major damage and poses a threat to safety of flight.

Drone-sightings at airports are increasing and have caused major disruption. Near-misses of drones have tripled in the last two years.

Attack
Drones are a threat to the security at an airport. The required technology to equip drones with lethal payload is easily accessible and drone attacks are already commonplace in conflict areas.

A small amount of explosives can bring down a civilian aircraft and cause mass casualties. This is a major security threat to airports.

Operational and technical requirements

The large variation of drones in terms of size and technology creates a challenge for detection. Due to interference and congested environments, sensors alone cannot reliably detect drones.

Therefore, a robust drone detection solution must include:

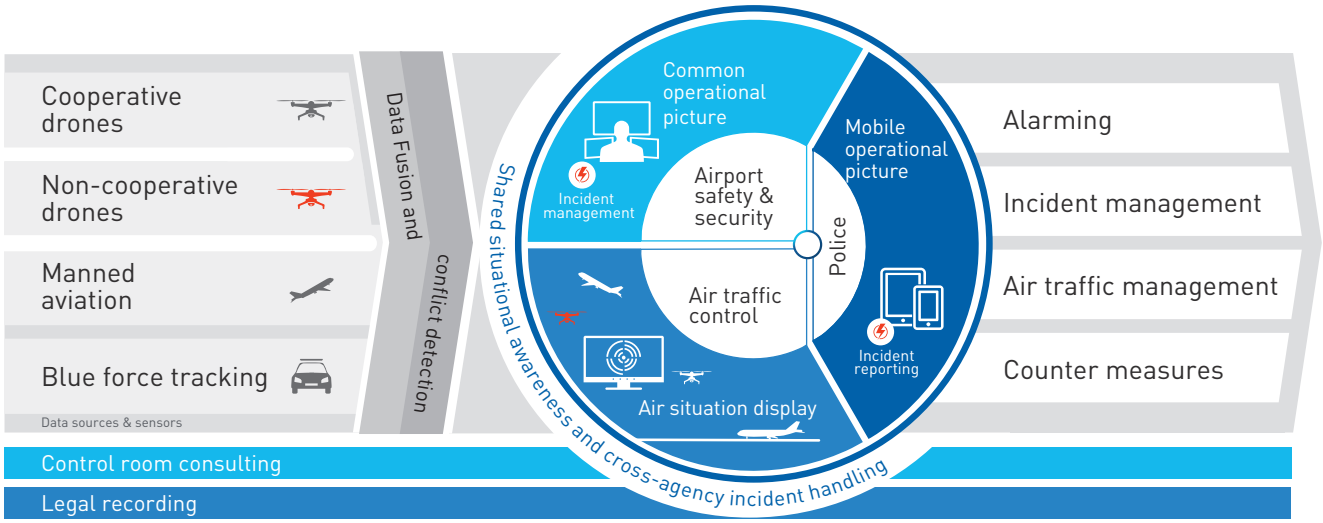
- multi-sensor fusion and detection of conflicts between manned aviation and non-cooperative drones,
- link to UTM systems to differentiate non-cooperative vs cooperative drones, and
- reports and visual observations of ground staff, pilots, police forces and other sources
- law enforcement units (blue force tracking) for automated dispatching.

Due to speed and flexibility of drones, reaction and resolution times are limited. A collaboration of airport security, air traffic management and security forces is a must for fast resolution of incidents. All agencies at all levels, including mobile staff, operation centres and decision makers, need to be connected through one cross-agency incident management system, which supports defined tasks, responsibilities and workflows.

Airports need to deal with a number of threat scenarios in day-to-day operations. Drone incidents are one of many threats, which needs to be addressed through a standardised tool and process.

Reliable detection and minimised resolution time

Frequentis' goal is to ensure an efficient management of drone incursions across all stakeholders. The solution creates the missing link between organisations (airports, ANSPs and law enforcement), existing infrastructure (ATC air situation, police and blue force tracking) and new systems (UTM and drone detection).



Full situational awareness

ATM-grade data fusion and correlation of cooperative and non-cooperative air traffic creates an enhanced situational picture and allows detection of anomalies and potential incidents. The integration of blue force tracking allows direct interaction with security forces close to ongoing incidents.

Fast resolution

The multi-airport capable incident management and communication system connects stakeholders across all hierarchies. Mobile devices allow coordination of security forces and reporting of observations. Enhanced air situation displays provide immediate information to ATC.

Increased interoperability

The ATM-grade data exchange platform integrates new and existing surveillance sources to create a standardised data source, which is used in all downstream systems in a harmonised way. This leads to a reduction of cost and vendor lock-in through an increase in interoperability.

Best use of sensors/effectors

A large selection of drone detection sensor and effector systems with varying capabilities are available in the market. Frequentis' independent experts will ensure customers receive the most suitable systems depending on operational, technical and commercial requirements.

Ensured user acceptance

Frequentis' control room consulting ensures thorough understanding of customer needs, KPIs, workflows and HMI requirements across all organisations involved. This ensures the solution is the best fit for its purpose, and maximises efficiency in incident handling procedures.

Seamless extendibility

The system is fully integrated with UTM and is able to share sensor data to coordinate responses. It is build to respond to multi threat scenarios and can be used as umbrella system for airport coordination centres or national incident and crisis centres.

Mature solution components used across industries

The Frequentis drone detection solution is based on mature solutions already in use operationally in the ATM industry. The integrated solution is tested and verified in trials with customers and research programs.

Data exchange platform

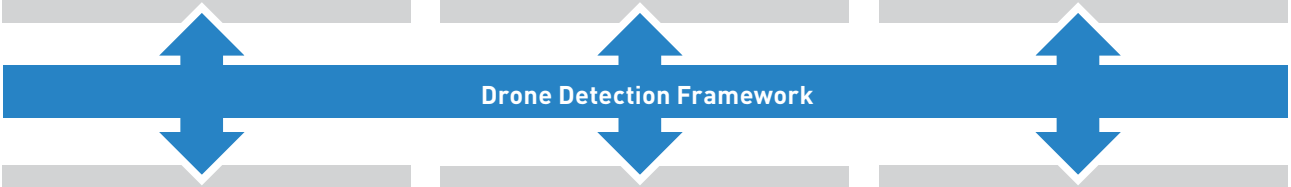
MosaiX SWIM is Frequentis' data exchange platform fusing drone detection with UTM, ATM and law enforcement data sources. It comes with a Service Registry which provides the tools for all the agencies to discover the services available by the publisher of services. SWIM MosaiX makes information available in near-real time to all stakeholders.

Operation centre and mobility

The drone detection operation centre and mobile solutions are based on the Frequentis Situational Awareness Framework. This framework enables complex incident management for National Air Policing, Search and Rescue and Railway Emergency Management. It is in use operationally worldwide.

Air situation display

The Frequentis Comsoft Air Situation Display (ASD) is integrating drones to provide situation awareness and SafetyNet functions to air traffic management. The high-performance, flexible and configurable HMI is one of the worldwide most trusted ASDs providing seamless air/ground awareness.



PTZ tracking and visual link

Visual PTZ control and visual object tracking is done with Frequentis smartVISION, which is the Remote Digital Tower product. It is tested and used at airports with complex ATC operations. Solutions are already in use safely managing IFR and VFR operations from remote positions all over the world.

Legal recording

Thorough documentation of all activities and events is a vital task for drone incidents. The market leading DIVOS logging system collects and archives phone and radio communication, while also capturing screens, giving operators and investigators easy access to securely stored information.

Control Room Consulting

With more than twenty years' experience, Frequentis Control Room consulting is ensuring best fit of purpose by using not only user-centric but also business process centric design. A rapidly growing number of customers appreciates this unique approach.

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