ANSPs UAS integration service platform

Common information system - CIS

Seamless information exchange

Cost-efficient integration into existing infrastructure

Cloud deployment and scalability

UAS Traffic Management

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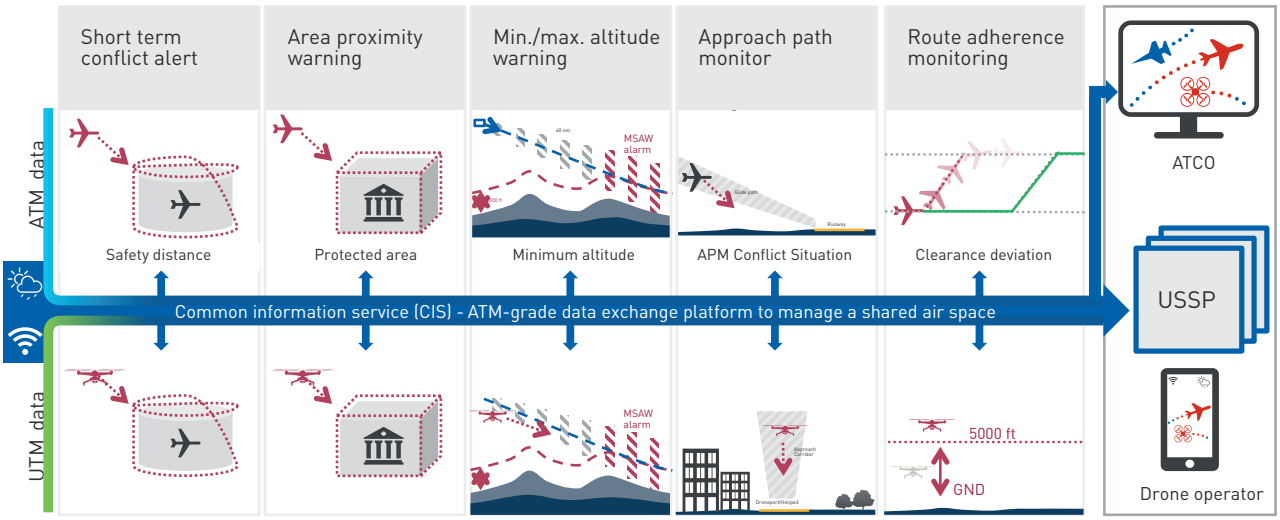
FOR A SAFER WORLD

ANSPs need to rethink before integrating UTM

Since airspace is a finite resource with a growing number of actors – including manned and unmanned commercial, general aviation and air sports, military and search & rescue operations – all wanting to use it, the ANSPs must have a mature framework that enables different categories of airspace users to share the airspace with a minimal level of segregation while ensuring fair and equitable access for all.

Safety, security and sustainable integration of unmanned aircraft into the airspace where manned aviation is likely to operate are key requirements for the UAS/U- space industry to move forward.

Challenges for seamless drone integration following the ATM masterplan



Example: Combined ATM/UTM SafetyNET service powered by MosaiX SWIM

The proposal on the future architecture of the European airspace developed by the SESAR Joint Undertaking, addresses the airspace capacity challenge in the short to long term. The proposal calls for combining airspace configuration and design with technologies to decouple service provision from local infrastructure and progressively increase the levels of collaboration and automation support.
The intention is to ensure that airspace is optimised according to operational needs, regardless of flight information regions (FIRs) or national boundaries made clear throughout the ATM master plan. The goal is the defragmentation of European skies through virtualisation and the free flow of data among trusted users across the network.This includes the development and implementation of a drone management system, in particular for but not limited to very low-level airspace, as well as provisions to integrate large remotely piloted aircraft systems into manned traffic, so called U-space.
The accommodation of aerial vehicles enables new opportunities for ANSPs to provide services. Digital transformation is the driving force behind innovation and business growth as new airspace users seek access to Europe's skies. New technology improves airspace efficiency and enhances safety. To ensure a seamless UTM integration, ANSPs need a common information system – CIS, enabling the optimisation and rationalisation of ATM and allowing airport operations' support services to move from physical to virtual infrastructures.

CIS as key enabler for ANSPs

Frequentis CIS (Common Information System) comes with the services required for the integration of Unmanned Traffic Management (UTM) with Air Traffic Management (ATM). The UTM Services and the translation between UTM and ATM require new service definitions, new data models and conversion rules between the two, along with seamless service interconnectivity.

Frequentis CIS offers ANSPs a ready-to-deploy backbone to bridge the UTM and ATM world, based on MosaiX SWIM and the UTM services required to manage drones safely alongside manned aviation. These have already been proven in live flight trials conducted between cities, and involving urban drone fleet operations in controlled airspace, beyond-visual-line-of-sight (BVLOS) operations stretching for more than 100km, maritime search-and-rescue operations (SAR), cooperative flight operations with general aviation and recreational remote control model hobbyists, and even an electric vertical take-off and landing (eVTOL) Air Taxi.

Digital data exchange platform – Frequentis CIS powered by MosaiX SWIM

UTM (USPs)

Frequentis CIS enables inter-USP communication through seamless interconnectivity via one harmonised data exchange platform, saving integration effort.

ATM (ANSPs)

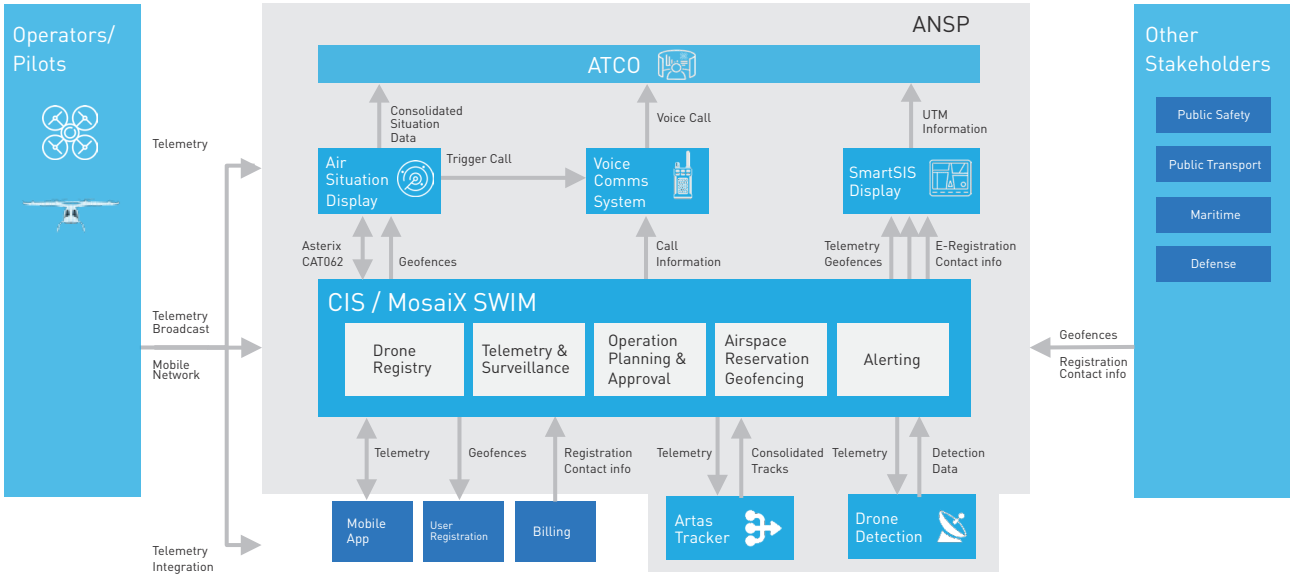
The data exchange platform fosters the creation of an ATM/UTM ecosystem of services for all stakeholders and USPs, while enabling ANSPs to provide/ implement future value-add service capabilities.

Emergency Services

Through Frequentis CIS, emergency services become airspace users for their drone operations and can integrate their control centre / dispatch solution with the common air situation picture.

Commercial users

Frequentis CIS ensures the seamless integration necessary to provide an intuitive user experience as well as communication and coordination services to end-users.



Partnering for successful UTM service provisioning

Frequentis' SWIM-based CIS platform comes with a truly modular and API-driven design, resulting in low vendor lock-in with the capability to replace and / or upgrade individual modules independently. Thus, Frequentis, any third-party organisation or the customer itself will be enabled to develop and add both ATM and UTM services to the CIS platform ensuring maximised cost-efficiency, flexibility and scalability depending on the customer's needs. It can be deployed on-premises or in the cloud as well as in a hybrid architecture.
A CIS-to-CIS connection enables a cross-border and FIR (Flight Information Region)-to-FIR operation as well as full situational awareness to all airspace users. Additional UTM services and components, e.g. precision weather, 3D mobile coverage charts, dynamic charts on aggregation of people can be integrated seamlessly, unlocking new capabilities for stakeholders.

Selected references

AIRlabs

The AIRlabs Austria infrastructure project aims to build up and operate test sites for Unmanned Aerial Systems (UAS) in an innovation lab in Austria, covering all development stages from simulation to actual state-of-the-art tests such as Beyond Visual Line Of Sight (BVLOS) drone missions, Urban Air Mobility, and UAS defence. As largest industrial partner in the FH JOANNEUM consortium consisting of 26 recognised partners, Frequentis will be responsible for the technical integration and operation of various interfaces with Austro Control. The five-year project thus brings together all key stakeholders in the UAS domain such as research institutions, industrial enterprises, and users to achieve the project goals: from research and development to validation and integration.

Gulf of Finland (GOF) U-space

With a broad consortium of 19 members and the demonstration of seven drone use cases, the GOF U-space project proves that Europe is on course with its implementation of U-space, an initiative that aims to ensure safe and secure drone traffic management, taking into account the rapid growth in the use of drones. The GOF concept enables shared situational awareness for all aviation stakeholders – the success of the project is based on deep ATM experience of the consortium members, developing interoperability and data-sharing solutions which are aligned with SESAR JU's overall U-space architecture. Frequentis provided the FIMS backbone, based on its MosaiX SWIM UTM/ATM Digital Data Platform, ensuring ATM-grade information exchange between various systems.

Avinor Air Navigation Services

Norway is on track to become the first Nordic country to implement a UTM system powered by Frequentis. This will open up the Norwegian airspace for advanced use of drones in the coming years. Frequentis will partner with the industry-leading UTM technology provider, Altitude Angel, for the deployment of the UTM solution, which will provide Norway's Avinor Air Navigation Services with a technically advanced UTM solution. This will allow the organisation to begin safely integrating drones into controlled airspace at 18 airports across Norway. Norway will be the first country in the Nordic region to implement a UTM system, highlighting Avinor Air Navigation Services' dedication to the industry.

The project is funded under the "Take off" programme of the Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Austrian Research Promotion Agency (FFG).

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FREQUENTIS

FREQUENTIS AG
Innovationsstraße 1
1100 Vienna, Austria
Tel: +43 1 811 50-0
www.frequentis.com