

ENABLING SCALABLE, COMMERCIAL USE OF DRONES

What is still needed to allow drone usage to scale safely, and can the aviation industry look forward to new revenue streams? Frequentis **Guenter Graf**, Vice President New Business Development, explains.



The aviation industry's digital transformation and the fast-evolving unmanned traffic management (UTM) market are additional drivers that call for harmonised data to be monetised by new services (i.e. for unmanned aerial vehicles (UAV) operators and airlines). A European drones outlook study estimates that the total market value of drones will be in excess of EUR 10 billion annually by 2035. There is therefore an opportunity to look at the airspace integration of drones with a view to providing air navigation service providers (ANSPs) with additional revenue streams.

The convergence of air traffic management (ATM) with unmanned traffic management (UTM) has already begun, with a high focus on safety on the one side and the dynamic digital world of UTM provision on the other side. This also includes the potential for new service provision.

For commercial drones to reach their full potential the challenge is still how to safely and securely integrate both ATM

and UTM and allow all users equal access to a harmonised and finite airspace. A high degree of digitalisation and automation is required for this.

Countries must be able to ensure a high degree of freedom to use the available airspace if it is to be economically sustainable. The key is to enable scalable commercial use of drones, safely and reliably and allow ANSPs to also provide services outside of the controlled airspace. So, what do we need to ensure the digital European sky is possible?

CONNECTED, AUTOMATED AND INTEGRATED

Frequentis is leveraging system wide information management (SWIM), which comes with service orientated architecture, reducing overheads, lowering integration costs, and allows the development of third-party tools to be added to the platform. An open and flexible micro-service infrastructure is key to future-proofing today's investments in ATM systems. The Frequentis MosaiX SWIM supports seamless information exchange between drone operators and air traffic controllers, creating a unified, shared understanding of the airspace situation. On top of MosaiX, tailored services can be developed for each entity in the value chain, ensuring a flexible but strong framework connecting to the airport efficiently. Essentially managing the airports "internet of things".

MosaiX SWIM comes with a service registry which provides the tools for all agencies to discover the services available by the publisher. As a single source of truth, MosaiX SIWM supports all the stakeholders in the ecosystem with a focus on data accuracy, integrity, consistency, and timeliness.

WORLDS-FIRST DRONE REGULATIONS

The worlds-first U-Space/UTM regulatory package, adopted by the European Union Aviation Safety Agency (EASA) will become applicable in early 2023, enabling drone operations to be safely integrated in urban environments.

U-space services were designed to support drones with safe, efficient, and secure access to the airspace to support routine drone operations. This requires extreme levels of digitalisation and automation, as well as an interface to the ATM network and its users and stakeholders.



In Norway, Frequentis has already provided an operational UTM system to Avinor air navigation services (ANS) consisting of the common information services (CIS) function and U-space service technologies. The system in Norway already follows ongoing regulatory work and is the first UTM system to receive CAA approval for the direct integration into the Norwegian ATM infrastructure. Norway is the first country in the Nordic region to implement a UTM system and is continuously extending its service portfolio towards authorities and commercial drone operators; This highlights Avinor ANS' dedication to the industry.

More recently, in May 2022, we announced a project with Austro Control, the Austrian ANSP, to launch a drone management solution for the safe integration of drones into Austrian airspace, to also be operational by early 2023. The new digital traffic management system will ensure that flight clearances for drones are handled faster and safer in an area shared by both manned and unmanned aircraft. Drone identification and restricted airspace warnings will be activated in the system, in-line with the aforementioned EU regulations currently being implemented.

PIONEERING

As well as the operational system in Norway Frequentis is also the largest industry partner in the Austrian AIRLabs project, aiming to build and operate test sites for Unmanned Aerial Systems (UAS), covering all development stages from simulation to actual state-of-the-art BVLOS drone missions. Dronecloud, the drone Flight Management Software provider, has also selected Frequentis to join Project Rise, a consortium funded by the UK Government, that will collaborate on the development of open standard integrations to help unlock Beyond Visual Line of Sight (BVLOS) drone flights in the UK. Through it's 'Future Flight Challenge' the consortium, including Sky-Drones, Skyports, Cranfield University, will deploy a standardised, automated, and integrated UTM service providing value add for all stakeholders of the commercial drone ecosystem.

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.

The provided services are developed based on the EU regulations and specific national legal frameworks, focussing on safety and business opportunities to support drone operations and close the gap between the demand and the authorising units.

To unlock the potential of automated flights and approvals, at the scale necessary for future demand, Frequentis supports an open market regime while offering ANSPs and authorised units a pathway to a secure and safe management of airspace.

PARTNERING FOR SUCCESS

At Frequentis we have the right skills and partnerships and can scale to provide safe and flexible solutions for commercial drone operators, ANSPs and other authorities in the ecosystem. As many European nations start to push ahead with their economic plans for the integration of drones to support industry and infrastructure, it is important to have a clear pathway for how to safely scale the integration and allow the flexible use of the airspace.

Aiding customer business processes, the Frequentis platform, MosaiX SWIM, provides the necessary data analytics and interfaces to billing tools, which supports the monetisation of the services, using various schemes such as pay-per-time or pay-per-hit.

With the right technology and the right vendor it is possible to close the value chain, from the commercial drone operator to the ANSP, and provide the right tools for other authorities in the UTM ecosystem to benefit not only in terms of a safer airspace, but one that also starts to pay them back.

Frequentis' safety-critical communication and information solutions leverage seventy-five years of cross-industry experience in civil aviation, defence, public safety, maritime and public transportation markets. The company has driven innovation throughout its history with many 'industry firsts'. This will continue as the industry evolves, with a focus on user-centric design that considers the controller in all it does.

More info: www.frequentis.com