ACCELERATED DRONE MANAGEMENT

Drone markets are reshaping airspace, increasing its complexity. Thomas Pilsl, Frequentis Vice President New Market Solutions, explains why new technologies should be adopted to ensure safety, situational awareness, and compliance.

The ability to manage crewed and uncrewed traffic in shared airspace is becoming increasingly complex thanks to the rapid growth in drone use cases.

The primary concern is safe integration. Important is the seamless information exchange between all stakeholders and procedures to ensure safe separation between drones and manned aircraft. For this, organisations must enhance their technological capabilities so that they can introduce drones both safely and efficiently. This has required the development of new technologies, which I want to talk a little about.

THE TECHNOLOGY

Both the aviation industry and drone users must adopt innovative technologies to ensure safe and fair access to the skies. To successfully operate drones, an organisation will need systems for voice and data communications, and uncrewed traffic management (UTM).

Frequentis has created a UTM suite of systems that support secure data exchange and access to UTM services. It facilitates a common information services (CIS) environment for all uncrewed aviation stakeholders.

The Frequentis UTM suite is available as a user-friendly and interactive mobile app and web portal, consisting of the UTM Operation Manager and the UTM Airspace Manager applications. the UTM Operation Manager caters to both business and private drone operators, providing a comprehensive suite of features designed to enhance airspace safety, and efficiency. The UTM Airspace Manager is an application used by Air Traffic Controllers (ATCO) to manage drones traffic within their area of responsibility.

With a secure open protocol, seamless data exchange between all relevant stakeholders, including government authorities, entrepreneurs, ATCOs, and drone operators can be ensured. A standout feature of the system is the drone map, which provides valuable insights into permanent and temporary flight restriction zones, permitted flight altitudes, flight registrations, airspace monitoring, and the ability to request flight plan approvals and take-off clearance. The interactive tools, accessible through the website and mobile app, ensure that drone operators have a comprehensive understanding of their operating environment, further enhancing safety and situational awareness.

WHO IS TAKING THE LEAP?

In Norway, rescue helicopters were finding it increasingly challenging to safeguard against drones before departing for an

Frequentis accelerated drone management has the ability to manage crewed and uncrewed traffic in a shared airspace

Norwegian Air Ambulance (NLA) operations from their Evenes base in Northern Norway

emergency due to a lack of real-time information. To solve this, we were able to implement a UTM system permitting data sharing between the drone pilot system and the helicopter emergency medical services to ensure both parties could see the other and be alerted of potential collisions. The drone warning system was first put into operation for testing in June, 2022, and was tested among selected users. In March 2023 the project was awarded the Overall Excellence ATM Award at Airspace World in Geneva. This has had a positive impact on public safety and the overall efficiency of these critical services, improving airspace visualisation for emergency helicopters as well as potentially police. It has enabled them to respond more quickly to emergencies and other high-priority tasks, without the added workload required to look for drones.

In Austria, the national railway operator, OBB, is researching the use of drones to inspect railway track, making the task more efficient as well as safer. Since November 2022 we have been researching the operational feasibility of hangar-based automated drone flights for automated track maintenance checks. This use case could benefit many other industries, like construction and agriculture, sending drones from the hanger to a certain point and back once checks have been completed. Over an initial period of one year, use cases such as incidents, checking route availability, forecasting and the effects of natural

hazards, inspection activities, and shunting operations will be practised. This is a great step forward for drone use in railways, aiming to make manual tasks more efficient, while enhancing safety.

In Estonia, our UTM suite has been recently implemented for Estonian Air Navigation Services (EANS). Users now have access to up-to-date drone flight information, can register themselves as operators and securely exchange data, monitor airspace conditions, file flight plans and even apply for take-off clearance. This solution marks a significant milestone in the development of uncrewed aviation services in Estonia and will transform the drone flying experience. Important is also the system's ability to support police and military drone operations.

THE FUTURE DRONE ECOSYSTEM

The predicted surge in drone usage has spurred on the need for innovative solutions that ensure safety, situational awareness, and compliance. As the boundaries between crewed and uncrewed traffic blur, it becomes paramount for both the aviation industry and drone users to embrace new technologies that enable harmonious coexistence in the skies.

By implementing an open, intuitive, and simple solution, ANSPs can safely and efficiently integrate drones into shared airspace while fostering

innovation and economic growth. Seamless integration and real-time data sharing is key, as well as an increasing level of automation to satisfy the steadily growing number of UAVs in a shared airspace. The convergence of ATM and UTM is a logical next step.

Prior to launching an operational drone system, organisations across all industry sectors can work with Frequentis to test and validate their use cases. Our long experience of working with ATM organisations gives us confidence that we can help other industries deploy drones without negative impacts on other air traffic. Solutions are available as on-premises and cloud-hosted deployments, as best suits the requirements of each customer.

ABOUT THOMAS PILSL

With a master's in computer sciences and economics, Thomas has over two decades of experience in the IT services industry, holding various operational and management positions. He joined Frequentis in 2016, in various roles before being appointed Vice President New Market Solutions in January 2023 to further grow the Frequentis UTM suite and other innovative solutions.

ABOUT FREQUENTIS

With over 75 years of cross-industry experience, Frequentis ATM ensures the safety of 95% of the world's passengers and aircraft, helping ANSPs worldwide efficiently deliver safer and more secure capacity for airspace users. Frequentis has been working with Nordic and Baltic stakeholders on the SESAR Gulf of Finland (GOF) U-space and GOF 2 projects, exploring the safe integration of drones, trialling and validating use cases in line with the U-space regulatory framework. ∎