



GOF U-space

Media Release

SESAR U-space demonstrations: Safe drone traffic integration in the Gulf of Finland (GOF)

Tallinn, 29/10/2018

The SESAR Joint Undertaking GOF U-space project in Estonia and Finland demonstrates that Europe is on course with its implementation of U-space, an initiative that aims to ensure safe and secure drone traffic management. The project therefore not only accelerates the realisation of manned and unmanned mobility in the lower airspace, taking into account the rapid growth in the use of drones, but also showcases the progress towards reaching the objective of a unified European airspace.

With a co-financing from the SESAR Joint Undertaking within the framework of the EU's Connecting Europe Facility programme, GOF U-space demonstrates and qualifies seven drone use cases, while addressing questions of safety, security, environment, as well as privacy and public perception. The use cases include international parcel delivery (up to 5 kg per flight) between Helsinki and Tallinn, urban drone fleet operations in Helsinki with Police intervention, urban drone fleet operations in Tallinn in controlled airspace, long range inspection flights in forestry and utility inspection in Finland, and maritime traffic surveillance combined with search-and-rescue over the Gulf of Finland. Apart from that, the consortium wants to demonstrate the use of UTM (Unmanned Traffic Management) for controlling drone taxi traffic by showing a live Drone Taxi flight from Helsinki-Vantaa airport to downtown Helsinki.

The GOF U-Space project at a glance

Flight Information Management System (FIMS) safe, cross-border drone operations

- ⇒ Integration of UTM and ATM systems
- ⇒ Cross-agency / country drone (UAV) information management system
- ⇒ Accessibility of a Common operational picture
- ⇒ Enable Joint Operations / authority collaboration

Large scale demonstration



UAV use-case demonstrations

 Urban drone fleet ops in Helsinki with <u>Police intervention</u>	 Co-operation with Search and Rescue forces and general air traffic (GA)	 Maritime traffic surveillance combined with border guards over Gulf of Finland	 International parcel delivery between Helsinki and Tallinn	 Urban drone fleet ops in Tallinn in controlled airspace	 100km+ inspection flights in forestry and utility inspection	 Urban Air Mobility flight from Helsinki-Vantaa airport to downtown Helsinki
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The U-space demonstrations show the fitness for purpose of combining commercial off the shelf (COTS) UTM components to demonstrate all phases of drone operations with a focus on pre-flight and flight execution. The U-space architecture is based on a federation of U-space service provider microservices to collectively manage all drone traffic in the same geographical region. U-space service providers will exchange information and coordinate themselves using new interoperable standards to be developed for the demonstration, allowing for automated drone traffic management and improved situational awareness among all U-space stakeholders.

The consortium includes U-space infrastructure members ANS Finland, Estonian ANS, AirMap, Altitude Angel, Fleetonomy, Frequentis, Robots Expert, and Unify. The Finnish communication authority Ficora, drone manufacturers Avartek, Threed Systems, VideoDrone, as well as drone operators BVdrone, CAFA Tech, Hepta Airborne, Helsinki Police Department, Estonian Police and Border Guard, Finnish Air Rescue Society, and drone taxi company Volocopter are also part of the consortium. While the Finnish Police is currently the largest drone operator in Finland, the Estonian Police and Border Guard are actively pursuing drone applications, too.

GOF is one of six SESAR U-space demonstrations, which over the course of the next 18 months will be carried out in rural locations and European cities including Belgium, Estonia, Finland France, Greece, Italy, the Netherlands, and Spain with the objective to showcase the readiness of U-space services to manage a broad range of drone operations and related services and their interaction with manned aviation.



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About SESAR

As the technological pillar of the Single European Sky initiative, SESAR aims to modernise and harmonise air traffic management in Europe. The SESAR Joint Undertaking (SESAR JU) was established in 2007 as a public-private partnership to support this endeavour. It does so by pooling the knowledge and resources of the entire ATM community in order to define, research, develop and validate innovative technological and operational solutions. The SESAR JU is also responsible for the execution of the European ATM Master Plan which defines the EU priorities for R&D and implementation. Founded by the European Union and Eurocontrol, the SESAR JU has 19 members, who together with their partners and affiliate associations will represent over 100 companies working in Europe and beyond. The SESAR JU also works closely with staff associations, regulators, airport operators and the scientific community.

About Lennuliiklusteeninduse AS (EANS)

Estonian Air Navigation Services (EANS, Lennuliiklusteeninduse Aktsiaselts) is efficiently operating public limited company acting under private law, which provides Air Navigation Services in Tallinn FIR and at Tallinn and Tartu aerodromes. The Company has a long and fruitful experience in the modernisation of Air Traffic Management (ATM) and Aeronautical Information Management (AIM) systems, airspace organisation and procedures design and implementation. EANS has experience in the realisation of EU funded development and implementation projects. In year 2013 new PRNAV/CDA procedures were implemented in Tallinn TMA and Sherpa project were successfully finalised– building capacity for SBAS LPV procedures design and implementation, ASM Tool as well as DLS service implementation. In 2012-2014 we worked on IDSG IDP implementation projects. EANS participates actively in different kinds of regional initiatives, i.e. Northern-European FAB implementation projects, in the projects of Borealis ANSPs alliance, particularly expanding the recently implemented NEFAB FRA into NEFRA and Borealis FRA initiatives.

About ANS Finland

ANS Finland is responsible for managing the use of Finnish airspace as well as providing air traffic control services at airports in Finland. En-route services include area control services in Finland, airspace management, aeronautical search and rescue and air traffic flow management. Our technological air navigation services maintains and develops all navigation, communication, surveillance and monitoring systems related to en-route services, such as the air traffic control and radar systems required for flight surveillance. Our customers include airports, the commercial aviation industry, the Finnish state's aviation operations and military aviation, general aviation and pilot training schools.



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About Robots Expert

Robots.Expert (REX) is a consultancy focused on unmanned aviation. REX help companies adopt new drone technology in their business, often through live demonstrations to jump-start understanding of the potential. Robots.expert main focus in the Nordic and Baltic countries is to advance a strong network with drone stakeholders in Europe. REX' personnel have a strong background in UAS, technology and strategy, as well as in project management to support the tasks of facilitating demonstrations and to manage large projects or consortia. Robots.expert is the ambassador in Finland for EIP-SCC Urban Air Mobility.

About Frequentis

Frequentis is an international supplier of communication and information systems for control centres with safety-critical tasks. These control centre solutions are developed and distributed by Frequentis in the business segments Air Traffic Management (civil and military air traffic control, and air defence) and Public Safety & Transport (police, fire and rescue services, emergency medical services, vessel traffic and railways). Frequentis maintains a worldwide network of subsidiaries and local representatives in more than fifty countries. The company's products and solutions are behind more than 25,000 operator positions in almost 140 countries. With this extensive portfolio, Frequentis is the leading provider of voice communication systems... all making our world a safer place every day! For more information, please visit www.frequentis.com

About Altitude Angel Limited

Altitude Angel is an aviation technology company delivering solutions that enable the safer integration and use of fully automated drones into airspace. Through its Airspace Management Operating System, GuardianUTM, they deliver the essential software 'building-blocks' that enable national deployments of U-space compatible services. One of Altitude Angel's core objectives is to accelerate the development of drone-related solutions by building and maintaining the many complex 'backend' services. These services provide the data, storage, identity and command & control structures required to deliver excellent experiences to users via on-board drone solutions and mobile applications. In synchronicity with changing global drone regulations, Altitude Angel has already built a number of key services focused on delivering our long-term vision: fully autonomous, safe control of drones. Altitude Angel's leadership team has a wealth of experience across technology industry, specialising in building massively scalable, secure and distributed cloud based services, and a passion for aviation.



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About AirMap Deutschland GmbH

AirMap is the world's leading airspace management platform for Unmanned Aircraft Systems (UAS), commonly known as drones. AirMap partners with civil aviation authorities, air navigation service providers, drone manufacturers and solutions developers, and enterprises to integrate drones safely into the airspace. Developed by experts in aviation, airspace management, drone technology, mobile network communication, automotive and policy, the AirMap UTM platform includes solutions for registry, geo-awareness, notification, authorization, and traffic deconfliction to support autonomous, BVLOS operations. AirMap UTM has been deployed worldwide, including Switzerland, Czech Republic, the United States, and Japan. Visit www.airmap.com for more information.

About Avartek

Avartek is a Limited Partnership company founded in 1996 in Finland. Avartek ky is based on Avaruustekniikka ky which has provided target drones for the Finnish Armed Forces since 1968. We have serviced and trained our customers since those days and manufactured and sold over 1000 UAVs. We develop and manufacture unmanned aerial systems for long range heavy duty use. Our unmanned systems are economical, easy to use and extremely durable. Our systems are designed to accommodate multiple sensors and to handle day in day out missions in very challenging conditions. Our systems are based on 50 years of military target drone experience. Our drones are used in extreme military conditions and in challenging weather conditions. Our experience is unique and makes the core of our offering.

About BVdrone

BVdrone is a BVLOS all-weather drone operator. BVdrone provides long-range, long-endurance operations for monitoring, remote sensing and surveillance missions, to create a new market for aerial work by lowering the cost, as well as provide services in conditions that civil, nonstate aviation normally does not operate in. BVdrone partners with other companies for sensor solutions and data processing. BVdrone is based in Finland.

About Cafat Technology

CAFA (Center of Automated Flights Applications) develops 3D maps for automated drone flights. CAFA 3D maps visualize drone flights in the true 3D environment. CAFA has developed a Tallinn 3D Map and its web application for drone operations (<https://cafa3d.com/3dpoc>). CAFA 3D map has also Google Earth 3D cities integration for planning low altitude drone operations in Europe and in USA. 3D Map is essential part of safe and efficient drone route and flight corridor planning.



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About Estonian Police and Border Guard Board (PPA)

Estonian Police and Border Guard Board is responsible for public order and general safety in Estonia. Estonian Police has been developing its capabilities to control public order by using Drones. Estonian Police and Border Guard Board has trained one hundred officers as Droneoperators who can use Drones on different cases (public events, security measures, search of lost people, boarder surveillance, technical crime investigation support and traffic accidents). Situation Pictures of flying objects is crucial part of possible counter measures. Estonian Police and Border Guard Board contributes to the project by organizing demos and testing different circumstances.

About Finnish Communications Regulatory Authority (FICORA)

FICORA is the regulator of spectrum, cyber security and communication markets in Finland. The authority's activities contribute to a reliable information society and secure the status and rights of users of communications services by ensuring that society, business and citizens have access to, for example fast and reliable telecommunications connections, effective communications markets, efficiently-used radio frequencies, numbers and codes, reasonablypriced communications services of good quality, versatile electronic media services, and objective information on the development, pricing and service level of communications markets and services. FICORA maintains an overview of the functionality of electronic communications networks and information security, and reports of eventual information security threats. One of FICORA's key performance targets is to support Finland in becoming the 5G technology leader and thereby ensure access to advanced electronic services for every member of society. FICORA functions under the Ministry of Transport and Communications Finland. Read more: <https://www.viestintavirasto.fi/en/index.html>

About The Finnish Air Rescue Society

The Finnish Air Rescue Society (SLPS) has 38 affiliate members, which will provide the actual aircraft and manpower to the project (test flights with general aviation aircraft, coordinated by SLPS). The Air Rescue Society is one of three coordination Societies of the Finnish Voluntary Rescue Service, a force of almost 20 000 voluntary persons, and is responsible of all Aviation operations of the Service. The Society maintains 35 readiness groups, with one 24/7 duty officer at the time to forward different flight operations asked by the Police and Fire Departments.

About Fleetonomy.AI Oy

Fleetonomy.ai Oy develops a remote operating platform for automated vehicle fleets for vehicle fleet operators. Platform manages key issues in the automated vehicle operator environment including regulation, exception and responsibility management while keeping the human in the loop. Foundations rest upon innovations in interactive 3D control systems for display and analytics of complex data sets for managing fleets of automated vehicles and airborne drones.



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About Helsinki Police Department

There are tens of trained officers as Drone-operators in Helsinki Police. Helsinki PD has approximately ten drones for operative purposes 24/7. They are in use almost every day - especially in public events, security measures, searching lost people, barricade situations, supporting technical crime investigations etc. for three years now.

About Hepta Airborne

Hepta Airborne, a leading robotics and Big Data company, has developed the next generation power line inspection technology. The technology consists of in-house developed 6 hour long-duration UAV, upgraded measurement sensors and autonomous post-flight data analysis platform. The whole system inspects hundreds of kilometres autonomously and analyses the collected data. Utilities and Network operators receive a detailed overview of their assets, automated defect reports and detailed vegetation analysis.

About Threed Systems

Threed Systems specializes in developing, producing, and operating Unmanned Aircraft Systems (UAS) that are designed for information collection and exploitation in military, governmental and civil applications. Threed supports the decision-making process on every level of command. Threed Systems is known for rapid product development and tailor made UAS solutions for small multirotors, fixed-wing UAV platforms, and in-house developed subsystems. Threed System designs, develops, manufactures and operates Unmanned Aircraft Systems and subsystems for information collection, surveillance and other tasks related to unmanned sensing including VLOS and BVLOS operations.

About Unifly

Unifly is the leading Unmanned Traffic Management software developer, deploying the new unmanned eco-system on a national scale in four countries. Since the foundation of the company, Unifly continuously works on upgrading this system according to the U-Space blueprint. Due to the step-by-step approach, Unifly can easily integrate legislation and airspace for specific countries and stakeholders. Since 2015, Unifly participates in Horizon2020 projects, targeting specific requirements of the Unmanned Traffic Management system.

About VideoDrone

VideoDrone Finland Oy has designed and manufactured multicopters for professional applications since 2011 and as a limited liability company since 2013. The drones are completely designed, manufactured and tested by our experts. Our drones are used currently for various technical inspections, land survey and planning, orthoimaging and point cloud processing, oil and other environmental accidents, accident investigation and surveillance. Our customer base includes land surveying professionals, companies,



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municipalities, educational institutions and farmers. VideoDrone delivery is always a complete, tested and ready-to-fly package to help the customers together with the operational training.

About Volocopter

Volocopter is developing autonomous air taxi services, to supplement public transportation in large cities. Their Mobility as a service solution will be sustainable, quiet, and time efficient. The Volocopter resembles a helicopter but is based on drone technology, it is electrically powered, and much safer due to multiple redundancy in all flight critical systems. As true pioneers, Volocopter has been flying regularly since 2011, both piloted and autonomously. The first commercial routes are planned to be up and running by in 2022.

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