



GOF 2.0 – Integrated Urban Airspace Validation

September - October 2021: Very Large Demonstrations taking place in Estonia, Finland, Poland, Austria (Wave 1)

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The future of transportation

The future of transportation lies in the third dimension – the sky – and will revolutionise the way we perceive urban mobility. 15 scientific and commercial partners from the drone and aviation industry will use their expertise and technology for the safe, secure and sustainable integration of unmanned aerial vehicles and air taxi operations in urban airspace.

What is GOF 2.0?

With the further enhancement of unmanned aerial vehicles and air taxis in the rapidly growing drone market comes the need for the evolution of technology and framework conditions for their safe coexistence with manned aircraft. This requires a change in the way airspace is managed. A new environment and updated framework conditions must be developed in U-space, where we integrate unmanned traffic management and air traffic management for their safe coexistence.

The GOF 2.0 Integrated Urban Airspace Very Large-Scale Demonstration is a SESAR Joint Undertaking project focusing on the safe, secure, and sustainable integration of unmanned aerial vehicle and air taxi operations in urban airspace, including airport environments. GOF 2.0 is a follow-up to the SESAR JU GOF U-space project, which successfully demonstrated the safe airspace integration of unmanned aerial vehicles in summer 2019.

GOF 2.0 will contribute to developing and enabling future U-space, supporting the work of the SESAR JU, EASA, EUROCONTROL, European Commission, EUROCAE, EUSCG, Air Navigation Service Providers, and National Aviation Authorities.

Why GOF 2.0?

The European Commission has identified an increasing demand for the non-segregated use of airspace, which is being driven by a rapidly growing market of Very-Low-Level (VLL) airspace users, most of which are expected to be unmanned aerial vehicles, commonly known as drones.

Via the roadmap for the safe integration of drones into all classes of airspace, within the European ATM Master Plan, the European Commission seeks assurance that this rapid growth of airspace use happens in a safe and controlled manner. Building on the key learnings and results of the SESAR JU GOF U-space project, GOF 2.0 intends to demonstrate the operational validity of serving unmanned aerial systems and manned operations safely, securely, and sustainably in a unified, dense urban airspace using existing air traffic management and U-space services and systems.



The future of transportation

Why GOF 2.0?

GOF 2.0 is an important enabler for the further development of the drone market and will deliver the technical components (services, software, competencies, practices) required to provide innovative strategic and tactical deconfliction services to demonstrate how both manned and unmanned aircraft can safely share the same airspace, which is needed to cost-efficiently operate autonomous and semi-autonomous drones beyond visual line of sight (BVLOS) in urban, low-level airspace.

GOF 2.0 will help implement U-space in the future. The regulatory landscape will be combined with technological solutions built on open architecture in order to enable cost-effective U-space service provision and rapid deployment across European Member States through simple integration with existing airspace and urban data.

The SESAR JU project creates safe conditions for all stakeholders to learn and gain a better understanding of the current opportunities and challenges when implementing U-space. The aim is to test and validate existing solutions in operational settings with real-life use cases and to evaluate the maturity of these solutions.



Timeline of live trials

GOF 2.0 kicked off at the beginning of 2021. Live trials will take place in 2021 and 2022, with the first wave of trials happening in September and October 2021. During the live trials in four European countries, GOF 2.0 will gather experience from integration into the airspace in different countries and environments.

Where and when will the test flights take place?

Planned date	Back up-date	Place	Country	Trial Type*
2 September	3 September	Tartu	Estonia	2
13 September	14 September	Tallinn	Estonia	1
21 September	22 September	Helsinki	Finland	1
22 September	23 September	Tallinn-Helsinki	International	3
29 September	30 Sept to 1 Oct	Kąkolewo	Poland	2
5 October	6 October	Klagenfurt	Austria	1

*Please find a description of the Trial Types on the next pages.



What will be demonstrated?

Trial 1 – Tallinn, Estonia, 13-14 September; Helsinki, Finland, 21-22 September; Klagenfurt, Austria, 5-6 October

The focus of Trial 1 is operations in dense environments, such as inside controlled airspace and close to or in aerodromes. For Urban Air Mobility to become a transportation system, it must be integrated with other transportation infrastructure, such as airports, harbours, train/bus terminals, as well as logistics centres. The ability of logistics drones to form a seamless transportation chain in and out of airports is therefore of utmost importance.

Use cases and scenarios during live demonstration:

- Large number of automated parcel delivery drones operating at low level
- Unexpected 'HEMS' (Helicopter Emergency Medical Services) flights
- eVTOL (electrical vertical take-off and landing) intra-urban flight
- Drone surveillance flights in urban area
- Tourist drones doing ex tempore photography flights
- Regular traffic arriving at and departing from international airport



What will be demonstrated?

Trial 2 – Tartu, Estonia, 2-3 September; Kałolewo, Poland, 29-30 September

The focus of Trial 2 is entry to and exit from defined airspaces. The trials will demonstrate how manned and unmanned aviation can enter and leave various types of airspace, such as controlled/uncontrolled airspace and U-space airspace.

Use cases and scenarios during live demonstration:

- Large number of automated parcel delivery drones operating at low level
- eVTOL intra-urban and peri-urban flights
- Long endurance drone surveillance flights above 150 m altitude
- Drone c
- Drone mapping flights (construction, infrastructure, agriculture)
- Unexpected 'HEMS' (Helicopter Emergency Medical Services) flights



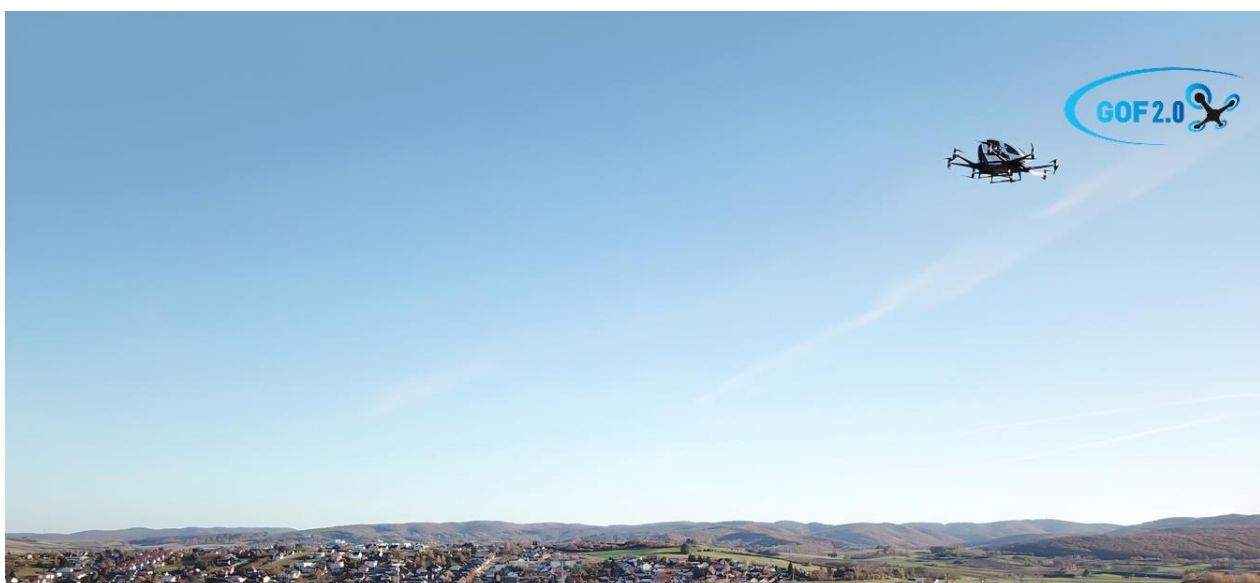
What will be demonstrated?

Trial 3 – International route from Helsinki-Tallinn, 22-23 September

The focus of Trial 3 cross-border operations in U-space corridors with mixed eVTOL and drone traffic. The trial will be conducted between two geographical locations separated by ca 80 km: Tallinn, Estonia and Helsinki, Finland.

Use cases and scenarios during live demonstration:

- Cross-border drone delivery flights between Estonia and Finland
- eVTOL intercity/international flight
- Drone delivery from city harbour to ship under international flag



GOF 2.0 consortium members



Estonian Air Navigation Services (EANS)

Airbus Urban Mobility GmbH

Aviamaps Ltd

CAFA Tech

Dimetor

Droneradar Sp. z o.o

EHang (Nasdaq: EH)

Fintraffic ANS

Frequentis

Poznan Supercomputing and Networking Center (PSNC)

Polish Air Navigation Services Agency

Robots Expert Finland Oy (REX)

Threod Systems

Unmanned Life

Vaisala

