

CONTEXT & AMBITIONS

The growth of the drone economy and the implementation of Urban Air Mobility require a new air traffic management framework for low-altitude operations. This framework, known as U-space, involves a range of digital and automated services aimed at providing safe, efficient, and secure access to airspace for a large number of drones. It will accommodate routine missions in any class of airspace and environment while ensuring compatibility with manned aviation and air traffic control. To achieve this vision, demonstrators will play a crucial role, bridging the gap between research and industrialization, and promoting market uptake.

In this context, ÉALÚ-AER's ambition is to demonstrate U-space architecture operations (U1 and U2 services) and the integration with ATM, establishing Ireland's first Digital Sky Demonstrator.

RELATED GLOBAL ACTIVITIES & PROJECTS

The project will coordinate with wider global activities carried out by EASA, CINEA and other European Agencies, ICAO, EUROCAE, ASTM, ISO, EUROCONTROL and other SESAR Digital Sky Demonstrators addressing U-space and urban air mobility such as U-ELCOM and BURDI.

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CONSORTIUM



START NOVEMBER 2022
END OCTOBER 2025

ÉALÚ-AER

Enhanced Automation for U-Space/ATM integration



Deploy and demonstrate U-space
architecture building Ireland's
first Digital Sky Demonstrator



Funded by
the European Union

This project has received funding from the SESAR Joint Undertaking under the European Union's Connecting Europe Facility programme under the grant agreement N° 101079674.

OBJECTIVES

U-SPACE ARCHITECTURE

ÉALÚ-AER will build an infrastructure platform using state of the art drone traffic management technology solutions, including a fully functioning vertiport, a U-Space platform, a backhaul network, communications and surveillance equipment, and advanced three-dimensional phased array radar. Throughout, four technology integration phases are foreseen:

PHASE 1

A VLOS (Visual Line of Sight) flight based on the simplest CONOPS (Concept of Operations), uses WebUAS connectivity to the ground control station and Shannon Air Traffic Control through the ARINC Global Network Point of Presence and Network Monitoring.

PHASE 2

Addition of Skyler Surveillance and EVLOS (Extended Visual Line of Sight) utilizing the demo drones embedded C2 (Command & Control).

PHASE 3

Integration of CNPC (Control and Non-Payload Communication) C2 ground network and integration of CNPC onto a test platform.

PHASE 4

Additional BVLOS (Beyond Visual Line of Sight) corridors to another county.

DEMONSTRATIONS

ÉALÚ-AER will execute five use cases of Urban Air Mobility (UAM) that capture the operational requirements, vehicle dynamics, and technology demonstrations associated with the projected near-term UAM services market.

USE CASE 1 - BVLOS Validation

- VLOS flight, ≈0.5km inside controlled airspace (Shannon)
- EVLOS (with 3 VO) flight, ≈3.27km inside controlled airspace (Shannon)

USE CASE 2 - BVLOS Expansion

- BVLOS flight, ≈13.6km inside controlled airspace (Shannon)

USE CASE 3 - Remote BVLOS

- BVLOS flight, ≈16.40km inside controlled airspace (Shannon)

USE CASE 4 - BVLOS Cross Jurisdiction

- BVLOS flight, ≈71 km inside controlled airspace (Shannon-Kerry)

USE CASE 5 - Remote/Mobile Launch

- BVLOS flight ≈33.01km inside controlled airspace (Shannon)
- BVLOS flight ≈19km inside controlled airspace (Shannon)

PUBLIC ACCEPTANCE

Citizens' and future users' confidence and acceptance will be critical to UAM success. ÉALÚ-AER will perform a comprehensive study on the societal acceptance of UAM operations across Ireland, examining the attitudes, expectations and concerns of citizens with respect to UAM, new business models and technologies. New roles and major changes in future workforce's skills and competencies needed will be also assessed.

COORDINATION & HARMONISATION

ÉALÚ-AER will establish a coordination process with the other Digital Sky Demonstrator projects and various regulatory and standardisation bodies to ensure consistency, integration, and consolidation at a pan-European level.