



ENAIRe tests urban air mobility with air taxis, drones and conventional aviation

- The ATLAS Centre in Villacarrillo, Jaén, will be home to the tests of the European U-space4UAM project, with ENAIRe taking part as the air navigation service provider
- U-space4UAM studies the future of urban air mobility integrated with manned air traffic
- ENAIRe air traffic controllers will activate a virtual geo-fence to protect a landing helicopter from an intruding drone, and flight manoeuvres by an air taxi to evade a drone

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ENAIRe continues to test the European U-Space system, which will regulate how drones are integrated into conventional air traffic. U-space is the set of services and procedures that are being developed in a coordinated manner to enable a high number of operations with unmanned aircraft, especially complex operations, in a way that is orderly, fluid, safe and attainable.

Today and tomorrow, ENAIRe is taking part in the validation of the U-space4UAM project, which has demonstrations in four countries, with the ATLAS Centre in Villacarrillo, Jaén, hosting the one in Spain.

These demonstrations involve both drones and urban air mobility (UAM) vehicles. They cover different use cases, including mixed operations, so the project can collect results that are applicable across Europe. The goal is to increase social acceptance by users to allow U-Space and the autonomy of these aircraft to develop sufficiently to show that their onboard systems are suitable for U-Space services and provide the required safety levels.

At the ATLAS Centre in Villacarrillo, ENAIRe and the other U-space4UAM members hope to demonstrate the benefits of using a U-Space platform and

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its associated services to manage a large number of remotely piloted aircraft (UAS) and air taxi operations.

Automated manoeuvres

ENAIRe is studying how the benefits of the U-Space system in controlled airspace will allow processes that are now manual to be automated, and response times to be improved. Similarly, the desired safe integration of drones and manned traffic will be subject to coordination between air navigation service providers.

U-space4UAM has a budget of 4 million euros from Horizon 2020 European research funds, within the SESAR Joint Undertaking public-private partnership, and is led by Honeywell.

U-space4UAM studies operational concepts, regulations and standards for the safe and orderly integration of UAM into daily air traffic. It is doing so with a forward-looking consortium of cities and air navigation providers, such as Austro Control, Air Navigation Services of the Czech Republic, and ENAIRe, national regulators and the European Aviation Safety Agency (EASA), a manager of unmanned air traffic, as well as manufacturers of eVTOL (electric vertical take-off and landing aircraft), research centres and technology providers such as CRIDA, ENAIRe's R&D subsidiary, the Polytechnic University of Madrid, and Ineco, which is responsible for collecting the data.

Scenarios tested in Jaén:

Case 1: creation of a geo-fence

A helicopter needs to land in a U-Space area within a controlled airspace. ENAIRe's air control creates a geo-fence that virtually restricts the landing area to keep drones out of that airspace. The geo-fence is shown to interfere with the route of an air taxi, which deviates around it. Once the helicopter is on the ground, the geo-fence is deactivated.

Case 2: conflict in controlled airspace

The system on board the air taxi detects a conflict with an intruding drone in controlled airspace and must perform an evasive manoeuvre that will force it to exit the defined flight corridor. ENAIRe air traffic controllers coordinate with nearby (simulated) aircraft and the air taxi returns to its approved route once the conflict clears.

Case 3: route change due to unavailability of destination vertiport

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The air taxi sees that the destination vertiport is not available and must change its flight path to a secondary vertiport. To do this, ENAIRe's air control service creates a dynamic corridor that protects the operation to the new destination and coordinates with nearby manned aircraft. All of it simulated.

U-Space projects and news

Last June, the Ministry of Transport, Mobility and Urban Agenda (Mitma) published the U-Space National Deployment Plan in Spain (PANDU), available on the [Mitma website](#), the challenge of which is to coordinate the deployment of this system between public bodies with different functions and responsibilities.

As part of the Plan, ENAIRe aims to be certified as the sole common information services provider (CISP) to disseminate static and dynamic data that will allow U-space services to be provided.

ENAIRe recently participated in the demonstrations in Santiago de Compostela and the Rozas aerodrome in Lugo of the AMU-LED project, financed by the European Horizon 2020 programme and led by NTT Data, which relied on the GammaSim control simulation tool and air traffic controllers at the Santiago Airport to test the integration of an emergency helicopter and five drone operators in controlled airspace in various scenarios.

In November, it will be the turn of U-ELCOME, led by EUROCONTROL, with a budget of 14 million euros and an execution timeline through October 2025, where ENAIRe will act as the national coordinator, with eight locations in Spain, five in Italy and four in France.

About ENAIRe

ENAIRe is the air navigation service provider in Spain.

As a company of the Ministry of Transport, Mobility and the Urban Agenda, it provides en route control services for all flights and overflights from five control centres in Madrid, Barcelona, Seville, Gran Canaria and Palma, as well as approach services to every airport in the country.

In addition, 45 control towers receive ENAIRe's communication, navigation and surveillance services, and 21 airports, including the country's busiest, rely on its aerodrome control services.

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PRESS RELEASE

ENAIRe is Europe's fourth largest air traffic manager. Since 1 January 2022, it has chaired the A6 Alliance, a coalition of air navigation providers responsible for over 80% of European air traffic, and which is seeking to modernise the air traffic management system. It is also a member of other international alliances promoting the Single European sky, such as SESAR Joint Undertaking, SESAR Deployment Manager, iTEC, CANSO and ICAO.

ENAIRe, as the agency appointed by the Ministry of Transport, Mobility and Urban Agenda to implement the U-space system in Spain, will be the provider of the Common Information Services (CIS), which are essential for administering U-space services to drones and Urban Air Mobility, in interaction with local air traffic control services, so that all types of aircraft can fly safely in the same airspace.

ENAIRe has received the highest score in Europe on the aviation safety key performance indicator. It has also been awarded the EFQM 500 Seal for its safe, efficient, innovative and sustainable management of air navigation services.

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