

IRINA

IFR RPAS Integration into European Airspace

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PRESS RELEASE

IRINA SESAR Joint Undertaking Project Launches First Simulations to test safe integration of IFR Remotely Piloted Aircraft Systems operations into European Airspace

Brussels, Belgium, [14 March 2025] – In January IRINA SESAR Joint Undertaking Project started to conduct Fast-Time and Real-Time Simulations in France (Clermont-Ferrand Airport) to test Detect and Avoid (DAA) technology, identifying and resolving issues before implementation, to enhance safety and reduce disruptions. The validation exercises for integrating IFR RPAS are based on scenarios covering infrastructure and key players involved in the process with the aim of optimizing ATCO workload and enhance the management of the airspace in a safe manner, amongst other things.

IRINA SESAR Joint Undertaking Project is working to overcome the current limitations that impose segregated airspace for IFR Remotely Piloted Aircraft Systems (RPAS) operations in European airspace. The type of RPAS performances being used in the project are RPAS with MALE, TUAS and LUAS performances. By refining encounter models for Fast-Time Simulations and testing in real time Detect and Avoid (DAA) technology in multiple traffic environments, the project aims to provide input for the safe integration of RPAS alongside manned aircraft. Through rigorous validation exercises, we are progressing towards Technology Readiness Level 6 (TRL6)—a maturity level that ensures our models are robust, reliable, and prepared for real-world deployment in the future.

This approach ensures more efficient airspace utilization while maintaining key operational safety standards. Through these efforts, IRINA is paving the way for a future where IFR RPAS can operate freely in both controlled and uncontrolled airspace, unlocking new possibilities for unmanned aviation in Europe. The project is coordinated by EUROCONTROL and involves 10 industrial partners from different European countries.

As the aviation landscape evolves, the integration of Remotely Piloted Aircraft Systems (RPAS) into European airspace is becoming increasingly critical. With growing demand for unmanned operations across sectors such as logistics, surveillance, or defense and emergency response, ensuring safe and efficient coexistence with manned aviation is essential. Well-developed encounter models and simulation of RPAS capabilities are key to enabling innovation while maintaining the highest safety and performance standards. IRINA plays a vital role in this process, providing the necessary input to support seamless adaptation and interoperability with manned aviation in the future European airspace.

Yannick Seprey, ATM expert from Direction des Services de la Navigation Aérienne (DSNA), shared: “DSNA performed first IRINA Real Time Simulations (RTS) in January 2025 in Clermont-Ferrand Airport for 4 days. RTS were conducted with pseudo-pilots and Air Traffic Controllers physically in Clermont-Ferrand and remote pilots from Safran and Thales respectively in Paris and Toulouse. These RTS focused on the impact on safety and human performances of RPAS flights in controlled airspace classes A to C, with a special attention to situations where the Remain Well Clear function is activated by RPAS’ Detect And Avoid system. Objectives were to collect information and data for the integration of RPAS in controlled airspace classes A to C (Solution 379). In addition, we also were interested in ATCO’s opinion to have operations conducted, usually by manned aircraft (e.g., helicopter) in VFR, conducted by RPAS in IFR”.

María Del Carmen Jiménez Moleón, ATM expert from INDRA, the validation leader for the project commented on the Validation Plan: “The validation process follows a structured approach to ensure the effectiveness of the proposed solutions. It begins with dry-runs to test infrastructure, scenarios, and functionalities, allowing for necessary adjustments. Then, ATCO training familiarizes controllers with new operating methods, Safety Nets functionalities, and system interfaces. The exercise execution follows, where all actors perform their roles in reference and solution scenarios. Finally, data collection supports analysis based on predefined metrics. This process ensures the safe integration of RPAS into the ATM system while optimizing ATCO workload and enhancing airspace management. In the absence of immediate integration technologies, standardized procedures are essential for RPAS operations in medium-to-high-density airspace. ”

INDRA and ENAIRE (CRIDA and INECO) will be conducting Real-Time Simulations in June 2025 in Madrid for integration of IFR RPAS operations in controlled airspace classes A to C (Solution 379) and IFR RPAS accommodation in uncontrolled airspace classes D-G (Solution 380). Some parts of Fast-Time and Real-Time Simulations will be also conducted in EUROCONTROL Innovation Hub in Bretigny, using EUROCONTROL's traffic data and sophisticated encounter models. These exercises will evaluate how RPAS interact with other air traffic, ensuring safety, efficiency, and manageable workload for Air Traffic Controllers (ATCOs).

A key focus of these simulations is enhancing ground-based safety systems to improve how ATCOs detect and manage potential conflicts involving RPAS. This includes setting precise alert thresholds for predicting and responding to airspace conflicts while ensuring smooth ATCO-RPAS coordination. To achieve this, the simulations will integrate Downlinked Aircraft Parameters (DAPs) into critical safety nets, including Short-Term Conflict Alert (STCA), Area Proximity Warning (APW), and Minimum Safe Altitude Warning (MSAW). Additionally, a BADA model specific for RPAS and trajectory prediction engines will be incorporated, using available RPAS information (position, status, predicted trajectory, published procedures, etc.) to obtain more realistic results.

Workshops with a wide range of international stakeholders will take place next summer and by the end of the year with the aim of providing them with the first results and dissemination of the findings of the project.

NOTES TO EDITORS

About IRINA

IRINA is a project that spans over three years and builds upon research projects conducted on Remotely Piloted Aircraft Systems (RPAS), more known as drones, insertion in the European airspace, the most recent being SESAR 2020 PJ13 ERICA. The project aims to finalize the Air Traffic Management infrastructure and services, as well as the Detect And Avoid capability which allows RPAS to detect nearby traffic and remain well clear or avoid collision, and is crucial for the safe RPAS integration. The project comprises of two Solutions, with Solution 1, focusing on controlled airspace classes A-C and Solution 2, focusing on the RPAS operations in lower airspace classes D-G with mixed civil and military traffic environment. These solutions not only focus on the full integration of RPAS into European Airspace, but also on the transition between Air Traffic Management and Unmanned Traffic Management (U-space in Europe) airspaces.

[Learn more about IRINA](#)

About the SESAR Joint Undertaking

The SESAR Joint Undertaking is an institutionalised European private-public partnership set up to accelerate through research and innovation the delivery of the Digital European Sky. The partnership is developing cutting-edge technological solutions to manage conventional aircraft, drones, air taxis and vehicles flying at higher altitudes. The SESAR JU partnership brings together the EU, EUROCONTROL, and more than 50 organisations covering the entire aviation value chain, from airports, airspace users of all categories, air navigation service providers, drone operators and service providers, the manufacturing industry and scientific community. The partnership also works closely with the regulatory and standardisation bodies, notably EASA and Eurocae, as well as key stakeholders, such as professional staff organisations, the space and military communities and global partners. www.sesarju.eu

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About RPAS

Remotely Piloted Aircraft Systems (RPAS) are a subgroup of unmanned aircraft systems that is operated by a pilot that is on the ground. Unlike fully autonomous drones, RPAS rely on real-time human supervision and secure communication links to navigate and execute missions safely.

RPAS will play an increasingly vital role in modern aviation, with applications ranging from environmental monitoring and emergency response to commercial cargo transport and air traffic surveillance.

Instrument Flight Rules (IFR) Remotely Piloted Aircraft Systems (RPAS) are designed to operate under the same instrument-based navigation rules as manned aviation.

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