

Startical Unveils Its IOD-2 Satellite, a Key Advancement in Air Communication and Surveillance from Space

- The demonstrator will enable communication between aircraft and ground stations using VHF and ADS-B signals transmitted from space, marking a milestone in aerospace technology.
- The technology will enhance flight safety, efficiency, and punctuality, benefiting both airlines and passengers, while also facilitating the creation of new routes, reducing operational costs, and cutting CO₂ emissions.
- The satellite reflects Spain's commitment to innovation in the aerospace sector and represents a major step forward in improving global air traffic management.

Madrid, February 6, 2025. Startical, a company created by ENAIRE and Indra, takes an important step in aerospace innovation with the presentation of its IOD-2 (In-Orbit Demonstrator-2) satellite, the company's second to date. The satellite is located at the National Institute for Aerospace Technology (INTA) facilities, where electromagnetic compatibility, vibration, and functional tests are being conducted prior to its launch, scheduled for mid-2025, all aimed at ensuring the satellite's operability in orbit.

INTA has the only facilities in Spain, and one of the few worldwide, capable of conducting complete satellite tests like the IOD-2 in clean room conditions. "This service is essential for the Spanish business fabric, especially for companies developing satellites, as they are required to carry out this type of test, and being able to perform them within the national territory is of utmost importance," says Daniel Hernández Gómez, director of the Equipment and Systems Testing Department at the institute.

With a large 4-meter VHF antenna and other systems for aircraft position monitoring (ADS-B), the IOD-2 will demonstrate the viability of a space solution that optimizes air traffic management by improving communications between air traffic controllers and pilots, especially in remote and oceanic areas.

Currently, when an aircraft crosses oceanic areas, it may enter zones without real-time voice communication coverage between pilots and controllers. This requires planes to maintain high levels of separation to ensure safety, which reduces the efficiency of airspace use and limits the capacity to handle a large volume of traffic.

The global coverage proposed by Startical allows for much more efficient and safe air traffic management, particularly in contingency situations, such as route changes due to storms or medical emergencies on board. Additionally, it contributes to sustainable aviation, as it allows aircraft to choose optimal routes and thus reduce fuel consumption.

"Startical's initiative is pioneering worldwide and places Spain at the forefront of the aerospace sector, marking a before and after in air traffic management by providing services to areas currently without coverage, which, among other things, contributes to providing new growth opportunities for developing countries," says Juan Enrique González Laguna, General Director of Startical.

All the engineering behind the mission systems, as well as the satellite payload, have been developed by Indra, with the support of ENAIRE. The satellite platform, on the other hand, has been manufactured by Kongsberg NanoAvionics. Atle Gjerløw Wøllo, CEO of the Lithuanian company, states, "We are proud to have partnered with Startical on this groundbreaking project. Together, we've successfully delivered a cutting-edge communication solution on an accelerated timeline. We appreciate the trust and opportunity to highlight the effectiveness of our microsatellite in developing safety-critical communication services and look forward to IOD.2 performing in orbit".

Both the IOD-2 and its predecessor, the IOD-1, manufactured by the Danish company GomSpace, are part of the ECHOES SESAR Digital Sky Demonstrator project, co-financed by the European Union's Connecting Europe Facility (CEF) and managed by the European Climate, Infrastructure, and Environment Executive Agency (CINEA), with the support from the SESAR Joint Undertaking.

Through ECHOES, Startical will conduct proof-of-concept tests in oceanic airspaces on both sides of the Atlantic, such as the Canary Islands, Azores-Santa Maria, Dakar Oceanic, Cape Verde, and the Brazilian Atlantic. For this, it will have the participation of air navigation service providers such as ENAIRE, NAV Portugal, ASA, ASECNA, and DECEA, highlighting international collaboration and interest in the initiative. These demonstrators pave the way for the Startical Constellation, which will provide operational surveillance and communication coverage globally.

About Startical

[Startical](#) is a public-private company created by Indra and ENAIRE, approved by the Council of Ministers, which will position Spain as a leader in global satellite services for air navigation. The initiative aims to deploy over 200 small satellites in low Earth orbit to improve air traffic management, extending coverage in oceanic and remote areas. Startical will pioneer by integrating ADS-B surveillance with VHF radio communication between controllers and pilots, following aeronautical standards. In 2025, it will carry out the first two launches to validate the technology in orbit. With these advancements, the initiative will enhance the safety, efficiency, and sustainability of global air traffic, facilitating the creation of new routes, and contributing to the reduction of operational costs and CO₂ emissions. For additional information on ECHOES project, please visit www.sesarju.eu/projects/ECHOES.

About INTA

The National Institute of Aerospace Technology is a Public Research Organization (OPI) under the [Ministry of Defense](#). In addition to conducting scientific research and system and prototype development activities in its field of knowledge, it provides technological services to companies, universities, and institutions.

INTA specializes in dual-purpose research and technological development in the fields of [Aeronautics](#), [Space](#), [Hydrodynamics](#), [Security](#) and [Defence](#). INTA works closely with the aerospace, civil, and military sectors for national and international programs, supporting testing requirements with a complete set of facilities, equipment, and qualified scientists and technicians.

Additionally, it has over 50 years of testing experience (at the system, subsystem, and equipment levels), positioning it at the level of competing nations in the aerospace and military fields.

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