

INDRA IS DEVELOPING ADVANCED TRANSPORTATION SERVICES BASED ON DRONE TECHNOLOGY AND ARTIFICIAL INTELLIGENCE

- **The company is heading up the Comp4Drones project, which has 49 partners and a budget of 30 million euros, and which will develop key technologies to provide secure and autonomous drones for complex applications in the fields of transportation, construction, logistics, surveillance and agriculture**
- **Indra will optimize transportation and infrastructure management by integrating drones as sensors in monitoring or guidance systems, develop secure means of communication with the transportation control center and deep learning for image processing**
- **By integrating Mova Traffic, which includes the Air Drones solution for unmanned aircraft system traffic management (UTM), Indra will have a comprehensive solution for unparalleled intermodal mobility by applying drone traffic**

Madrid, October 8, 2019.- Indra, one of the leading global technology and consulting companies, will develop innovative applications based on the use of drones and artificial intelligence, which will allow them to offer new and advanced transportation services and improve their control and exploitation, as well as the construction, management and maintenance of infrastructures.

These projects are included in the European R&D project, Comp4Drones, led by Indra, in which the company coordinates 49 partners from France, Italy, Austria, Belgium, Czech Republic, Latvia, the Netherlands and Spain. Its objective is to develop key hardware, software and communication technologies that ensure the drones are autonomous and safe for complex applications in the fields of transportation, construction, logistics, surveillance and inspection and agriculture. With a budget close to 30 million euros, the project is funded by the European ECSEL program, and nationally by the Ministry of Industry.

Indra is in charge of the use case and the two demonstrators that will be carried out for transportation management. The objective is to apply the use of drones to improve the efficiency and automation of monitoring activities, as well as to lower their costs, upgrade the control and maintenance of transportation operations and their infrastructure, both on land and sea, offering greater flexibility and stability in solutions and services. Moreover, drones can help reduce incident response times and operational risks, increase the capacity of cargo areas in ports and other infrastructure, and increase safety and sustainability.

Indra will use drones as sensors for current transportation monitoring systems, and integrate them into Mova Traffic, its solutions for transportation control and management. It will develop image and video processing tools based on graphics cards as well as artificial intelligence and deep learning technologies to analyze video and images taken by the drones, so that incidents can be automatically detected. In addition to artificial intelligence algorithms, the project is set out to develop trajectory planning algorithms, safety monitoring, obstacle avoidance, geo-fencing to establish virtual boundaries in a given geographical area or local preprocessing.

During the project, Indra will integrate the Mova Traffic transportation management solutions, which include Air Drones, the unmanned aircraft system traffic management (UTM) in low-altitude airspace, thus creating a pioneering comprehensive solution for intermodal mobility, unprecedented in the market, which will provide infrastructure managers with an array of new and secure drone applications.

Additionally, in order to ensure the secure exchange of information between the transportation control center and the drones, Indra will develop communication modules using 4G technology, which will guarantee cybersecurity, reliability and stability, creating encrypted communication channels for drone applications.

To perform the tests planned for the project, Indra will use, among other drones, its optionally manned USV vessel, developed as part of the Civil UAVs Initiative, a Xunta de Galicia project that is the driving force of the unmanned aerial systems for civil applications sector in Europe, in which Indra acts as an anchor company.

In addition, it will improve its Mantis fixed-wing drone, developing a civil use version for innovative transportation applications. Among other improvements, Indra will work on the detection capabilities of Mantis, in order to facilitate both the processing and the analysis of the images and videos obtained.

The project will thus add the capabilities of Indra's Transportation, Air Traffic and Defense and Security markets to develop and test innovative mobility services.

Collaboration with the Civil UAVs Initiative

The first use case that Indra will carry out will use the drones for the management and supervision of road traffic and the detection of incidents, and will be tested at the Rozas airdrome, headquarters of the Civil UAVs Initiative in Lugo. Different drones will be integrated with the transportation control center, which will receive and process real-time image and video transmissions of hundreds of vehicles, validating the artificial intelligence and deep learning algorithms developed in the project. Guidance systems will also be integrated with the control center in order to control the drone while flying above the roads.

The second use case will be carried out in Puerto de Vigo. It will consist of the deployment of drones as sensors or tools for maritime activities, such as guiding ships arriving at ports, as well as new applications that facilitate the supervision of port infrastructures and offer support to land and maritime operations in the ports.

The European Comp4Drones project is focused specifically on the software and hardware architecture of UAV (Unmanned Aerial Vehicle) systems. It is an ECSEL JU project that complements the SESAR JU's efforts to integrate drones into the upcoming U-Space, which will facilitate access for drones to fly over cities and rural areas to offer innovative services. Indra also leads the Safedrone project consortium, which will present one of the largest flight demonstrations in Europe to date, with conventional drones and aircraft sharing the same low-altitude (Very Low Level-LVV) airspace.

Leader in Smart Mobility

The Comp4Drones project will allow Indra to be at the forefront of drone applications to offer advanced transportation services, and will also strengthen the company's position as a leader in smart mobility and innovative technologies for the sector.

At the same time, the use of drones will further develop Indra's set of solutions, Mova Traffic, which enables comprehensive management and control of intermodal mobility and has included in recent years technologies such as Big Data, Artificial Intelligence and the IoT and systems to integrate connected vehicles.

Indra has unique experience in transportation, with more than 2,500 projects developed in more than 100 cities and more than 50 countries. Its Transportation Division, Indra Mova Solutions, covers the entire life cycle of its clients' projects and combines the new digital, integration, specialization and innovation capabilities demanded by the market, with reliability, business knowledge, Indra's proprietary transport technology and the unique experience of its team of professionals.

About Indra

Indra (www.indracompany.com) is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defense markets, and a leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate Minsait. Its business model is based on a comprehensive range of proprietary products, with a high-value focus and with a high innovation component. In the 2018 financial year, Indra achieved revenue of €3.104 billion, with 43,000 employees, a local presence in 46 countries and business operations in over 140 countries.