LABYRINTH, making drone traffic safer to boost its use

- **This European project (Horizon 2020) researches on how to develop applications that optimize drone traffic and accelerate regulatory changes that allow navigation in European airspace.**
- **The project is applicable to land, sea, and air transport management entities, as well as those responsible for emergency and rescue operations. At these areas of activity, drones can improve management by increasing safety and efficiency.**
- **The project lasts 36 months and involves 13 European entities from different sectors: transport, aeronautics, research, security, and management.**

Madrid, 06 July 2020. This June the European project **LABYRINTH** has been launched, in which **The National Institute for Aerospace Technology (INTA)** participates as an Expert on the Design, Development, Testing, Certification and Operation of remotely piloted air vehicles and ground control station. The aim of LABYRINTH is **to optimize drone traffic to enhance its circulation in highly densified areas and encourage its use**, given the high potential of these unmanned aerial vehicles for the optimization of management and supervision processes.

LABYRINTH will focus its efforts on providing a drone traffic service **to improve the safety and efficiency of civil land, sea, and air transportation, as well as improve emergency and rescue operations**. This ambitious project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 861696 and will be carried out by **13 European entities leading the transport, aviation, research, emergency, and ancillary services sectors**.

These organizations together, will investigate **during 36 months** on the **design of applications and procedures that will revolutionize the transport of drones and accelerate the regulatory changes that allow the drone use in the European Union.**

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Why LABYRINTH

Ensuring the **safety and efficiency of transport is one of the EU's priorities**. **Drones are a great ally in this field**, thanks to their ability to carry out surveillance, management operations or reach hard-to-reach places in emergency situations. But to date**, security concerns have limited drone's use**, being often illegal using them in public areas.

Given its potential, **SESAR** (Single European Sky ATM Research) **is leading the U-Space project, to create a new air traffic management framework that includes drones**. This new framework is designed to integrate low-level drone operations safely and efficiently, up to 120 meters high, into European airspace. For the safe control of this traffic, the electronic registration of the airline is essential, as well as the restriction of access to sensitive areas, such as airports, through geofancing.

The use of drones is increasing, by 2035 in Europe there will be around 400,000 unmanned aircraft. **The challenge will be to relieve drone traffic in cities and other areas sensitive to congestion**. In this scenario, the current traffic management will not be enough to avoid collisions.

In this regard, LABYRITH **will work on a centralized planning system, capable of communicating with all the drones active in a given area and identifying their directional layout to calculate alternative routes to avoid collisions.** This approach is also being investigated by NASA, which is working to create flight control centres for autonomous drone management.

LABYRINTH aims to **base its technology on the U-Space framework and advance the already made efforts within the SESAR strategy**, to develop autonomous air traffic control systems for the integration of drones in the European airspace.

LABYRINTH potential applications

This project intends to **develop applications capable of revolutionizing air transport** and accelerating regulatory changes regarding drone use in the EU. This advance offers a huge range of applicability and new business models that **open the drone industry to new markets**.

LABYRINTH is focused on offering its services to public or private entities responsible for **managing land, sea, and air transport infrastructures, as well as emergency and rescue operations**. The aim of the project is to increase the competitiveness of the civil transport sector by reducing security and management costs.

LABYRINTH applications are very diverse depending on the area:

- **Air transport**: identify birds that may interfere with air traffic, verify the state of airport infrastructures, prevent unauthorized personnel or drones from accessing sensitive areas of the airport, etc.

- **Land transport**: speed control, estimate safety distance, plate identification, traffic supervision, management in case of accidents, speed up traffic congestion, etc.

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- **Maritime transport**: port traffic monitoring, surveillance of vessels anchored in the port to prevent theft, facilities supervision, dredging operations monitoring to ensure operational areas of navigation, etc.

- **Emergencies**: surveillance and study of the area to identify escape routes and medical assistance points, communication with medical and security services to warn of optimal routes, give important warnings in real time, etc.

The Consortium

LABYRINTH will be executed by 13 European entities from Spain, Germany, Austria, Italy, and Belgium. These entities are experts in the different sectors involved in the project: transport, aviation, research, emergency, and ancillary services.

- UC3M - University Carlos III of Madrid
- Expace on Board Systems
- DLR – The German Aerospace Centre
- DGT – Directorate General for Traffic
- TID – Telefonica Research and Development
- INTA - International Institute for Aerospace Technology
- Eurocontrol - Organization for the Safety of Navigation
- DIN – German Institute for Standardization
- The Authority of the Port System of the Eastern Ligure Sea
- AIT - Austrian Institute of Technology
- PONS Road Safety
- Madrid City Council – SAMUR Civil Protection
- PKF Attest innCome

About INTA

The National Institute of Aerospace Technologies *is a Public Research Establishment specialized in Security & Defence, Aeronautics, Space, and Nautical, attached to the Spanish Ministry of Defence. The Institute was founded in 1942 and has now more than 1700 public servants. INTA's main technological centre is located at Torrejón de Ardoz, near Madrid, having other Centres in Madrid, Ávila, Granada, Huelva, Lugo and the Canary Islands. Furthermore, INTA has representatives in Europe such as Seconded National Experts in the European Maritime Safety Agency (EMSA) and the European Space Agency (ESA), and is member of EREA, the Association of European Research Establishments in Aeronautics*

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