

# COMP4DRONES



## Framework of Key Enabling Technologies for Safe and Autonomous Drones



### Objectives

COMP4DRONES is an ECSEL JU project coordinated by Indra that brings together a consortium of 49 partners with the aim of providing a framework of key enabling technologies for safe and autonomous drones. It brings to bear a holistically designed ecosystem from application to electronic components, realized as a tightly integrated multi-vendor and compositional UAV embedded architecture solution and a tool chain complementing the compositional architecture principles. The project will mainly focus on the following objectives:

1. Ease the integration and customization of embedded drone systems.
2. Enable drones to take safe autonomous decisions.
3. Ensure the deployment of trusted communications.
4. Minimize the design and verification effort for complex drone applications.
5. Ensuring sustainable impact and creation of an industry-driven community.

Demonstration and validation activities are essential to ensure the quality and relevance of innovations. COMP4DRONES will ease the development of new application and functionalities on the fields of transport, construction, surveillance and inspection, logistics, and agriculture.

Transport	Drones for optimization of transport control, operation and infrastructure management
Construction	Drones for virtual design, construction and operation of transport infrastructures
Logistics	Logistic using heterogeneous drones fleet
Surveillance & Inspection	Drone and wheeled robotic systems for inspection, surveillance and rescue operations
Agriculture	Smart and Precision Agriculture: From drone to rover

### Technical Innovation

The COMP4DRONES framework will provide key technologies to accelerate the implementation of safe and profitable professional applications of autonomous drones for usage on an industrial level:

- Simplify the qualification process for drones by transposing the principles of integrated modular architecture used in aeronautics to drones.
- Providing methodologies and tools to facilitate obtaining flight authorizations, to reduce the design efforts for drones.
- Improve the perception and the integration of artificial intelligence to increase the autonomous decision-making capacity.
- Communications with the drone and between the drone that are secure, available and adaptable to the operational domain.
- Provide a modular software architecture of reference and mutualization of the generic means of production to contribute to the structuring of the drone industry in Europe.

### Relevance and Impact

COMP4DRONES will reinforce the ecosystems of drones industry by providing methodology and a reference software architecture framework that meets performance and safety requirements. The project also aims to improve the innovation capacity in the European drone industry and the integration of new knowledge; a structuring aspect of COMP4DRONES is the adoption of a “safe-by-design” approach, which covers the activities of specification, design, implementation, and validation and verification. Finally, COMP4DRONES will enable and ease the delivery of new services using drones in Europe.

<b>Spain</b> INDRA SISTEMAS SA – INDRA ACCIONA CONSTRUCCION SA ACORDE TECHNOLOGIES SA HEMAV TECHNOLOGY SL HI IBERIA INGENIERIA Y PROYECTOS SL IKERLAN S. COOP UNIVERSIDAD DE CANTABRIA	<b>France</b> SOBEN ECOLE NATIONALE DE L AVIATION CIVILE SIEMENS INDUSTRY SOFTWARE SAS EUROGICIEL ECOLE NATIONALE SUPERIEURE DE MECANIQUE ET D'AEROTECHNIQUE COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES ATECHSYS ENGINEERING SHERPA ENGINEERING SA TOTAL S.A. ALTRAN TECHNOLOGIES	<b>Latvia</b> ELEKTRONIKAS UN DATORZINATNU INSTITUTS LATVIJAS UNIVERSITATES MATEMATIKAS UN INFORMATIKAS INSTITUTS LATVIJAS MOBILAIS TELEFONS SIA
<b>Austria</b> AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH FORSCHUNG BURGENLAND GMBH MORAVITZ MARTIN SKYABILITY GESMBH INFINEON TECHNOLOGIES AUSTRIA AG	<b>Italy</b> ABINSULA SRL UNIVERSITA DEGLI STUDI DI MODENA E REGGIO EMILIA UNIVERSITA DEGLI STUDI DEL SANNIO UNIVERSITA DEGLI STUDI DI SASSARI UNIVERSITA DEGLI STUDI DELL'AQUILA	<b>Netherlands</b> ANYWI TECHNOLOGY BV STICHTING IMEC NEDERLAND THALES NEDERLAND BV TECHNISCHE UNIVERSITEIT Eindhoven TECHNISCHE UNIVERSITEIT DELFT DEMCON UNMANNED SYSTEMS BV ALMENDE BV
<b>Belgium</b> INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM – IMEC AIROBOT		
<b>Czech Republic</b> VYSOKE UCENI TECHNICE V BRNE	<b>ZAPADOCESKA UNIVERZITA V PLZNI</b> SMARTMOTION S.R.O.	<b>LA</b> TEKNE SRL TOPVIEW SRL AITEK SPA UD'ANET SRL AITRONIK SRL RO TECHNOLOGY SRL MODIS CONSULTING SRL



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<b>Start</b>	<b>Duration</b>
1-10-2019	36

**Total investment**  
€M 29.7

**Participating organisations**  
49

**Number of countries**  
8