Decarbonization of light aviation
launch of the "InDRa" project to optimize the energy consumption of electric
drones using frugal AI and mathematics

A consortium comprising the AI and deep learning specialist **ADAGOS**, the **Toulouse Mathematics Institute** and the drone manufacturer **DELAIR** launches the InDRa project (INcreasing electrical Drone RAnge), aimed at increasing the flight time of electric drones by 20%, by optimizing their energy consumption.

In order to achieve this objective, the partners will create a digital twin of the battery and the drone to act on two key areas:
- Better battery management,
- Optimized flight command precision.

An optimization process will be applied to the digital twin to determine the best possible real system (drone + battery).

The InDRa project is a response to the call for projects MAELE (Light and Environmentally Responsible Air Mobility) led by the competitiveness cluster Aerospace Valley and funded by the Occitanie Region as part of a Collaborative Innovation Investment Agreement with the support of the Public Investment Bank (BPI). The project will last two and a half years (30 months).

What benefits are expected by the consortium members?
"The objective of optimizing the autonomy of our drones with an ever-reduced carbon footprint is a major differentiating factor in the context of strong international competition" Bastien MANCINI, CEO of DELAIR.

"Adagos is pleased to bring its parsimonious AI technology to Delair's environmentally friendly electric drones. Our goal is to demonstrate that our tools can achieve the announced 20% increase in autonomy" Mohamed MASMOUDI, CEO of ADAGOS.

"At ITM, optimal control is a particularly active research area. This project is an opportunity to apply our expertise to the dynamic and exciting drone sector" Franck BARTHE, Director of ITM.

Press contact : Stéphane DOUCE – 06 08 90 19 35 – stephane.douce@delair.aero

About ADAGOS
ADAGOS develops and markets a unique software, NeurEco, which uses frugal artificial intelligence to automatically build parsimonious neural networks. The result is a powerful tool for solving large and complex problems, using fewer resources than conventional neural networks. The target markets include light mobility, autonomous generators, and autonomous or remotely controlled aerial, marine, and land vehicles.
Learn more : https://www.adagos.com/

About DELAIR
Delair designs, manufactures and markets aerial drones for civil and military applications since 2011. Among the world leaders in long-endurance UAVs for out-of-sight flights DELAIR masters all the technologies required to design a drone: aerodynamics, control laws, electronics, mechanics, telecoms, optics and data acquisition, safety and airworthiness. Based in Toulouse, the company has a workforce of over 120, and more than €10 million turnover in 2023.
Learn more : https://delair.aero/

About IMT

Located at the heart of the University of Toulouse, the Toulouse Mathematics Institute (Joint Research Unit 5219 of CNRS, Toulouse 3 Paul Sabatier University - which hosts the project, INSA Toulouse, University Toulouse Capitole, University Toulouse Jean Jaurès and INUC) is one of France's leading mathematics research centers. Its mission is to unite the mathematical community in the Toulouse area. With over 200 researchers and faculty members, it is recognized for the excellence of its work in a wide variety of fields, from the most theoretical aspects to the most practical applications. In relation to the present project, IMT has recognized expertise in the areas of optimization, control, estimation, modeling, and scientific computing.
Learn more : https://www.math.univ-toulouse.fr/en/

About the University Toulouse III - Paul Sabatier

University Toulouse III - Paul Sabatier is one of France's leading universities, with over 37,000 students. The diversity of its laboratories and the quality of its teaching in the fields of science, health, sport, technology and engineering ensured its scientific influence for over 50 years. The university has 71 laboratories and federative structures focused on research. From atoms to exoplanets, from bid data to oncology, from social sciences to ecosystems, its research spectrum is extremely broad and of the highest caliber. It is ranked among the top 400 universities worldwide according to the 2023 Shanghai Ranking (Academic Ranking of World Universities).
Learn more : https://www.univ-tlse3.fr/home