

# Onera

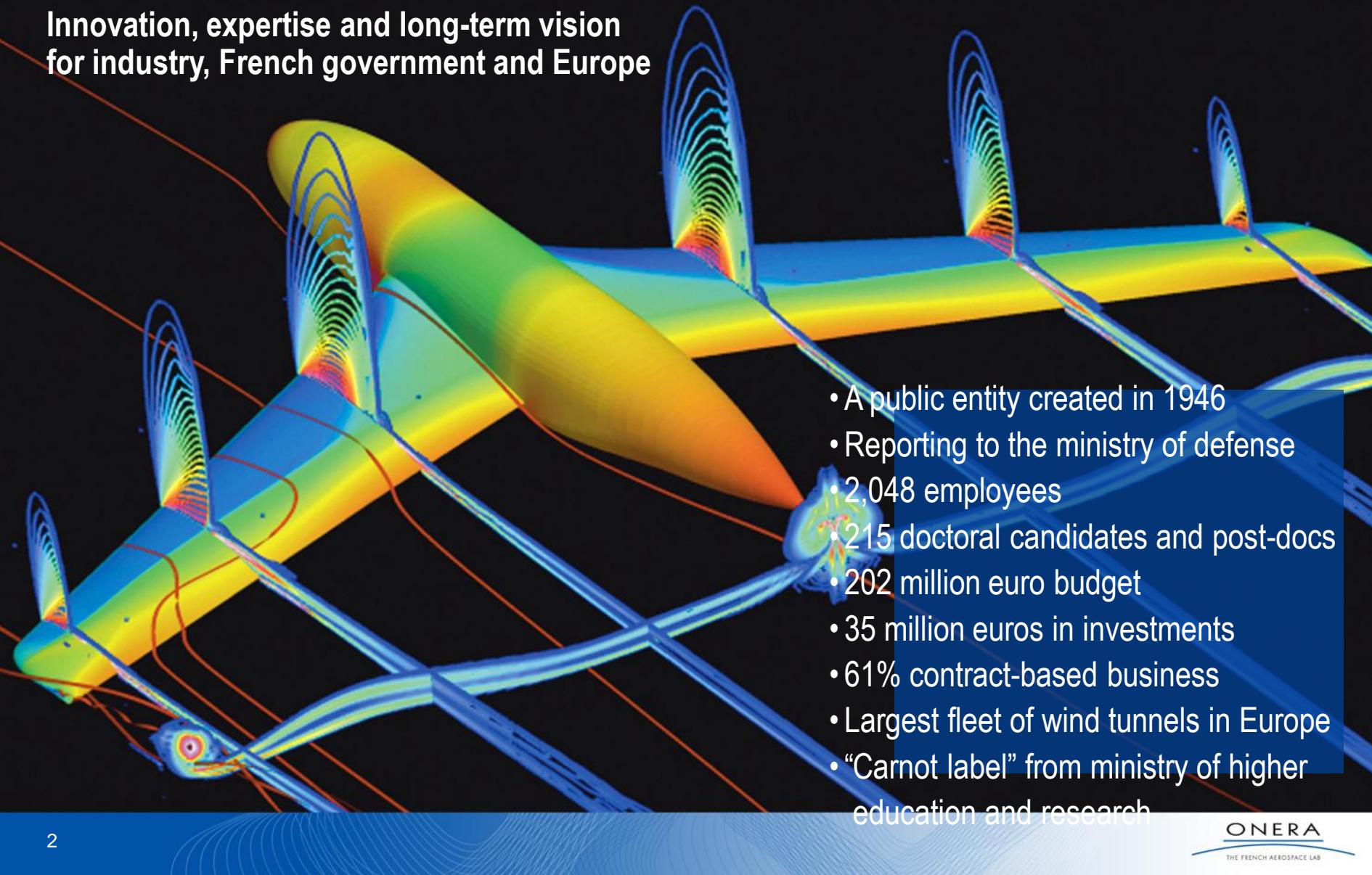
## The French Aerospace Lab



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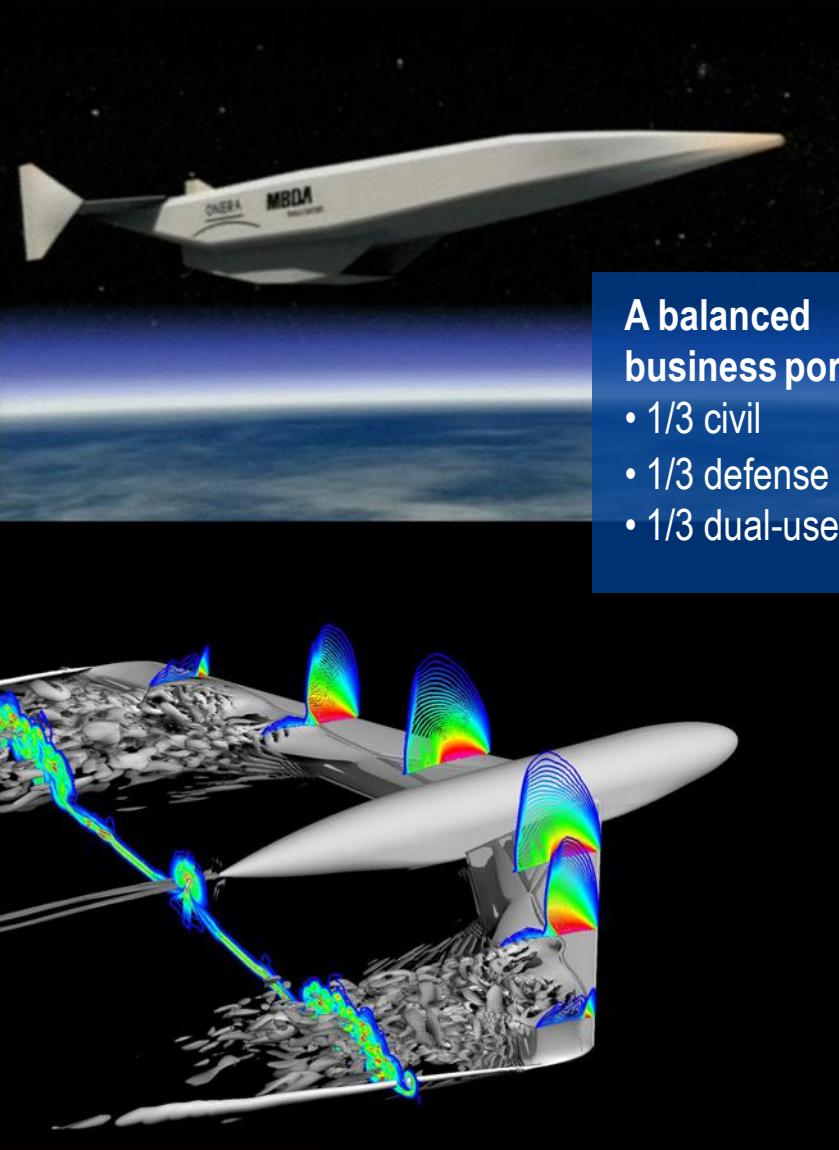
# The French Aerospace Lab

Innovation, expertise and long-term vision  
for industry, French government and Europe



- A public entity created in 1946
- Reporting to the ministry of defense
- 2,048 employees
- 215 doctoral candidates and post-docs
- 202 million euro budget
- 35 million euros in investments
- 61% contract-based business
- Largest fleet of wind tunnels in Europe
- “Carnot label” from ministry of higher education and research

# Science driving innovation in aerospace and defense

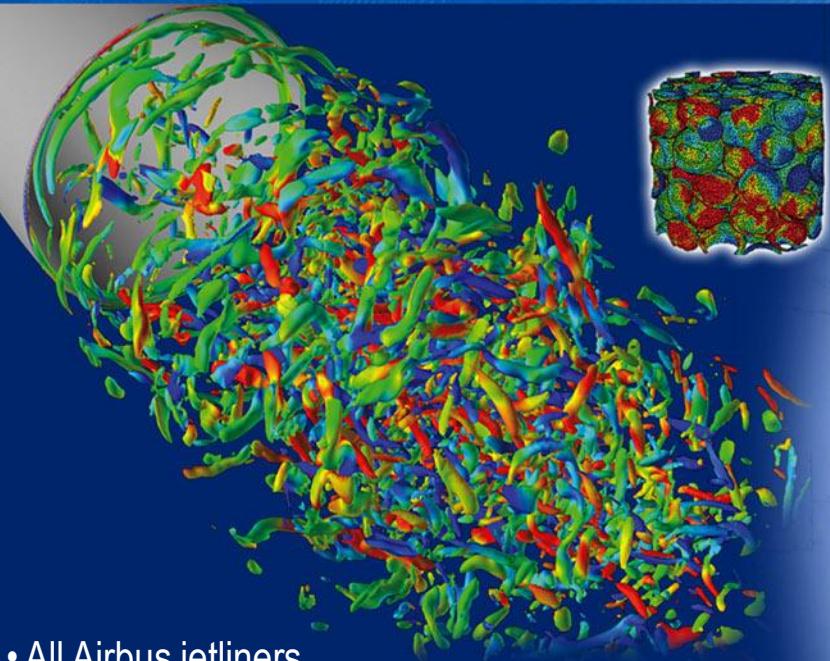


A balanced business portfolio:

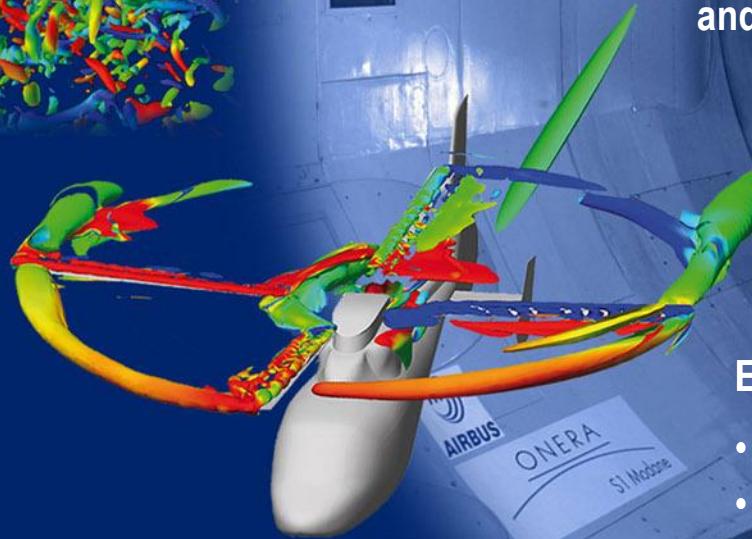
- 1/3 civil
- 1/3 defense
- 1/3 dual-use



# Return on innovation: advanced technology and industrial success



- All Airbus jetliners including the upcoming A350
- Falcon 7X
- Ariane 5
- Propulsion
- Helicopters
- Space missions



800 researchers,  
8 departments active in fluid dynamics, combustion, materials and structures

## Environmental protection

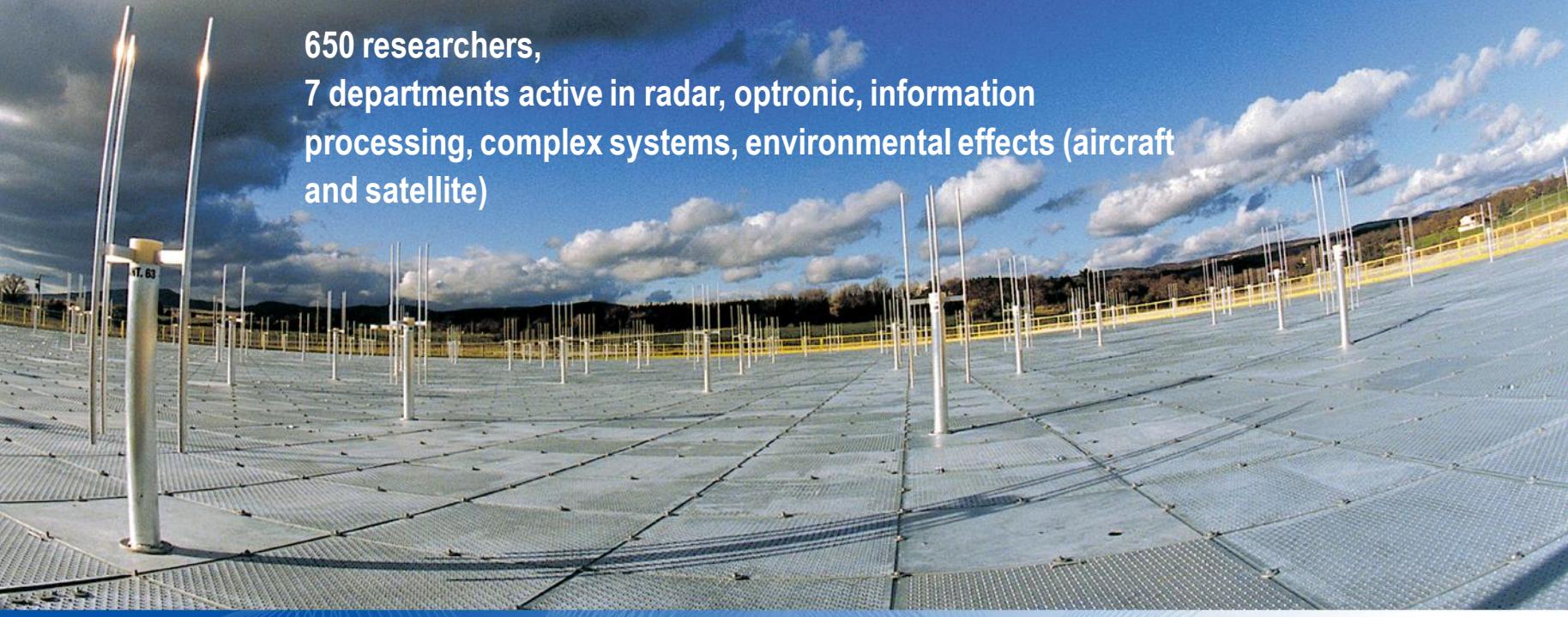
- Reduce aircraft noise
- Reduce emissions
- Alternative fuels

# Return on innovation: new observation concepts, expertise and systems for defense, security and environment



- Radar systems : Nostradamus, Graves
- Extended air defense
- Optronics: Hyperspectral, Active imagery, high resolution
- UAV research: Onera catalyzes and federates innovations

650 researchers,  
7 departments active in radar, optronic, information  
processing, complex systems, environmental effects (aircraft  
and satellite)



# Onera: close to our industrial partners



**ISAE-ENAC Campus: 2000 students**

**ONERA Toulouse Center**  
- 390 employees  
including 220 Research Engineers  
90 PHD students

**ONERA Fauga Mauzac Center** 70  
employees



# DOTA – Theoretical and Applied Optics

Dir : F.Lefevre

Workforce : 160 (including 30 Phds)

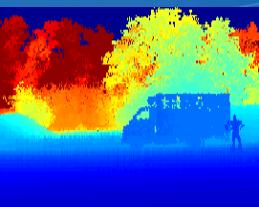
Objectives : To develop and evaluate innovative optical systems, from the source to post-processing, from THz to ultraviolet, for aeronautic and space applications



Modeling of optronic scenes , data banks, remote sensing processing



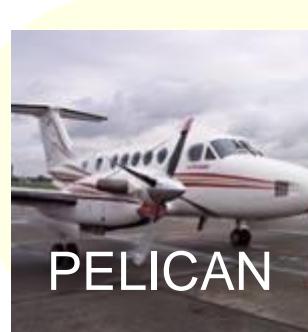
Design, development and qualification of high-performance optical instruments and airborne measurement systems



Active imagery and laser systems

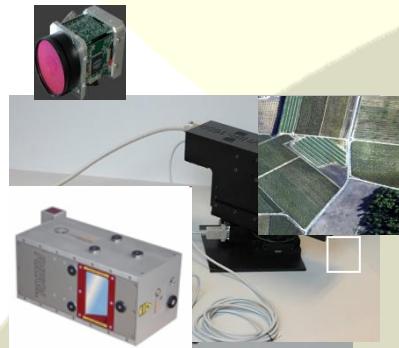


# Airborne Imagery



PELICAN

8 bands, 10 cm GSD



SETHI : POD Radar-Hyper (2011)

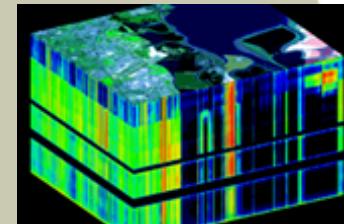
SAR, Hyperspectral, Panchro HR



Pods Radar and IR (2010)



Sysiphe (2013)



Hyperspectral 0.4-12  $\mu\text{m}$   
50 cm GSD



International campaigns EDA, Nato...

# LIMA : Laboratoire d'Imagerie Multicapteurs Aéroportés (Hyper, XSHR, 3D...)

Ce projet a été cofinancé par l'Union européenne.



L'Europe s'engage en Midi-Pyrénées avec le Fonds européen de développement régional.



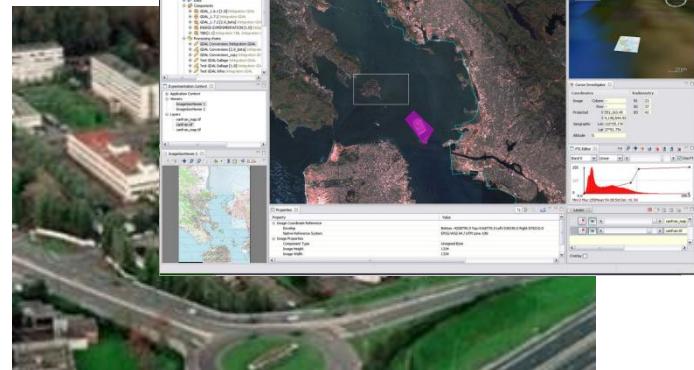
ONERA  
THE FRENCH AEROSPACE LAB

Grand Toulouse  
COMMUNAUTE URBNAE

## Une plateforme d'exploitation

Située sur le centre de Toulouse

Consultation par Internet de façon sécurisée



## Une logistique de validation

Ensemble de moyens de mesures de vérité terrain

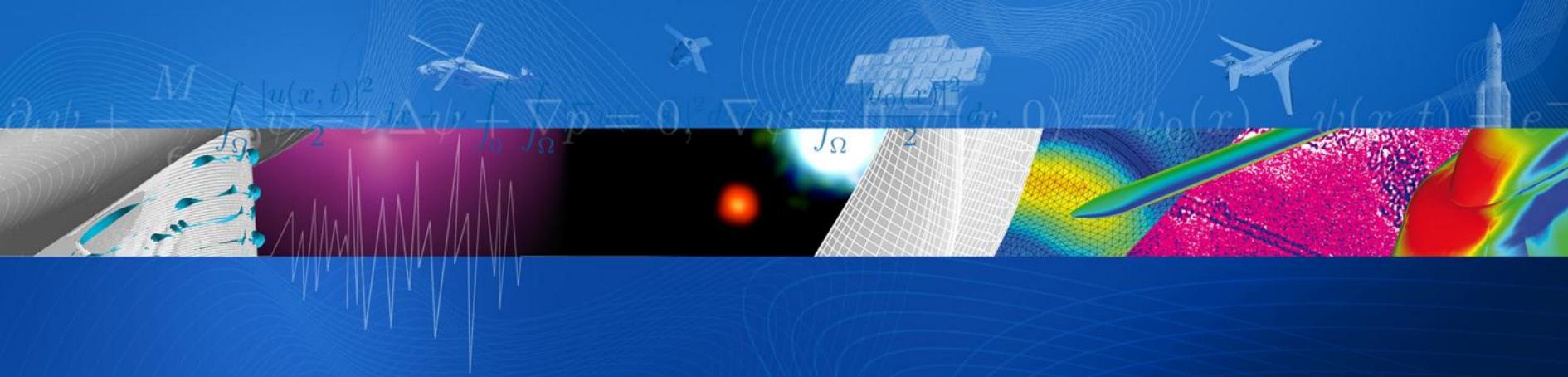
(dont lidars multispectraux 3D : T, H<sub>2</sub>O, aérosols)

Site d'essai instrumenté et protégé (70 Ha)

Logistique de déploiement sur site distants



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