ICE GENESIS
Project Overview

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824310.

The Consortium

- 37 project partners
- 27 EU / 10 non-EU
- 10 countries

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ICE GENESIS project overview

Creating the next generation of 3D simulation means for icing

- **Duration:** From 1st January 2019 until 31st December 2022
- **Coordinator:** AIRBUS OPERATION SAS

- **Budget:**
  - Max EU Contribution: €11 964 300
  - Total Estimated Project costs: €21 984 549
  - Project effort in Person-months ~ 1858

- **Advisory board:** EASA, FAA, ADSE, AEROTEX,
  AIRBUS Defense&Space, CSTB, DAHER, EMBRAER,PIAGGIO, SAFRAN nacelles

ICE GENESIS project overview

Top level objective

The top level objective of the ICE GENESIS project is to provide the European aeronautical industry with a validated new generation of:

3D icing engineering tools
(numerical simulation and Icing Wind Tunnels capabilities)

addressing

Regulation CS25 Appendix C (well-known icing envionment)

Appendix O (SLD or Supercooled Large Droplet)

and snow conditions,

for safe, efficient and cost effective design and certification of future aircraft and rotorcraft.

Novelties in Europe : 3D ice scanning system
droplet temperature measurement
snow characterization and campaigns

ICE GENESIS project overview

Sub-objectives

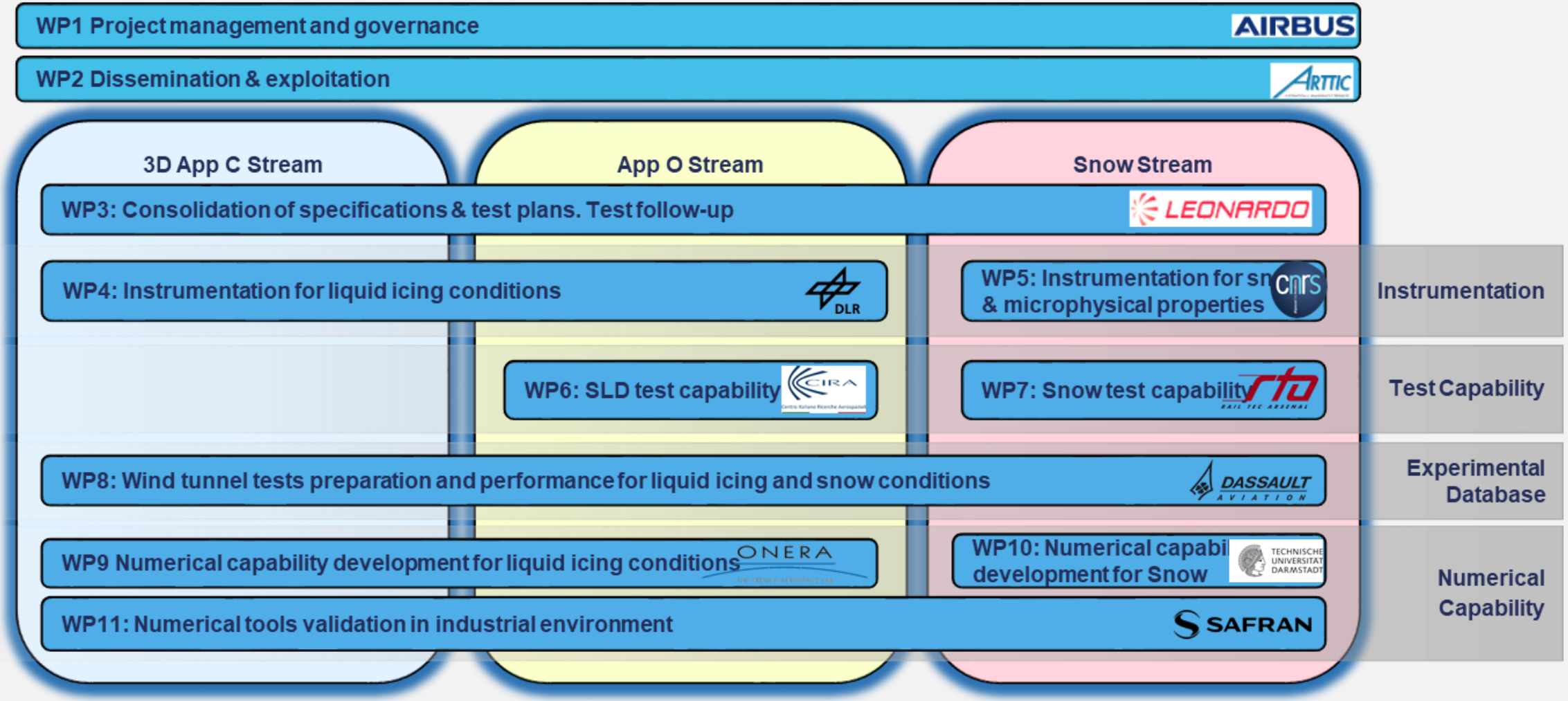
Obj#1: Improve and validate existing **3D numerical tools** to predict ice accretion in Appendix C, Appendix O and Snow conditions.

Obj#2: Upgrade and calibrate **icing wind tunnels** to allow reproduction of:

- **Supercooled Large Droplets (SLD) in FZDZ (Freezing drizzle) conditions**.
- **Snow conditions**
- Additionally, to **assess the potential of current icing wind tunnels to represent SLD in FZRA (Freezing rain) conditions**.

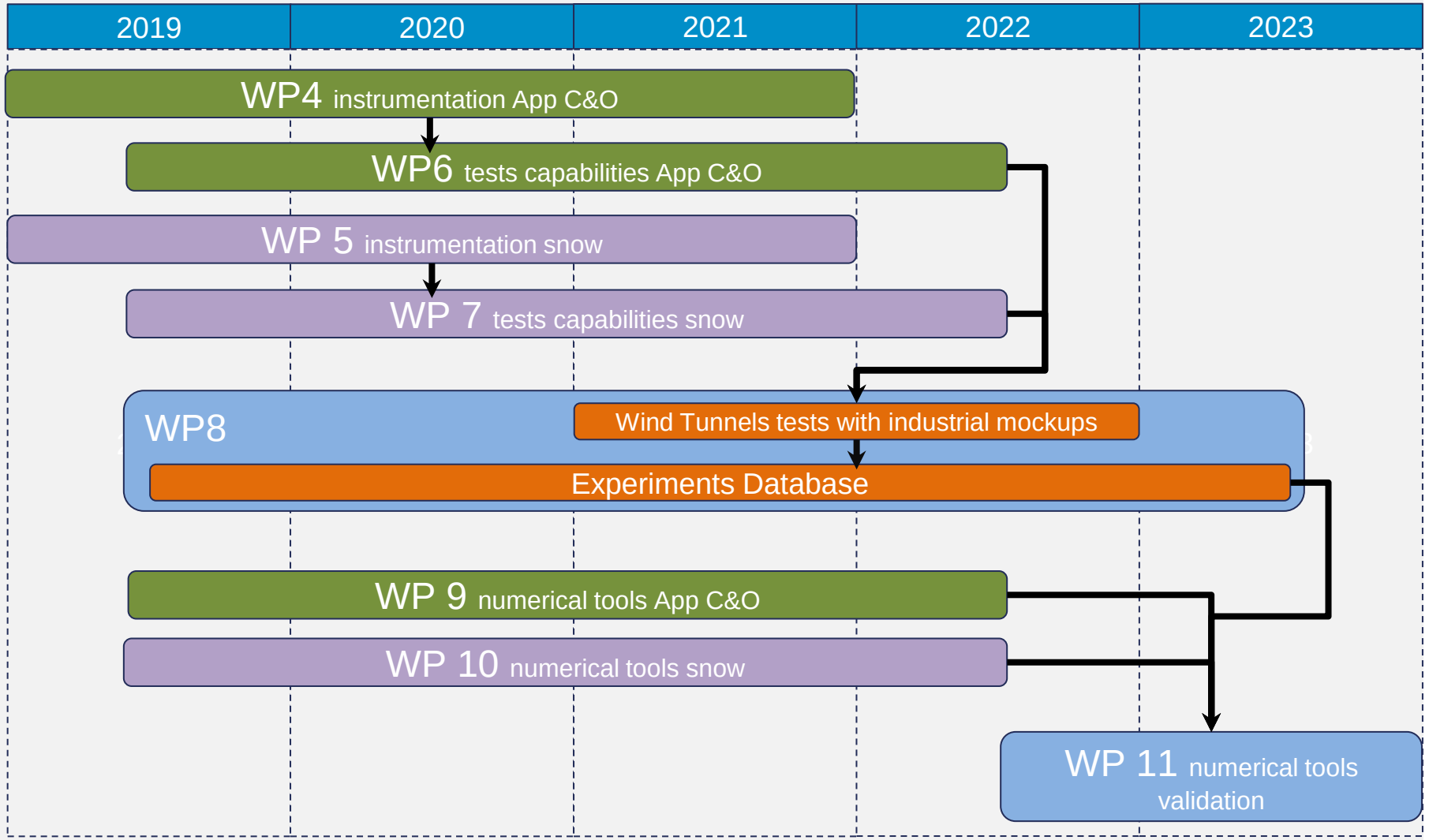
Obj#3: Build a **large scale experimental database** on representative 3D configurations to be used as a solid reference (“ground truth”) for future numerical tools validation.

ICE GENESIS Organisation



WP DEPENDENCIES

- Perform wind tunnel tests in liquid icing and snow conditions, in industrial environment (IWT and mockups)
- Provide searchable database of experimental results for validation of numerical tools



Liquid conditions and snow

Numerical tools validation

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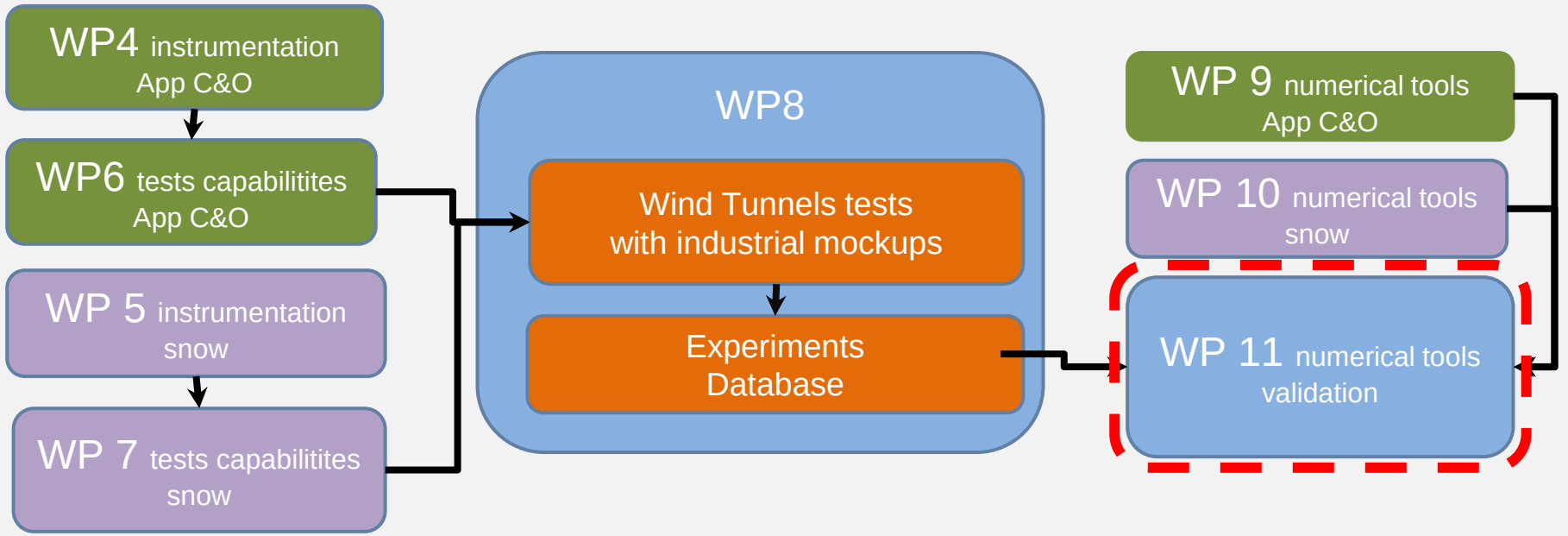
Objective of the WP

- Integration of improved numerical tools from WP9 & WP10 in the industrial computational environment
- Validation of the tools using WP7 & WP8 experimental database



Description of activities

- Integration of numerical tools in industrial environment with support of the academic partners

- Validation of numerical tools by the industrial on realistic components partners in liquid icing and snow conditions :
  - 2D/3D Airframe
  - Helicopter hoist
  - Engine inlet

- Cross-comparison of the different numerical tools / modelling approach by the partners :
  - Definition of common test cases at the start of WP11

Description of activities

- Identification of limitations and best-practices for the numerical tools.

- Increase of the numerical tools maturity :
  - Validation of a TRL5 is expected at the end of WP11

THANK YOU FOR YOUR INTEREST

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