CIRA – Italian Aerospace Research Centre:
- Research Public body
- Italian Government entrusted to CIRA the management of the Italian Aerospace Research Program (PRORA) to support the competitiveness of the Italian aerospace community.

Technical contribution:
- KGT2; Application of multidisciplinary optimization to aircraft drag reduction. Focus on laminar flow technologies (both natural and controlled) and on the design of laminar flow wing aircraft both in transonic and supersonic conditions. Attention also paid to uncertainty handling techniques in the optimization loop, due to the importance of these aspects in laminar flow aerodynamic design.
- WP6; Dissemination activities: Short course on tools needed for greener technologies including large scale simulation, new green materials, use of new IT tools for reliable code development and access and management of large scale simulation data.

Projects:
- **RECEPT**: **RECEPTivity and amplitude-based transition prediction.** Aimed at increasing the accuracy of performance prediction for aircraft with laminar wings, allowing design of advanced and innovative aircraft.
- **AFLoNext**: **Active Flow Loads & Noise control on Next generation wing.** Aimed at proving and maturing highly promising flow control technologies for novel aircraft configurations to improve aircraft’s performance and to reduce the environmental footprint.
- **UMRIDA**: **Uncertainty Management for Robust Industrial Design in Aeronautics.** Develop and apply new methods in UQ and RDM to handle large numbers of simultaneous uncertainties within times acceptable for industrial readiness.
- **Drag Reduction of Airframe and Non Lifting Rotating Systems within CLEAN SKY GRC2.**

Future activities:
- Development and improvement of reliable and rapid methods for the prediction of the transition from laminar to turbulent flow.
- Development of methods for design and optimization for complex aerodynamic configurations with the aid of high-fidelity simulations.
- Robust and reliability based optimization techniques for problems with a large number of uncertain parameters.

Selected Publications:

Contact Data:
- Dr. Domenico Quagliarella, d.quagliarella@cira.it, +390823623139, Via Maiorise, Capua, Italy
- Dr. Marcello Amato, m.amato@cira.it, +390823623310, Via Maiorise, Capua, Italy