



European Commission

RBF4AERO

Innovative benchmark technology for aircraft engineering design and efficient design phase optimization

September 2013 to August 2016

Partnership

RBF4AERO Project

Standard Optimization Approaches
● RBF4AERO Optimization Approach

Project Structure

WP1	End Users Requirements and Technical design Specifications	DAPP
WP2	Benchmark Technology Infrastructure Implementation	UTV
WP3	Experimental Tests Development	VKI
WP4	Numerical Optimization Analyses on Reference Models	DAPP
WP5	Benchmark Technology Procedure Verification and Testing	PIAGGIO
WP6	Dissemination & Exploitation	CNR
WP7	Consortium Management	DAPP



During the last decades **Computer-Aided Engineering** advanced techniques have become an indispensable mean in conceptual aircraft design due to the level of accuracy and reliability reached in numerical prediction. These **CAE processes** need to be **timely, cost effective** and with **high confidence in prediction capability**. Furthermore, to face with the requirements of aeronautical design, the geometries shape optimization process is requested to fulfill, at the same time, the **contrasting design targets of speed** (time required by the overall optimization process), **accuracy** (achieved using large meshes) and **extent** (related to the number of different configurations fully calculated during the optimization process).

The **RBF4AERO Project** aims at developing the **RBF4AERO Benchmark Technology**, an integrated numerical platform and methodology to efficiently handle the most demanding challenges of aircrafts design and optimization. The basic idea is to make the **CFD model parametric** through the use of a **shape optimization** environment based on a morphing technique founded on **radial basis functions (RBF)** mathematical framework, which offers a number of distinct advantages over the more traditional approaches, in terms of **speed** and **extent** maintaining a **high level of accuracy**.