



# AGILE

AIRCRAFT 3<sup>RD</sup> GENERATION MDO  
FOR INNOVATIVE COLLABORATION  
OF HETEROGENEOUS TEAMS OF EXPERTS

When a project for a new aircraft is initiated, designers need knowledge and competences from many different disciplines in order to make the right decisions about the plane's systems and functions. From the start of the aircraft design process computer simulation plays an major role in the prediction of the physical properties and behavior of the aircraft. A major challenge arises in aircraft design as the properties from different disciplines (aerodynamics, structures, stability and control, ...) are in constant interaction with each other. It is therefore important not only to connect the simulation models but also the corresponding experts to combine all competences and arrive at the best possible design.



This is at the core of the EU funded Horizon 2020 project **AGILE** coordinated by the Institute of Air Transportation Systems of the German Aeronautical Research Establishment DLR. **AGILE** will implement the 3<sup>rd</sup> generation of multidisciplinary optimization through efficient international multi-site collaboration in overall design teams. The project builds on key technologies developed over the last 10 years at DLR, as for example the common data format CPACS and the integration framework RCE.

Understanding complex systems and products as aircraft and the aircraft design process depends highly on the exploitation of knowledge. New technologies to exploit and/or re-use available engineering knowledge have become available and they have the potential to substantially accelerate the multidisciplinary aircraft design optimization process. Knowledge Based Engineering (KBE) for multidisciplinary aircraft design is one of the key innovations that the **AGILE** project promises to deliver.

***“New Aircraft Multidisciplinary Optimization processes targets significant reductions in aircraft development costs leading to cheaper and greener aircraft”***

The **AGILE** project has set ambitious performance targets to meet at the end of the project in 2018: a reduction of 20% in time to converge the optimization of an aircraft and a 40% reduction in time needed to solve the multidisciplinary optimization in a team of heterogeneous specialists. This will lead to aircraft designs with improved performance and a 40% performance gain (compared to aircraft in service today) is expected for large passenger unconventional aircraft.

To meet the challenges of the **AGILE** project a team of 20 partners from Europe, Canada and Russia, coming from industry, research and academia will collaborate together. The composition of team reflects the heterogeneous structure that is characteristic for today's design teams. The budget of the project is close to 9 Million Euro, with around 7 Million Euro provided by the European Commission.

