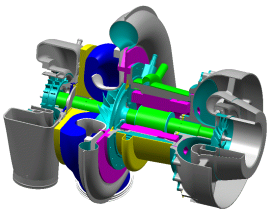
SGO Annual Implementation Plan 2012
Publishable summary

2011-12-20

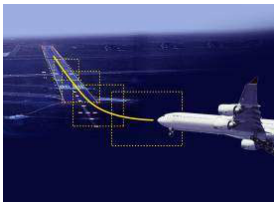
1 SGO - Systems for Green Operations introduction

Two domains have been identified in the Systems for Green Operations ITD as major contributors to the achievement of the Clean Sky challenges:

- The **Management of Aircraft Energy (MAE)**, which includes the two focus areas of “All-Electric Aircraft Equipment Systems Architectures” and “Thermal Management”

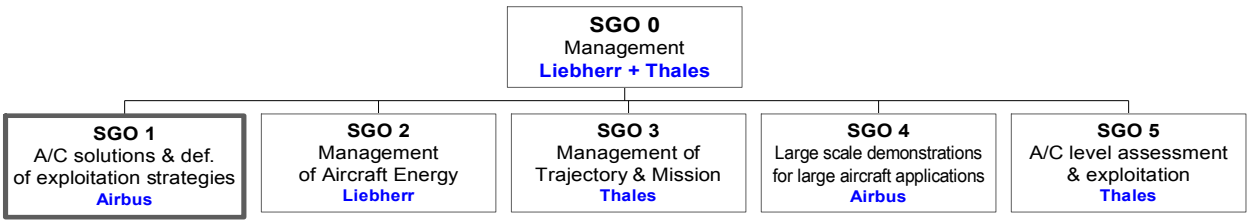



- The **Management of** Aircraft **Trajectory and Mission (MTM)**, which includes the two focus areas of “Management of trajectory and Mission” and “Smart Operations on Ground”



The ITD will deliver solutions that are integrated at aircraft level, fully demonstrated in realistic operational conditions and proven against the environmental challenges.

SGO is composed of six first level work packages as shown below.



2 Work programme 2012

2.1 WP 1 – Aircraft solution and exploitation strategies

In 2012, for large aircraft, WP1 will complete the updated requirements for cycle 2 development taking benefits of cycle 1 assessment. The master V&V plans will be updated and the TRL plan will be potentially updated with new findings. WP1 will also monitor the development and update the architecture assessment thanks to the refined knowledge of the technologies developed in WP2 and WP3.
As far as regional aircraft are concerned, WP1 will deliver the final configuration document for the green regional aircraft.
WP1.3 will also still ensure the management interface with SESAR to avoid overlaps and benefit from synergies.

2.2 WP2 – Management of aircraft energy

In WP2, work on technologies for energy management intended for demonstration activities will move on. In 2011, most of designs based on frozen architectures for cycle 1 were completed, and work on the construction of hardware began.
Throughout 2012, all designs based on frozen architectures for cycle 1 will be achieved and first equipment and subsystems are now being readied and will be delivered to test benches for demonstrator testing. The definition of Large Aircraft requirements and working architectures for cycle 2 system developments and improvements will be started.
For electrical and thermal systems, large-scale demonstrations are planned to be assembled during 2012 and 2013, and WP2 will deliver some equipment for these platforms in 2012.
The selected Ice Protection demonstrators for each of the three WIPS technologies will be delivered in order to support the icing tunnel tests, which are planned in the third quarter of 2012.
The development of first equipment intended for flight-testing such as a prototype skin heat exchanger subsystem will be completed and delivered to the flight test platform.
Major hardware for the first large scale ground tests will be completed and delivered to the COPPER Bird and PROVEN. In parallel, the development of many other technologies will move on towards completion checked by means of TRL3 and TRL 4 reviews during 2012.

Parallel to the construction of equipment, the method and tools work package will finalize their cycle 1 activities including transverse simulation activities across the SGO ITD. Some deliverables, which have been released in 2010 and 2011, will go through a refinement process, based on the results from the use-case simulation.

WP3

Most technologies developed in WP3 will reach a TRL4 in 2012.

First TRL4 for Flight management functions in the vertical plan will be passed for some flight phases, and preparatory work will be carried out for the remaining flight phases, in order to pass TRL4 in the first half of 2013.
Concerning the Atmospheric Data Transmission System and associated water vapour sensor, a major decision gate will be reached in first quarter of 2012. If successful, it will lead to hardware and software development in order to prepare for flight tests planned in 2013.
Other TRL 4 will be achieved in the field of advanced weather radar algorithms, on-board optimisation and decision aids, as well as Smart Operation on Ground System. TRL4 gates will be supported by Integration of technology mock-ups in partial test benches, in order to prepare final demonstration on more complete test rigs, planned in 2013 to 2015.

WP4

In WP4, the main activities will consist in:

- Pursuing the ground tests for power systems
- Preparing the ground test means for the demonstration of cycle 1 equipments which delivery is planned in 2013
- Performing large scale icing wind tunnel tests for the selected ice protection technologies
- Preparing the aircraft for the first flight test demonstration in 2013

WP5

In the frame of WP5.1 “Exploitation” the following tasks will be initiated.

- Identification of the new promising technologies, which could require an evolution of the design and certification rules.
- Initial analysis of the impacts for selected technologies.

In the area of WP5.2 “General Assessment”, data will be collected in 2012 to prepare a first ITD level assessment of the environmental impact of the developed technologies.