



Association of
European Research Establishments in Aeronautics

Position paper on the successor to Clean Sky in Horizon 2020

1. A Joint Technology Initiative for Aviation within Horizon 2020

The current framework programme recognises the specificity of aeronautics characterised by a long research and innovation cycle and by the need of activities ranging from basic research up to demonstration.

The current instruments in FP7 successfully cover the full scale of technology readiness levels: L0/L1 are focussing on lower technology readiness levels, L2 on integration projects, and L3 instrument (e.g. Clean Sky) brings research results up to demonstration in real scale and operational environment.

Public Private Partnerships initiated in FP7 for transport, such as the Clean Sky Joint Technology Initiative, have proven to be an important and efficient instruments for demonstration and should be continued.

EREA recommendation is to ensure in HORIZON 2020 the coverage of aviation research and innovation cycle ranging from basic research up to demonstration. Specifically, a successor of Clean Sky should be foreseen reinforcing the demonstration activities for innovative technologies and radically new configurations reducing the risks of new product development.

2. Content of a Joint Technology Initiative for Aviation within Horizon 2020

In order to bring the technologies up to the highest level of maturity, different steps are needed:

- **Validation and demonstration at technology level;** thus testing on ground with specific laboratories and facilities is required.
- **Validation and demonstration of integrated technology;** both on ground testing and demonstration with technology integrated in aircraft demonstrators are needed.
- **X-demonstrators - Demonstrators** with breakthrough technologies integrated in radically new configurations.

A "Clean Sky 2" in Horizon 2020 should cover all these steps.

EREA is ready to support validation and demonstration in the different phases:

- Numerical test campaigns, design and optimization studies;
- Virtual testing (multidisciplinary simulation, product testing and verification, certification aspects);
- Test campaigns with relevant research and test facilities;
- Full integration and demonstration test by a demonstration aircraft. EREA could take over the full operation of the research aircraft; in future this aircraft could also be used as an EREA research aircraft.



A market sub-sector approach should be adopted.

EREA supports the idea of continuing with five main topics within this L3-project.:

- Fixed Wing Aircraft
 - Integration of breakthrough technology (e.g. aerodynamics, propulsion systems, innovative multifunction materials, etc) in large and regional aircraft;
 - Next to innovations in technology there should also be more focus on improvements in design processes
 - Radically new configurations;
 - Small aircraft and integration in the Air Transport System towards a 4 hours door-to-door transport in Europe
- Rotorcraft
 - Integration of breakthrough technology (e.g. aerodynamics, propulsion systems, innovative multifunction materials, etc) in rotorcraft configurations and integration in the Air Transport System towards a 4 hours door-to-door transport in Europe
 - Radically new rotorcraft platforms (helicopters, tilt-rotors)
- Engines
 - Integration of breakthrough technologies for engines dedicated to a wide variety of transport A/C (large, medium and regional range) - including small aircraft - and rotorcraft (traditional helicopters, tiltrotor, etc.)
 - Radically new concept for radically new A/C and rotorcraft configurations
- Systems (cross-cutting ATS level approach)
 - The relations to ATM depend on the future set-up of SESAR 2.
 - Attention given to Cockpit Operations in this topic would be welcomed.
- Technology and Impact Evaluator.
 - The impact assessment at airport and fleet level, currently focused on noise and emissions, may be enriched with other analyses, in particular in the wide field of mobility.

3. The continuation of the current Clean Sky set-up

- For reasons of simplification, the successor of Clean Sky should have the same funding rules as Horizon 2020.
- The current structure of Clean Sky, with Members, Associated Members, and partners could continue.
- EREA members wish to continue as **partners of industry** under the successor of Clean Sky
 - Whereas industry prepares the product, research establishments play an essential role in turning basic knowledge into knowledge applicable for industry.
 - Furthermore Research Establishments support industry by performing test campaigns with relevant research and test facilities.
 - The partnership between the two should therefore continue or even be reinforced, e.g. **institutionalised EREA seats in the Governing Board of the successor of Clean Sky.**
- The use of research and test facilities (infrastructures), as well as the associated hardware (such as wind tunnel models) used as a service for industry should be 100% funded (full-cost).



4. About the potential set-up of Clean Sky 2 as a project management organisation

- EREA prefers L0-L1-L2-projects Commission responsibility under Horizon 2020, continuing current FP7 approach.
- In case Clean Sky 2 takes over the management of a part of the current annual Calls for Proposals
 - An open and transparent process similar to the current process of the Commission has to be ensured.
 - The principles and procedures as used today for the REA in Space and Security will be applied to that management organisation. In particular, Commission should take the final decision on funding, involving the programme committee (Member States).
 - Members and partners of the L3-project should be able to apply for open calls for proposals from the project management organisation, without budget constraints.
 - The demonstration activities (L3) will be funded via the project management organization in the same way as today Clean Sky by EC.