NATIONAL CONTACT POINT AERONAUTICS

НАЦИОНАЛЬНАЯ КОНТАКТНАЯ ТОЧКА АЭРОНАВТИКА

National contact point "AERONAUTICS"

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Ongoing Projects under the Framework Programme "Horizon 2020"

All open access information on H2020 projects is available on the Informational Portal CORDIS and on the projects websites. Data of the Portal and websites are updated during projects progress.

Projects with Russia

Other projects

Projects with Russia

Aircraft 3rd Generation MDO for Innovative Collaboration of Heterogeneous Teams of Experts

Project details:

Acronym:	**AGILE**
Project ID:	636202
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	8 763 432,79 €
EU contribution:	7 074 806,66 €
Starting date:	01.06.2015
Ending date:	01.06.2018
Duration:	36 months
Website:	http://www.agile-project.eu/

Coordinator:

DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany

Partners:

• AIRBUS DEFENCE AND SPACE GMBH	Germany
• ALENIA AERMACCHI SPA	Italy
• BOMBARDIER INC.	Canada
• CFS ENGINEERING SA	Switzerland
• FEDERALNOE GOSUDARSTVENNOE UNITARNOE PREDPRIYATIE CENTRALNII INSTITUTAVIACIONOGO MOTOROSTROENIYA IMENI PI BARANOVA	Russia
• FOKKER AEROSTRUCTURES BV	Netherlands
• GENWORKS BV	Netherlands
• KE-WORKS BV	Netherlands
• KUNGLIGA TEKNISKA HOEGSKOLAN	Sweden
• LINKOPINGS UNIVERSITET	Sweden
• STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	Netherlands
• NOESIS SOLUTIONS NV	Belgium
• OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES	France
• POLITECNICO DI TORINO	Italy
• RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	Germany
• SAAB AKTIEBOLAG	Sweden
• THELSYS GMBH	Germany
• FEDERAL STATE UNITARY ENTERPRISE THE CENTRAL AEROHYDRODYNAMIC INSTITUTE NAMED AFTER PROF. N.E. ZHUKOVSKY	Russia
• TECHNISCHE UNIVERSITEIT DELFT	Netherlands
• UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II.	Italy

Objective:

AGILE targets multidisciplinary optimization using distributed analysis frameworks. The involvement of many disciplinary analyses ranging up to high levels of fidelity and agile workflow management are considered to be state-of-the-art and starting point for AGILE.

Advanced optimization techniques and strategies will be developed in order to exploit available computing systems and to gain faster convergence to optimal solutions. Surrogates, decomposition, robust design and uncertainties, global-local optimization, mixed fidelity optimization and system-of-system optimization are central fields of research.

Operating the coupled numerical system and interpreting the high fidelity results requires collaboration of heterogeneous specialists. Techniques for collaboration are the second scientific objective of AGILE using the research on optimization techniques as use case. The interactions between humans and the interactions of the design team with the numerical system both are investigated.

Knowledge-enabled information technologies will be developed in order to support the collaboration process constituting the third, outer-most layer of the nested research concept.

Novel technologies are iteratively implemented, tested and enhanced. Use cases are realistic overall aircraft design tasks for conventional, strut-braced, box-wing and BWB configurations.

The project is set up to proof a speed up of 40% for solving realistic MDO problems compared to today’s state-of-the-art.

The resulting technologies will be made available; amongst others via an Open MDO Test Suite.

Reduced development costs and reduced time to market will enable a more agile way of collaboration and joint development and experimenting on innovative products.

AGILE pronounces the collaboration of SME, RES and HES in order to contribute to IND-centred virtual extended enterprises. AGILE considers all pre-existing conventions and will contribute to the CRESCENDO results and dissemination plan.

Future Sky Safety

Project details

Acronym:	**Future Sky Safety**
Project ID:	640597
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.4-2014 – Coordinated research and innovation actions targeting the highest levels of safety for European aviation
Funding scheme:	RIA – Research and Innovation action
Total cost:	16 382 874,25 €
EU contribution:	14 882 894 €
Starting date:	01.01.2015
Ending date:	01.01.2019
Duration:	48 months
Website:	https://www.futuresky-safety.eu/

Coordinator

STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM Netherlands

Partners

DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES	France
CEIIA - CENTRO PARA A EXCELENCIA EINOVACAO NA INDUSTRIA AUTOMOVEL	Portugal
CENTRO ITALIANO RICERCHE AEROSPAZIALI SCPA	Italy
CSEM CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DEVELOPPEMENT	Switzerland
INSTITUTUL NATIONAL DE CERCETARI AEROSPATIALE ELIE CARAFOLI - I.N.C.A.S. SA	Romania
INSTITUTO NACIONAL DE TECNICA AEROESPACIAL ESTEBAN TERRADAS	Spain
VYZKUMNY A ZKUSEBNI LETECKY USTAV A.S.	Czech Republic
TOTALFORSVARETS FORSKNINGSINSTITUT	Sweden
EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	Belgium
CIVIL AVIATION AUTHORITY	United Kingdom
AIRBUS SAS	France
AIRBUS OPERATIONS SAS	France
AIRBUS DEFENCE AND SPACE SA	Spain
THALES AVIONICS SAS	France
THALES AIR SYSTEMS SAS	France
DEEP BLUE SRL	Italy
TECHNISCHE UNIVERSITAET MUENCHEN	Germany
DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT	Germany
SERVICE TECHNIQUE DE L'AVIATION CIVILE	France
EMBRAER PORTUGAL ESTRUTURAS EM COMPOSITOS SA	Portugal
FEDERAL STATE UNITARY ENTERPRISE THE CENTRAL AEROHYDRODYNAMIC INSTITUTE NAMED AFTER PROF. N.E. ZHUKOVSKY	Russia
ENAV SPA	Italy
BOEING RESEARCH & TECHNOLOGY EUROPE S.L.U.	Spain
LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE	United Kingdom
ALENIA AERMACCHI SPA	Italy
CRANFIELD UNIVERSITY	United Kingdom
THE PROVOST, FELLOWS, FOUNDATION SCHOLARS & THE OTHER MEMBERS OF BOARD OF THE COLLEGE OF THE HOLY & UNDIVIDED TRINITY OF QUEEN ELIZABETH NEAR DUBLIN	Ireland
ZODIAC AEROSAFETY SYSTEMS	France
Institut polytechnique de Bordeaux	France
KONINKLIJKE LUCHTVAART MAATSCHAPPIJNV	Netherlands

Objective:

The EC Flight Path 2050 vision aims to achieve the highest levels of safety to ensure that passengers and freight as well as the air transport system and its infrastructure are protected. However, trends in safety performance over the last decade indicate that the ACARE Vision 2020 safety goal of an 80% reduction of the accident rate is not being achieved. A stronger focus on safety is required. There is a need to start a Joint Research Programme (JRP) on Aviation Safety, aiming for Coordinated Safety Research as well as Safety Research Coordination. The proposed JRP Safety, established under coordination of EREA, is built on European safety priorities, around four main themes with each theme consisting of a small set of projects:

- *Theme 1* (New solutions for today's accidents) aims for breakthrough research with the purpose of enabling a direct, specific, significant risk reduction in the medium term.
- *Theme 2* (Strengthening the capability to manage risk) conducts research on processes and technologies to enable the aviation system actors to achieve near-total control over the safety risk in the air transport system.

- *Theme 3* (Building ultra-resilient systems and operators) conducts research on the improvement of Systems and the Human Operator with the specific aim to improve safety performance under unanticipated circumstances.
- *Theme 4* (Building ultra-resilient vehicles), aims at reducing the effect of external hazards on the aerial vehicle integrity, as well as improving the safety of the cabin environment.

To really connect and drive complementary Safety R&D (by EREA) to safety priorities as put forward in the EASA European Aviation Safety plan (EASp) and the EC ACARE Strategic Research and Innovation (RIA)Agenda, Safety Research Coordination activities are proposed. Focus on key priorities that impact the safety level most will significantly increase the leverage effect of the complementary safety Research and Innovation actions planned and performed by EREA.

Towards Industrial LES/DNS in Aeronautics – Paving the Way for Future Accurate CFD

Project details:

Acronym:	**TILDA**
Project ID:	635962
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	3 048 742,5 €
EU contribution:	2 706 241,75 €
Starting date:	01.05.2015
Ending date:	01.05.2018
Duration:	36 months

Coordinator:

NUMERICAL MECHANICS APPLICATIONS INTERNATIONAL SA Belgium

Partners:

• DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
• OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES	France
• DASSAULT AVIATION SA	France
• SAFRAN	France
• CENTRE EUROPEEN DE RECHERCHE ET DE FORMATION AVANCEE EN CALCUL SCIENTIFIQUE	France
• CENTRE DE RECHERCHE EN AERONAUTIQUE ASBL - CENAERO	Belgium
• UNIVERSITE CATHOLIQUE DE LOUVAIN	Belgium
• UNIVERSITA' DEGLI STUDI DI BERGAMO	Italy
• IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE	United Kingdom
• FEDERAL STATE UNITARY ENTERPRISE THE CENTRAL AEROHYDRODYNAMIC INSTITUTE NAMED AFTER PROF. N.E. ZHUKOVSKY	Russia

Objective:

The ability to simulate aerodynamic flows using CFD methods has progressed rapidly over the last decades and has given rise to a change in design processes in aeronautics already. But more improvement is necessary to overcome the (still) existing lack in confidence in CFD usage, based on turbulence modelling. The TILDA project will offer methods and approaches combining advanced and efficient high-order numerical schemes (HOMs) with innovative approaches for LES and DNS in order to resolve all relevant flow features on tens of thousands of processors in order to get close to a full LES/DNS solution for 1billion degrees-of-freedom (DOF) not exceeding turn-around times of a few days.

The TILDA project will provide both an improved physical knowledge and more accurate predictions of non-linear, unsteady flows – near borders of the flight envelope - which will directly contribute to an enhanced reliability. The main highly innovative objectives, targeting at industrial needs read:

- Advance methods to accelerate HOM for unsteady turbulence simulations on unstructured grids.
- Advance methods to accelerate LES and future DNS methodology by multilevel, adaptive, fractal and similar approaches on unstructured grids.
- Use existent large scale HPC networks to enable industrial applications of LES/DNS close(r) to daily practice. Compact high-order methods offer a very high ratio between computational work per DOF combined to a low data dependency stencil, making these methods extremely well adapted for shared-memory parallel processors, and allow for efficient redistribution over an increased number of processors.
- Provide grid generation methods for HOM on unstructured grids with emphasis on valid curvilinear meshes for complex geometries, and accounting for mesh and solution quality.
- Provide suitable I/O and interactive co- and post-processing tools for large datasets.
- Demonstration of multi-disciplinary capabilities of HOM for LES in the area of aero-acoustics.

Other Projects

Aeroelastic Gust Modelling

Project details:

Acronym:	**AEROGUST**
Project ID:	636053
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	4 289 986,25 €
EU contribution:	4 237 652 €
Starting date:	01.05.2015
Ending date:	01.05.2018
Duration:	36 months
Website:	http://www.aerogust.eu/

Coordinator:

UNIVERSITY OF BRISTOL	United Kingdom

Partners:

• INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET EN AUTOMATIQUE	France
• STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	Netherlands
• DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
• UNIVERSITY OF CAPE TOWN	South Africa
• NUMERICAL MECHANICS APPLICATIONS INTERNATIONAL SA	Belgium
• Optimad engineering s.r.l.	Italy
• THE UNIVERSITY OF LIVERPOOL	United Kingdom
• AIRBUS DEFENCE AND SPACE GMBH	Germany
• DASSAULT AVIATION SA	France
• PIAGGIO AERO INDUSTRIES SPA	Italy
• VALEOL SAS	France

Objective:

Encounters with atmospheric turbulence are a vitally important in the design and certification of many manmade structures such as aircraft and wind turbines. Gusts cause rapid changes in the flow about the structures which leads to rigid and flexible unsteady responses. Knowledge of aircraft/gust interactions is therefore vital for loads estimation during aircraft design as it impacts on control systems and often defines the maximum loads that these structures will experience in service.

At present industry typically uses the linear doublet lattice method with static loads corrections from expensive wind tunnel data. The wind tunnel data is created using the final aerodynamic surface in the predicted cruise shape. This means that gust loads come relatively late when the design options have been narrowed. Increased competition and environmental concerns are likely to lead to the adoption of more

flexible materials and the consideration of novel configurations, in which case the linear assumptions of the current gust loads process will become unacceptable.

To introduce non-linearity into the gust loads process without significantly increasing the cost and time, this project has three main objectives:

- to carry out investigations using CFD so that the non-linearities in gust interactions are understood;
- to create a gust loads process that does not require wind tunnel data and hence reduces the need for wind tunnel testing;
- to develop updated reduced order models for gust prediction that account for non-linearity at an acceptable cost.

These investigations will reduce the need for expensive wind tunnel testing and hence lead to time and cost savings at the design stage therefore ensuring that the European aerospace and defence industry remain competitive in the future.

The wind turbine industry has similar concerns, with gusts and wind shear restricting the locations available for wind farms. The project will also address these issues using common methodology.

Quality assurance concepts for adhesive bonding of aircraft composite structures by advanced NDT

Project details:

Acronym:	**ComBoNDT**
Project ID:	636494
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	4 617 226,25 €
EU contribution:	4 617 225,75 €
Starting date:	01.05.2015
Ending date:	01.05.2018
Duration:	36 months
Website:	http://combondt.eu/

Coordinator:

FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV	Germany

Partners:

• INSTYTUT MASZYN PRZEPLYWOWYCH IM ROBERTA SZEWALSKIEGO POLSKIEJ AKADEMII NAUK - IMP PAN	Poland
• CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	France
• AERNNOVA COMPOSITES ILLESCAS SA	Spain
• AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE	Italy
• UNIVERSITY OF PATRAS	Greece
• AIRBUS DEFENCE AND SPACE GMBH	Germany
• EASN Technology Innovation Services BVBA	Belgium
• GMI AERO SAS	France

• AIRBUS DEFENCE AND SPACE LTD	United Kingdom
• AUTOMATION WR GMBH	Germany
• COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	France
• Airbus Group SAS	France

Objective:

The integration of innovative lightweight materials like CFRP into multi-material design (MMD) environments in aeronautic applications brings along a paradigm shift in initial design, manufacturing and in maintenance, repair and overhaul (MRO). Essential cost reductions over the whole aircraft lifecycle demand innovative processes meeting the specific requirements of MMD in general and specifically of CFRP. The certification of (structural) adhesive bonding marks a key step for full integration of CFRP, as adhesive bonding is the optimum CFRP joining technology.

As yet difficulties in predicting and assessing the bond quality by non-destructive testing limit certification of adhesive bonding technologies and subsequently their usage in aeronautic applications.

ComBoNDT aims at overcoming these limitations by further development and maturation of extended non-destructive testing (ENDT) methods suitable for pre- and post-bond inspection of adherend surfaces and adhesively bonded joints.

The ComBoNDT approach is threefold:

- reliable and reproducible detection of undefined and/or multiple contaminations on surfaces prior bonding, triggering surface cleaning and activation measures,
- reliable and reproducible detection of poor bond quality, triggering appropriate repair actions,
- improvements in robustness of methods addressing the requirements of in-line inspection in both aircraft manufacturing and MRO environments.

Time savings of up to 70 % and cost savings of up to 50 % in related production, MRO and retrofit processes are expected from the application of ENDT technologies resulting from ComBoNDT.

ComBoNDT addresses relevant levels of technology and of manufacturing readiness. ComBoNDT will contribute to implementation of safe, cost- and time-efficient adhesive bonding technologies and to reducing production and MRO costs.

Data driven approach for a Seamless Efficient European Travelling in 2050

Project details:

Acronym:	**DATASET2050**
Project ID:	640353
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.7-2014 – Support to European aviation research and innovation policy
Funding scheme:	CSA – Coordination and Support action
Total cost:	1 327 255 €
EU contribution:	1 327 255 €
Starting date:	01.12.2014
Ending date:	01.12.2017
Duration:	36 months
Website:	http://www.dataset2050.com/

Coordinator:

FUNDACION INSTITUTO DE INVESTIGACION INNAXIS	Spain

Partners:

• EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	Belgium
• THE UNIVERSITY OF WESTMINSTER LBG	United Kingdom
• BAUHAUS LUFTFAHRT E.V.	Germany

Objective:

DATASET2050 (DATA driven approach for a Seamless Efficient Travelling in 2050) is the very first Coordination and Support Action that - through a cutting edge data science approach - will provide insight into the door-to-door European travel paradigm for the current, 2035 and 2050 transport scenarios.

DATASET2050 puts the passenger at the centre, paving the way for a seamless, efficient door-to-door travelling experience. The main focus will be put on analysing how the European transport supply profile (capacity, connections, business models, regulations, intermodality, processes, infrastructure) could adapt to the evolution of the demand profile (customers, demographics, passenger expectations, requirements).

Through expert application of state-of-art predictive analytics, modelling, statistical analyses and data visualisation, with an examination of multimodal data, these analyses will enable the identification of European transport bottlenecks and weak areas across the different scenarios. These findings will serve as a basis for the development of intermodal transport concepts, identifying possible solutions for current and predicted shortcomings. The insights gained through the project's approach will highlight research needs towards the four hour door-to-door goal formulated by ACARE.

Given the nature and aim of the initiative, the DATASET2050 partners and Advisory Board are comprised of top European transport Entities (universities, policy makers, industry, research Institutes, GIS and inter-/multimodal entities) with major inputs into European strategy agendas. A comprehensive dissemination and communication plan will ensure efficient circulation of the results among key European transport policy makers and stakeholders.

Door to Door Information for Airports and Airlines

Project details:

Acronym:	**DORA**
Project ID:	635885
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.3-2014 – Seamless and customer oriented air mobility
Funding scheme:	RIA – Research and Innovation action
Total cost:	4 682 895 €
EU contribution:	4 682 895 €
Starting date:	01.06.2015
Ending date:	01.06.2018
Duration:	36 months
Website:	https://dora-project.eu/

Coordinator:

EURESCOM-EUROPEAN INSTITUTE FOR RESEARCH AND STRATEGIC STUDIES IN TELECOMMUNICATIONS GMBH	Germany

Partners:

• VMZ BERLIN BETREIBERGESELLSCHAFT MBH	Germany
• ETRA INVESTIGACION Y DESARROLLO SA	Spain
• Flughafen Berlin Schönefeld GmbH	Germany
• EUREVA SAS	France
• UNIVERSITAT POLITECNICA DE VALENCIA	Spain
• CREATIVE SYSTEMS ENGINEERING (C.S.E) MONOPROSOPI EPE	Greece
• TECHNISCHE UNIVERSITAET BERLIN	Germany
• LAPPEENRANNAN TEKNILLINEN YLIOPISTO	Finland
• AYUNTAMENT DE PALMA DE MALLORCA	Spain
• SENATSVERWALTUNG FUR STADTENTWICKLUNG	Germany
• Empresa Municipal de Transports Urbans de Palma de Mallorca S.A	Spain
• VBB VERKEHRSVERBUND BERLIN-BRANDENBURG GMBH	Germany

Objective:

DORA project is aiming at design and establishment of an integrated information system that helps passengers to optimise travel time from an origin of the travel to the airplane at the departing airport as well as from the arrival airport to the final destination. With it, the DORA integrated information system, which will be created within the project together with necessary software platforms and end user applications, is aiming at reduction of overall time needed for a typical European air travel including necessary time needed for transport to and from the airports.

To ensure this, the DORA system will provide mobile, seamless, and time optimised route recommendations for the travels to the airport and time optimised routing within the airports, leading the passengers through terminals to the right security and departure gates. The DORA will integrate all necessary real time information on disruptions in the land transport environments and on incidents in the airport terminals to provide the fastest route alternatives, ensuring the accessibility of airport and airplane at any time in accordance with individual passengers' requirements. The DORA system will be designed in a generic way, to ensure that it can be widely adopted independently on passengers and airports locations.

In the project, the DORA system will be implemented and tested in realistic environments involving cities of Berlin and Palma di Mallorca as well corresponding airports in both cities with involvement of at least 500 real end users – passengers – in the trials. To support the passengers' route optimisation, the DORA project will investigate and design technologies for recognition of waiting queues and indoor location services in airports, which will be integrated into the DORA system and tested within the project trials.

European Collaborative Dissemination of Aeronautical research and applications 2

Project details:

Acronym:	**e-CAERO 2**
Project ID:	640316
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.6-2014 – Improving skills and knowledge base in European aviation

Funding scheme:	CSA – Coordination and Support action
Total cost:	688 125 €
EU contribution:	688 125 €
Starting date:	01.12.2014
Ending date:	01.12.2017
Duration:	36 months

Coordinator:

CENTRE INTERNACIONAL DE METODES NUMERICS EN ENGINYERIA	Spain

Partners:

• ERCOFTAC EUROPEAN RESEARCH COMMUNITY ON FLOW TURBULENCE AND COMBUSTION	Belgium
• COUNCIL OF EUROPEAN AEROSPACE SOCIETIES	Belgium
• EUROPEAN CONFERENCE FOR AERO-SPACE SCIENCES	Belgium
• EUROMECH EV	Germany
• EUROPEAN TURBOMACHINERY SOCIETY	Italy

Objective:

The E-CAero2 project is the natural follow-up of the E-CAero project developed within FP7 from 2009 to 2013.

E-CAero achievements can be summarized as improved communication between associations, implementation of a common logistic platform, better synchronised conference events, scientific expertise better aggregated to conferences, events organised in cooperation between associations, and a vision for common journal and publishing policy.

The E-CAero project was launched in response to a call from the European Commission. The object was to harmonise the scientific communication activities in the field aeronautics and air transport made by the European organisations working in these fields. The ECAero 2 project is aimed to go further and it aims to define a wide coordination mechanism between the associations that devote their activities, totally or partially, to aeronautics and air transport.

The action will enhance the impact of and facilitate access to publications of interest to European aviation, notably those issued from EU-funded projects. The rationalisation of conferences is to reduce the duplication of events, improve their visibility, and increase their audience. It goes without saying that the actions taken in this project are to become self-supported by the end of the project.

The objectives of E-Caero 2 are in keeping with the former project E-Caero. They can be defined as:

- Enhance communication between the associations
- Progress in the synchronisation of events
- Take initiatives towards a joint publication policy in Europe.
- Promote coordination within the federation of associations
- Provide a more visible European label and common policy to aeronautical events and publications
- Establish a unified logistics network and a specific secretariat for events of the ECAA
- Properly quantify the size of the scientific/industrial community and the desirable number of events;
- Offer a better harmonised information to scientists and technologists.

EXTREME Dynamic Loading - Pushing the Boundaries of Aerospace Composite Material Structures

Project details:

Acronym:	**EXTREME**
Project ID:	636549
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	5 277 597,5 €
EU contribution:	5 277 597,5 €
Starting date:	01.09.2015
Ending date:	01.09.2019
Duration:	48 months

Coordinator:

UNIVERSITY OF BATH — United Kingdom

Partners:

- TECHNISCHE UNIVERSITAET DRESDEN — Germany
- TECHNISCHE UNIVERSITEIT DELFT — Netherland
- UNIVERSITEIT GENT — Belgium
- BRUNEL UNIVERSITY LONDON — United Kingdom
- CONSIGLIO NAZIONALE DELLE RICERCHE — Italy
- DYNAWAVE LTD — United Kingdom
- DYNAMORE GESELLSCHAFT FUER FEM INGENIEURLEISTUNGEN MBH — Germany
- MSC SOFTWARE BELGIUM — Belgium
- TECHNOBIS FIBRE TECHNOLOGIES BV — Netherlands
- AGUSTAWESTLAND LIMITED — United Kingdom
- ROLLS-ROYCE PLC — United Kingdom
- UNIVERSITY OF PATRAS — Greece
- ISRAEL AEROSPACE INDUSTRIES LTD. — Israel

Objective:

The European industry is currently a world leader in aviation and to maintain its leading position and competitiveness in the dynamic global market, Europe's industry must develop quickly and efficiently high quality products by meeting time-critical market demands and customers' needs. Industrial competition is becoming fiercer not only from established regions, such as the USA, but from new emerging challengers, such as Brazil, Canada, etc.

Technological leadership and innovation is becoming the major competitive differentiator, most notably in terms of costs, and environmental performance. The market demands shorter cycles of new technology integration and, on the other hand, competitors enter the market with aggressive prices.

It is forecasted that in 2050, innovative products and services demanded by the market will be based on state of the art design, manufacturing and certification processes with a significant reduction of the environmental impact. Recent studies have shown that the development and deployment of new structural technologies will have the greatest impact in the reduction of weight and operational costs compared to other technologies.

Against this background, composite materials technology is of fundamental importance to current and future aircraft structures where high specific properties and integration of multiple functionalities are essential to improve weight, fuel efficiency, reduce CO2 emissions, and certification costs. The vulnerability of composite structures to localised, dynamic, sudden, and unexpected loads, may result in unpredictable complex localized damage and a loss of post-impact residual strength.

The aim of the EXTREME project is to develop novel material characterisation methods and in-situ measurement techniques, material models and simulation methods for the design and manufacture aerospace composite structures under EXTREME dynamic loadings leading to a significant reduction of weight, design and certification cost.

Flutter Free FLight Envelope eXpansion for ecOnomical Performance improvement

Project details:

Acronym:	**FLEXOP**
Project ID:	636307
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	6 692 164,38 €
EU contribution:	6 692 163,75 €
Starting date:	01.06.2015
Ending date:	01.12.2018
Duration:	42 months
Website:	https://www.flexop.eu/

Coordinator:

MAGYAR TUDOMANYOS AKADEMIA SZAMITASTECHNIKAI ES AUTOMATIZALASI KUTATOINTEZET	Hungary

Partners:

• AIRBUS DEFENCE AND SPACE GMBH	Germany
• AIRBUSGROUP LIMITED	United Kingdom
• DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
• FISCHER ADVANCED COMPOSITE COMPONENTS AG*FACC AG	Austria
• INASCO HELLAS ETAIREIA EFARMOSMENON AERODIASTIMIKON EPISTIMON EE	Greece
• TECHNISCHE UNIVERSITEIT DELFT	Netherlands
• TECHNISCHE UNIVERSITAET MUENCHEN	Germany
• UNIVERSITY OF BRISTOL	United Kingdom

Objective:

The FLEXOP project is about developing multidisciplinary aircraft design capabilities for Europe that will increase competitiveness with emerging markets -particularly in terms of aircraft development costs. A closer coupling of wing aeroelasticity and flight control systems in the design process opens new opportunities to explore previously unviable designs. Common methods and tools across the disciplines also provide a way to

rapidly adapt existing designs into derivative aircraft, at a reduced technological risk (e.g. using control to solve a flutter problem discovered during development).

The goal will be achieved by:

- improving efficiency of currently existing wing, by increased span at no excess structural weight, while establishing modifications by aeroelastic tailoring to carry the redesigned derivative wing;
- developing methods and tools for very accurate flutter modeling and flutter control synthesis, to enable improved flutter management during development, certification, and operation, enabling to fly with the stretched wing at same airspeed as the baseline aircraft;
- validating the accuracy of developed tools and methods on an affordable experimental platform, followed by a scale-up study, demonstrating the interdisciplinary development cycle.

Manufacturers will gain cost efficient methods, tools and demonstrators for enhancing aircraft performance by integrated development of flutter control and aeroelastic tailoring. These inter-disciplinary capabilities will improve the design cycle and the Verification& Validation process of both derivative and new aircraft. Better control of development and certification costs can be achieved if these capabilities are used to address problems early in the design process.

Flight test data will be posted on the project website to provide a benchmark for the EU aerospace community. The project's results will serve as a preliminary outlining of certification standards for future EU flexible transport aircraft.

Integrated, Intelligent modular power electronic converter

Project details:

Acronym:	**I2MPECT**
Project ID:	636170
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	7 180 892,51 €
EU contribution:	6 734 626,26 €
Starting date:	01.05.2015
Ending date:	01.05.2018
Duration:	36 months
Website:	http://www.i2mpect.eu/i2mpect/

Coordinator:

SIEMENS AKTIENGESELLSCHAFT	Germany

Partners:

AIRBUS DEFENCE AND SPACE GMBH	Germany
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH	Switzerland
THE UNIVERSITY OF SHEFFIELD	United Kingdom
DYNEX SEMICONDUCTOR LIMITED	United Kingdom
LABINAL POWER SYSTEMS	France
INSTITUT NATIONAL DES SCIENCES APPLIQUEES DE LYON	France
K & S GMBH PROJEKTMANAGEMENT	Germany

- AIRBUS OPERATIONS SAS France

Objective:

Increasingly demanding requirements in the transportation industry for higher efficiency and reduced carbon footprint are leading to an ever increasing interest in electrically operated drives which offer significant benefits over their pneumatic or hydraulic counterparts. More electric aircraft technologies with fully electrical actuation and environmental conditioning systems are moving from topics of academic interest to commercial applications.

Despite the progress in power electronics and electrical drives, significant advances in power density and reliability are still required before electrical technologies are fully accepted in the aircraft industry. The thermal management of losses generated in the power converters, with the associated requirements for heavy cooling systems, is proving to be the stumbling block for further improvements in power density.

Ground-breaking advances in wide band-gap semiconductor materials are promising to deliver significant benefits to power conversion systems with unprecedented levels of power density thanks to considerably reduced losses and high temperature operation, making them ideal building blocks for aerospace power electronics.

Leveraging on some of EU best expertise in device manufacture and packaging, components integration, thermal management, converters design, reliability analysis, control and condition monitoring, as well as aircraft power systems, the proposal will demonstrate significant advances of the state of the art in power converters for harsh environments. Innovative 3D device packaging based on planar interconnect technologies with double-sided integrated cooling, will be demonstrated for wide band-gap wire-bond free power semiconductor devices. These technological breakthroughs, coupled with novel methodologies for active thermal management, lifetime testing, health management and prognosis will contribute to unprecedented levels of power density, efficiency and reliability in aerospace application

New aerospace advanced cost effective materials and rapid manufacturing technologies

Project details:

Acronym:	**MMTech**
Project ID:	633776
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	5 708 000 €
EU contribution:	5 708 000 €
Starting date:	01.05.2015
Ending date:	01.05.2019
Duration:	48 months
Website:	http://mmtech-nology.com/

Coordinator:

THE UNIVERSITY OF SHEFFIELD United Kingdom

Partners:

• ADVANCED MANUFACTURING (SHEFFIELD)LIMITED	United Kingdom
• TEKS SARL	France
• UNIVERSITY OF STRATHCLYDE	United Kingdom
• DIAD GROUP SRL	Italy
• EFESTO	France
• CE.S.I. CENTRO STUDI INDUSTRIALI SRL	Italy
• IDEKO S. COOP.	Spain
• MBN NANOMATERIALIA SPA	Italy
• FIDIA SPA	Italy
• MONDRAGON GOI ESKOLA POLITEKNIKOA J.M.A. S.COOP.	Spain
• PRIMA INDUSTRIE SPA	Italy
• IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE	United Kingdom

Objective:

This project will focus on the development of technologies and methodologies which have the potential to save costs and time across the whole life cycle of the aircraft (design, production, maintenance, overhaul, repair and retrofit), including for certification aspects. Moreover it will also target the integration of additional functions or materials in structural components of the aircraft, the increased use of automation.

The first proposed step is the introduction of the γ-TiAl alloy, a well known promising advanced material for aerospace applications and a revolutionary manufacturing technology. Its specific stiffness and strength, as compared to its low weight, potentially leads to large weight savings (50%), and therefore lower mechanical loads on thermomechanical stressed parts, compared to the common Ni based superalloys. The integration of new material and new manufacturing technology will positively impact several aspects of the manufacturing and maintenance chain, starting from the design, the production, the repair).

The aim of this project is twofold:

- On one side the work will be focused on the development and integration at industrial of a IPR protected gas atomization process for producing TiAl powders, whose properties must be highly stable from batch to batch.
  Thanks to the stability of the chemical and granulometric properties of the powders, the application of the Rapid Manufacturing technique to the production of TiAl components will be economically affordable. While this technique is by now well-known, its main drawback resides in the scarce quality of the starting powders.
- The other main drawback for the wide industrial application of TiAl components is the integrated optimisation of all the machining steps, that means the setting up of machine tool characteristics and parameters, cutting tool geometry, substrate and coating materials, advanced lubrication technologies.

Novel Integration of Powerplant System Equipment

Project details:

Acronym:	**NIPSE**
Project ID:	636218
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.1-2014 – Competitiveness of European aviation through cost efficiency and innovation
Funding scheme:	RIA – Research and Innovation action
Total cost:	6 235 001,25 €

EU contribution:	6 235 001,25 €
Starting date:	01.06.2015
Ending date:	01.06.2018
Duration:	36 months
Website:	http://www.nipse.eu/

Coordinator:

AIRCELLE SA	France

Partners:

• ARTTIC	France
• THERMOCOAX SAS	France
• STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	Netherlands
• COMPANIA ESPANOLA DE SISTEMAS AERONAUTICOS	Spain
• BAE Systems (Operations) Ltd	United Kingdom
• MEGGITT AEROSPACE LIMITED	United Kingdom
• SNECMA SA	France
• LABINAL POWER SYSTEMS	France
• ARCHIMHDHS KENTRON KAINOTOMIAS KAIDIMIOURGIAS ARCHIMEDES CENTER FOR INNOVATION AND CREATION	Greece

Objective:

The main objectives of NIPSE are to provide technologies to

- reduce Integrated PowerPlant System development time of future aeroengines by 10%
- enable the 2 to 3% environmental related gains in fuel burn and reduction in emissions looked at by these new aeroengine architectures (especially Ultra High Bypass Ratio and Open Rotor) through improved aeroengine equipment solutions.

The objectives will be achieved through several elements. NIPSE will develop key equipment and capabilities, in particular:

- multivariable optimisation methodologies,
- more efficient heat exchangers,
- smaller equipment, and
- novel electrical and pneumatic interconnections to enable a means of developing better competitive solutions for future aeroengine architectures in a shorter development time.

This will be performed taking into account line maintenance issues to ensure the improvements of aeroengine architecture and associated equipment do not adversely impact the passenger experience.

This is relevant to the work programme in increasing competitiveness of European companies through development of technologies to achieve fast, best solution approaches for installation of aeroengine equipment, allowing securement and enhancement of existing European workload for this equipment, and enhancing exports for Europe.

Development of key technology in equipment definition, installation and optimisation enables existing and future aeroengine technologies to better achieve their goals, thus enhancing European competitiveness within aeroengine market.

Without NIPSE, the true potential of the new aeroengine architectures will not be achieved and societal gains will not be met.

Personalised Airport Systems for Seamless Mobility and Experience

Project details:

Acronym:	**PASSME**
Project ID:	636308
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.3-2014 – Seamless and customer oriented air mobility
Funding scheme:	RIA – Research and Innovation action
Total cost:	4 639 086,25€
EU contribution:	4 631 211,75 €
Starting date:	01.06.2015
Ending date:	01.06.2018
Duration:	36 months
Website:	http://www.passme.eu/

Coordinator:

TECHNISCHE UNIVERSITEIT DELFT	Netherlands

Partners:

• THE UNIVERSITY OF NOTTINGHAM	United Kingdom
• OPTIMARES SPA	Italy
• STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	Netherlands
• KONINKLIJKE LUCHTVAART MAATSCHAPPIJNV	Netherlands
• SCHIPHOL NEDERLAND B.V.	Netherlands
• DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
• FLUGHAFEN HAMBURG GMBH	Germany
• TECHNISCHE UNIVERSITAET HAMBURG-HARBURG	Germany
• ALMADESIGN CONCEITO E DESENVOLVIMENTO DE DESIGN LDA	Portugal
• C.C.I.C.C. LIMITED	Ireland
• INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	Greece

Objective:

PASSME aims to deliver industry-driven, passenger-centric novel solutions (up to TRL6) for passengers, airports and airlines to address the anticipated increase in demand for commercial flights in Europe by 2050. The goal is to reduce travel time by at least 60 minutes by integrating information between all stakeholders and transforming airport and aircraft operations and interiors to make the passenger journey time efficient, seamless, robust and accessible.

This requires significant breakthrough solutions, such as:

- a real-time passenger-centric system for managing passenger flows that use input from the airport and passenger to provide predictive analytics on passenger flows 20-30 minutes ahead of time;
- a passenger independent system for managing luggage flows that reduce the time in arrival/departure airports by at least 30 minutes and increases the control passengers have over their luggage;
- radically redesigned passenger-centric airport and airplane processes and facilities that enable highly personalised and less stressful experience through key touch points (check-in and boarding);
- and a personalised device and smartphone application that measures physiological/psychological state and links with airport/airline services to provide relevant and timely information to support the passenger in decision-making.

The research institutes (TUD, UNott, ICCS, TUHH, NLR, DLR) with interior design partners (Alma, Optimares) and communication experts (CARR) will work closely with Amsterdam and Hamburg airport clusters and KLM airlines to drive the user-centred design and evaluation methodology; to ensure the success of the solutions and that benefits will be shared with passengers, airlines and airports to have the necessary impact on the air transport system. Linking with the Airport Council International Europe (a selection of the 450 airports) and airport service SMEs will guarantee the results will have the maximum dissemination and exploitation across EU industries.

Promoting excellence and recognition seal of European aerospace Universities

Project details:

Acronym:	**PERSEUS**
Project ID:	640211
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.6-2014 – Improving skills and knowledge base in European aviation
Funding scheme:	CSA – Coordination and Support action
Total cost:	673 316,25 €
EU contribution:	600 000 €
Starting date:	01.12.2014
Ending date:	01.12.2016
Duration:	24 months
Website:	http://perseus-project.eu/

Coordinator:

POLITECNICO DI MILANO	Italy

Partners:

• UNIVERSIDAD DE SEVILLA	Spain
• UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II.	Italy
• CESKE VYSOKE UCENI TECHNICKE V PRAZE	Czech Republic
• TECHNISCHE UNIVERSITEIT DELFT	Netherlands
• POLITECNICO DI TORINO	Italy
• ECOLE NATIONALE SUPERIEURE DE MECANIQUE ET D'AEROTECHNIQUE	France
• EASN Technology Innovation Services BVBA	Belgium
• AKKREDITIERUNGSAGENTUR FUER STUDIENGAENGE DER INGENIEURWISSENSCHAFTEN, DER INFORMATIK, DER NATURWISSENSCHAFTEN UND DER MATHEMATIK EV	Germany
• INSTITUT VON KARMAN DE DYNAMIQUE DES FLUIDES	Belgium
• INSTITUTUL NATIONAL DE CERCETARI AEROSPATIALE ELIE CARAFOLI - I.N.C.A.S. SA	Romania
• AEROSPACE VALLEY	France

Objective:

The proposed action is expected to contribute to better meeting the needs of the aerospace sector for highly skilled workforce and to enhance the mobility of aerospace students and professionals across Europe.

Taking into consideration the complex skills needed by the aerospace sector, the action will develop the required learning outcomes and competence profiles for aero-engineering curricula and propose the

aerospace specific accreditation criteria that would complement the existing European, national or regional accreditation systems for engineering education.

The action will be developed in three distinct phases:

- The first phase is a conception phase. The learning outcomes and procedures will be defined looking at current practices and involving the main stakeholders of the higher education chain, from Universities to Industries and Research Establishments. The result should be a staged accreditation system, thereby gradually enhancing the quality level of the higher education degrees.
- The second phase is an implementation phase. The identified processes are tested on 6 aerospace curricula, from different EU countries.
- The third phase is a refinement phase. The results of the testing phase are compared to the expectations and the processes are updated taking into consideration the lessons learned from the testing phase. Suggestions for harmonizing the curricula and simultaneously developing knowledge and emerging technologies as well as facilitating students' exchanges across the EU will be proposed.

In parallel to the three phases, a dissemination and outreach activity is implemented to diffuse the culture of best practices among the EU higher education courses in the area of aerospace engineering and attract talented students to such studies.

The consortium members include representatives of aerospace industry, research establishments and education institutions, participating in the major existing EU networks such as PEGASUS, EASN, ENAEE, EREA and EACP.

SUstainable Network for Japan-Europe aerospace research and Technology cooperation II

Project details:

Acronym:	**SUNJET II**
Project ID:	640480
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.8-2014 – International cooperation in aeronautics with Japan
Funding scheme:	CSA – Coordination and Support action
Total cost:	612 652 €
EU contribution:	612 652 €
Starting date:	01.12.2014
Ending date:	01.06.2017
Duration:	30 months
Website:	http://sunjet-project.eu/

Coordinator:

Airbus Group SAS	France

Partners:

• EASN Technology Innovation Services BVBA	Belgium
• DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	Germany
• STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	Netherlands
• OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES	France
• AEROSPACE VALLEY	France
• BAE Systems (Operations) Ltd	United Kingdom

Objective:

SUNJET II proposal responds to the H2020-MG-2014 Topic 1.8 International Cooperation in Aeronautics of the work programme. Its main objectives are:

- Recommendations and guidance for future EU-Japan cooperation in the field of aviation
  Building on the SUNJET project, SUNJET II will produce consolidated roadmaps in the fields of Aircraft, Systems and Equipment, with the support of R&T institutions, Academics and Clusters. The roadmaps' consistency as well as their level of granularity will be checked, key topics for future EU-Japan R&T cooperation in the field of aviation will be selected, with an assessment of the funding and time required, and concrete recommendations for future EU-Japan Calls will be produced, taking into consideration the EU and Japanese R&T mechanisms. A Guidance Desk will make available relevant guidance material, including recommendations and best practices to a wide community interested in building a joint research project between Europe and Japan in the future.
- Promote communication and networking between EU and Japan in the field of aviation
  A Forum of exchanges between European and Japanese stakeholders will be created. It will be comprised of four physical meeting sessions in Europe and in Japan. A virtual platform will also be set up to maintain communication and develop new contacts remotely between the meetings. Furthermore, a collaboration (web based) platform will be created, designed to host social and semantic functionalities in order to boost the communication between European and Japanese stakeholders.
  Ensuring that the interested stakeholders will continue benefiting from the services and tools developed by SUNJET II even after the end of the project, the collaborative platform as well as the technical database connecting all roadmaps will be transferred to a permanent authority capable of maintaining it.

A Japanese mirror organization will be put in place on the basis of the contacts already established.

The consortium will be working in close cooperation and supported by Japanese mirror organizations, including the Society of Japanese Aerospace Companies (SJAC), the Japan Aircraft Development Corporation (JADC), the Japan Aerospace Exploration Agency (JAXA), the University of Tokyo and Chubu Aerospace Industry and Technology Center (C-ASTEC).

Ultra Low emission Technology Innovations for Mid-century Aircraft Turbine Engines

Project details:

Acronym:	**ULTIMATE**
Project ID:	633436
Programme:	H2020
Sections:	Smart, Green and Integrated Transport
Topic:	MG-1.5-2014 – Breakthrough innovation for European aviation
Funding scheme:	RIA – Research and Innovation action
Total cost:	3 138 121,88 €
EU contribution:	3 138 121,88 €
Starting date:	01.09.2015
Ending date:	01.09.2018
Duration:	36 months
Website:	http://www.ultimate.aero/

Coordinator:

CHALMERS TEKNISKA HOEGSKOLA AB	Sweden

Partners:

• ARISTOTELIO PANEPISTIMIO THESSALONIKIS	Greece
• BAUHAUS LUFTFAHRT E.V.	Germany
• CRANFIELD UNIVERSITY	United Kingdom
• INSTITUT SUPERIEUR DE L'AERONAUTIQUE ET DE L'ESPACE	France
• GKN AEROSPACE SWEDEN AB	Sweden
• MTU AERO ENGINES AG	Germany
• ROLLS-ROYCE PLC	United Kingdom
• ARTTIC	France
• SNECMA SA	France

Objective:

With the ULTIMATE project five experienced research groups and four major European engine manufacturers will develop innovative propulsion systems to fulfill the SRIA 2050 key challenges. One of the most challenging targets is the 75% reduction in energy consumption and CO2-emissions. Technologies currently at TRL 3-5, cannot achieve this aim. It is estimated that around a 30% reduction must come from radical innovations now being at lower TRL. Thus, European industry needs synergetic breakthrough technologies for every part of the air transport system, including the airframe, propulsion and power.

The ULTIMATE project singles out the major loss sources in a state of the art turbofan (combustor irreversibility, core exhaust heat, bypass exhaust kinetic energy). These are then used to categorize breakthrough technologies (e.g. piston topping, intercooling & exhaust heat exchangers, and advanced propulsor & integration concepts). This classification approach gives a structured way to combine and explore synergies between the technologies in the search for ultralow CO2, NOx and noise emissions. The most promising combinations of radical technologies will then be developed for a short range European and a long range intercontinental advanced tube and wing aircraft.

Through the EU projects VITAL, NEWAC, DREAM, LEMCOTEC, E-BREAK and ENOVAL, the ULTIMATE partners have gained the most comprehensive experience in Europe on conception and evaluation of advanced aero engine architectures. Existing tools, knowledge and models will be used to perform optimization and evaluation against the SRIA targets to mature the technologies to TRL 2. Road maps will be set up to outline the steps to develop the technologies into products and bring them onto the market. These road maps will also provide a way forward for future European propulsion and aviation research.