



Coordination Action Pro "Production, Avionics, Design" on Cost-efficiency in Aeronautics

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Concept & Objectives

CAPPADOCIA (*Coordination Action Pro "Production, Avionics, Design" on Cost-efficiency in Aeronautics*) is a 4 years' Coordination and Support Action which focuses on research activities that address solely or mainly the SRIA goal of **cost-efficiency** in Aeronautics and Air Transport and in particular the following technical domains:

- * **Airframe Design Systems and Tools**
- * **Production and Maintenance**
- * **Avionics and other relevant domains dealing with cost efficiency, e.g. propulsion**

Accordingly, the **main objectives** of CAPPADOCIA are *a) to comply with the expectations of the European Commission and b) to contribute to a better coordination of research and innovation (R&I) in the field of Aeronautics and Air Transport (AAT)*. To achieve these objectives, during the past first year of its lifetime as well as throughout its entire duration, CAPPADOCIA has and will continue to

- Assess past and ongoing EC (and non-EC) funded projects related with cost efficiency in AAT
- Identify gaps in terms of needed Research
- Identify bottlenecks towards innovation (e.g. funding and financial mechanisms, etc.)
- Identify impact with respect to societal and market needs

These elements combined, will ultimately allow CAPPADOCIA to provide coherent strategic recommendations aiming to cover research gaps, overcome bottlenecks to innovation and justify effort with an impact on policy, industrial market and social needs.

Main CAPPADOCIA Goals:

- > Prepare annual strategic recommendation reports that fully address the cost-efficiency targeted domains in terms of state of the art and impact assessment towards the ACARE goals;
- > Disseminate activities through all the European AAT Communities;
- > Enhance the coherence of strategic research policy making, impact assessment and dissemination;
- > Fully cover the cost-efficiency domain, i.e. investigate manufacturing, design, operations and services, and not only in avionics;
- > Maintain close collaboration with the other CSAs of the call, dealing with environmentally related research and innovation, time efficiency and safety.



Analysis of the state of the art of Research and Innovation

The analysis of the state of the art of Research and Innovation has been focused in accordance with the yearly updated focus for the CAPPADOCIA multi-dimensional methodology. The analysis of the state of the art has been based on literature search, interviews, and workshops. In the course of the years the analysis went deeper into specific topics, such as “Collaborative Supply Chain” and “Factories of the Future” with a list of specific sub-topics in the final year.

Overall several tens of interviews have been held by the CAPPADOCIA partners in their respective national and international networks. Structured interviews allowing for more quantitative analysis were held in accordance with common questionnaires, whereas also free format interviews were held to allow for a more creative input by the interviewees. The interviews were held with key persons for Research and Innovation Strategy for their organisations in the respective topics of the interviews. The interviews were supported by web surveys. In the course of the years the analysis went deeper into specific topics.

At several events CAPPADOCIA organised dedicated workshops on the research and innovation strategy of the event’s topic, as relevant for the competitiveness of European aviation industry. In these workshops CAPPADOCIA presented its results, enabled participants to pitch their views on the workshop’s topic, and allowed the participating experts to provide their feedback in interactive sessions.

[list of workshops, see the previous newsletters]

The analysis resulted in the identification of gaps in the research landscape and of bottlenecks to overcome these gaps in the research landscape. These results provided a firm basis for the public CAPPADOCIA recommendations reports.

You may view and download the CAPPADOCIA Strategic Reports on the project’s [public website](#).

Outcomes–Recommendations

Over 2017, the CAPPADOCIA CSA puts a particular focus on the cost efficiency and competitiveness issues according to different points of view of the involved aviation actors of the value-chain from the predesign, design phase and ramp-up activities. The CAPPADOCIA 2017 proposed individual and collective competitiveness recommendations do consider the major changes that are occurring within the value chain along those specific steps. In addition, they also take into account the evolution of the decision-making power within the whole supply chain from upstream to downstream industrial actors.

As encouraged by the SRIA, there must be a stronger collaborative approach to innovation, pooling the know-how of multiple stakeholders, including educational establishments, to accelerate the innovation process and provide the best possible response to customers’ needs.”

The factory of the future concept also demonstrates to be a great opportunity to fulfil the change in the balance in the downstream value chain (quickly meet clients’ needs, creation of new services etc.). Industry 4.0 concept affects the entire aviation supply chain and product life cycle: from product design and development, to the operations management and logistics.

To maintain the competitiveness of the European aviation sector, the whole supply chain would therefore intensively need to go through a deeper digitalized mutation, including implementing purely digital interfaces between airframes and suppliers at all levels. To some extent will have to be connected – not just customers, suppliers and IT systems in general, but also parts, products and other smart objects used to monitor and connect.

Hopefully, this new paradigm should enable the emergence of new “B2B” concept and their associated new business models contributing to a significant increase of the European aviation sector overall competitiveness and underlying cost efficiency character.

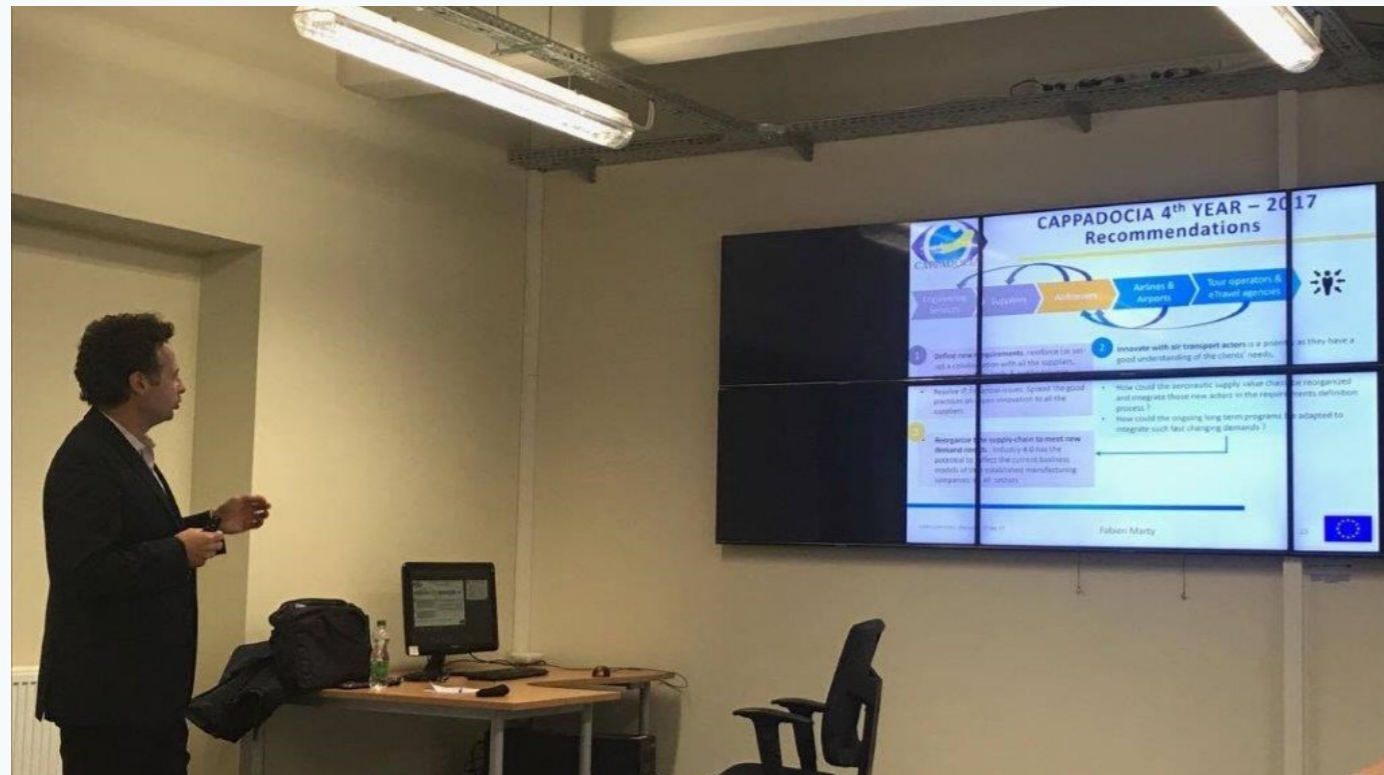
CAPPADOCIA “2017” full Strategic Recommendation report is available to download at : <https://cappadocia-fp7.eu/outcome/>

CAPPADOCIA at the 7th EASN Conference

CAPPADOCIA has successfully organized and held a dedicated session in the frame of the 7th EASN International Conference on “Innovation in European Aeronautics Research”. The latter took place on 26-29 September 2017, in Warsaw, Poland, at the modern Conference Centre of the Institute of Aviation.

Overall, the conference gathered approximately 350 scientists, researchers, professors, engineers and policy makers from over 20 different countries to discuss policies and actions supporting the advancement of aeronautics in Europe, and constituted a major dissemination event for running research projects.

The CAPPADOCIA project has once again exploited this excellent forum and held its final session on 27 September 2017, from 15:00-16:50. A comprehensive presentation was given by the project Co-ordinator, Mr. Fabien Marty (Efficient Innovation), whereby the main overall achievements, activities and major outcomes of CAPPADOCIA were described and analyzed.



CAPPADOCIA at AEROSPATIAL 2016



CAPPADOCIA has been presented at the International Conference of Aerospace Sciences “AEROSPATIAL 2016”, held at INCAS, Bucharest on the 26th -27th of October 2016.

The AEROSPATIAL Conference is an international scientific conference organized every two years in INCAS, comprising topics from Aerodynamics; Flight Mechanics and Systems Integration; Astro-nautics and Astrophysics; Materials and Structures; Systems, Subsystems and Control in Aero-nautics; Experimental Investigations in Aerospace Sciences; ATS and full Automation ATM; and Management in Aerospace Activities.

The main audience of this conference is the scientific community (both national and international) with participants coming from the academic and research environment, professors, engineers, researchers, as well as students.

The CAPPADOCIA presentation, entitled “Identification of Gaps and Bottlenecks to Innovation in the European Aeronautics Research Landscape”, was included under the conference topic: “Management in Aerospace Activities” and presented an overview of the CAPPADOCIA project, its consortium, main objectives, methodology for the third year, as well as the outcome of the third year strategic recommendation report.

CAPPADOCIA at UHUM 2017



Organized by the Chamber of Mechanical Engineers in Turkey, **the 9th National Aerospace Engineering Congress (UHUM 2017) took place on 5-6 May 2017 in Ankara, Turkey.**

It was aimed to create a discussion, consultation and sharing environment, to help stakeholders meet on the same platform for applying new technological developments according to demands of the industry and living problems and thus to create possible solutions.

In this context, “national competency and international competitiveness in aviation sector”, “national applications in information management and standardization issues in aviation sector”, “qualification and quantity evaluation of aircraft, aeronautics and space engineering trainings”, “national technology applications in aviation area” and “experimental aircraft development studies” sessions were organized and 26 presentations were made.

The main up-to-date CAPPADOCIA results and recommendations were also presented at the UHUM 2017.

CAPPADOCIA at UHUT 2017



Organized by the National Defense University, **the 4th National Aviation Technology and Application Congress (UHUT 2017) will take place on 17-18 November 2017 in İzmir, Turkey.**

The aims of the Congress are to share scientific research results for the aviation field and its applications; bring aviation field practitioners and academicians together; identify the areas that are needed to be developed and share current developments with educational institutions and aviation sector.

Topics Covered: Aircraft Maintenance Systems and Management; Aircraft Maintenance Facilities Management; Air Logistics and Applications; Military Aviation Applications; Civil Aviation Applications; Aviation Business; Aviation Education; Legal Arrangements and Applications in the Field of Aviation; Air Traffic Management; Human Factor and Management in Aviation; Flight Physiology; Aviation and Computer Applications; History of Aviation; Flight Wear and Equipment; Use of Nanotechnology in Aviation; Aircraft Aerodynamics, Aircraft Mechanics, Avionics Systems and Unmanned Flight Systems and Their Usage Areas; Electronics and Communication Systems in Aeronautics; Air Defense Missile Systems

A dedicated CAPPADOCIA presentation will be made during the event, presenting the main recommendations produced within the project.

Sister CSA's: Latest news, Activities and Achievements



OPTICS FINAL DISSEMINATION EVENT — IS SAFETY RESEARCH MAKING US SAFER?

OPTICS has successfully held its Final Dissemination Event: *“Is safety research making us safer?”* on June 12-13, 2017 in Brussels, at the EUROCONTROL premises.

Presenters from the European Commission, EASA, FAA, NASA, SESAR, the European Passenger Federation, Future Sky Safety and EUROCONTROL, along with representatives from each main segment of the aviation spectrum – airlines, airports, air traffic organizations, and airframe manufacturers – have addressed this key question, highlighting some of the key research results and ongoing research activities that aim to ensure we not only remain the safest mode of transport, but continue to improve safety even as capacity and aerial vehicle diversity increase. This two-day event has also summarized the four years of OPTICS assessments, including the recent assessment of over 100 safety R&D projects occurring at national level in Europe, and the early results from analysis of global aviation safety research activities.

Key safety research projects have been presented, including the integration of RPAS/Drones into civil airspace as well as personal aerial vehicles, and the resulting top ten priority issues from the April 2017 OPTICS workshop on Design for Resilience and Survivability.

The ‘OPTICS story’ has been presented, alongside the unveiling of the brand new ACARE Strategic Research & Innovation Agenda for Safety and Security. Lastly, the future need for closer integration of safety and security research and the challenges that remain to guide us to a safer air transport system-of-systems all the way to 2050 were discussed.

For more information on the OPTICS project please visit its public website: <http://www.optics-project.eu/>



Sister CSA's: Latest news, Activities and Achievements



Coordinating Air transport Time Efficiency research CATER -Coordinating Air transport Time Efficiency Research

CATER is now in its final stages and the last iteration of documents are being completed, representing the latest and most complete assessment of projects and funding opportunities in the time efficiency domain.

More specifically, completing a 4-years iterative analysis, the project has produced the final and most comprehensive assessment of European projects in the time efficiency domain, covering the FP6 to H2020 timeframe and highlighting the innovation trends and changes relating to all phases of the Door-to-Door journey.

Accordingly, the latest and final exploration of funding opportunities is now also being completed, including National as well as European projects and extending over the next three years. This groundwork will lead to the release of the gap analysis and final recommendations documents which represent the lasting results from the CATER project, intended to guide future work and strategies on this theme.

The topmost CATER results, as well as the latest developments and trends on time efficiency, will be presented and discussed during the CATER final event, entitled: **“Time Efficiency in Aviation: Trends & Evolution of R&D Initiatives”**, and which will be held on the 19th of September, 2017 in Madrid, Spain at the ISDEFE premises.

The CATER project will also participate and present its major findings, achievements and produced recommendations during the 7th EASN International Conference on Innovation in European Aeronautics Research, to be held on 26-29 September 2017 in Warsaw, Poland.

For more information about the CATER project visit: <http://www.cater-transport-time-efficiency.eu/>



Cost-Efficiency related projects – Discover them!

Discover other Cost-Efficiency-related EC-funded projects (FP7 and H2020) that have been assessed by CAPPADOCIA. More relevant projects, can be found on the dedicated [CAPPADOCIA public database](#).



AFLoNext – “2nd Generation Active Wing” – Active Flow- Loads & Noise control on next generation wing”
<http://www.aflonext.eu/>

[> Discover](#)



WASIS – Composite fuselage section Wafer Design Approach for Safety Increasing in Worst Case Situations and Joints Minimizing
<http://www.wasis.eu/>

[> Discover](#)



DREAM – validation of Radical Engine Architecture systems (completed)

[> Discover](#)



RECEPT – RECEPTivity and amplitude-based transition prediction (completed)

[> Discover](#)



QUICOM – Quantitative Inspection of Complex Composite Aeronautic Parts Using Advanced X-ray Techniques
<http://www.quicom.eu/>

[> Discover](#)



TRIADe— Development of technology building blocks For structural health monitoring sensing devices in aeronautics (completed)

[> Discover](#)



DAPHNE – Developing aircraft photonic networks
<http://www.fp7daphne.eu/>

[> Discover](#)



FUTURE— Flutter-Free Turbomachinery Blades
<http://www.future-project.eu/>

[> Discover](#)



Go4Hybrid – Grey Area Mitigation for Hybrid RANS-LES Methods (completed)
<http://go4hybrid.mace.manchester.ac.uk/go4hybrid/bin/view/Main/WebHome>

[> Discover](#)



SAFAR— Small Aircraft Future Avionics Architecture (completed)

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ACCENT— Adaptive control of manufacturing processes for a new generation of jet engine components
<http://www.accent.wzl.rwth-aachen.de/>

[> Discover](#)



ADMAP-GAS— Unconventional (Advanced) Manufacturing Processes for Gas-Engine Turbine Components
<http://www.admapgas.com/>

[> Discover](#)



BOPACS— Boltless assembling Of Primary Aerospace Composite Structures
<http://www.bopacs.eu/>
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DOTNAC— Development and Optimization of THz NDT on Aeronautics Composite Multi-layered Structure
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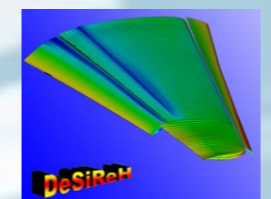
ASHLEY— Avionics Systems Hosted on a distributed modular electronics Large scale dEmonstrator for multiple tYpes of aircraft
<http://www.ashleyproject.eu/>

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i-VISION— Immersive Semantics-based Virtual Environments for the Design and Validation of Human-centred Aircraft Cockpits
<http://www.ivation-project.eu/>

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DESIREH— Design, simulation and flight reynolds number testing for advanced high-lift solutions (completed)

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SCARLETT – SCALable & Reconfigurable Electronics platForms and Tools
<http://www.scarlettproject.eu/default.asp>

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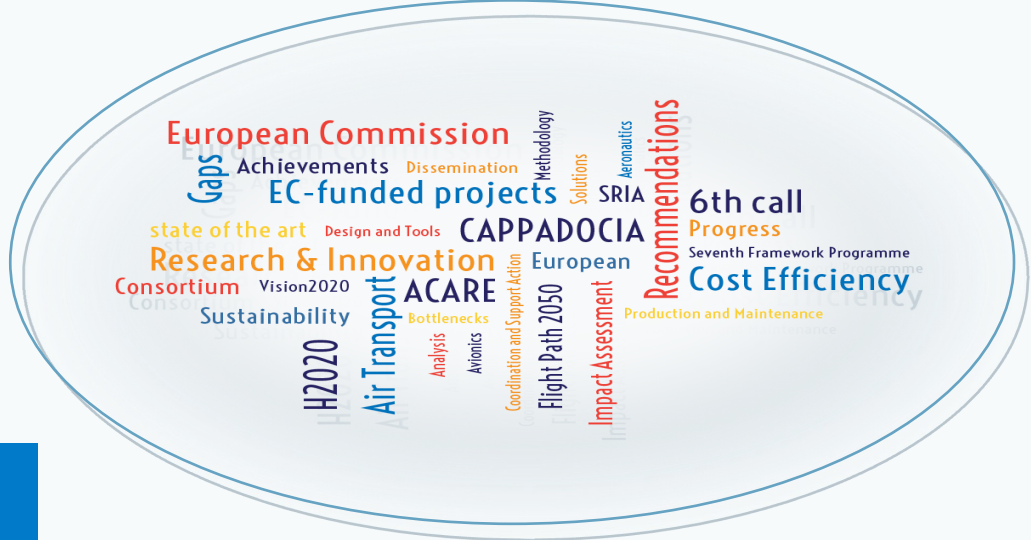
FANTOM: Full-field advanced non destructive technique for on-line thermo-mechanical measurements on aeronautical structures
<http://www.fantom-ndt.eu/>

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MASCA— MAnaging System Change in Aviation
<http://www.masca-project.eu/>

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www.cappadocia-fp7.eu

