

### Current CATER Activities

**CATER** (Coordinating Air transport Time Efficiency Research) is a 48 months' coordination project designed as a research and innovation observatory and policy advisory center. CATER delivers reports and recommendations and conducts annual reviews of the state of the art of R&I, identifies gaps in the landscape and bottlenecks to innovation and formulates strategic recommendations to address these.



The CATER centre for air transport time efficiency research coordination, is designed to be a vital instrument for Europe's Air Transport stakeholders, in achieving these Flightpath 2050 goals. CATER has been designed for the operational level to provide the intelligence, data, information, assessment, insight and recommendations, thus it shall be the "navigation instrument panel" of the European time efficiency research and innovation stakeholder community. Namely, CATER is an organization based on a rigorous research and analysis methodology, on smart tools and platforms, on a network of organizations covering the entire aviation industry, and most importantly on the industry acumen and insight of highly experienced air transport research professionals.

CATER partners **Leonardo**, **CTECH**, **ALTRAN**, **ISDEFE** and **ONERA** made a Project presentation to the CATER Project Officer, the ACARE WG1 Chairman and a SESAR representative on ACARE WG1 premises in Brussels on 1st of May 2016, providing an update on the progress of the project and an overview of results.



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### Main Results on CATER Gap analysis between R&I and opportunities/needs

**CATER Gap Analysis first release ready!**

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CATER aims to support the identification of main Gaps and Hindrances on current and past funded Research & Innovation (R&I)

**CATER's Gap Analysis will be based on EC's strategic agenda, definitions and specific taxonomy** - this task is being pursued following the progressive development and improvement of the project's *Knowledge Search & Management tools* (Visit the **CASK platform** following this link: <http://www.cater-transport-time-efficiency.eu/> and feel free to register in the dedicated section) and the definition of a suitable R&I Frame based on ACARE's SRIA, i.e. the research agenda defining the next 40 years in air transport and R&D.

**Searching for new metrics to give R&I an impact score** - EU projects have been catalogued according to official taxonomies and modelling of the Door-to-Door path in EU travels in the attempt to give a specific score for every funded group of projects. Such score relates preliminary analyses by CATER's specialists to ex-post in-depth assessment of concluded projects. The considered variables aim at defining the impact on future EU's transport punctuality, predictability and duration. Correspondingly, *the final score Impact Index represent the importance of an R&I Domain, considering how many really impacting projects were financed and how many of them have been also able to demonstrate their impact after the project, not only on a preliminary evaluation level.* The defined index equals 1 if all financed project per domain have a measurable ex-post impact on Time Efficiency. For more information feel free to ask CATER's partners for the Gap Analysis deliverable (Ref. D4.2)

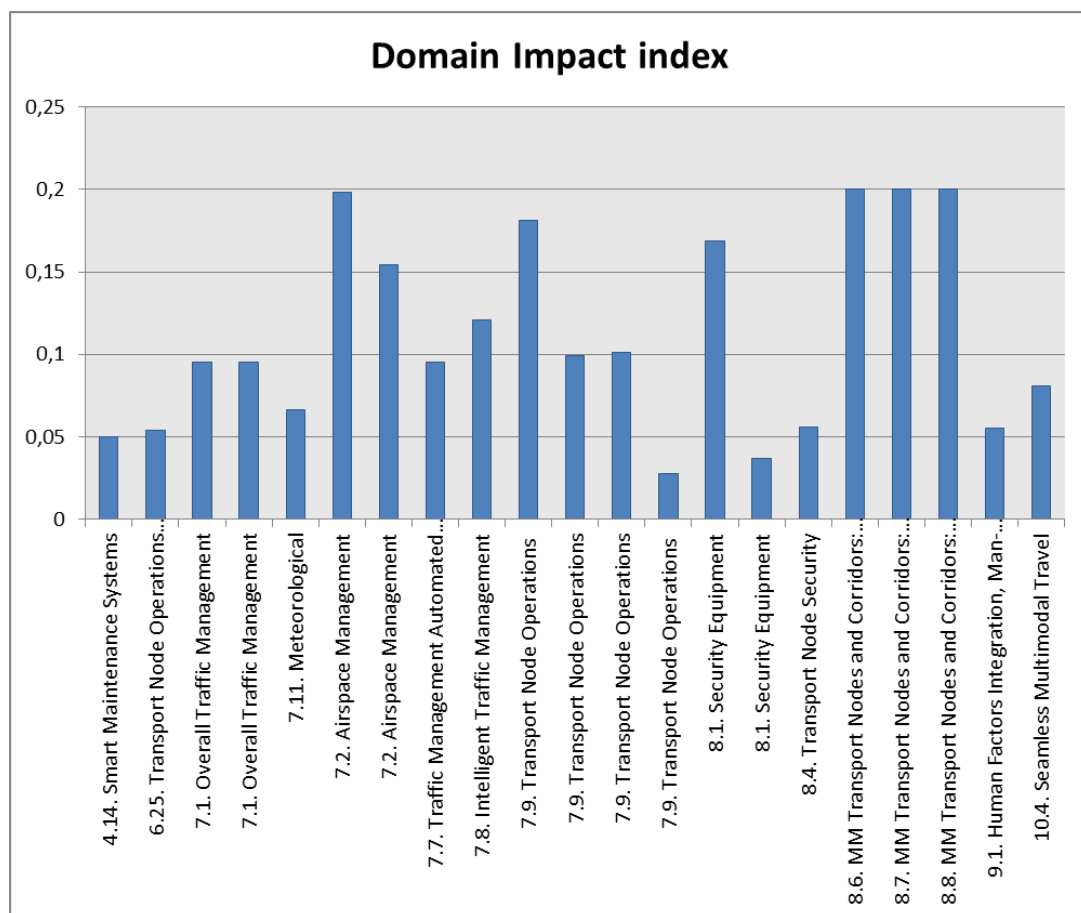


Figure 1 Defined Impact Index per R&I Domain

**One release is done, two more are yet to come** – the first release has included analysis on more than 100 relevant FP6 and FP7 projects analyzed in the first 30 months of activity. Two more yearly updates are included in CATER schedule. They will improve the metrics and include data about new H2020 projects under development as well as a focus on Industry watch and expert stakeholders' suggestions and considerations.

## CATER Recommendations update

The guideline for CATER work is provided by ACARE time efficiency goals:

ACARE TIME EFFICIENCY goals	
<b>Primary focus</b>	90% of travellers within Europe able to complete their journey, door-to-door within 4 hours
	Flights arrive within 1 minute of the planned arrival time regardless of weather conditions
	Efficient boarding and security checks allow seamless security for global travel, with minimum passenger and cargo impact.
<b>Secondary focus</b>	European citizens are able to make informed mobility choices and have affordable access to one another, taking into account: economy, speed, and tailored level of service
	A coherent ground infrastructure is developed including: airports, vertiports and heliports with the relevant servicing and connecting facilities, also to other modes.
	An air traffic management system is in place that provides a range of services to handle at least 25 million flights a year of all types of vehicles, (fixed-wing, rotorcraft) and systems (manned, unmanned, autonomous) that are integrated into and interoperable with the overall air transport system with 24-hour efficient operation of airports
	Weather and other hazards from the environment are precisely evaluated and risks are properly mitigated.

Reaching these goals will mainly stem from improvements in technology, organisation and procedures, and infrastructures. Most of these improvements can be classified as impacting the transport efficiency in terms of:

- **Speed** (distance travelled divided by the journey time),
- **Frequency** (number of services (necessary for the journey) of a specific mode of transport which are available within a concrete period of time),
- **Reliability** (ability of a system to function under stated conditions for a specified period of time), and
- **Connectivity** (existence of direct point-to-point routes between origin and destination).

These efficiency factors may act on various parts of the travel, in what is called a door-to-door model segment:

1. From Door to Origin Airport
2. At Origin Airport
3. From Gate to Gate
4. At Transit Airport
5. At Destination Airport
6. From Destination Airport to Door.

Many operational functions are to be impacted by the various improvements to be implemented to achieve Time Efficiency goals, such as:

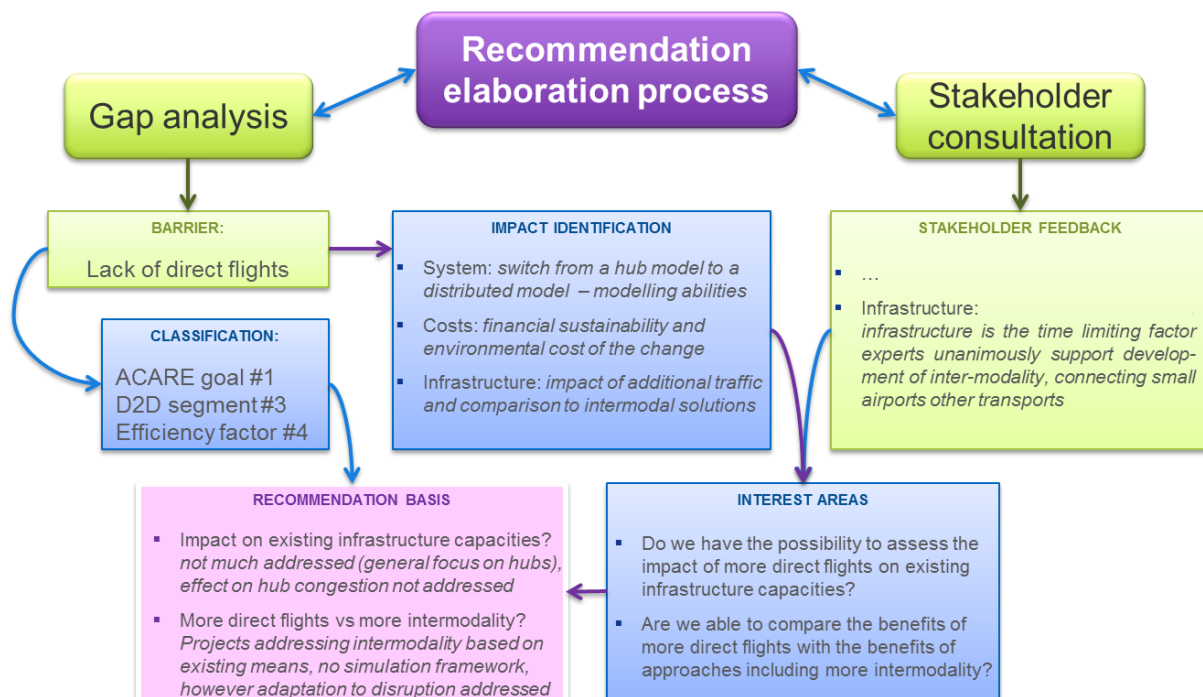
- **aircraft**-related functions including maintenance, manufacturing, ...,
- **airline**-related functions such as catering / in flight safety and comfort as supported by flight attendants, flight dispatching, logistics and personnel management, pilot, ticketing, ...,
- **airport**-related functions such as management, security service, ...

- **Air Traffic Management**-related functions such as Air Traffic Control, Air Traffic Flow and Capacity Management, flight plan processing, route charges management, ATM systems manufacture/maintenance, ...,
- **avionics**-related functions such as maintenance — Communication, Navigation, Surveillance, Flight Data Recorder, Health and Usage Monitoring Systems, manufacturing, ...,
- **engine**-related functions such as maintenance, manufacturing...

The impacts above may be of different natures, which may be roughly classified in the following categories:

- Technological issues
- Infrastructure issues
- System issues
- Security/safety issues
- Cost issues

Recommendations are based on other CATER activities, mostly the Gap analysis and the Stakeholder consultation process. The barriers identified in the Gap analysis are classified using the notions above, and then are crossed with stakeholder feedback to produce recommendations.



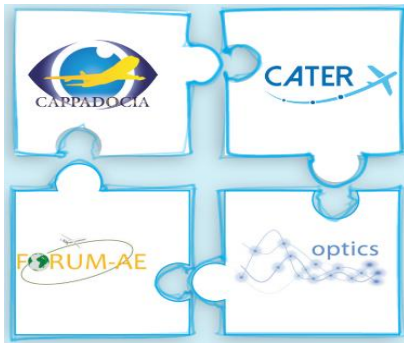
EXAMPLE OF RECOMMENDATION ELABORATION

## Recent News Around Time Efficiency

### Common CSAs Workshop

To realize the new European vision beyond 2020 for the horizon towards 2050, i.e. *meet the societal and market needs, maintain and extend the industrial leadership, protect the environment and the energy supply, ensure safety and security*, Europe will engage in large scale, intensive and coordinated Research and Innovation.

[CAPPADOCIA](#), [CATER](#), [FORUM-AE](#) and [OPTICS](#), all responded to the FP7 – Mobility for growth AA.2013.7-1 call for proposals and deal with the same topic but different domains: Cost Efficiency, Time Efficiency, Environmental related Research and Innovation and Safety Research, respectively.



The four “sister” projects will once again hold a common Workshop on **“Support Actions for Coordinating Research in the Field of Aeronautics and Air Transport”**. This joint event will take place in the frame of the *6th EASN International Conference on Innovation in European Aeronautics Research*, on October 19<sup>th</sup> 2016, from 9:00 until 10:40.

The session will be chaired by Dr. Dietrich Knoerzer from the European Commission. The four Coordination and Support Actions will present their up-to-date progress and results. An open panel discussion will then follow, focused on the main lessons learnt and way forward, in light of the upcoming MG-1.5-2016-2017 call.

> [Click here for more information](#)  
**First Annual CATER Workshop**

The CATER consortium is happy to invite you to its first annual Workshop that will be held on **18 October 2016, from 10:20 until 16:00** in the frame of the 6th EASN International Conference on Innovation in European Aeronautics Research. The event will be held in Porto, Portugal at the Crowne Plaza Porto Hotel.

The CATER Workshop will focus on the topic of **Time Efficiency Research and Innovation**, demonstrate the latest promising achievements, bottlenecks, gaps and opportunities in the field, present the main produced up-to-date findings and recommendations, as well as offer room for an open discussion between the CATER team and key Research, Technology and Development (RTD) experts of all aviation sectors.

The results will support CATER in producing recommendations towards the EC and ACARE and influence future strategic priorities.

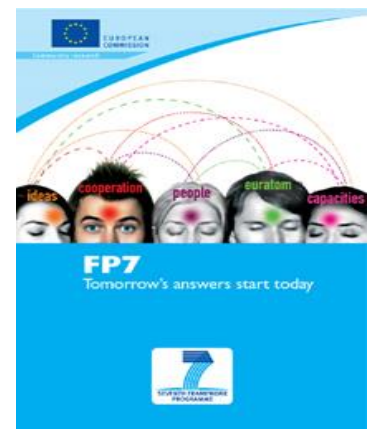
> [Click here for more information](#)



### Highlight on Research Projects

The projects reviewed by CATER in this period included a broad range of topics, some proposing breakthrough innovation, others optimising existing processes. Together they cover the entire door-to door travel process. Nine of the eleven projects covered in some way the gate-to-gate travel phase, including ATM and the ground airside processes. Five projects covered the travel phase to and from the airport, and included the landside phase at the airport.

Many projects had interesting and potentially useful results, but there was no visible continuation of activities. In the case of larger projects, it is expected that some of the results may have been taken up internally by the organisations involved, especially in the case of large aerospace companies, but visibility into the post-project commercialization was lacking. Collaboration of a mix of companies, large and small, academic and commercial organisations should also be promoted. The large companies have the means to aid in the eventual commercialization of the R&I activities, while the small organisations and academic institutions have the ability to propose novel ideas and out of the box approaches that complement the traditional incremental approaches of the larger partners.



Even though the Horizon 2020 Research and Innovation Programme is outside the scope of CATER analysis, consortium partners found interesting projects that have an impact on Time Efficiency. One of them, running at this moment, is [Airport IQ project](#), an “Innovation project” addressing the Transport Specific Programme (H2020 Specific Programme: Part III – 4. Smart, green and integrated transport). Airport IQ aims to improve the quality of the information that is used in turnaround. The departure time of an aircraft is predicted and set based upon a wide range of live and static data being provided - from different groups such as catering, fuelling teams, passenger handlers, maintenance crews, aircraft crew and baggage handlers.



The time estimates provided have many in-built time buffers, which when added together can have a significant impact on the accuracy of the departure time. By improving the quality of the information, the buffers will be reduced with a corresponding improvement in the eventual turnaround time.

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Some of the highly relevant Time-Efficiency-linked EU FP7 projects that are being screened by CATER:



ALICIA is a research and development project co-funded by European Commission under the Seventh Framework Programme. ALICIA aims to develop new and scalable cockpit applications which can extend operations of aircraft in degraded conditions: All Conditions Operations. ALICIA addresses the ACARE objective of increasing time efficiency within the future air transport system.

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The FP7 project Airport 2050+ explores radical and novel solutions to prepare airports for the year 2050 and beyond. Therefore, the "2050+ Airport" project develops three different airport concepts (time-efficient, cost-effective and ultra-green) that demonstrate what the future airport will look like when taking one of the areas as the leading objective.

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MOWE-IT (Management of weather events in transport system) examines practical applications to manage transport networks more effectively with the goal of identifying existing best practices and to develop methodologies to assist transport operators, authorities and transport system users to mitigate the impact of natural disasters and extreme weather phenomena on transport system performance.

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Project Partners

