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IMPACT MONITOR

NEWSLETTER

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Dear Reader,

I am glad to share the **#1 Issue** of the Impact Monitor Newsletter. The project, commenced on the 1st of February 2023, is implemented by a highly competent and complementary consortium. With a system of systems approach for aviation, the project's first high level objective is to deliver a coherent, collaborative and holistic framework and toolbox for technology and policy assessment of the environmental, economic and societal impacts of European aviation Research and Innovation (R&I).

Focus of Impact Monitor is to demonstrate with example use cases the collaborative assessment of future technologies, aircraft, operations, and policies. The aircraft agnostic demonstrative assessment is carried out at aircraft, airport, and air transport system level.

The Impact Monitor framework and toolbox for collaborative workflows across all three levels rests on and advances the approaches of the EU projects TEAM_Play, Clean Sky TE, and AGILE/AGILE 4.0.

The vision of a holistic system of systems assessment in aviation R&I is implemented by the following work packages: interfaces, toolbox, framework, dashboard application, and demonstration use cases.

Enjoy the read about the first half-year of the project and stay connected with Impact Monitor via our communication channels!

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Interfaces

In order to identify the stakeholders' **KPIs and needs**, a list of relevant stakeholders and other R&I actors has been created. To collect their specific needs, a questionnaire has been elaborated and sent to the identified stakeholders.

The methodological approach is structured in the following steps:

- Identification of interested **organizations and communities**;
- Identification of **stakeholders** and collection of details;
- Integration of further information via **public and open data**;
- Identification of **relevant R&I projects** and related details;
- Collection of stakeholders **needs** and classification of suggestions and KPIs on a periodic basis. Different means will be used to streamline the interactions with the stakeholders;
- **Analysis** of stakeholders' questionnaire results.

The information will be collected in dedicated datasets.

Take part in the Impact Monitor **Stakeholder Survey**

R&I Dataset buildup

Targets

Climate neutrality by 2050
Limit GHG emissions and noise by 2035
Improve transport connectivity
Expand EU aviation R&I collaboration

Topics

Air transport environmental sustainability
Scientific knowledge developments
Social & economic impacts
European policy regulations
European aviation commercial penetration

Timeframes 2030, 2035, 2050

R&I projects with compatible timeframe

Target groups

Industry, Governments, Organizations,
Institutes, Universities, Researchers
Associations, Professors & PhD students

Sectors of interest

Commercial aviation; Airports; ATS & ATM

Assessment levels

Aircraft; Airport; Air Transport System

Toolbox

The core objectives for the toolbox development include the specification of **requirements** and the provision of **practical guidance** for the key steps in the assessment cycle.

During the first semester of the project's implementation, an initial demonstrative set of KPIs has been identified, addressing impact assessment of innovations in EU R&I programmes, impact assessment models and tools, as well as impact assessment methodologies in EU Directives, inter-national standards and best practices. The KPIs have been categorized:

per KPA

noise, emissions & air quality, climate, safety, economy, quality of life, efficiency, predictability, capacity, effectiveness, coherence, circular economy

per ASSESSMENT LEVEL

Aircraft; Airport; Air transport system

Framework

*The collaborative assessment framework is tightly connected with the implementation of the **use cases** to provide the proof of concept, and the web-based **Dashboard Application** for the visualization of results of the application cases.*

Connection of tools to CPACS

For the implementation of the framework, a set of tools has been provided by the project partners which are being **connected to the open-source schema for the air transport system** (CPACS), to facilitate efficient data exchange between the multitude of tools involved.

Identification of data to be exchanged

In a second stage, the **identification of data to be exchanged** begun. In that frame, online trainings and tutorials have been utilized, existing data standards have been reviewed, and disciplinary data sets & data structures are ready to use.

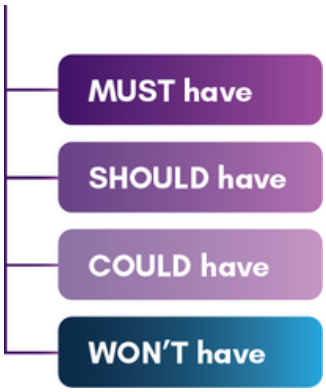
Modification & extension of CPACS

At this point, the official CPACS v3.4 is being adapted to the Impact Monitor requirements. The aircraft domain level CPACS is matured and is also being used in several National, EU, and global collaborations. The project partners are currently expanding to the airport and air transport system assessment levels.

cpacs
A Common Language for Aircraft Design

Dashboard Application

The demanding assessment requirements from multiple stakeholders to view results from their perspective, calls for a scientific dashboard to understand outcomes of the demonstrative assessment. The work initiated with the **specification of requirements** for the dashboard application, considering that the different stakeholders and users, including policy makers, researchers, and students, may have different needs. To identify the individual requirements, a thorough discussion with all the partners and prospective users was conducted, concluding on a complete first iteration of the requirements for the dashboard. This includes prioritizing the requirements according to the scheme below for the prototype implementation, which will be completed by the end of the first year of the project.



To ensure that the dashboard application is compatible with the framework being created within the project, it is essential to **develop the capability for reading and writing CPACS files**. Up to this stage, a prototype for data communication through CPACS has been developed, based on discussion and workshops on CPACS for parsing and using it as a standard data communication platform.

Last but not least, several **technologies** to be used for the dashboard application implementation have been explored. The initial prototype was developed using REACT and D3.JS for front-end development.

Demonstration Use Cases

Once the collaborative framework and toolbox are created, aircraft agnostic use cases are derived to demonstrate the capability of the framework. The project focuses on demonstrating a framework which is capable of assessing (in future) the technology, vehicles and operations researched in Clean Sky 2, Clean Aviation, SESAR and other EU R&I initiatives. Thus for demonstrative purposes, three multilevel (aircraft, airport, air transport system) use cases are envisioned.

For the **Use Case 1 (Advanced Propulsion System)**, a number of components has been defined:

- Required models and partners
- Assessment levels and boundaries for the study (e.g., mission types, payload range capabilities etc.)
- Parameters and required metrics for performance and environmental impact assessment
- Reference for CPACS
- CPACS version of Engine performance tools

The process on other tools is ongoing.

For the **Use Case 2 (Continuous Descent Operations)**, a set of components has been defined:

- Scenario complexification (Initially only airport level, then combined with aircraft level and later ATS level)
- Required models and partners for the use case
- Assessment levels and boundaries for the study
- Parameters and required metrics

The reference for CPACS is under definition, and the CPACSization of tools.

For the **Use Case 3 (Sustainable Aviation Fuel)** a set of components has been defined:

- Scenario complexification (initially airport and ATS level combined, later also with aircraft level).
- Global scenario
- Required models and partners for the use case
- Assessment levels and boundaries for the study
- Parameters and required metrics

The reference for CPACS is under definition, while the tool inputs and outputs are available and the CPACSization of tools is in progress.

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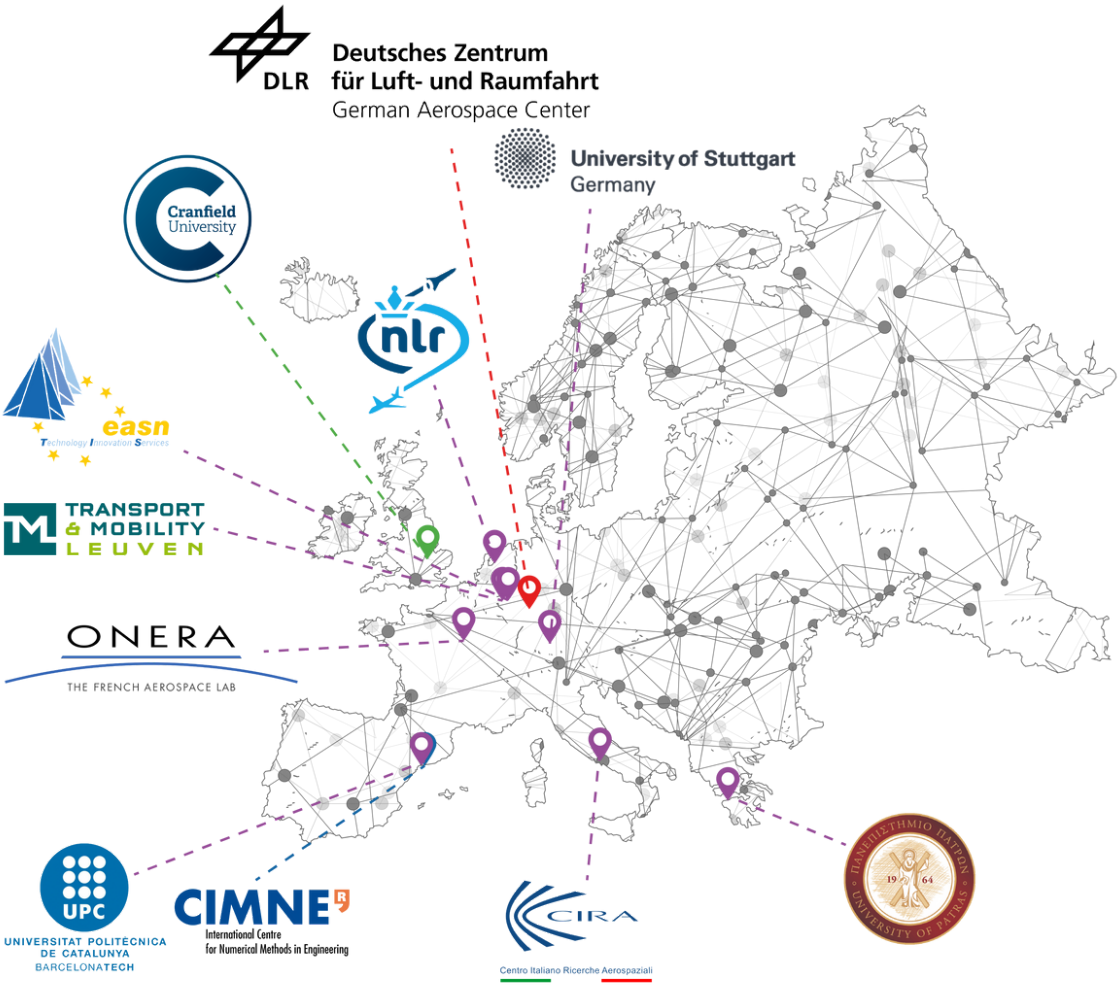
Our Team



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