D6.1 – Intermediate dissemination report

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Copyright Statement

AEON

ADVANCED ENGINE-OFF NAVIGATION

This intermediate communication report is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 892869 under European Union's Horizon 2020 research and innovation programme.

Abstract

AEON aims at fostering the usage of environmentally friendly ground operations techniques such as electric towing vehicles, electric taxi system or single engine taxiing.

The project will define a concept of operations focusing on engine-off taxiing techniques based on a set of dedicated tools such as fleet management for TaxiBots and supervision interfaces to support the operators and their collaborations. AEON will consider the concept on different time ranges:

- Long term strategy: investment model to help an airport or an airline evaluate their interest in the concept
- Operations strategic phase: proposition of the different techniques to use on each aircraft movement to minimize fuel consumption and nocive emissions without impact on the arriving and departing flight schedules.
- Operations tactical phase: real time evaluation of environmental indicators to support decision making, conflict free routing for all vehicles, reallocation of techniques to adapt to real time events, etc.

Depending on the chosen operational strategies, these operations will require the collaboration of different actors at the airport, from ATC to airline and airport operators. The main research questions that AEON addresses is: "what should the operations performed by taxiing actors and automation be designed to benefit the most from engine-off taxiing-capable aircraft and automated tug in terms of safety, capacity and environmental impact?" In particular, we address the following questions: How to determine in real time efficient, conflict-free routing plans for autonomous and non-autonomous aircraft taxiing from gates to the corresponding runways and the other way around?; How to schedule for taxiing a fleet of towing vehicles during the day of operations? How to dynamically adjust this schedule when operations disruptions occur?; How to manage and adjust real-time collaboration between human operators and automation? What are the costs for an airport to build the required infrastructure that enables electric taxiing? What are the benefits of implementing electric taxiing at an airport?

The AEON project will hence provide tools that should be part of an airport collaborative decision-making tool. Based on their experience in other research projects, the consortium will develop an operational concept and formalize it on a documentation derived from the OSED/SPR/INTEROP template of the SESAR2020 industrial research.

The project is part of the SESAR 2020 programme which aims to modernize all aspects of air traffic management in Europe.

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Applicable reference material

[1] D7.1 Project Management Plan

[2] ATAG, "Climate change." https://www.atag.org/our-activities/climate-change.html

[3] ATAG, "Green recovery of air transport a priority for industry leaders," Press release, 2020. https://www.atag.org/component/news/?view=pressrelease&id=121

List of Acronyms

Acronym	Definition
AB	Advisory Board
A-CDM	Airport Collaborative Decision Making
ADP	Paris Airport
ANSPs	Air navigation service providers
APOC	Airport Operation Center
ATC	Airport Traffic Manager
ATM	Air Traffic Management
CDE	Communication, Dissemination, and Exploitation (Plan)
DSNA	the French Civil Aviation Authority
DTVETS	Dispatch Towing Vehicle Electric Taxiing System
Dx.x	Deliverable x.x (often used in referment of D6.1)
EFB	Electric Flight Bag
EGTS	Electric Green Taxiing Systems
H2020	Horizon 2020
KLM	the Royal Dutch Airline
KPIs	Key Performance Indicators
LGETS	Landing Gear Electric Taxiing System
PMP	Project Management Plan
SAS	Smart Airport Systems
SJU	SESAR Joint Undertaking
WP	Work package

Table 1: List of Acronyms

1 Introduction

Dissemination represents one of the core activities of the AEON project. Our dissemination strategy is based on the identification of groups of stakeholders who may be interested in the project findings, and on the personalization of the communication message for the different stakeholders in terms of content, style, and information support.

The present document aims at reporting the different communication and dissemination actions carried out along the first year of the project activities, specifically for the period November 2020 – September 2021. To better understand the link between the activities carried out in the first 10 months and the communication strategy, the next sections will introduce the relationship between the D6.1, the other Work Packages (WP) and the Communication, Dissemination and Exploitation Plan [1] detailed in the Project Management Plan.

1.1 Relationship with other work packages

Although this deliverable is part of a work package (WP6) concerning communication, dissemination and exploitation activities, its contents are lined up with all the other technical WPs, such as WP1 "Operational concept description", WP2 "Support algorithms prototyping", WP3 "Supervision HMI prototyping", WP4 "Demonstrator integration" and WP5 "Solution performance assessment". Indeed, the Communication, Dissemination, and Exploitation (CDE) activities reported in the D6.1 diffused the project activities, the results and defined the periods for the consultation activities with the project stakeholders. The WP6 and its deliverables as a result are closely linked with the validation activities carried out in the WP5. Several meetings with representatives of the industry were organized by the Consortium during the first year to collect information that helped defining the WP2, WP3 and WP4 state of the arts as well as the concept of operations (OSED), respectively described by D1.3 and D1.1.

Finally, this document closely relates to the CDE plan as it describes the status of the activities planned at the beginning of the project and detailed in the 5th Chapter of the Project Management Plan. The strategy adopted in the CDE plan and its implication in this document is addressed in the following section.

1.1.1 Relationship with the Communication, Dissemination, and Exploitation Plan

The strategy applied in the communication of AEON to key stakeholders relies on the clarification of targets, audience, and message before deciding which media to use to convey the message. Therefore, in the Communication, Dissemination and Exploitation (CDE) Plan [1], AEON matched the messages to communicate with the target audience, and then with the means to use them. This was fundamental to increase the possibility of increasing the message impact on the multi-layered community to which AEON refers. The main communication and dissemination actions carried out in the first period follow these objectives:

1. **Inform**, by promoting the project and its events and results;
2. **Raise awareness**, by informing relevant stakeholders about the project activities, its progress, findings, and results;

3. **Engage**, by fostering the use of the project results within the community, as well as involving it in order to receive feedback on the project findings;

4. **Ensure impact**, in terms of guiding the European Union regulatory process, thus ensuring the long-term impact of the AEON research.

To ensure the intended impact on the different categories of stakeholders, the strategy creates strong links between the dissemination goals and the target audience. This enabled us to select the appropriated type of information, tool, or activity to communicate the project and reach the goals set in the CDE plan. Thus, the CDE objectives must be seen in relation to specific audience segments:

- **the general public**: people and groups interested in the general topics pertaining AEON, such as civil society groups, passengers' associations, or citizens interested in the potential of AEON, and the media;
- **the scientific community**: the broader European R&D community;
- **the policy makers and regulatory**: such as the Horizon 2020 (H2020), SESAR Joint Undertaking (SJU), and institutional decision-makers projects;
- **the aviation industry**: the airspace users, air navigation service providers (ANSPs), airport operators, manufacturers, staff associations and their members.

The match between the CDE objectives and the target audiences produces the strategy used to communicate the AEON project. A strategy based on a topic-centric communication, the continue involvement of the project stakeholders and a constant interaction with the SESAR brand. All these pillars were set to maximize the outreach of the communication of all the project activities.

1.2 Structure

The rest of the document is structured as follows:

- **Chapter 2** reports all the communication of project towards the general public made through the website, social networks, press coverage and public materials.
- **Chapter 3** describes the liaison with relevant stakeholders such as the scientific community and the aviation industry.
- **Chapter 4** analyzes the results of the communication and dissemination.
- **Chapter 5** details the next events, scientific publications, and activities.
- **Chapter 6** draws the conclusions.

2 Website and media coverage

The AEON project deals with many different stakeholders. For this reason, the communication of project results to a broader community of users is one of the project inherent objectives.

AEON identified the general public as one target audience. This cluster includes people and groups interested in the topic in general, such as policymakers which aim to reduce aviation emissions. An audience that broad and with such a level of interest recognizes the importance of the project research and the benefits that may derive from it.

Therefore, this audience looks for clear, useful, non-technical information. In fact, the main source of information for this group are the website, social networks, flyers and brochures, and online articles as well as printed ones.

2.1 AEON Project website

The project website[1] has an essential role in the dissemination as the principal means of communication of the AEON objectives, activities, and results. The website promotes communication and interaction within AEON by improving dissemination directed to specialists, potential users, politicians, and public funding authorities, as well as the general public. Deep Blue regularly updated it with public information about AEON progress, news, and any other relevant information. The website and the social profiles create a network that connects the broader possible group of stakeholders.

Since the website was launched at the end of January 2021, no major changes were made to the structure and graphical aspects of the website. However, in this seven-months period several products were uploaded on the AEON website and, on a monthly basis, the CDE leader update the blog with news on project progresses and participations in events. A webpage with the outcomes from the ground professionals survey was created in the results and graphical material sections, while the 1st newsletter and the brochure with the SJU projects related to AEON were uploaded on the graphical

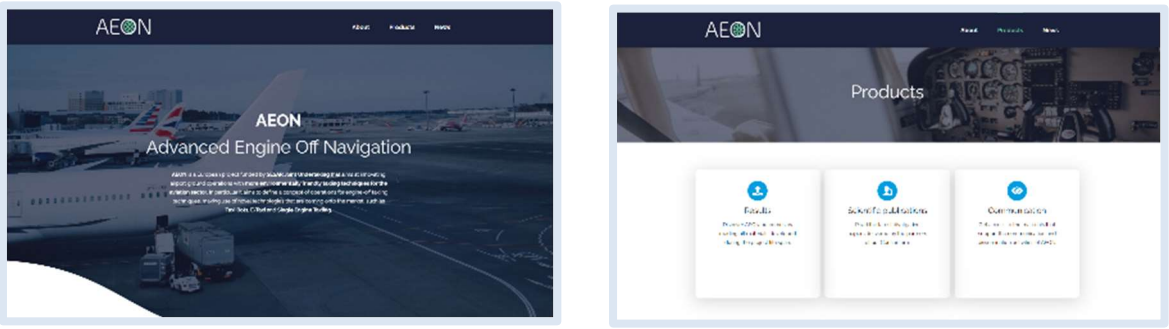


Figure 1. Screen captures of the AEON website

[1] https://www.aeon-project.eu/

material section. Finally, a backlink to www.sesarju.eu has been inserted upon the SJU logo in the website footer following the request from the PMP review.

2.1.1 Search Engine Optimization

The position of the AEON website on some keywords in well-known search engines is one of the parameters to monitor in order to assess the success of the dissemination. This is an indication of whether AEON is associated with keywords that are relevant to the project.

The following table presents the AEON website ranking for specific words (keyword column). For each keyword, it indicates in which position is the website (rank column) and the page of the results (results page column).

Keyword	Rank	Results page
AEON Project	1st	1st
Advanced engine off navigation	1st	1st
Greener taxiing operations	1st	1st
	7th	2nd
Green ground operations	7th	1st
	5th	2nd

Table 2. The AEON positions on Google

For the keyword “AEON project”, from February to September 2021, our website climbed up to the first position as a result of the website content optimization. Similarly, the website rank 1st for the keyword “Advanced engine off navigation”, winning the competition against the Carlock and Airbus websites.

For “Greener taxiing operations”, AEON results in the 1st and 7th position respectively on the first and second page of Google results. These two results are to attribute to the news published on the SJU website and on the Airport Business Magazine. This testify how relevant is to be present on other website to increase the visibility to the project and its website as well.

Finally, the keyword “Green ground operations” shows the news issued to the International Airport Review, resulted as 7th item on the first page, and again the SJU news on AEON, which appear on the second page of results as 5th item.

2.1.2 Website analytics

As the website was launched, an analysis tool, Google Analytics, was linked to it to monitor the access and usage of the webpages. Google Analytics provides different kinds of information regarding the number and behaviours of visitors, helping identify possible problems, and increase the website

performance by evaluating the impact and effectiveness of its contents. Data provided cover the period spanning between the 27th of January 2021 and the 20th of September 2021.

2.1.2.1 Audience overview

Figure 2 provides a snapshot of different metrics regarding the quantitative and qualitative aspects of the website's visits.

Figure 2. Website analytics: audience overview

The Consortium employs the following metrics to analyse the website visitors' behaviours

and understand the users' interest in the content of the AEON website:

- **Users** is the number of single (counted only once) visitors over the course of a period.
- **Sessions** is the number of visits to the website.
- **Page Views** is the number of pages viewed (repeated views of a single page are counted).
- **New visitors** is the percentage of visits that were first-time visits (from people who had never visited the website before).
- **Pages/Session** is the average number of pages viewed during a visit by a single user.
- **Avg. Session Duration** is the average duration of a visit.
- **Number of public materials downloads** is the count of downloads recorded for all materials published on the AEON website.
- **Bounce Rate** is the percentage of single-page visits (meaning that the person left the website from the entrance page).

All these metrics show that the website performance is in line with similar sites, i.e., websites of EU research projects around the same size as AEON. The metrics reported in Table 3 are on average if compared to those websites.

In the first period, the website activity has reached most of the key performance indicators (KPIs) set in the CDE to monitor the progress of the Communication and Dissemination activities (see Table in Section 4.2).

The number of sessions is in line with the planned value. The number of multimedia downloads has overreached the expected value of 10 download per document, achieving 169 downloads with the publication of 3 public materials (see Section 2.4). Similarly, the average session duration got beyond the target of 1 minute by reaching almost 3 minutes per session.

Google analytics provides several other indicators that were not considered at the time of the CDE plan, but which are now deemed to be inserted in the group of KPIs for the website. These indicators are now considered to provide an in-depth analysis on the performance of the website communication.

Starting from the number of users and new visitors, these data shows that in the first reporting period the project website attracted mainly new visitors. Although this is a positive result for a project in an initial stage, reporting the same values in the second year might be indicative of a communication without the ability to engage the target audience. Thus, the project will monitor this indicator and rearrange the content in case this trend will persist.

Good results have been achieved also in terms of pageviews (3739) and page-session ratio (2.41). The latter value shows that visitors are used to navigate more than two pages before leaving the website. As a result, their exposure to the AEON content is quite high considering similar sites.

A critical value is recorded for the bounce rate, which is four points over the 50-60% average suggested for content websites. This data implies that more than a half of the AEON website visitors leave the website on the entrance page, meaning that the content are not appealing for the majority of the visitors or that they have found what they need on the entry page. In the specific case, this bounce rate is seen as a positive result considering the intense connection between the communication activities carried out through social media profiles and specific webpages with the latest published materials.

Overall, these data suggest that the website mainly attracted new visitors, which is in line with the strategy of communicating the AEON project to the general public in the first part of project activities. Nevertheless, the high numbers of multimedia material downloads indicate that the project stakeholders have already started engaging with AEON, testifying the interest that the project community has for the project results.

Parameter	January 2021 - September 2021	Planned
Users	1109	//
Sessions	1550	800+
Pageviews	3739	//
New visitors	932	//
Page/session	2.41	//
Avg. session duration	00:02:44	1 min
Multimedia material downloads	169	80+
Bounce rate	64.26%	//

Table 3. AEON website metric

2.1.2.2 Pages viewed

The following table shows the **top ten visited pages.**

Rank	Page name	Views
1	Homepage	1280
2	About	422
3	Products	385
4	[Results] Survey dashboard	315
5	News	303
6	[Products] Graphical Materials	83
7	[Products] Public deliverables	74
8	[Products] Results	74
9	[News] Towards an advanced concept of engine-off navigation	66
10	[Products] Scientific Publications	63

Table 4. List of top ten visited pages

These date shows that the large majority of visitors landed on the home page. This may indicate that most of them already knew the project and reached the website by typing the address on their browser or on Google. Our hypothesis is that many website visitors had already came in contact with the project at the time when they visited the website for the first time, thus we consider them as already aware of the AEON project.

The following most visited pages are the “About” and “Products”. These results suggest that many visitors who landed on the Homepage have then clicked on one of these two pages to find more information about the AEON project and its results. The visitors’ interest on the AEON results can be clearly seen by looking at the 4th most visited page: the one exhibiting the dashboard with the survey result.

All the next most viewed pages follow the same trends, being mainly related with subpages of the products section. The only two exceptions are those at 5th and 8th position. These two are news pages, showing that updates from the project Consortium are interesting for the website visitors too.

Overall, it seems that the AEON website visitors have already came in contact with the project and want to know more about the activities carried out by the Consortium and the results produced. This clearly shows the communication activities performed in the first period manage achieve the first two communication goals, namely, to inform and raise awareness to the general public.

2.1.2.3 Geo-Localization

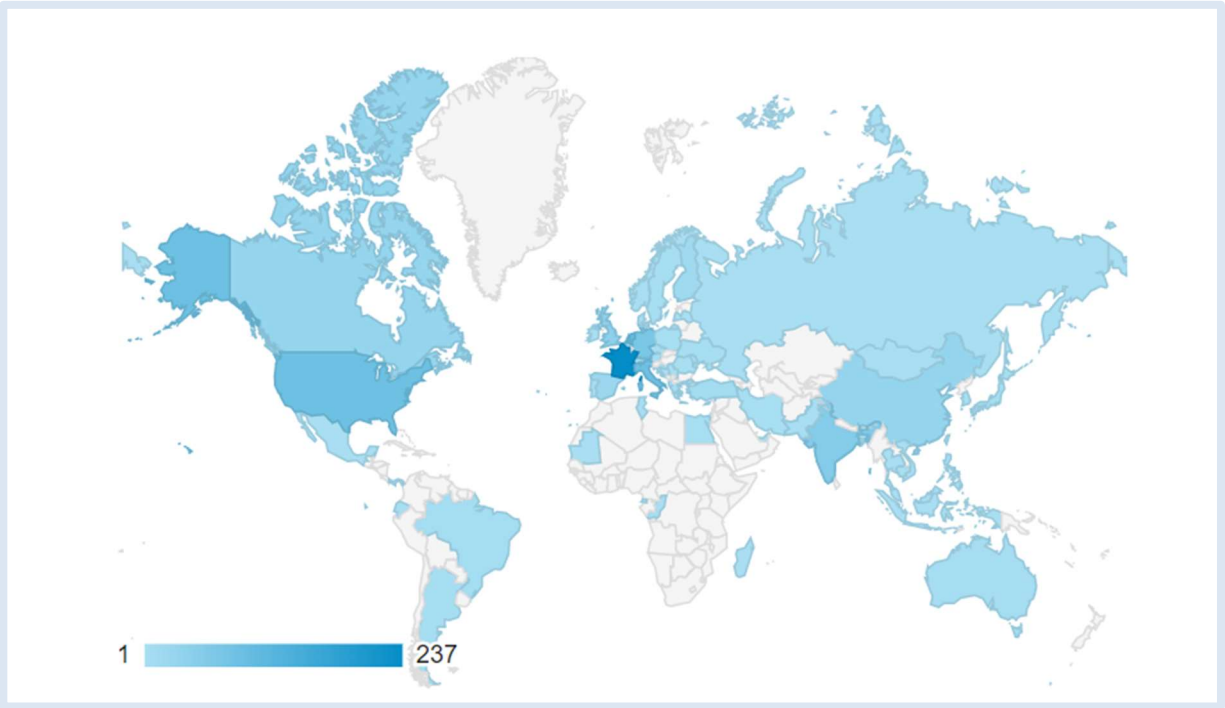


Figure 3. Geo-localization of the AEON website visitors

Not surprisingly, most visitors come from France, Netherlands and Italy, the same countries that compose the AEON Consortium. But many visits come from the US, Germany, India and from other countries worldwide as well. Overall, the website counted visitors from 112 countries out of 195. This demonstrates the effectiveness of the communication strategy at creating content of interest for a wide and diversified audience, bypassing cultural differences.

2.1.2.4 Referrals

The referral is a type of analytic that enable us to understand how the website visitors land on the site, allowing the project to understand the traffic source, then to redistribute the effort on one channel instead of another. The following image presents the distribution of visitors per traffic channels.

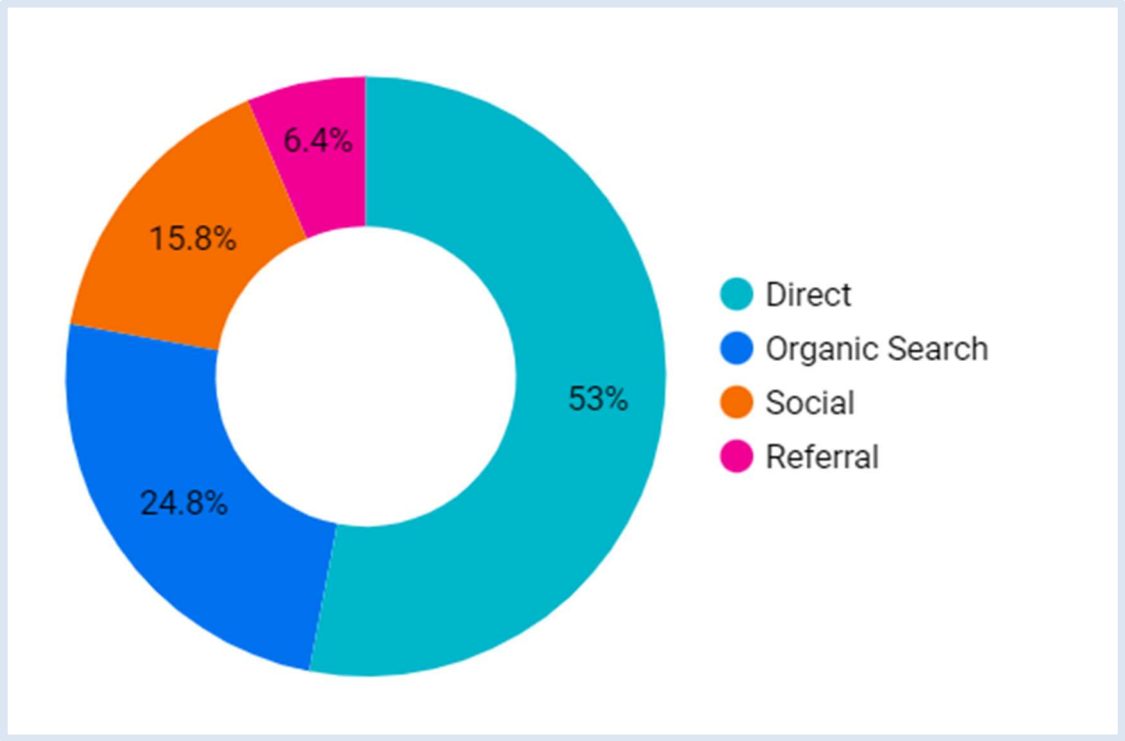


Figure 4. AEON website traffic channels

Direct traffic (53%) comes from people that type the AEON website URL directly into their browser. It also includes visitors who clicked on links from their bookmarks/favorites, within emails, or in documents that do not include tracking variables (e.g., PDFs or Word documents). This is the first form of referral traffic for the AEON website as it brings more than half of the visitors on the website, and it is in line with the analysis of the results from the most viewed pages (see Section 2.1.2.2.).

Organic traffic (24,8%) generates as an unpaid search engine result. It stands at the second place as source of visits towards the AEON website and relies on the list of keywords presented in Section 2.1.1.

Social traffic (15,8%) results from social networks links. The website received visits mainly from LinkedIn (243), Twitter (116) and only in minority from Facebook.

Referral traffic (6,4%) comes through links on other websites like cordis.europa.eu, sesarju.eu, tudelf.nl, internationalairportreview.com, airport-business.com.

Overall, the Direct and Organic traffic results indicate that the majority of visitors already know the AEON project and land on the website potentially through a link in the material shared by the project, or by typing the name into their browser. In particular, visitors resulted from the organic traffic visit the website looking for more information, as it is also confirmed by the 2nd and 3rd most-viewed pages (Section 2.1.2.2.). On the other hand, the number of visitors from social media is in line with similar websites, showing how the content shared through social media accounts are well tailored on the project audience.

2.2 Social Networks

AEON makes use of two social media, LinkedIn[2] and Twitter[3], to enhance the impact of the communication, dissemination, and exploitation activities. These channels have been selected due to their ability to targeting a diversified audience. Through LinkedIn, the Consortium aims at reaching a more professional and specialized audience, while Twitter has been preferred to reach the general public. These channels help open up discussion around the project and engage the target audience accordingly to the communication goals described in Section 1.1.1.

Digital communication largely benefited from the support received by the SESAR Joint Undertaking at disclosing the project activities and results through their social media profiles as well as periodically including AEON in their monthly e-news. The impact of these activities is clearly tangible when looking at the AEON social media analytics, especially on Twitter, where the mentions from the SJU closely predict higher values of profile visits.

2.2.1 Twitter

Twitter supports short and focused communication, it is very useful to follow profiles relevant to the project, and when participating in external events, it offers the possibility of live tweeting, interacting with people taking part in the same event, or entering a previously started discussion.

The table below reports AEON activities on Twitter in the period from the 27th of January 2021 – 20th of September 2021.

Month	Tweets	Impressions	Profile Visits	Mentions	New followers
Jan	1	28	99	1	6
Feb	10	683	306	3	4
Mar	8	1,500	647	1	2
Apr	6	2,471	338	2	1
May	8	1,950	424	0	3
Jun	12	2,890	191	1	0
July	3	1,331	295	2	2
Aug	9	3,383	389	4	1
Sep	3	1,987	661	0	1
Tot.	60[4]	16,233	3,350	14	20

[2] https://www.linkedin.com/company/aeon-project/

[3] https://twitter.com/AEONProject1

[4] The total amount of tweets is 77, also considering AEON's retweet from other profiles.

Table 5. Twitter profile analytics

The results produced from the activities on Twitter in the first period produced optimal results compared to projects with similar Consortium sizes. On average, the Consortium published 8,5 tweets per months, updating the profile almost 3 times per week. Overall, the project managed to reach more than 16,000 views. The 20,6% of people who saw an AEON update visited the Twitter profile.

The content shared through Twitter mainly focused the research on innovative taxiing techniques, results from trials on Schiphol airport, updates from the AEON and its related projects. The goals of this activity were to inform and raise awareness about research on greener taxiing techniques and the value which the AEON project is aiming to add in airport operations.

2.2.2 LinkedIn

LinkedIn, as a professional social network, helps attract a specialized public that can exchange information and discuss the project and its findings (this may also involve the partners of the Consortium).

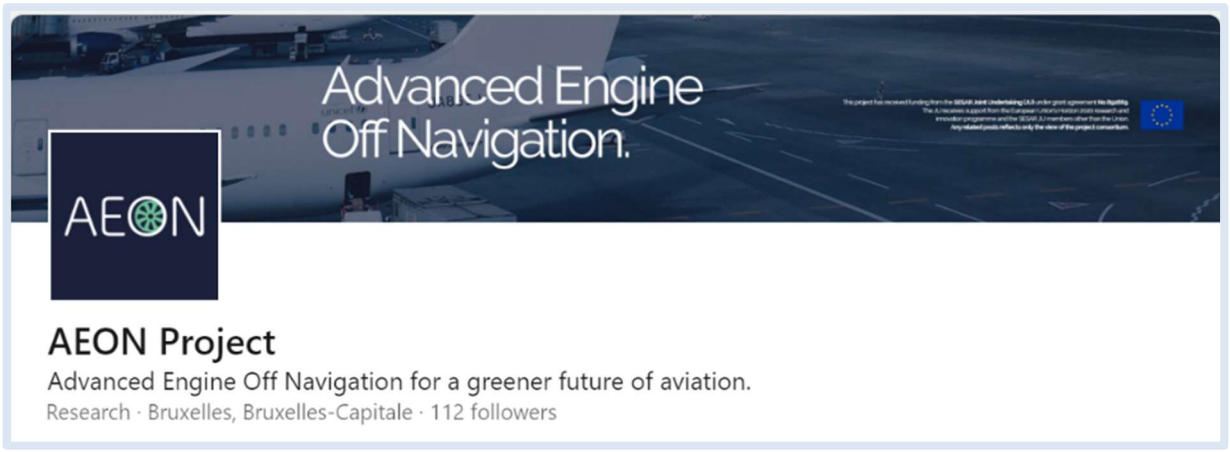


Figure 5. Timeline from LinkedIn profile

In the period January 2021 – September 2021, AEON published 29 updates that have been viewed by 6337 people and brought to 572 profile visits. These activities took the number of followers from scratch to 112. A good result seeing that the AEON profile was officially launched at the end of January, hence it has been active only for 8 months.

These results were possible thanks to the publication of periodic updates about the project activities and news from projects focused on greener airport operations. This content was employed to inform and raise awareness about the AEON project towards a community largely composed by professionals operating in the aviation and airspace industry (54.1%), the scientific community (19.3%) and other industries (14.7%).

2.3 Press coverage

The press coverage directly results from the communication activities and indicates whether the project topics are communicated effectively or not. The more effective the project's communication is, the more AEON is expected to appear in journals and newspapers. In the first reporting period, the

AEON project appeared on the Airport Business magazine of ACI Europe, International Airport review and SESAR Joint Undertaking e-news for three times in only 8 months.

Title	Date	Magazine	Objective	Audience
The green promise of aircraft taxiing technologies	January 2021	SESAR JU e-news	Inform; Raise awareness;	Scientific community
Have your say on greener taxiing technologies!	February 2021	SESAR JU e-news	Raise awareness; Engage	Scientific community; Aviation industry
Taxi bots, drones, multimodality – new SESAR innovations for airports in the pipeline	May 2021	Airport business	Inform; Raise awareness	Aviation industry
Experts share views on greener taxiing techniques	July 2021	SESAR JU e-news	Inform; Raise awareness; Engage	Scientific community; Aviation industry
A keystone to sustainable green aviation!	July 2021	International Airport Review	Raise awareness; Engage	Aviation industry

Table 6. AEON press coverage

Generally, the publication of AEON in third-party magazines followed the objectives set in the first period of communication activities, namely, to inform and raise awareness. As the project begun to produce its first results, the materials published on digital magazine were used also to engage the AEON target audiences with the project results.

2.4 Public materials

In the first reporting period, the Consortium developed several public materials to convey the information about the AEON goals and progress. This material consists of (see Appendix A):

- One brochure to inform the scientific community and the funding institutions about the SJU projects related to AEON;
- One brochure containing the dashboard with the analysis of the results from the survey launched in the framework of WP1 to collect experts' opinion on the greener taxiing techniques considered in AEON;
- The downloadable versions of the AEON first newsletter.

The first brochure focused on providing information to the scientific community and funding institutions, while the second and the third public materials aimed to raise awareness and engage all the project stakeholders with the results produced by the survey for ground professionals as well as those related with the Consortium activities, which were presented in the newsletter.

All these documents have been shared through AEON social media profiles and are available on the project website. In this way, these materials will be easily accessible for any project stakeholders even beyond the AEON life span.

2.5 Public Event

On the 30th of June 2021, the AEON Consortium held a demonstration of the project platform in the public event organized by the Université du Transport Aérien (UTA). The AEON project was presented to 22 aviation executives taking a course at ENAC for a 360° vision on Air Traffic Management (ATM) world.

3 Liaison with relevant stakeholders

The following sections describe the communication and dissemination activities targeting stakeholders relevant for the AEON project. The activities performed towards this audiences aimed to share the AEON lessons-learned and findings and achieve different goals. In this reporting period, the objectives for most of the activities carried out were to inform relevant stakeholders about the project progress, findings, and results; and to foster the exploitation of the AEON results, as well as gather feedback from the interested parties.

3.1 Links with other EU funded research projects

Under the coordination of the Air Transport Action Group (ATAG), the aviation sector has long committed to cut its emissions and implement mitigation strategies to reduce its impact on the environment and climate [2]. This commitment has been recently restated despite the current crisis [3]. At institutional level, the European Commission is supporting these efforts by promoting the research of innovative methods and technologies aimed at reducing the impact of aviation on climate.

3.1.1 ACACIA, ALBATROSS, ARTIMATION, ClimOP, DYNCAT, FlyATM4E

AEON established a collaborative network with a group of six projects, selected by the Consortium due to their point of contacts or continuity with the topic covered by the project. These six projects, namely ACACIA (Advancing the Science for Aviation and Climate), ALBATROSS (Advanced Light-weight BATteRy systems Optimized for fast charging, Safety, and Second-life applications), ARTIMATION (Transparent artificial intelligence and automation to air traffic management systems), ClimOP (CLimate assessment of Innovative Mitigation strategies towards OPerational improvements in aviation), DYNCAT (DYNamic Configuration Adjustment in the TMA) and FlyATM4E (Flying Air Traffic Management for the benefit of Environment and climate:

- **ACACIA:** a scientifically sound understanding of the aviation contribution to climate change;
- **ALBATROSS:** the demonstration in real conditions of the feasibility of implementing the most fuel-efficient flights through a series of gate-to-gate live trials;
- **ARTIMATION:** investigates AI methods in predicting air transportation traffic and optimizing traffic flows based on the domain of Explainable Artificial Intelligence (XAI). The AEON Consortium is exploring possible way to build synergies among the two projects;
- **ClimOP:** the identification and assessment of the most promising operational improvements to reduce the aviation climate impact and the evaluation of their impact on all the aviation stakeholders;
- **DYNCAT:** the impact of current (approach) ATM operations in the TMA on environmental pollution, cost-effectiveness, and safety to quantify the potential for environmental impact (noise, CO2 emission) reduction through better communication between ATC and the flight deck.

- **FlyATM4E:** better climate-assessment methods to optimize fly trajectories and identify promising mitigation options to reduce their climate impact.

The network with the related projects was built through a series of meeting organized to explore potential synergies and define a strategy for cooperation. Moreover, in every meeting each project presented its objectives and workplan in order to identify commonalities or complementary aspects. In most of the cases, the projects decided to exchange the results produced from time to time and organize common events.

The projects with which AEON established tighter links are ALBATROSS and ClimOP. These projects are those that have more commonalities with AEON and that can benefit the most from an exchange of information.

- **ALBATROSS:** collaborates by sharing with the Consortium the results produced in the gate-to-gate trials, where the efficiency of taxiing operations at Schiphol airport is tested. On the other side, AEON will inform the ALBATROSS Consortium about its CONOPS and adding them to the project mailing list.

- **ClimOP:** exchanges the results of the analysis on more efficient ground operations and collaborates though joint communication activities. AEON presented ClimOP in its first newsletter, while ClimOP invited the Consortium to present the initial CONOPS in their 2nd Advisory Board Workshop planned for mid-November 2021.

3.2 Dissemination towards the Advisory Board

Active contribution and participation from a large set of stakeholders are pivotal for the development of the CONOPS and its validation. Nevertheless, the communication and dissemination activities towards the industry is also vital to ensure the deployment of the project results.

To this end, at the beginning of the project the Consortium instituted an Advisory Board (AB) to support the methodological work of the project, provide reviews, recommendations and feedback on project activities and findings; and bring an external view into the project.

Nevertheless, the Consortium carried out several activities to establish connections with aviation industry members even beyond the AB, preparing the ground for the dissemination of the project results.

3.2.1 Liaison activities with Advisory Board members

The collaboration with the Advisory Board members takes the form of 'ad-hoc' meeting reviews where they provide feedback to project results, steering the overall work of the project. For the description of the plan for the validation activities with details on the expected contributions from the Advisory Board to specific WPs, we refer to the Project Management Plan (PMP) (see Section 5.4).

No major deviances were seen from the plan, with the exception of the first AB meeting aiming at gathering feedback on the state of the art of HMIs, multi-agent systems and operational research for fleet management. Instead of a singular meeting, the Consortium carried out a series of meetings in which collected inputs on different aspects of the work done in the D1.3.

The AEON Advisory Board reunites players of the aviation industry such as airlines, airports, and manufacturers to develop a harmonized concept of advanced engine-off taxiing operations. The members are AIRBUS, the French Civil Aviation Authority (DSNA), EUROCONTROL, the Royal Dutch Airline (KLM), SAFRAN, Smart Airport Systems (SAS), the Schiphol Group and To70.

Figure 6. The AEON Advisory Board members

In the first year of activities, the Consortium had a series of meetings with representatives of the industry, internal and external to the AB. These meetings were made with the twofold purpose of communicating the AEON project to the industry and supporting the consultation and validation activities.

The following meetings were organized to gather information on the state of the art on HMIs, multi agent systems and operational research for fleet management which converged into the D1.3. These series of exploratory meetings mint to substitute the workshop expected in March 2021 while communicating the AEON scope and methodology.

Company name	Date	Description
Schiphol innovation	March 2021	Representatives of Schiphol Innovation group presented the results from the test done to introduce TaxiBots in the Amsterdam Airport. This information provided a very useful input to understand the pros and cons linked to the greener taxiing technology mentioned above.
AIRBUS	April 2021	General overview of the TaxiBots and its operations and limitations. The discussion also focused on WheelTug and the Safran capabilities.
Smart Airport System (SAS)	April 2021	The AEON members presented the scope of the project. Then, the SAS representative presented the results from an inquiry on the TaxiBots usage in Delhi and Bangalore airports. The information was used in the AEON initial CONOPS.
Safran	April 2021	The Consortium collected inputs on perks and drawbacks linked to the use of e-Taxi, together with other information

		on e-Taxi concept. The meeting was held with 2 SAFRAN Electric Green Taxiing Systems (EGTS) concept developers.
Paris Airport (ADP)	April 2021	After a short presentation of the AEON project, the discussion focused on the description of ground operations at Paris-Orly airport, which includes single engine taxiing. The Consortium had also the opportunity to see the Airport Collaborative Decision-Making tool (A-CDM) and the Airport Operation Center (APOC). This meeting saw the participation of 4 attendees.
DSNA Roissy Charles De Gaulle (CdG)	April 2021	The meeting aimed at collecting information on the use of engine off taxiing operations. At the beginning the Consortium presented the AEON project, then information on CdG past operational experience and future trials were gathered. The meeting was attended by the Consortium and one representant from the DSNA.
Air France	April 2021	This meeting started with a description of the AEON project and its goals. Then a representant of Air France provided information on their past operational experience and future plans for the integration of engine off taxiing techniques.
TransAvia	April 2021	After a quick presentation of the project, the Consortium discussed with the TransAvia operation Manager their company habits and contacts with ground handling companies.
WSP USA	April 2021	The meeting focused on the various alternative taxiing methods, the need for additional infrastructures for the deployment of TaxiBots.
Group Europe Handling (GEH)	April 2021	After an introduction of the AEON project, the focus of the discussion went on the GEH role on green and alternative taxiing.
Frankfort Airport	April 2021	The Consortium presented the AEON project and proposed to the representant of the Frankfurt Airport to join the Advisory Board. He shows its interest but stated to don't have enough time to join.
Alysia	April 2021	The AEON project was presented by the Consortium to the representatives of Alysia.
WheelTug PLC	April 2021	Discussion on WheelTug taxing methods and operations. After the meeting, the WheelTug plc representative offered to share further information on operational methodologies and the SOP.
LocusLabs	April 2021	The meeting focused on airports' smart technologies that can foster the application of engine-off taxiing techniques in airports with different layouts.
Miles GSE	April 2021	The meeting with Miles ground support equipment mainly focused on their e-GSEs, the perks and drawbacks associated with the usage of their technology.

Mototok Intl GMBH	April 2021	Discussion on Mototok Pushback methods and application in real life conditions.
TKH Airport Solutions BV (AGL)	April 2021	
AIRBIZ	April 2021	The meeting with AIBIZ discussed the pros and cons of a series of sustainable taxiing techniques.
EFM Munich	April 2021	The AEON Consortium met the ground handlers of Munich Airport to discuss the current state of operations for aircraft movements. During the meeting, both the parties presented themselves and the work they carry out. At the end of the meeting, EFM asked to receive AEON CONOPS once released.

Table 7. Meeting with representatives of the industry

3.2.2 First Advisory Board Meeting

The first Advisory Board meeting was held online on September 21st, 2021. The meeting took the form of a workshop and was made by using the GoToMeeting platform in order to ensure a better experience to all the attendees. The gathering started at 9 in the morning and ended at 1 p.m. The First Advisory Board Meeting saw the participation of 24 attendees, 12 were Advisory Board members, 1 represented the SESAR Joint Undertaking and 11 were members of the Consortium.

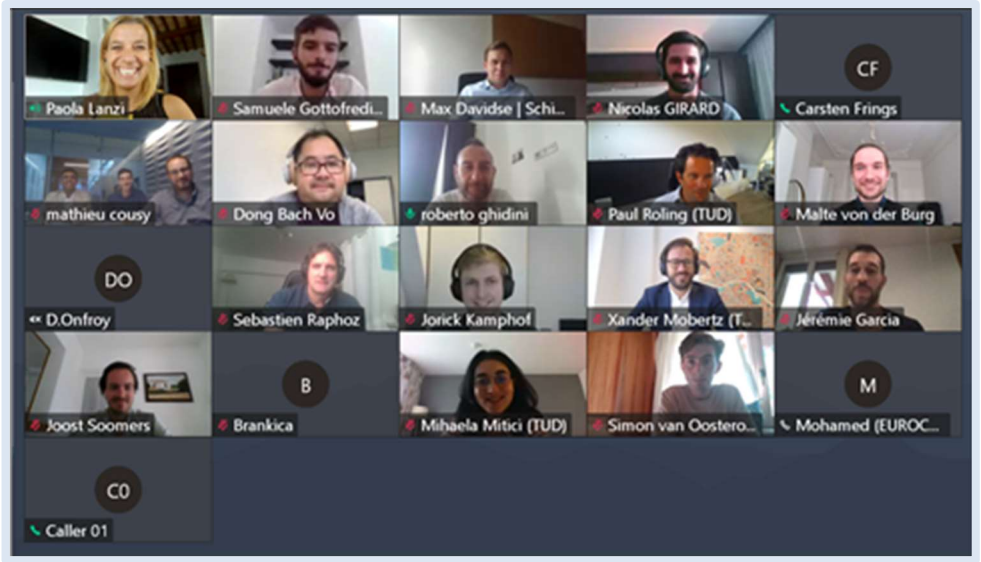


Figure 7. Participants to the First AEON AB Workshop

The meeting started with a quick introduction and presentation of the actions taken in the first year of the project. The Project Coordinator described the results from the state of the art on algorithms and HMIs, along with the meetings with different stakeholders that brought to the inclusion of WheelTug in the study. After a roundtable in which all the attendees presented themselves, the Consortium gave an overview of the innovative taxiing techniques considered by the AEON project. Then, the floor was left to the Advisory Board members and all the other participants to discuss what was presented until that point.

Subsequently, the meeting focused on the AEON initial operational concept, the economical model to assess its costs and benefits, the operations, the tools implied, and the algorithms selected to manage the fleet of towing vehicles and plan their path on the airport surface. After another round of discussion, the activities were interrupted for a break.

After the break, the attendees presented and discussed the leads to be explored further such as modification in the A-CDM, TaxiBots supervision tool, routing suggestion and automated control of vehicles and HMI to support speed cues for smoother traffic. Furthermore, all the attendees discussed the preliminary safety assessment.

Finally, the Project Coordinator took back the stage to wrap-up the information that came out from all the rounds of discussion and closed the meeting. This meeting provided fruitful information for the review and consolidation of the initial version of the operational concept as well as on the definition of the use cases.

More specifically, the Consortium was able to clarify its understanding of the Dispatch Towing Vehicle Electric Taxiing System (DTVETS), which was initially saw as a fully electric technique rather than a hybrid one. DTVETS warm up times also have been a crucial point for the discussion with the AB on the current employment of engine-off techniques.

The presentation on the Cost-Benefit Analysis pointed out that Landing Gear Electric Taxiing System (LGETS) are easier to employ when embedded in the main gear rather than in the aircraft nose, as in the latter case they may produce nose fatigue damages and certifiability issues.

Another crucial input from the AB regarded the Electronic Flight Bag (EFB), an interactive system that AEON aims to use to provide speed cues during taxiing operations. The system appeared to be an exclusive feature of newer aircrafts, though the Consortium already planned to consider the tool more as an additional characteristic of the AEON solution than as a key one.

The AB members also added that in the near future, airports such as Schiphol may go for a division of roles between ATC and the APOC (Airport Operations Center), with the main distinction being that live traffic (pushback, taxi, take-off, landing, taxi clearance) will be handle by ATC, while non-live (towing; empty tugs) by the airport. More generally, technologies and regulations appeared not to be mature enough to go entirely in the autonomous direction.

On the preliminary analysis of safety issues, the Advisory Board suggested to focus the AEON safety scenarios on hazards strictly related to the employment of greener taxiing techniques leaving aside risks of other techniques which are already managed.

Overall, the results produced in the first year of project activities appeared to be in line with industrial expectations. The Consortium has collected all the feedback from the Advisory Board and will employ them to define the use cases of the greener taxiing techniques and to collect information to convey into the description of the Operational Concept (WP1), prototyping of HMI (WP3), demonstrator integration (WP4) and solution performance assessment (WP5).

4 Analysis of the communication and dissemination activities

4.1 Audience and objectives

The Communication, Dissemination and Exploitation plan defined a list of four main objectives for the dissemination in the AEON project: promoting the activities, raising awareness about the AEON objectives and goals, fostering interaction and exchange among the target audience, and getting key messages to decision-makers to ensure the impact.

During the first reporting period, AEON focused on achieving the first two objectives and, in particular, showing the relevance of the project purposes and maximizing its recognition among the general and specialized audience.

The goal of informing and raising awareness among the target audience on the AEON project and objectives has been achieved. The results produced so far by the communication and dissemination activities show that an audience of 22,569 persons has been reached through social media, and another 1,109 people visited the AEON website.

As confirmed by LinkedIn Analytics, communication and dissemination activities reached a well balance audience composed by professionals operating in the aviation and airspace industry (54.1%), the scientific community (19.3%) and other businesses (14.7%).

Although the first reporting period was mainly directed to inform and raise awareness about the project, several activities made possible the transition towards the second two goals of the CDE plan, namely, to engage the interested parties and ensure the impact of the project results. The diffusion of the survey to collect experts' opinion on perks and drawback to the introduction of greener taxiing techniques represents the first step in this transition. The questionnaire engaged the AEON stakeholders at the beginning, when they were asked to provide their feedback, and at the end of the activity, when they had the opportunity to see the analysis of the aggregated replies.

The number of replies to the survey (60), and that of downloads of the dashboard and the other graphic materials are consistent metrics to represent the engagement of the AEON community that the CDE activities manage to achieve in the first reporting period. However, the communication and dissemination activities have also suffered particularly for the second wave of Covid19 pandemic, that postponed some events the AEON Consortium was planning to attend. Furthermore, the publication of 3 scientific papers was rescheduled for the second year of activity, when the project will deliver more solid results.

4.2 Status of the activities

The activities carried out in the first year overall have achieved most of the KPIs set at the beginning of the project. The target KPIs related to communication via website have been overreached in most of the cases. This may be explained due the large increase of time spent on computers occurred during the lockdowns. The goals set in the fourth column of Table 8 refer to the entire duration of the project, hence achieving them after the first year is an extremely good result for the communication and

dissemination activities. On the other hand, there are some KPIs that didn't achieve their target and shouldn't be considered as lacking. This is the case of the KPIs related to the AEON newsletter. Indeed, even if these KPIs have not achieved the target set for the end of the project, they overachieved the targets for the following reporting period. For this reason, they are still marked with the green colour as the KPIs that have already overcome their goals.

The WP6 saw deviations from the actual plan only for the number of scientific publications and participation in third parties' events. The KPIs that are missing are those marked with the red colour on the right column of Table 8. The negative performance for the participation in third parties' events mainly occurred due to the pandemic, which has made postpone many gatherings, including the Smart Airport Cities and Region Conference that the Consortium planned to attend at the end of September 2021.

Concerning the number of scientific publications, the Consortium has decided to postpone most of them in the second year of activity, when the AEON project will produce more solid results. Despite, the Consortium plans to present a scientific paper for the 11th SESAR Innovation Days of December 2021. The Airport Cities and Region Conference and the paper for the SID are described in the following Chapter.

Activity	Indicator	Actual (M10 – Sep 21)	Target	Status
Website	N° of sessions	1550	100+ per month	
	Average session durations	00:02:44	1 minute	
	Countries' visitors	112	20+	
	N° of news	10	At least 1 per month	
	N° of downloads	169	10+ per document	
	N° of people receiving the newsletter	44	50+	
	Search engine position (keyword: "AEON project")	1st result	First result in the list	
Materials	N° of brochures produced	2	2	
	N° of newsletter produced	1	4	
Activities	N° of presentations at third parties' events	1	10+	
	N° of participants on the AEON workshops	25	50+	
	N° of participants on the AEON dissemination event	Not planned yet	50+	

	N° of scientific papers published	0	3	

Table 8. Status of the WP6 KPIs.

5 Future communication, dissemination, and exploitation initiatives

5.1 Next events

In November 2021, the AEON project will take part to the 2nd meeting that ClimOP will have with its Advisory board members. The meeting aims at presenting the results from the assessment of the selected operational improvements seeing the impact they have on climate and aviation stakeholders. AEON has been invited to present its initial CONOPS to their Advisory Board.

The AEON Consortium plans to organize a public workshop to officially present the CONOPS in December 2021, once the D1.1 will be submitted and approved. All the project stakeholders will be invited to attend the event in order to disseminate the first results to a wide and well differentiated audience of interested parties.

As detailed in the next session, AEON is preparing a paper to present in the 11th SESAR Innovation Days held online in December 2021. The paper will provide an overview of the operational concept developed by the Consortium during the first year of activity.

Furthermore, AEON aims to take part in the SMART Airports Cities and Region Conference and Exhibitions, an event covering how SMART airports and their adjacent regions are leveraging connectivity to stimulate innovation and opportunity. The event initially planned for the end of September has been postponed on May 19th to 20th 2022.

AEON has been invited to present the initial concept of operation for engine-off taxiing techniques that make use of novel technologies that are coming onto the market, such as TaxiBots, e-Taxi and Single Engine Taxiing. However, the Consortium is considering the date adjournment also to present the results that will be produced in the first months of 2022.

In August 2022, the project aims to reunite the Advisory Board members for the second time to collect their inputs on the results produced by the solution assessment process, carried out in the first half of 2022. Then, the Consortium is also considering to present the AEON final result in the 33rd ICAS Conference held on September 2022 in Vienna and in the 12th EASN International Conference held in Barcelona from the 18th to the 21st of October 2021.

In November 2022, AEON aims to hold the final dissemination event to share the ultimate version of the project platform, while in December 2022 the Consortium plans to present its ultimate results during the 12th SESAR Innovation Days. The participation in other public events will be considered in accordance with the project progress as well as following the opportunities offered from time to time by the events organizers.

Title	Subject	Date
ClimOP 2nd Advisory Board meeting	Presentation of the initial CONOPS to ClimOP Advisory Board	November 2021
Public Workshop	Presentation of the initial concept of operations.	January 2021

11th SESAR Innovation Days	Submission of a scientific paper and presentation of the AEON CONOPS.	December 2021
SMART Airports Cities and Region Conference	Presentation of the CONOPS (D1.1) as well as the supervision HMI and interaction (D3.2)	May 2022
Second Meeting with the AB	Evaluation of results from the solution assessment process (T5.3; T5.4; T5.5; T5.6; T5.7).	August 2022
12th EASN Conference	Presentation of the AEON final results	October 2022
The 33rd ICAS Congress	Presentation of the AEON final results	September 2022
Final dissemination event	Presentation of the AEON final results	November 2022
12th SESAR Innovation Days	Presentation of a paper with the final version of the Operational Concept and use cases.	December 2022
	Demonstration of the AEON system and platform.	December 2022
ACM CHI Conference on Human Factors in Computing Systems	Demonstration of the AEON system and platform.	May 2023

Table 9. AEON next events

5.2 Scientific publications

In the first year of project activities, the AEON Consortium has not published any scientific paper on scientific journals. This decision was taken as a consequence of the project workplan, which convey the production of the most meaningful results in the second year of activity.

At the beginning of October 2021, the Consortium plan to present a paper to the SESAR Innovation Days 2021 which will describe the initial concept of operations including the inputs received in the first Advisory Board meeting. The Table below details all the opportunities the AEON project is considering to foster the dissemination of its results to the interested parties.

Organization	Event	Deadline for papers submission	Link
SESAR JU	11th SESAR Innovation Days, 2021, online	October 15th, 2021	https://www.sesarju.eu/sesarinnovationdays
MDPI	Special Issue on "The Future of Sustainable Mobility Air Transport Systems: Challenges and Approaches"	January 31st, 2022	https://www.mdpi.com/journal/sustainability/special_issues/air_transport_systems

ICAS	The 33rd ICAS Congress, September 2022, Stockholm, Sweden.	February 10th, 2022	https://icas2022.com/
SESAR JU	12th SESAR Innovation Days, 2022, online	//	https://www.sesarju.eu/sesarinnovationdays
SGCHI	ACM CHI Conference on Human Factors in Computing Systems, 23rd May 2023, Germany	September 2022	https://sigchi.org/conferences/upcoming-conferences/
European Commission	Open Research Europe platform	//	https://open-research-europe.ec.europa.eu/
Elsevier	Transportation Research part C: Emerging Technologies	By the end of the project	https://www.journals.elsevier.com/transportation-research-part-c-emerging-technologies

Table 10. Call for papers of interest for AEON

5.3 Next activities

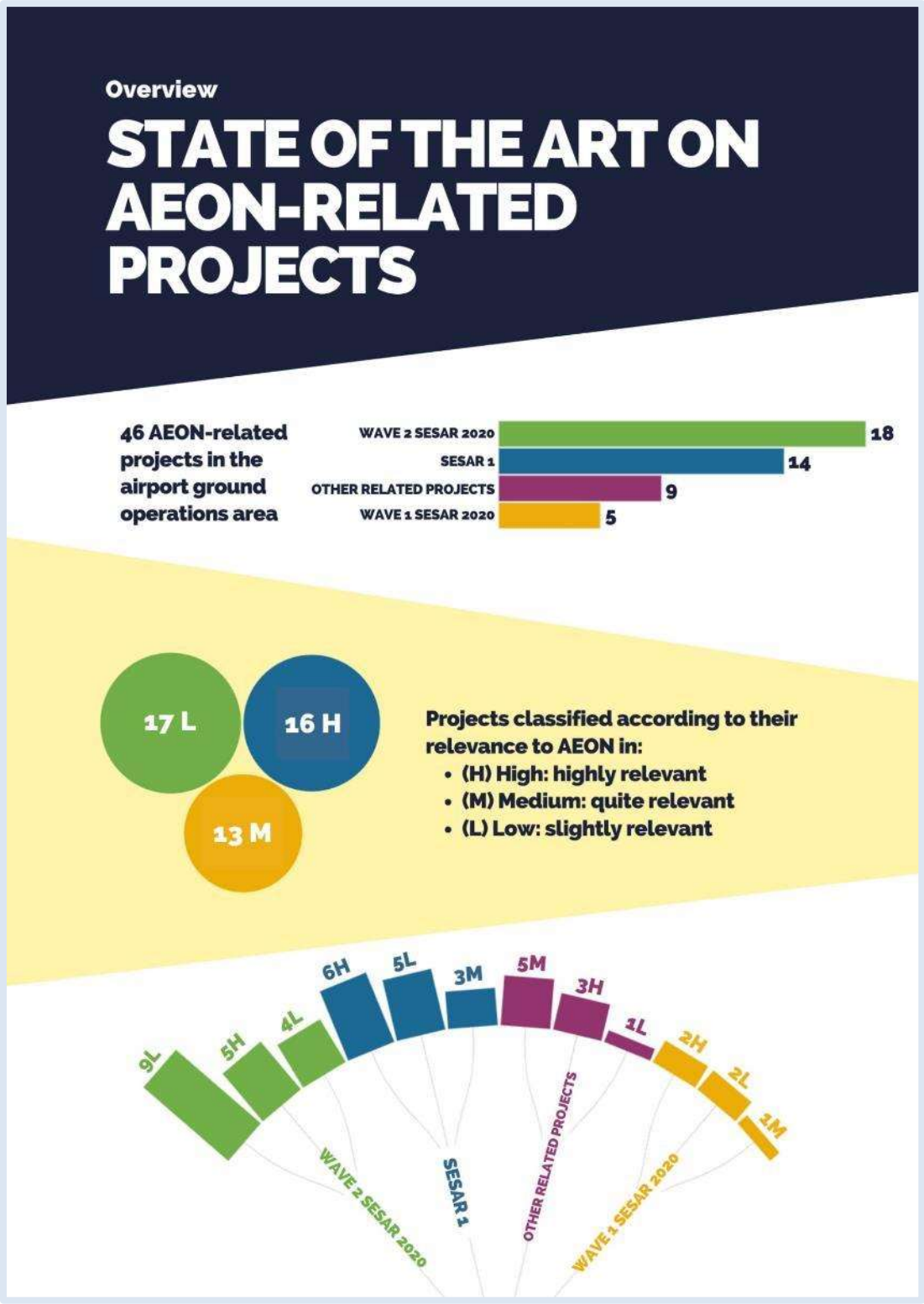
In line with the PMP, in January 2022 the AEON project plans to publish its second newsletter to disseminate the results from the consultation activities carried out during the first Advisory Board meeting, the initial version of operational concept and announce the organization of the public workshop of December 2021. Further two issues are planned for June and November 2022. Finally, a concept image for the AEON website is going to be prepared during the following months in order to be included in all the communicational material and support the participation in public events.

6 Conclusions

The present deliverable discussed all the communication activities done towards the general public by using the website, social networks, press coverage and public materials. Then, the discussion moved on the liaison with relevant stakeholders such as the scientific community and the aviation industry. After presenting all the activities carried out to communicate and disseminate the project to the general public, the scientific community, and the aviation industry, we went to the analysis of the produced results in order to highlight the status of WP6 as well as its deviations from the workplan and the CDE plan. Finally, a glimpse on future initiatives such as already planned events, scientific publications and activities have been presented to show the direction towards which the WP6 will move in the following months.

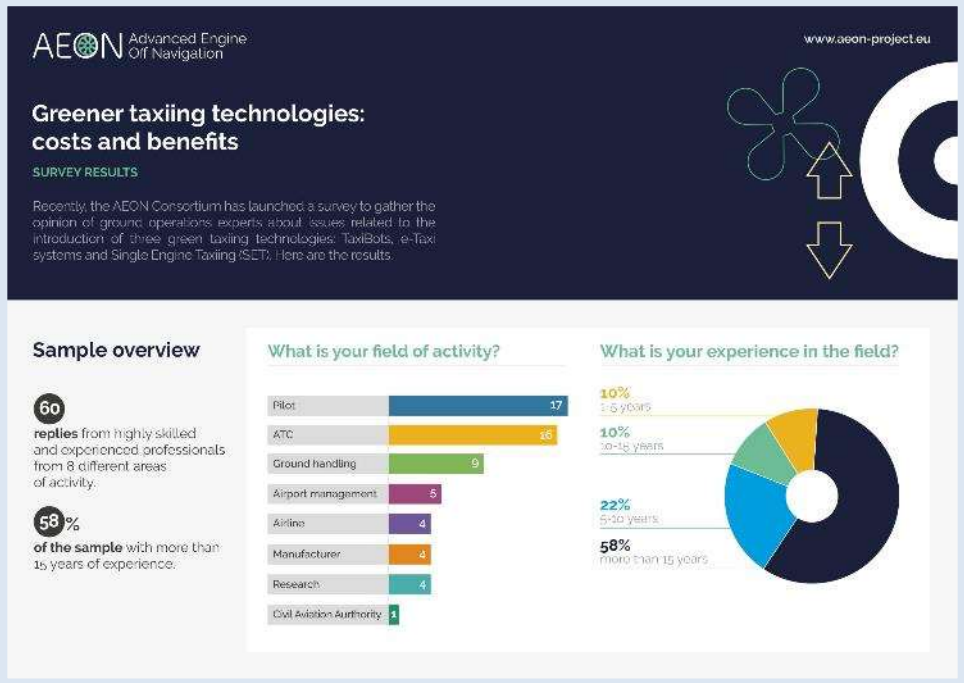
Appendix A Graphical Materials

A.1 Brochure: AEON related projects

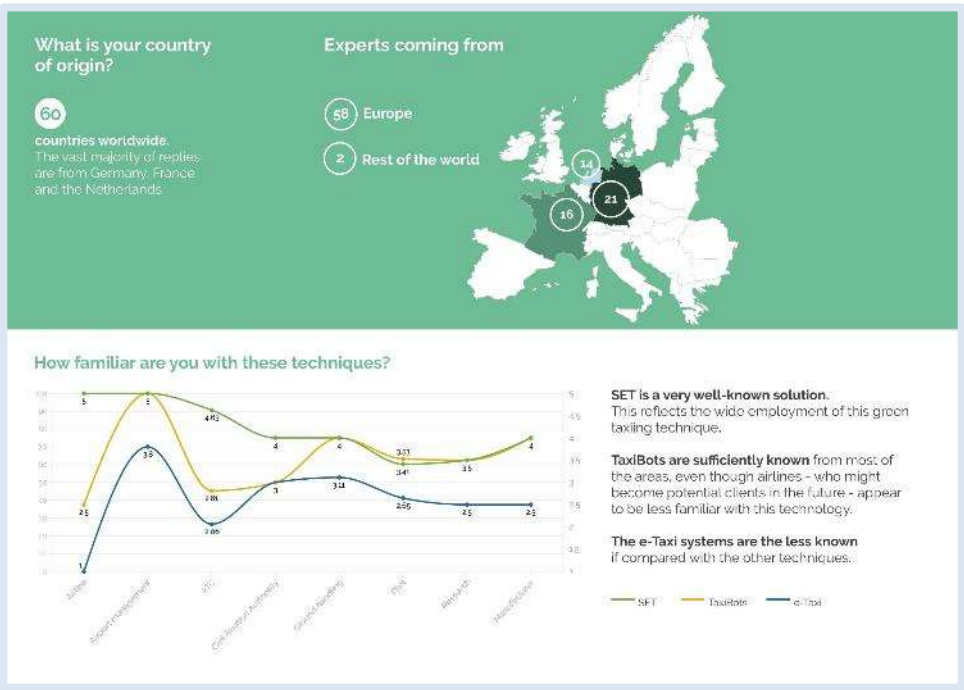


A.2 Brochure: Dashboard with survey results

A.2.1 Introduction



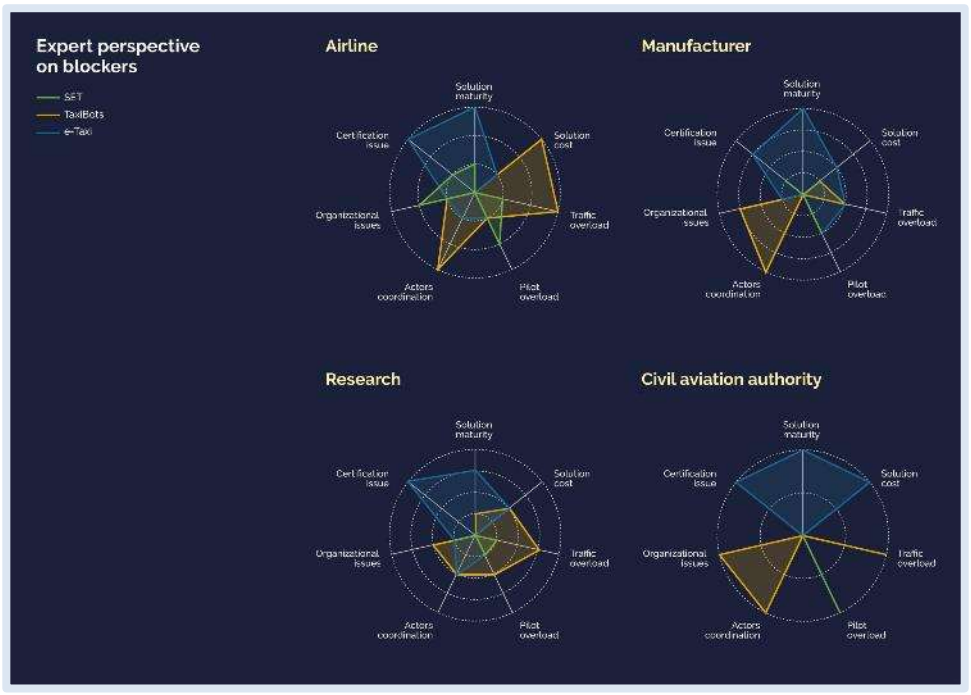
A.2.2 Subjects overview



A.2.3 Results overview

A.2.4 Expert perspective

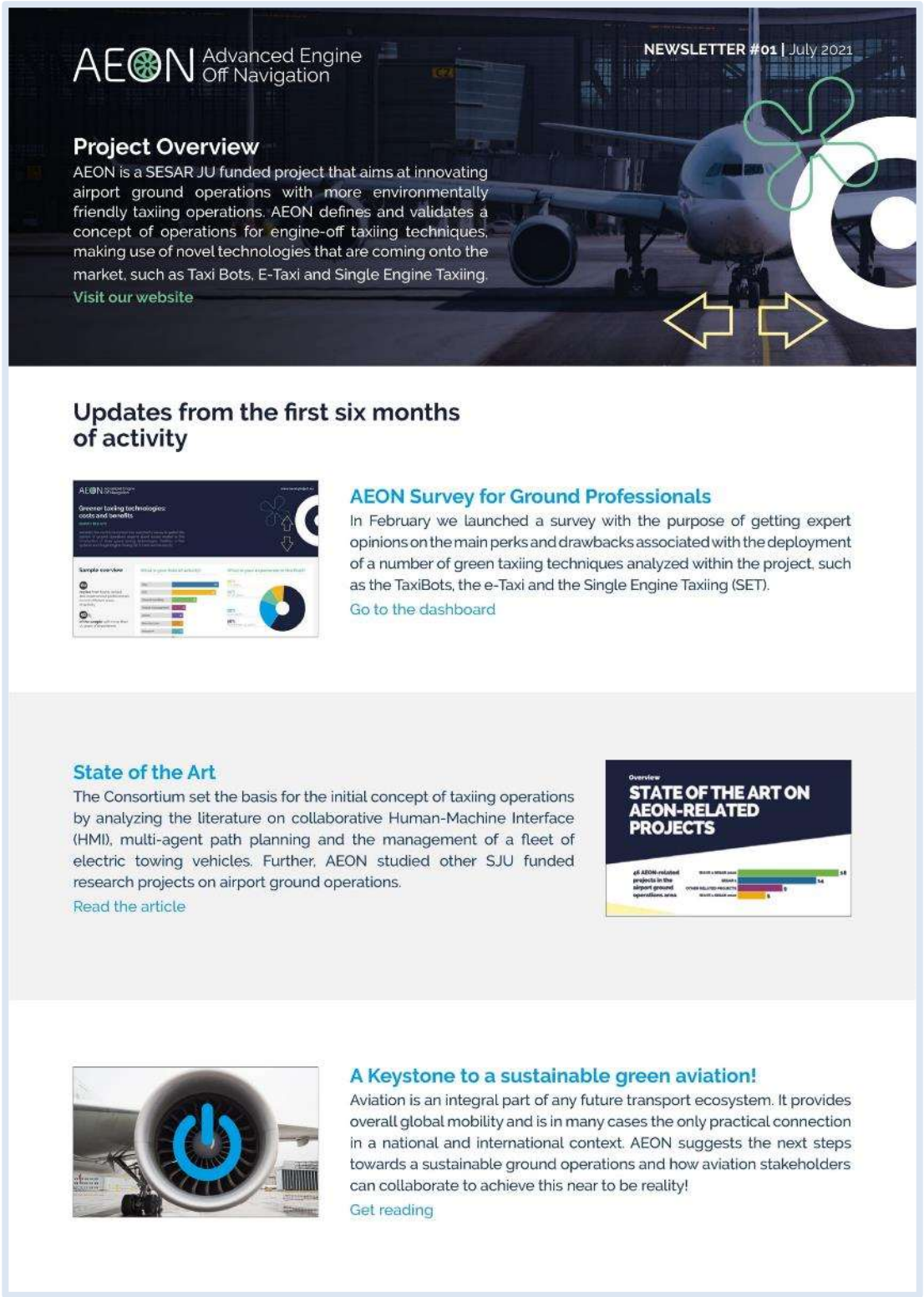
A.2.5 Expert perspective 2nd page



A.2.6 Future scenarios

A.3 Newsletter #1

A.3.1 Updates from the first six months of activity



A.3.2 Eyes on us

AEON Advanced Engine Off Navigation

"Climate action is also a massive opportunity for our economies. It creates new markets. It mobilises investment in new and transforming industries, and it unleashes innovation for a healthier and more prosperous future."

President of the EU Commission Ursula von der Leyen, at the Global Leaders Summit.

Eyes on us

SESAR JU E-news

Since AEON began, we have gained a lot of attention from stakeholders in the aviation sector. In January the SESAR JU, that founded the project in the framework of the SESAR exploratory research, focussed on AEON as project of the month in its e-News. AEON was then included for the second time in a row in the SJU e-news of February, when the Consortium launched a survey to gather the opinion of professionals in ground operations.

Know more about our inclusion in the SJU e-news

ACI Europe – Taxi bots, drones, multimodality
new SESAR innovations for airports in the pipeline

At the end of April 2021, the ACI Europe Airport business, the magazine of the Airport Council International, a non-profit organization representing more than 1,861 airports around the world, included the AEON project in one of its publications.

Read the article on the ACI Europe Airport

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A.3.3 Upcoming events

AEON Advanced Engine Off Navigation

Upcoming Events

Advisory Board

The AEON Advisory Board (AB) consists of a group of external experts and stakeholders with noteworthy and recognized expertise in the field of solutions for greener ground operations at airports. It complements the expertise already included in the Consortium and acts as an independent consultation body. In particular, its role is to follow the activity of the project in order to review and steer the main project results, establish connections with other related initiatives and projects and share information from/to other relevant projects and/or initiatives. In the 6 months of activity, the cooperation with the AB was based on bilateral meetings with each of the members, while in September the first plenary workshop is awaited. It will serve to present the initial version of the concept of green taxiing operations and collect experts' opinions.

CONOPS first issue

At the end of October, the Consortium is going to release four key documents: the preliminary version of the Concept of Operations for the integrated usage of the green taxiing solutions taken into account by AEON (D1.1), the Use cases (D3.1), the Description of the validation platform (D4.1), and the Solution validation plan (D5.1). These documents provide an essential description of the path that the AEON project will follow during the next year of activity. All the results expected for October are public and will be uploaded on the AEON website as soon as approved by the SJU.

Follow us on **Twitter** and **LinkedIn** to remain always updated.

ClimOP Workshop

ClimOP (Climate assessment of Innovative Mitigation strategies towards Operational improvements in aviation) is one of the projects related to AEON, with which we established promising synergies. The ClimOP project is an H2020 funded research project seeking to develop a mitigation strategy to decrease the climate impact of aviation, both in terms of CO_2 and non-CO_2 emissions. The project will arrange a public workshop in November 2021 to present the work made to develop a common air traffic scenario to compare the effectiveness and feasibility of the selected operational improvements. The AEON Project has been invited to attend and present its CONOPS. Stay tuned for further updates!

Discover more about the ClimOP project

deepblue consulting & research ENAC TU Delft

This project has received funding from the SESAR Joint Undertaking (JU) under grant agreement No. 892869. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the SESAR JU members other than the Union.

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