

D7.1 Dissemination, communication and exploitation plan

Deliverable 7.1

Pilot3

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Pilot3

A SOFTWARE ENGINE FOR MULTI-CRITERIA DECISION SUPPORT IN FLIGHT MANAGEMENT

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Abstract

This document is the Communication, Dissemination and Exploitation Plan (D7.1) of the Clean Sky 2 Innovation Action Pilot3. The document defines the communication and dissemination actions to be performed during the project, and the potential exploitation of the project results. A complete strategy of communication is presented, as well as the items and content already prepared for it.



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Executive summary

The Pilot3 project will develop a software engine model for supporting crew decisions for civil aircraft. This software will provide a set of options to the pilot with information to help the crew select the most suitable one considering the multi-criteria business objectives of the airline.

Pilot3 is coordinated by the University of Westminster (UoW), with the Universitat Politècnica de Catalunya (UPC), the Innaxis Research Institute and PACE Aerospace Engineering and Information Technology as partners. Thales AVS France SAS is the Topic Manager.

This deliverable presents the communication, dissemination and exploitation plan and approach followed by the project. The strategy for these activities relies on four axes:

1. **Dissemination** of key information (approach, methodologies, results, etc.) generated during the project.
2. **Exploitation** of the results in a context that ensures their dissemination and facilitates their successful handover for the next steps of the R&I pipeline.
3. **Communication** of progress from the beginning of the project onward that creates awareness about the project.
4. **Continuous involvement** and **interactions** with relevant working groups and other projects.

Four different audiences with their needs and approach have been identified including identifying detailed actions and defining targets:

- **Scientific and (academic) research community:** with focus on scientific papers (2 journal publications) and participation in conferences (3 participations in conferences). At the time of writing this report, April-May 2020, most upcoming events are being cancelled or postponed due to Covid-19, and some others are starting to be organized remotely. The Pilot3 members will closely follow the evolution and continuously update the potential communication and dissemination opportunities. If remote events are organized instead of face-to-face, the Pilot3 members will still actively participate into them.
- **Industry / operations** (with particular focus on airlines): revolving around the strong relationship with the Advisory Board (with 2 meetings and site visits as required), collaboration with Engage KTN and targeted conferences aimed at industry (to facilitate transferability of results).
- **Education:** by presenting Pilot3 approach, challenges, methodology and results in lectures at the university programmes of the members of the consortium (UPC's BSc. and MSc. Degrees, and UoW's MSc.), and participating in Engage KTN workshops and summer schools.
- **General public and civil society:** focusing on maintaining a dedicated website and participating on physical/digital newspapers to promote information on Pilot3.

Specialised blogs (10 posts aimed during the duration of the project) and social media communications will also be used to reach the four audiences.

In order to maximise the impact of Pilot3, a coordinated visual identity has been developed, by designing and delivering the following:

- **Project logo**, and library of web or design elements, including, among others, a **palette of colours, icons, banners;**
- **Templates for project deliverables and presentations;**

- **Project website**, created during the first month of the project accessible at <https://pilot3.eu>. It includes information on the project, events and access to the dedicated blogs entries.

Pilot3 will rely on the already existing and successful social media accounts of its partners and the personal profiles of the participants for dissemination of updates on the project. These updates will be also added into Innaxis newsletter.

Specific **KPIs** have been defined to **monitor** the success of Pilot3 communication and dissemination actions. These will be tracked during the duration of the project. Example of these indicators are website hits, visits to blog posts, number of presentations, audience reached in conferences.

A detailed (month by month) communication and dissemination plan has been created indicating key actions. The calendar will be regularly updated to report the key aspects of the tasks performed and to adapt it to other ongoing initiatives which are considered relevant for Pilot3 to collaborate in communication and dissemination activities.

Synergies with other projects (in particular Dispatcher3 and Engage KTN) will be sought to maximise dissemination opportunities (e.g., collaboration defining meetings with Advisory Board).

Pilot3 counts with a diverse consortium including private companies, research institutions (with spin-off creation experience) and universities. The Pilot3 consortium aims at progressing the maturity of generated results and foreground beyond the completion of the project, both jointly so as individually, according to the different scope of each consortium member. WP6 will be dedicated to ensure that potential exploitation of project results are identified and a clear path to bring them to the market identified. In particular:

- Analysing the first Pilot3 prototype from an industrial perspective
- Assessing and provide requirements to improve the prototype
- Collecting the feedback of the industrial experts, including the validation workshop, to be integrated in the final release
- Considering the whole Pilot3 solution and assessment on how a final product should be released to be useful and easy to implement: HMI, connectivity requirements, interoperability.

The exploitation will focus on two areas:

- **Industrial developments**
 - On-board crew decision support tools
 - Data-analysis supporting decisions for optimized operations
- **Academic developments**
 - Trajectory optimisation/planning algorithms and models

Finally, data plays a key role in Pilot3. The data used in the project includes both private confidential data and public sources. Each dataset needs to be adequately treated to ensure the protection requirements are met. Pilot3 partners have more than 30 years of combined experience in working with aircraft performance, meteorological, air traffic, passengers, airline and economic/financial data. To ensure confidentiality, privacy and non-disclosure of the data, data owners and consortium members will follow **DataBeacon BeSt's global governance model**, the model consist on a data protection agreement (PDA).

It is anticipated that novel intellectual property (IP) will result from Pilot3, which will be quickly transferred into IPRs (intellectual property rights) such as patents, licenses, trademarks or copyrights for further utilisation in the form of innovative products or services. The Consortium Agreement (CA) signed between the members include the IPR regulations arranged among the project partners and all legal basis.

Pilot3 team agrees on ensuring as much as possible open access to all peer-reviewed scientific publications resulting from the project outcomes. Thus, a balance between IP protection and open access dissemination of results will be sought. Gold Open Access will always be the first option, otherwise, the team will opt for the green model in case the first was not possible.

1 Introduction

1.1 Pilot3

Pilot3 will develop a software engine model for supporting crew decisions for civil aircraft. This software will provide a set of options to the pilot with information to help the crew select the most suitable one considering the multi-criteria business objectives of the airline.

Pilot3 will look to integrate an airline's flight policies and overall performance targets to select and rank the alternatives. The system does not only consider the flight but the whole network operations of the airline. Pilot3 is composed of five different subsystems: Indicators Estimator, Operational ATM Estimator, Alternatives Generator, Performance Assessment Module and HMI. The first four will be developed during the project, while an HMI will be designed. Pilot3 will specify the software interface so that it can be integrated in larger systems.

The project is an Innovation Action (IA) funded by the Clean Sky 2 Joint Undertaking (CSJU) under the European Union's Horizon 2020 research and innovation programme, Grant Agreement No. 863802, following the consortium's response to Call "H2020-CS2-CFP09-2018-02" Topic "JTI-CS2-2018-CfP09-SYS-01-12 - Software engine for multi-criteria decision support in civil aircraft flight management" (Clean Sky 2 Joint Undertaking, 2018). The action is coordinated by the University of Westminster, with the Universitat Politècnica de Catalunya, the Innaxis Research Institute and PACE Aerospace Engineering and Information Technology as partners. Pilot3 launched in November 2019 and will last 27 months.

The Project Dissemination, Communication and Exploitation Plan (D7.1) is the first deliverable of WP7 "Communication and Dissemination". The objective of WP7 is to create awareness on the project evolution, objectives and results among the relevant communities. By actively communicating the project outcomes in the relevant fora, this plan aims at fostering the exploitation potential of its achievements.

The Communication, Dissemination and Exploitation Plan (CDEP) sets up the guidelines to achieve these objectives, identifying the relevant communities and fora, the most suitable communication channels to address them and the appropriate communication actions. This plan is considered as a live and flexible document that could be adapted to the changing needs of the project according to its evolution and progress.

This document analyses the objectives and target audiences (in Section 2) and communication opportunities and proposes a complete plan of actions, their corresponding media and indicators (see Section 3 and Section 5). In Section 4, the visual identity and website are also presented in this document, together with other materials to be used by the consortium both internally (such as templates) and externally (such as banners).

A communication and dissemination strategy can be found along the document with the actions to be taken, and also the exploitation plan of results is defined (see Section 7). Pilot3 is linked with other projects and EU initiatives and this is defined in Section 6.

In Pilot3, data plays a key role, it is used in the project includes both private confidential data and public sources. The document contains a specific section for the definition of data management and confidentiality (see Section 8.1).

This is a living document; it will be completed along the duration of the project with those actions taken and/or modified. It is directly connected with Deliverable 7.2 – Project communication, dissemination and exploitation report as in this report the results of the CDEP will be collected.

1.2 Scope

The communication and dissemination of the objectives, actions and results of Pilot3 will be organised around an understanding of target audiences, and a coordinated plan:

- dissemination of objectives and results will be channelled to the needs of the target audiences by defining a distinct strategy of targeted messages, means and language for the different key stakeholders identified; and
- the communication and dissemination plan will aim to engage with the classes of stakeholder in the aviation sector that have most to gain from the results of the project in the short-term, as well as the research communities that could build upon more fundamental findings.

The strategy will cover the 27 months of the project.

The outcome of this task, the communication and dissemination plan in D7.1, will be progressively adapted and refined in accordance with the needs and evolution of the project, especially during the last months of the project, where the communication tasks are planned to be reinforced to disseminate the results.

At the time of writing this deliverable, Europe and most of the world is seriously affected by the COVID-19 pandemic. There is still high uncertainty on the time it will take to recover a seamless mobility across Europe. In order to adapt to the current (and short/medium term) situation, the team proposes a higher effort in communication through alternative (i.e., non face-to-face) media.

1.3 Deliverable structure

This deliverable is structured in 8 sections and two Appendixes:

- Section 1: Introduction
- Section 2: Objectives and targeted audiences
- Section 3: Communication, dissemination and exploitation strategy
- Section 4: Pilot3 Visual identity and web presence
- Section 5: Communication and dissemination impact indicators

- Section 6: Link with other projects and relevant initiatives
- Section 7: Communication and dissemination planning
- Section 8: Data management, confidentiality and IP
- Appendix A: Project website
- Appendix B: Template reporting communication, dissemination and exploitation activities

2 Objectives and targeted audiences

The current plan aims at creating awareness and visibility, as well as fostering engagement of all relevant stakeholders and the general public. Key elements of these communication, dissemination and exploitation tasks are presented next. A specific strategy, using appropriate means and language, has been planned for each targeted audience, to be divided into four axes of activities:

1. **Dissemination** of key information (approach, methodologies, results, etc.) generated during the project.
2. **Exploitation** of the results in a context that ensures their dissemination and facilitates their successful handover for the next steps of the R&I pipeline.
3. **Communication** of progress from the beginning of the project onward that creates awareness about the project.
4. **Continuous involvement** and **interactions** with relevant working groups and other projects.

In order to maximise the impact of Pilot3, a coordinated visual identity has been developed, by designing and delivering the following:

- **Project final logo**, and library of web or design elements.
- **Templates for project deliverables and presentations**, including the Pilot3 visual identity objects, with especial attention to guidance to publishable summaries of documentation generated, to ensure maximum readability by the targeted audiences.
- **Project website** in line with the visual identity defined.

2.1 Targeted audiences and key activities

The different audience and the key activities that will be carried out to increase the awareness and the impact of Pilot3 are:

- Scientific and (academic) research community:
 - Publication in **scientific papers**.
 - Participation in **conferences** specifically targeted at the relevant academic communities.
- Industry / operations (with particular focus on airlines):
 - Interaction with the **Advisory Board**, comprised of airlines and stakeholders (see below for further detail). This will allow Pilot3 to have continuous communication of the different activities with a target audience for the project product.
 - Participation at **Engage KTN** workshops and summer schools.
 - Participation in **conferences** aim at industry and stakeholders.

- Education:
 - Presentation of Pilot3 in **lectures** at UPC (BSc. and MSc. degrees on aerospace engineering) and UoW (MSc. in air traffic management).
 - Participation at **Engage KTN** workshops and summer schools.
- General public and civil society:
 - **Maintaining a dedicated website** created during the first month of the project. The website will include general information about the project and all communication material will be uploaded in order to provide a single point of access for project progress updates. The content available in the website, which will be regularly updated, will be complemented by blog entries when more detailed information about a particular finding, event, investigation or result wants to be disseminated.
 - **Participation in physical/digital newspapers**, posts, reports, articles will be promoted and facilitated.
- All target audiences:
 - The publication of **specialised blogs**, the content that will be shared through blogs will be more detailed or specific than the website. Rather than maintaining a project blog where engaging audience and creating very frequent content would be too high consuming, we will work on developing collaborations with other portals with established audiences. Innaxis has large experience in this line, especially after the creation of datascience.aero in 2017 which currently has +100 articles written by 14 authors on many topics related to data science in aviation, and a total of +56.000 page views. Pilot3 aims at publishing around ten targeted blog posts during the 27 months of the project. The blogs will also be accessible from the project website. The content of these blog posts will consist of the progress made through the project activity, events, findings, etc. These blog posts will be typically around 200-300 words, targeting one or two stakeholder groups which has been proven to be a more effective dissemination and communication strategy to gather interest across wider audiences. Blog posts are to be further complemented by equivalent posts in professional social media (e.g., LinkedIn) to ensure maximum visibility on the communication actions.
 - When considered interesting and worthwhile, the consortium will make use of **existing communication channels**: all the partners websites, and social media (e.g., Twitter accounts, personal LinkedIn profiles, etc.).

2.2 Advisory Board Members

The following table (Table 1) shows the current status of the Advisory Board, which is open to incorporate more relevant members during the project duration. This will increase the outreach of the dissemination within the industry.

Table 1. Advisory Board members

Entity
SWISS
Norwegian
Air Baltic
EUROCONTROL
A3 Aviation Consulting
Vueling
Salient Consulting
Airlines Operation Expert



3 Communication, dissemination and exploitation strategy

The communication and dissemination of the results will be carried out using a unified strategy, leveraging the consortium members' strong relationships with already a wide range of audiences.

3.1 Communication and dissemination strategy

Sharing the outcomes of the project with the relevant experts enables the results to be further developed leveraging on state-of-the-art techniques and foster its application, implementation or exploitation. Accordingly, the aim for the dissemination activities is to spread knowledge to expert groups, which could replicate our results, advance the state of the art beyond Pilot3 main findings, or find synergies and potential further collaborations with all or some members of the Pilot3 consortium. Pilot3 will also develop communication actions to create awareness among the general public on the expected benefits of the project for the society.

The following table outlines the dissemination and communication strategy according to each targeted group, including addressing civil society (generally a non-expert public):

Table 2. Targeted actions for communication and dissemination

Targeted audience	Communication Dissemination action	Motivation	Goal
Scientific/ research	Submission of papers to identified peer-reviewed journals and conferences	Present the progress beyond the state of the art in: <ul style="list-style-type: none"> • trajectory and operations optimisation, • multi-criteria decision making techniques, • machine learning, • airline's operations, and • air traffic management. 	<ul style="list-style-type: none"> • 2 submitted journal publications in some of the journals in Table 3 • 3 publications/ participations in some conferences of Table 4 • Collaborate with the Engage KTN to facilitate the transferability of results.

Industrial	Meetings with the Pilot3 Advisory Board	<ul style="list-style-type: none"> • Establish and maintain a fluid relationship with airlines and experts: collect input on airlines operations, performance monitoring and assessment on trajectory management. • Capture stakeholders' requirements • System validation • Raising awareness 	<ul style="list-style-type: none"> • Establishment and engagement of an Advisory Board to gather information and data: <ul style="list-style-type: none"> ○ on flight policies, ○ KPIs and preferences ○ requirements ○ validation • Organization of 2 Advisory Board meetings (month 4 and month18) • Site visits to AB airlines members if required (month 4-24) - during travel restrictions, site visits will be postponed or replaced by one-to-one videoconferences. • Continuous interaction during the project lifecycle through teleconferences, questionnaires, direct emails.
	Pilot3 workshop organization	<ul style="list-style-type: none"> • Raise the awareness of Pilot3 in the community • Provide input as part of the external evaluation and validation of Pilot3 • Help the consortium to define the modifications needed for the final release of the product. 	Organization of one targeted workshop (month 18) to widely present the first Pilot3 prototype to advisory board members and other relevant stakeholders*.
	Participation in broader events	Benefit from well-established audience coming from the targeted groups of industrial stakeholders.	At least one open presentation per year on broader, relevant events. See Table 4
	Collaboration with Engage KTN to disseminate results to industrial partners	Engage KTN has a key remit to better integrate exploratory research and more applied/industrial, maturing the TRL of the former, as a two-way process. Some of the Pilot3 partners are also partners in the KTN that will facilitate collaboration and cross-fertilization.	Pilot3 to take part in one Engage KTN initiative per year, especially those with high participation of the Advisory Board, if deemed relevant by the Engage KTN consortium and activities.

Education	Ensure and maintain an active link with the Engage KTN to foster educational activities through its summer schools.	Support Engage KTN initiative to “develop new talent with a deep knowledge of the future ATM scientific research needs [...] stimulating the next generation of ATM staff”.	Participate in the Engage KTN summer schools
All targeted audiences	Maintaining a dedicated website, and a presence in social media, with general information and communication material complemented by blog entries when more detailed information or result wants to be disseminated (see Section 7 for further details)	<ul style="list-style-type: none"> • Create awareness about the project objectives and outcomes among a non-specialist public • Give visibility to the EU-funded initiatives with focus on the societal benefits • Complement the general content in the website with more specific technical blog posts 	<ul style="list-style-type: none"> • Creation and maintenance of a public website • 10 posts along the duration of the project, with a new milestone, event report, result to communicate. • Participation in external physical/digital newspapers, posts, reports, articles. For instance, be part of datascience.aero blog with 2 posts about Pilot3.

* The workshop is scheduled for Spring 2021, by the moment, it is the objective of the consortium to hold a face-to-face meeting. If the current travel limitations were hold by the time of the workshop, it will be organized as a remote event. The consortium is already getting experience in the organization and participation in remote events (webinars, online dissemination sessions, etc.) and will apply its lessons learnt to Pilot3 if needed.

At the time of writing this report, April-May 2020, most upcoming events are being cancelled or postponed due to Covid-19, and some others are starting to be organized remotely. Accordingly, the following table of identified events may suffer changes to adapt to this situation. The Pilot3 members will closely follow the evolution and continuously update the table as required. If remote events were organized instead, the Pilot3 members will still actively participate into them.

Table 3. Targeted journals for publications

Journal	Description
Transportation Research Part C: Emerging Technologies	Focused on novel technologies, such as operations research, computer science, electronics, control systems or artificial intelligence, applied to transportation.
IEEE transactions on intelligent transportation systems	Focused in theoretical, experimental and operational aspects of electrical and electronics engineering and information technologies as applied to intelligent transportation systems.
Journal of Advanced Transportation	Targeting transportation research areas related to public transit, road traffic, transport networks and air transport.
Journal of Air Transport Management	Targeting economic, management and policy issues that apply to the air transport industry.

Journal	Description
European Journal of Operational Research	Targeting specialised communities interested in the practice of decision-making, describing novel ways to solve real problems and/or new operational research methodologies.

Table 4. Targeted events for dissemination

Event	Periodicity	Dates	Status
SESAR Innovation Days (SID)	Annual	7-10 December 2020. Budapest, Hungary	No changes by the moment, in preparation
International Conference on Research in Air Transportation (ICRAT)	Annual	June 2022	2020 edition postponed
ART Agency Research Team (ART) meetings and workshops	Biannual	April & October 2021	2020 edition cancelled
Digital Avionics Systems Conference (DASC)	Annual	11-15 October 2020, Texas, USA	The DASC is maintained by the moment but may suffer changes following the COVID-19 Health authorities recommendations. Nevertheless, it is extremely unlikely that European citizens can attend it.
USA/Europe Air Traffic Management (ATM) Research and Development (R&D) Seminar	Biennial	June 2021, New Orleans, USA	No changes by the moment, in preparation
Airline Group of the International Federation of Operational Research Societies (AGIFORS), Annual Symposia, Dedicated Study Groups	Annual	June 2020	The AGIFORS events organized during these days are being organized remotely.
Engage KTN workshops and summer schools	Multiple	TBA	Either remotely or face-to-face to be decided as a function of the COVID-19 status in Europe.
Data Science in Aviation Workshop	Annual	Spring 2021	No changes by the moment, in preparation

3.2 Exploitation strategy - Delivering innovation to the market

Pilot3 counts with a diverse consortium including private companies, research institutions (with spin-off creation experience) and universities. The Pilot3 consortium aims at progressing the maturity of generated results and foreground beyond the completion of the project, both jointly so as individually, according to the different scope of each consortium member. The exploitation plan presented below correspond to the 5 years after the project end date aimed at achieving the industrialization of its

outcomes. This industrialization may be achieved as a standalone applications or integrated in other tools based on the feedback of its end users. Considering the importance of this goal and the relevance of the end-users participation to achieve that aim, WP6 will be dedicated to ensure its achievement by:

- Analysing the first Pilot3 prototype from an industrial perspective
- Assessing and provide requirements to improve the prototype
- Collecting the feedback of the industrial experts, including the validation workshop, to be integrated in the final release
- Considering the whole Pilot3 solution and assessment on how a final product should be released to be useful and easy to implement: HMI, connectivity requirements, interoperability.

The consortium will also maintain a close relationship with the Topic Manager as part of the management activities (WP8), the definition of the problem and its requirements (WP1), the validation activities (WP5) and the future development (WP6). This also contributes to a higher industrialisation of Pilot3 modules and capabilities.

3.2.1 Industrial developments

Pilot3 aims at responding to the airlines needs of optimizing their flight trajectories against a number of selected criteria. Accordingly, involving airlines from the earliest stages of the project is key for a successful development of our technology. Pilot3 has set up an Advisory Board with strong presence of airline representatives and experts to collect their different operational characteristics, preferences and procedures. Their engagement and support to Pilot3 demonstrates the strong interest of airlines for the results of this project. Furthermore, after the strong impact of the COVID-19 crisis over the aviation industry, developing optimization crew support tools to perform more efficient flights is more relevant than ever.

3.2.1.1 On-board crew decision support tools

All the members of the consortium have strong links with stakeholders which will be the end users of the product. This is particularly relevant in the case of PACE, as some of the airlines in the Advisory Board are already users of PACE's products and have engaged in the past on discussions on how to develop PACE's solutions considering some of the aspects that will be developed in Pilot3. PACE background and experience in bringing to the market innovative solutions in the trajectory optimisation and decision support environment ensures that the outcome of Pilot3 (fully or partially) will be carried forward. The modularity of the functionalities of Pilot3 is particularly suitable for this identification of early possible gains and adoption of solutions. PACE leads WP6, which analyses which modifications are required to **Pilot3 in order to develop it into a fully commercial tool**, ensuring that a realistic path to industrialisation is produced. PACE has a proven record on developing innovative software products for the global aerospace and aviation industry. PACE has experience manufacturing and delivering on-board software, digital manufactured product which are tailored for the airlines needs, and provides flight operations support, training and simulation. PACE's 'Flight Operations' line of business is developing software applications for EFBs focussing on the inflight optimisation of fuel and operational efficiency. The EFB software Pacelab Flight Profile Optimizer allows inflight optimisation of the vertical trajectory. The application is expanding to allow cloud-based variant which captures a broader market (iPad EFBs, aircraft without aircraft interface device). PACE is already involved in research activities which consider a holistic flight operations optimisation, like their

OPsTIMAL project. The role in Pilot3 of PACE allows that synergies could be therefore exploited, and an evolution of the OPsTIMAL tool, taking advantage of the Pilot3 generated foreground is foreseen after the closure of the Project.

3.2.1.2 Data-analysis supporting decisions for optimized operations

Innaxis was the project coordinator of the SafeClouds project for the development of predictive capabilities for airlines and ANSPs in the safety and performance area. The research project included 5 airlines as full partners and enabled the development of the **DataBeacon BeSt platform** whose technology is currently being further developed as a spin-off of Innaxis. This experience in exploiting research results and pave the way to bring it into market will also be a key asset for the Pilot3 project. This will facilitate the uptake of a solution as the one developed in Pilot3 with the advanced estimation of predictors and ATM operational indicators, as early adopter airlines are already sharing some of their operational data within the DataBeacon BeSt infrastructure. DataBeacon is already at a maturity level of TRL6. Pilot3 will provide a mid-term goal to enrich the current historical datasets with the post-analysis of the operations. Building historical datasets representing how the heuristic models performed and compare them with the end costs of the strategies chosen. Building this historical dataset and merging it with the current data will enable in the future the necessary support for machine learning applications.

UPC, INX and UoW have experience providing consultancy support to stakeholders and a large outreach in the airlines and ATM community. These links will be exploited to maximise the interest of stakeholders on the product helping its acceptance and easing the path to the market for the solution.

3.2.2 Academic developments

The two universities involved in Pilot3 also have a plan to exploit the results to be developed in the project.

3.2.2.1 Trajectory optimisation/planning algorithms and models

UPC aims to further evolve DYNAMO, the trajectory optimisation/prediction tool used in Pilot3, targeting two potential exploitation activities after the closure of the Project:

1. Advanced trajectory optimisation/planning algorithms, going beyond state-of-the-art trajectory planning/dispatching tools and prediction/optimisation algorithms embedded in state-of-the-art FMSs or EFBs. Potential sectors of application are airspace users (airlines, general aviation operators, RPAS operators, etc.); industrial sector commercialising trajectory planning tools either for dispatch or for tactical trajectory computation; and aeronautics and aerospace manufacturers and suppliers.
2. Optimal trajectories in a service-oriented architecture, with an automatic provision of optimal trajectories via a public web-service for benchmark studies, flight planning purposes, ATM performance assessments, etc. and provision of large sets of trajectories to recreate realistic scenarios for ATM assessment, validation activities or research purposes. Potential sectors of application are research institutions; airlines and suppliers; SESAR industrial/exploratory research projects; Single European Sky Performance Review Unit; and air navigation service providers.

UoW and UPC also aims to exploit the increased knowledge and expertise on aircraft trajectory optimisation, multi-criteria decision making, performance assessment and validation gained in Pilot3;

as well as the models and tools generated; to **foster commercial consulting activities; participation in expert groups; participation in future research projects; and to conduct new doctoral and post-doctoral research at the universities.**

UoW with Innaxis have developed Mercury in the last years. Mercury allows the modelling of flights and passengers itineraries for a full day of operations. The potential use of this tool as part of the validation will increase its capabilities and pave the way to its utilisation by airlines as a testbed for changes on their policies.



4 Pilot3 Visual identity and web presence

4.1 Project Logo

A Pilot3 Logo was developed at the start of the project. The idea behind the image was to recreate an airplane tail, inspired by many airlines logos, considering the direct relationship of this project with the own airlines pilots. A tail-shaped P, plus 3 horizontal lines complete the "P3- PILOT3" logo. Two versions of the logo are available, a vertical one and a horizontal one, to be used according to the needs in each moment of the project and the platform where they are to be used. The main version to be used shall be the vertical one which allows the image to be seen bigger while the project name is still readable.



Figure 1. Pilot3 logo, vertical and main version



Figure 2. Pilot3 logo, horizontal and secondary version

4.2 Project main colours

A blue palette was chosen to be the main one for Pilot3 project, for its direct and known direction with aviation. A darker blue colour shall be used as the main colour for Pilot3, for its discretion. But it shall be accompanied when possible, by a brighter blue as it happens in the logo. Two shades of grey complete the 4 main and most used colours for the visual identity of Pilot3. More shades of the two blues, can be added if needed along the duration of the project.



Figure 3. Pilot3 colour palette

4.3 Pilot3 icons

Two pilot icons were developed in the start of the project, so they could be used along the duration of the project as the main pilot icon when needed, and to go with presentations, blogposts, websites and any communication material where they may be needed. They have been designed as part of the main Pilot3 image materials, together with the logo. A female and a male version were designed.

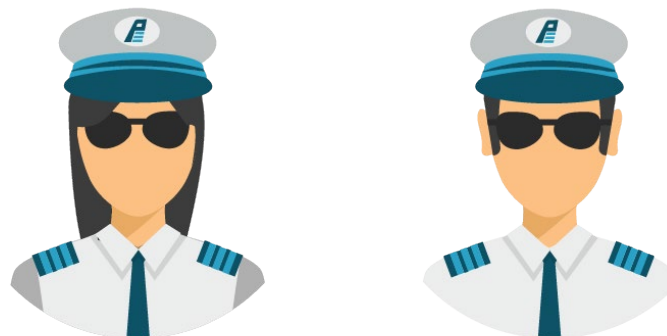


Figure 4. Pilot icons



Figure 5. Pilot3 banner

4.4 Pilot3 Templates

An internal template in Word format was created in M1 of the project, to be used by all partners. The example for it is this same deliverable. Also, a power point deliverable was prepared for presentations and shared with the partners. It was made sure that the font and design were generic enough so that the template was functional and working fine for all partners. Any other templates or products needed will be developed along the duration of the project.

4.5 Project website

The website was produced during the first month of the project, according to the visual image previously defined for Pilot3. It can be found under <https://pilot3.eu> and also at the end of this deliverable, in Appendix A.

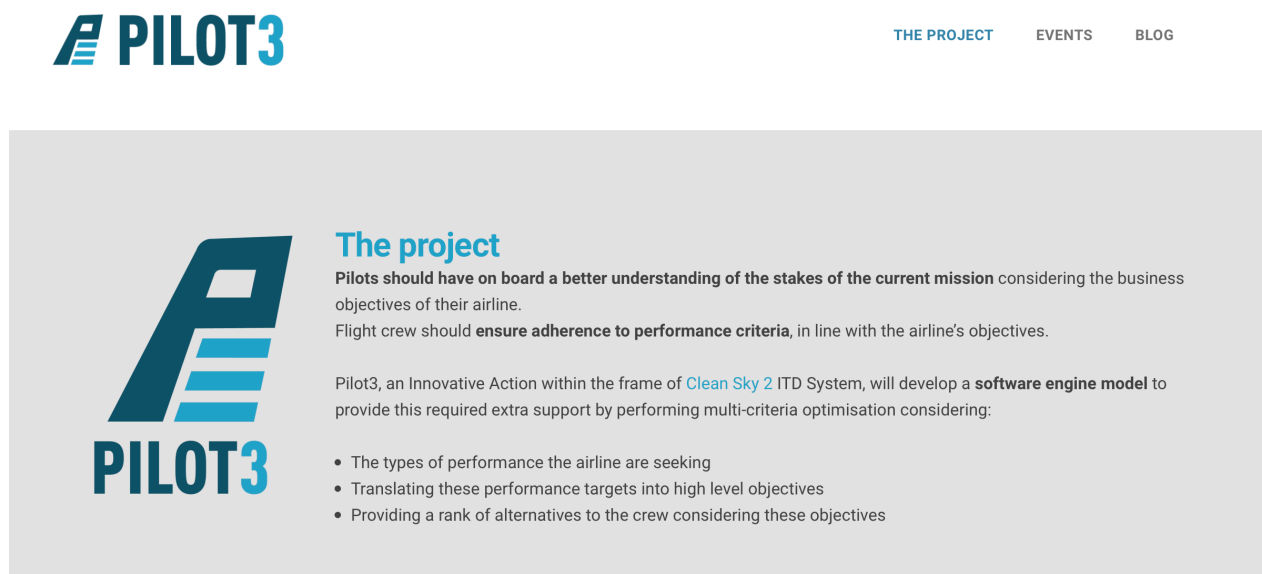


Figure 6. Main page of Pilot3 website

The website contains a main landing page, with information about the project, it was chosen to be developed like this with the idea of minimising the information, so it was appealing to the visitor, but with information enough about Pilot3. It also contains a dedicated Events page, where past, present and future events of Pilot3 will be located. This will host the registration links, information about the venue, topic of the workshop, agenda and pictures. It will be made sure that all the information concerning the assistants will be there.

Past Events

13 November 2019

The meeting took place at the Clean Sky Joint Undertaking premises, Brussels (Belgium)

Brussels – Pilot3 Kick-off meeting



Figure 7. Example of events page in Pilot3 website

4.6 Project social media

Pilot3 will rely on the already existing and successful social media accounts of its partners, such as Innaxis Twitter (+200 followers) and LinkedIn (+1000 followers) accounts, Engage KTN twitter account (+400 followers), Data Science in Aviation LinkedIn group owned by Innaxis (+200 members), and the personal profiles of the participants. Any project updates will be also added into Innaxis newsletter, which is launched 4 times per year and counts on +2K subscriptions. Once new blogposts, workshop or news about the project are ready, it will be made sure that all participants are aware, and they will be encouraged to share the news through their channels rather than creating new specific channels for Pilot3.

5 Communication and dissemination impact indicators

To ensure that the desired impact is achieved it is important to measure the success of the actions on various levels, in this case by defining indicators that measure impact in community building and engagement, and in uptake of the project outcomes within and beyond the consortium. Such indicators need to be robust, clear and SMART (Specific, Measurable, Attainable, Relevant and Time-bound).

The following list of KPIs has been chosen for monitoring the success of Pilot3 communication and dissemination actions:

Communication statistics and usability

- Website hits + (number of visits, number of page views, number of pages per visit, average time on site, number of absolute unique visitors). Set up by the launch of the website with Google Analytics
- Visits to the blog posts (total number, unique visitors, average time, source of traffic...). Linked to Innaxis website blog and Google Analytics in Innaxis website.
- Audience report of in-market segments and affinity category as set up by Analytics. Should be useful to be aware whether the dissemination is reaching the chosen targeted audience.
- Impact of Innaxis newsletter (total opens, clicks in Pilot3 sections)
- Other wide publications in electronic media (LinkedIn, Twitter, etc.)

Event participation, subscribers, inquiries

- Number of presentations given in a year
- Number and description of audience achieved in conferences presented.
- Number of papers published.
- Impact of the newsletter where the paper is published.
- Attendance at presentations, meetings and other events broken down by target audience.

6 Link with other projects and relevant initiatives

6.1 Relevant projects

Considering the scope, resources and duration of Pilot3, the team proposes a collaborative approach to maximise the impact of the communication activities. As previously detailed, both for social media presence so as presence in events and conferences, Pilot3 will collaborate with existing initiatives with consolidated audiences to create awareness on the project objectives and outcomes, address our targeted audiences and broaden our network of relevant experts. While this would be the general approach for the communication and dissemination activities, two projects worth special attention considering their strong link with Pilot3, both in terms of scope so as common team members.

- **Dispatcher3** - This Clean Sky 2 Innovation Action aims at studying innovative processing for flight practices. In particular it will use machine learning techniques to support dispatchers to select flight plans. It will also produce qualitative advice for pilots. The consortium of Dispatcher3 is formed by the members of Pilot3 (the University of Westminster, Innaxis, the Universitat Politècnica de Catalunya and PACE) plus the addition of Skeyes and Vueling. Dispatcher3 counts with an Advisory Board which members overlap the participants of the Pilot3 Advisory Board. Due to the synergies between the projects (e.g., the consideration of airlines performance indicators and operations), the progress of Pilot3 will be further disseminated as part of the consultation activities of Dispatcher3. For example, the first Advisory Board meeting of Dispatcher3 is planned for September 2020. This will be a perfect timing to present the selection of case studies that will be tested in Pilot3. The consortium aims at maximising the interaction between relevant stakeholders and both projects.
- **Engage KTN** - The Knowledge Transfer Network co-funded by SESAR JU is coordinated by the University of Westminster. Engage aims at promoting and facilitating the development of air traffic management research in Europe while bridging the gap between exploratory and industrial research, through a wide range of activities and financial support actions. To facilitate this alignment between academia and industry, Engage KTN has brought together an industry board with more than 100 aeronautical entities. The relevance (in number and quality) of the Industry Board, together with the links with the educational field (through PhD programmes, summer schools, etc.) make Engage KTN an ideal partner to increase the visibility of Pilot3, gain awareness among a diverse but specialized board and strengthen the link with the educational sector, as detailed in Section 3.

6.2 European dimension

The core activities carried out in the project are the development of the different subsystems and their integration in the Pilot3 software prototype. These activities will be performed by the members of the

consortium on their respective locations: London, Barcelona, Berlin and Madrid. However, Pilot3 is not just a software development project, Pilot3 requires interaction with airlines in order to obtain relevant information on their needs, requirements and policies, and also as part of the validation of the system. For these reasons Pilot3 has established an **Advisory Board** formed by airlines and relevant stakeholders (e.g., EUROCONTROL or active pilots). Currently 4 airlines are part of the Advisory Board (see Section 2) and it will remain open to other airlines to join. The airlines involved are based across different European countries geographically distributed (Switzerland, Norway, Latvia, and Spain). Therefore, the activities carried out in Pilot3 have already a wide European outreach. Pilot3 will benefit from the diversity of the airlines involved collecting rich input on their preferences and decision criteria.

The airlines involved in the Advisory Board will have direct access to state-of-the-art research which will benefit their competitiveness with respect to non-European carriers. As explained before, PACE will consider how to integrate some of the innovations developed in Pilot3 on their products. The Topic Manager will be welcome to supervise the project development and hence being able to consider how to best exploit some of the result. Finally, the different dissemination activities, and in particular, the workshop will be targeted to European stakeholders.

7 Communication and dissemination planning

The following planning (Table 5) collects the planned dissemination and communication activities. This calendar will be regularly updated to report the key aspects of the tasks performed (including those indicators requested by H2020 to be reported through the portal). It will also be monitored and maintained to adapt to other ongoing initiatives which are considered relevant for Pilot3 to collaborate in communication and dissemination activities. The different activities will be reported as indicated in Appendix B.

Table 5. Planning for dissemination and communication

Month	Audience (geo)	Sector	Comm. Vehicle	Action Milestone achieved	Status	Content (100-words note or presentation attached/linked, responsible, etc))	Type of diss/comm activities (for reporting)	
1	2019.11	Worldwide	General public	Website	First version of the website developed and public	Completed	https://pilot3.eu	Website
		Worldwide	General public	LinkedIn	LinkedIn post on project Kick off meeting	Completed	https://www.linkedin.com/posts/ldel_pilot3-kick-off-pilots-should-have-on-activity-6610865244208275456-hLTR/	Social media
2	2019.12							
3	2020.01	Worldwide	General public	Blog post	Publication of the 1 st blogpost (Topic: Presentation of Pilot3 project)	Completed	https://innaxis.aero/pilot3-pilots-better-understanding/	Non-scientific and non-peer-reviewed publication (popularised publication)
4	2020.02	Europe	Aviation stakeholders	Advisory Board meeting	First meeting with the Advisory Board	Completed	https://www.linkedin.com/posts/ldel_pilot3-cleansky-h2020-activity-663513712225528832-sGIF	Organisation of a Workshop
5	2020.03	Worldwide	General public	LinkedIn	Communication of Pilot3 achievements through social media	Completed	https://www.linkedin.com/posts/ldel_h2020-cleansky-pilot3-activity-6644145785732763649-Kcgt/	Social media

Month	Audience (geo)	Sector	Comm. Vehicle	Action Milestone achieved	Status	Content (100-words note or presentation attached/linked, responsible, etc))	Type of diss/comm activities (for reporting)
6	2020.04						
7	2020.05						
8	2020.06	Worldwide	Aviation stakeholders / experts	Presentation at AGIFORS 2020 Airline Operations Study Group meeting	Completed	https://www.linkedin.com/posts/ldel_agifors-airline-operations-virtual-sg-meeting-activity-6672158292749385728-6qTl https://www.agifors.org/page-18248	Participation to a Conference)
9	2020.07	Worldwide	General public	Blog post	Completed	https://innaxis.aero/optimisation-objectives-in-pilot3/	Non-scientific and non-peer-reviewed publication (popularised publication)
10	2020.08	Worldwide	General public	Blog post	Completed	https://innaxis.aero/multi-criteria-optimisation-method-pilot3/	Non-scientific and non-peer-reviewed publication (popularised publication)

Month	Audience (geo)	Sector	Comm. Vehicle	Action Milestone achieved	Status	Content (100-words note or presentation attached/linked, responsible, etc))	Type of diss/comm activities (for reporting)
11	2020.09	Worldwide	General public	Blog post		Publication of the 4 th blogpost (Tentative Topic: ATM uncertainty estimators)	Non-scientific and non-peer-reviewed publication (popularised publication)
12	2020.10	Worldwide	General public	Blog post		Publication of the 5 th blogpost (Tentative Scenarios to be modelled)	Non-scientific and non-peer-reviewed publication (popularised publication)
13	2020.11						
14	2020.12	Europe	ATM	Paper presentation at SIDs			Participation to a Conference
15	2021.01	Worldwide	General public	Blog post		Publication of the 6 th blogpost (Tentative Topic: Details on SIDs paper)	Non-scientific and non-peer-reviewed publication (popularised publication)
16	2021.02						
17	2021.03	Worldwide	General public	Blog post		Publication of the 7 th blogpost (Tentative Topic: 1st release of the model)	Non-scientific and non-peer-reviewed publication (popularised publication)



Month	Audience (geo)	Sector	Comm. Vehicle	Action Milestone achieved	Status	Content (100-words note or presentation attached/linked, responsible, etc))	Type of diss/comm activities (for reporting)
18	2021.04	Europe	Aviation stakeholders	Advisory Board meeting and workshop			Organization of a workshop
19	2021.05						
20	2021.06	Worldwide	Air Transport	Paper Presentation at ATM Seminar			Participation to a Conference
21	2021.07						
22	2021.08						
23	2021.09	Worldwide	General public	Blog post		Publication of the 8 th blogpost (Tentative Topic: Pilot3 capabilities)	Non-scientific and non-peer-reviewed publication (popularised publication)
24	2021.10						

Month		Audience (geo)	Sector	Comm. Vehicle	Action Milestone achieved	Status	Content (100-words note or presentation attached/linked, responsible, etc))	Type of diss/comm activities (for reporting)
25	2021.11	Worldwide	General public	Blog post	Publication of the 9 th blogpost (Tentative Topic: Future evolution of Pilot3)			Non-scientific and non-peer-reviewed publication (popularised publication)
26	2021.12	Europe	ATM	Paper presentation at SIDs				Participation to a Conference
27	2022.01	Worldwide	General public	Blog post	Publication of the 10 th blogpost (Tentative Topic: Wrap up!)			Non-scientific and non-peer-reviewed publication (popularised publication)

*Key:

- Organisation of a Conference
- Organisation of a Workshop
- Press release
- Non-scientific and non-peer-reviewed publication (popularised publication)
- Exhibition
- Flyer
- Training
- Social Media
- Website
- Communication Campaign (e.g., Radio, TV)
- Participation to a Conference
- Participation to a Workshop
- Participation to an Event other than a Conference or a Workshop
- Video/Film
- Brokerage Event
- Pitch Event
- Trade Fair
- Participation in activities organized jointly with other EU project(s)
- Other

8 Data management, confidentiality and IP

8.1 Data management

Data plays a key role in Pilot3. The data used in the project includes both private confidential data and public sources. Each dataset needs to be adequately treated to ensure the protection requirements are met. Ensuring data protection facilitates data owners trust and their collaboration. Data is an important asset for many companies and very particularly for airlines. While different data-based initiatives are demonstrating their strong potential for the aviation industry, data sources are still a highly sensitive asset. Only privacy-preserving solutions where data owners hold the governance of their data are adequate to perform these activities. For this reason, Innaxis puts their data architecture, BeSt, at the service of this project.

An accurate, precise and efficient data management is essential to the successful development and implementation of the Pilot3 project. Pilot3 partners have more than 30 years of combined experience in working with aircraft performance, meteorological, air traffic, passengers, airline and economic/financial data. Note that as Pilot3 is aiming at estimating the impact of trajectories alternatives on the airlines' performance indicators, a full representation of the airline situation is required (including passenger itineraries, flight schedules, etc.). Note that part of Pilot3 objectives is to collect data on flight policies and airlines indicators. Finally, some of these datasets could be generated (i.e., being synthetic data) which minimised the need of acquiring and processing confidential data.

To ensure confidentiality, privacy and non-disclosure of the data, data owners and consortium members will follow **DataBeacon BeSt's global governance model**, the model consist on a data protection agreement (PDA) with general terms and a series of Annexes describing particular usages of such data, e.g., scenarios, and concrete data protection measures required by its owners. In particular data shall maintain the confidentiality of any information that may, in any manner, violate the commercial secrecy of any particular before any use by the consortium, leaving only such data necessary for the analyses and modelling.

In addition to the legal framework described above, DataBeacon BeSt implements a three layer architecture focused on data protection and also provides the tools to analyse the data in the cloud, so no data leaves the protected environment.

Table 6. Type of data and corresponding source to be used within Pilot3

Data source	Detail	Previous experience
BADA	Aircraft performance database.	Yes (UoW, UPC and INX)
NOAA / ECMWF	Meteorological data (wind, temperature)	Yes (UPC and UoW)

Data source	Detail	Previous experience
Demand Data Repository 2 (DDR2)	Planned and actual air traffic (trajectories), airspace and route configurations, ATFM regulations, ATFM delay.	Yes (UoW, UPC and INX)
Airline schedules	Airline schedule data (proprietary). Available for a limited time interval.	Yes (UoW)
Passenger itineraries	Passenger itineraries from Global Distribution System provider, proprietary, paid for. Available for a limited time interval.	Yes (UoW)
eCODA, ATFCM and STATFOR	EUROCONTROL air traffic statistics	Yes (UoW)

The activities within the project will not involve the collection and/or processing of any kind of ‘sensitive data’. The parties understand that health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction data can be identified as ‘sensitive data’ and are completely out of scope of the activities planned. The use of the datasets required to perform the project objectives will be regulated by the data management agreement which will be included in the Consortium agreement. The data management agreement defines the obligations, conditions and technical measures to be undertaken by the partners in order to guarantee confidentiality, security and proprietary rights on exchanged data.

In line with the data confidentiality requirements linked to the commercially-sensitive data that is managed in the project, Pilot3 has opted out the Open Research Data pilot in Horizon 2020. This decision will be immediately revised in case of changes in the disclosure conditions under agreement with the data owners.

Every partner of the Pilot3 consortium has extensive experience in handling vast amounts of data of this sort. In addition, the BeSt data infrastructure will enable to implement the technical procedures to fulfil the legal protection requirements when storing and processing confidential data. DataBeacon uses a hybrid-cloud architecture with a three layer approach focused on privacy and machine learning applications that is TRL6 mature:

1. The first layer currently consists of a series of local nodes physically located on the data provider's premises which collect and store raw, identified data. Local nodes collect and pre-process data directly from sources and data is then de-identified using secure crypto-hashing algorithms and pushed to the second layer.
2. The second layer consists of several virtual private cloud (VPC) environments; one for each data provider. The VPC environments only store de-identified data on separate silos running in a cloud-computing architecture. These two layers belong to each data provider and together compose a private environment. Depending on the privacy requirements, local nodes could be optional and can be replaced by a secure VPC.
3. The third layer is a shared environment in which analytics and applications take place. The shared environment consists of a high availability, on-demand cloud computing architecture for analysis and applications. The data science development environment includes popular data science toolsets such as Python, Hadoop, Spark and the Anaconda ecosystem.

In addition to DataBeacon, Pilot3 consortium intends to use a database hosted at UoW for the development of parts of the model (e.g., fast time simulations). The database is built on one of the well-known standards in the field (MySQL) and will be accessible only through a secured connection which will pass through a dedicated VPN from the user to the University of Westminster's server. All the consortium members will be required to register and access the data through the VPN connection.

8.2 Intellectual Property Rights and open access

It is anticipated that novel intellectual property (IP) will result from Pilot3, which will be quickly transferred into IPRs (intellectual property rights) such as patents, licenses, trademarks or copyrights for further utilisation in the form of innovative products or services. Basic IP principles agreed state that all background might be available to all beneficiaries free of charge during the project thereafter. The created foreground is owned by the partner that generates it. In case of joint ownership, royalty-free access will be given for non-commercial purposes, including research and education, while fair and reasonable compensation will be ensured for commercial purposes. The Consortium Agreement (CA) signed between the members include the IPR regulations arranged among the project partners and all legal basis. Background IPR per partner is also clearly identified there and IPR regulations will cover the whole duration of the project and beyond, being specifically focused on protecting background, results and data while enabling collaboration in pre-existing developments.

If PACE eventually commercialises a product derived from the foreground generated in Pilot3, a mechanism of royalties, granted assignments, transfer of ownership, licenses or other IPR provisions are clearly stated in the CA.

The protection of project results will be adequate and flexible allowing the partners to respond to the market needs in the most appropriate manner. Yet, Pilot3 team agrees on ensuring as much as possible open access to all peer-reviewed scientific publications resulting from the project outcomes. Thus, a balance between IP protection and open access dissemination of results will be sought. Gold Open Access will always be the first option, otherwise, the team will opt for the green model in case the first was not possible. We will not consider publishing in journals where Gold or Green Open Access is not possible. A procedure was defined in the Project Management Plan (D8.1) to define which information can be disclosed for dissemination and to establish a mechanism to internally monitor and approve the proposed publications. In this context, and aiming as well to ensure the highest standards, each publication will be subject to an internal peer-review process prior to submission. In particular: The project coordinator will provide the Topic Manager with information on planned dissemination activities for:

- Conference and journal papers: by reviewing their abstract; and
- Blog posts.

If after 15 days from the request of approval no feedback is obtained, the dissemination activity will be considered as approved.

9 Acronyms

AGIFORS: Airline Group of the International Federation of Operational Research Societies

ART: Agency Research Team

ATFCM: Air Traffic Flow and Capacity Management

ATM: Air traffic management

CA: Consortium Agreement

CDEP: Communication, Dissemination and Exploitation Plan

CODA: Central Office for Delay Analysis

COVID-19: Coronavirus Disease 2019

CSJU: Clean Sky 2 Joint Undertaking

DASC: Digital Avionics Systems Conference

DDR2: Demand Data Repository (second phase)

DX.Y: Deliverable number (X=workpackage, Y=deliverable numbering within workpackage)

ECMWF: European Centre for Medium-Range Weather Forecasts

EFB: Electronic Flight Bag

Engage KTN: Engage Knowledge Transfer Network

GA: Grant Agreement

H2020: Horizon 2020 research programme

HMI: Human machine interface

IA: Innovation Action

ICRAT: International Conference for Research in Air Transportation

IEEE: Institute of Electrical and Electronics Engineers

INX: Short name of Pilot3 partner: Fundació Instituto de Investigación Innaxis

IP: Intellectual property

IPR: Intellectual property rights

KPI: Key Performance Indicator

NOAA: National Oceanic and Atmospheric Administration

PACE: Short name of Pilot3 partner: PACE Aerospace Engineering and Information Technology GmbH

PDA: Protection Data Agreement

SESAR JU: SESAR Joint Undertaking

SESAR: Single European Sky & ATM Research

SID: SESAR Innovation Days

SMART: Specific, Measurable, Attainable, Relevant and Time-bound

STATFOR: Statistics and Forecast EUROCONTROL

TRL: Technology Readiness Level

UoW: Short name of Pilot3 coordinator: University of Westminster

UPC: Short name of Pilot3 partner: Universitat Politècnica de Catalunya

VPC: Virtual Private Cloud



Appendix A Project website

This Appendix presents a complete view of the project website (as on 23 September 2020).



THE PROJECT EVENTS BLOG



The project

Pilots should have on board a better understanding of the stakes of the current mission considering the business objectives of their airline.

Flight crew should **ensure adherence to performance criteria**, in line with the airline's objectives.

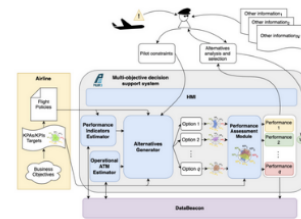
Pilot3, an Innovative Action within the frame of **Clean Sky 2** ITD System, will develop a **software engine model** to provide this required extra support by performing multi-criteria optimisation considering:

- The types of performance the airline are seeking
- Translating these performance targets into high level objectives
- Providing a rank of alternatives to the crew considering these objectives

Pilot3 at a glance

When disruption occurs, Pilot3 will provide a set of alternative trajectories to the pilot with information to help them to select the most suitable one considering multi-criteria business objectives of the airline.

Pilot3 will provide the capability to explicitly estimate the impact of each alternative with respect to the airline's performance targets. Pilot3 will integrate airlines' flight policies and consider the overall performance (in the whole network).



Pilot3 comprises five sub-systems:

- **Alternatives Generator**, which will compute the different alternatives to be considered by the pilot; fed by the two independent sub-systems:
 - **Performance Indicators Estimator**, which provides the Alternatives Generator with information on how to estimate the impact of each solution for the different performance indicators (PIs);
 - **Operational ATM Estimator**, which provides the Alternative Generator with information on how to estimate some operational aspects such as tactical route amendments, expected arrival procedure, holding time in terminal airspace, distance flown (or flight time spent) in terminal airspace due to arrival sequencing and merging operations, or taxi-in time;
- **Performance Assessment Module**, which, considering the expected results for each alternative on the different KPIs, is able to filter and rank the alternatives considering airlines and pilots preferences; and
- **Human Machine Interface**, which will present these alternatives to the pilot and allow them to interact with the system.

Pilot3 will contribute to the capture and definition of flight policies and allow airlines to define **enriched flight policies**.

Development approach

Close coordination with stakeholders and with the Topic Manager (Thales) are key to ensure that Pilot3 delivers a suitable solution. An Advisory Board formed by airlines and experts has been set up and will help to steer the project in the right direction.

The project will start with the formalisation of the requirements and case studies to be tested. Then, Pilot3 will consider state-of-the-art multi-criteria decision making optimisation techniques, review them and select the most suitable ones to be implemented.

Two prototype versions will be generated and you will be able to provide feedback to us on the first version on a dedicated workshop!

Figure 8. Website – The Project – Part 1

Who we are

Coordination and partners

Pilot3 is coordinated by the **University of Westminster**. There are four participants from three countries:

PACE: PACE Aerospace Engineering & Information Technology GmbH, Germany. **UPC**: Universitat Politècnica de Catalunya, Spain. **INX**: Fundacion Insituto de Investigacion Innaxis, Spain.



Topic Manager

The Topic Manager of Pilot3 is: **Thales**, France

THALES

Advisory Board

This project is supported by an Advisory Board formed by:



Public Deliverables

WP1 Technical resources and problem definition
D1.1 Technical Resources and Problem Definition

WP5 Model verification and validation
D5.2 Verification and validation report

WP2 Multi-criteria decision making techniques
D2.1 Trade-off report on multi-criteria decision making techniques

WP7 Communication and dissemination
D7.1 Project communication, dissemination and exploitation plan

Pilot3 timeline

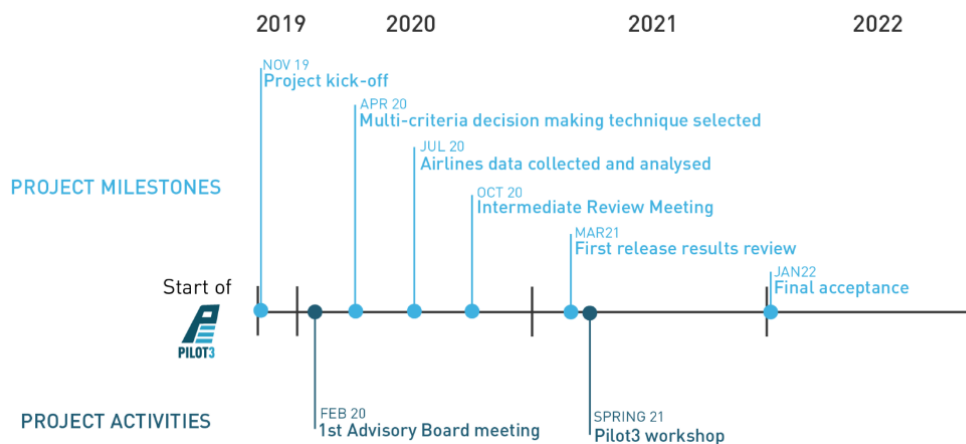


Figure 9. Website– The Project – Part 2

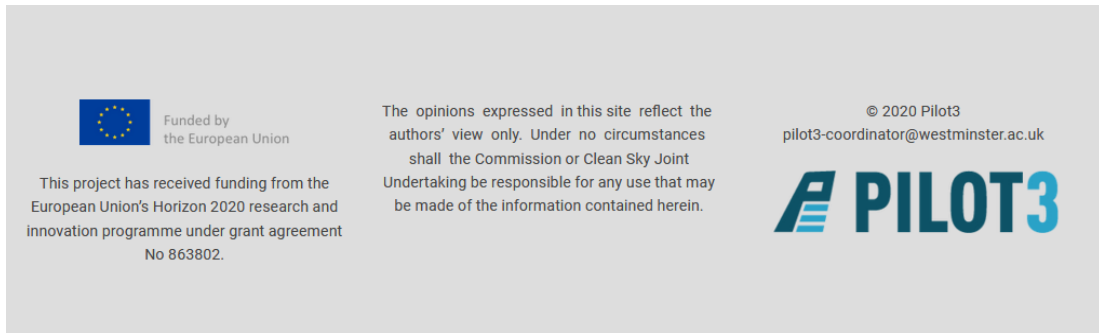


Figure 10. Website – The Project – Part 3

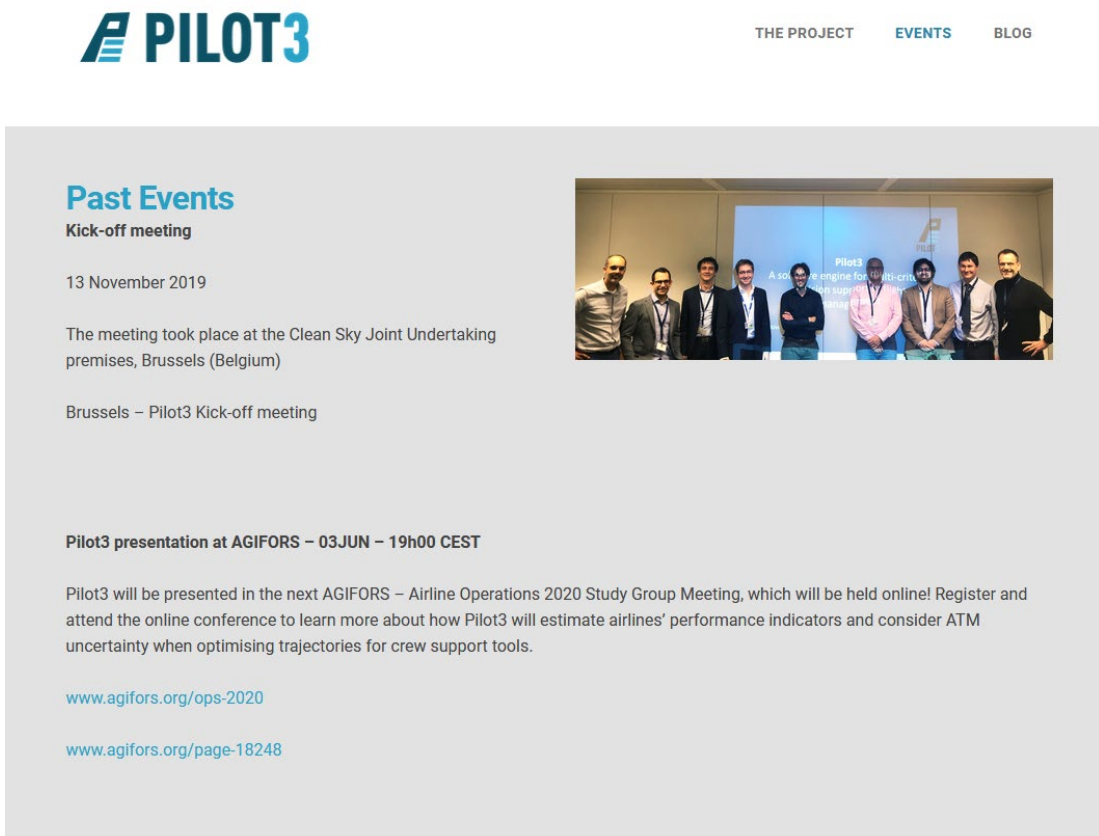


Figure 11. Website – Events

Appendix B Template reporting communication, dissemination, exploitation activities

This Appendix presents the template that will be used to report the dissemination, communication and exploitation activities performed during Pilot3. This includes:

- Table 7 list of Peer Reviewed Papers (the list of targeted Journals is presented in Table 3),
- Table 8 list of Conferences and other dissemination activities (the list of targeted Conferences is presented in Table 4),
- Table 9 list of Communication activities (the list of communication and dissemination activities is presented in Table 2), the planning on these actions is detailed in Table 5).
- Table 10 presents the template to report on the patents, trademarks, registered designs, etc.
- Table 11 presents the template to report on the exploitable foreground developed in Pilot3.

Table 7. List of Peer Reviewed Papers

No.	Title	Main author	Title of the periodical or the series or the event	Number, date or frequency (N/A for events)	Publisher or organiser	Place of publication or event venue	Year of publication or event	Relevant pages or event session	Permanent identifiers ¹ (if available)	Is/Will open access ² provided to this publication?
1										

Table 8. List of Conferences and other dissemination activities

No.	Type of activities ³	Main leader	Title	Date/Period	Place	Type of audience ⁴	Size of audience	Permanent identifiers	Countries addressed
1	Conference	University of Westminster	Crew multi-criteria decision support tool estimating performance indicators and uncertainty	3 June 2020	On-line	Industry and Scientific Community	92	https://www.agifors.org/page-18248	Worldwide

¹ A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

² Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

³ Choose the dissemination activity: Conference publications, workshops presentations, conference presentations, conference exhibitions, conference posters, Other.

⁴ Choose the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).

No.	Type of activities ³	Main leader	Title	Date/Period	Place	Type of audience ⁴	Size of audience	Permanent identifiers	Countries addressed
2	Workshop	University of Westminster	Workshop with Advisory Board	7 February 2020	London	Industry	15	-	European Union

Table 9. List of Communication activities

No.	Type of activities ⁵	Main leader	Title/Subject	Date/Period	Place	Type of audience ⁶	Size of audience	Countries addressed
1	Web	Innaxis	Pilot3 main website	November 2019	https://pilot3.eu	Industry, Civil Society, Scientific Community	-	Worldwide
2	Other	University of Westminster	Linkedin post on Kick off meeting	14 November 2011	https://www.linkedin.com/posts/ldel_pilot3-kick-off-pilots-should-have-on-activity-6610865244208275456-hLTR/	Industry, Scientific Community	2400	Worldwide

⁵ Choose the dissemination activity: web, press releases, flyers, articles published in the popular press, videos, media briefings, exhibitions, interviews, films, TV clips, posters, Other.

⁶ Choose the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).

No.	Type of activities ⁵	Main leader	Title/Subject	Date/Period	Place	Type of audience ⁶	Size of audience	Countries addressed
3	Other	University of Westminster	1 st Blog entry	14 January 2020	https://innaxis.aero/pilot3-pilots-better-understanding/	Industry, Civil Society	-	Worldwide
4	Other	University of Westminster	Linkedin post on 1 st blog entry	18 January 2020	https://www.linkedin.com/posts/ldel_pilot3-h2020-cleansky-activity-6623923351025004544-KKA5	Industry, Civil Society	2300	Worldwide
5	Other	University of Westminster	Linkedin post on 1 st Advisory Board meeting	17 February 2020	https://www.linkedin.com/posts/ldel_pilot3-cleansky-h2020-activity-663513712225528832-sGIF	Industry, Civil Society	4000	Worldwide
6	Other	University of Westminster	Linkedin post on progress/achievements	13 March 2020	https://www.linkedin.com/posts/ldel_h2020-cleansky-pilot3-activity-6644145785732763649-Kcgt	Industry, Civil Society	2000	Worldwide
7	Other	University of Westminster	Linkedin post on future participation at AGIFORS conference	29 June 2020	https://www.linkedin.com/posts/ldel_agifors-airline-operations-virtual-sg-meeting-activity-6672158292749385728-6qTI	Industry, Civil Society	1300	Worldwide
8	Other	University of Westminster	2 nd Blog entry	28 July 2020	https://innaxis.aero/optimisation-objectives-in-pilot3/	Industry, Civil Society	-	Worldwide

No.	Type of activities ⁵	Main leader	Title/Subject	Date/Period	Place	Type of audience ⁶	Size of audience	Countries addressed
9	Other	University of Westminster	Linkedin post on 2 nd blog entry	28 July 2020	https://www.linkedin.com/posts/ldel_optimisation-objectives-in-pilot3-activity-6693856250288992256-8WFt	Industry, Civil Society	1300	Worldwide
10	Other	Universitat Politècnica de Catalunya	3 rd Blog entry	04 August 2020	https://innaxis.aero/multi-criteria-optimisation-method-pilot3/	Industry, Civil Society	-	Worldwide
11	Other	University of Westminster	Linkedin post on 3 rd blog entry	06 August 2020	https://www.linkedin.com/posts/ldel_how-can-we-select-a-suitable-multi-criteria-activity-6697154870132256768-QCGw	Industry, Civil Society	1700	Worldwide

Table 10. List of applications for patents, trademarks, registered designs, etc. ^{7,8}

No.	Type of IP Rights ⁹	Confidential (Yes/No)	Foreseen embargo date (dd/mm/yyyy)	Application reference(s)	Subject or title of application	Applicant(s) (as on the application)
1						

Table 11. List of exploitable foreground

No.	Type of Exploitable Foreground ¹⁰	Nature of Exploitable Foreground ¹¹	Description of exploitable foreground	Confidential (Yes/No)	Foreseen embargo date (dd/mm/yyyy)	Exploitable product(s) or measure(s)	Sector(s) of application ¹²	Timetable, commercial or any other use	Patents or other IPR exploitation (licenses)	Owner & Other Beneficiary(s) involved
1										

For each record in Table 11, it is possible to further explain the exploitable foreground, in particular by addressing the following points:

⁷ Confidential or public table (Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects)

⁸ The list should, specify at least one unique identifier, e.g., European Patent application reference. For patent applications, only if applicable, contributions to standards should be specified. This table is cumulative, which means that it should always show all applications from the beginning until after the end of the project.

⁹ Choose the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others

¹⁰ Choose type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

¹¹ Choose nature of foreground: Product innovation, Process innovation, New method, Scientific breakthrough

¹² Choose the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html



Record No. 1:

- a. Purpose of exploitable foreground
- b. Achieved TRL at the end of period (where applicable)
- c. How the foreground might be exploited, when and by whom
- d. IPR exploitable measures taken so far or intended
- e. Business case aspects considered (i.e. market study, opportunities, ...)
- f. Further research necessary, if any
- g. Potential/expected impact (quantify where possible)
- h. Role of ITD members towards potential commercialization of results
- i. Relation to technical standards, EU/international regulations, directives

Record No. x:



-END OF DOCUMENT-

