

D7.1 Project communication, dissemination and exploitation plan

Deliverable 7.1

Dispatcher3

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Dispatcher3

INNOVATIVE PROCESSING FOR FLIGHT PRACTICES

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Abstract

This document is the Communication, Dissemination and Exploitation Plan (D7.1) of the Clean Sky 2 Innovation Action Dispatcher3. 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 Dispatcher3 project will develop a prototype to provide support to the optimisation of future flights with predictive capabilities and advice to dispatchers and pilots. This will be done considering airline preferences and the impact of flight missions management on the overall airline objectives.

Dispatcher3 is coordinated by the University of Westminster (UoW), with the Innaxis Research Institute, the Universitat Politècnica de Catalunya (UPC), Vueling Airlines, PACE Aerospace Engineering and Information Technology and skeyes 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, October-November 2020, most upcoming events are being cancelled or postponed due to COVID-19, and some others are starting to be organized remotely. The Dispatcher3 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 Dispatcher3 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 Dispatcher3 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 Dispatcher3.

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 Dispatcher3, 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://dispatcher3.eu>. It includes information on the project, events and access to the dedicated blogs entries.

Dispatcher3 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 Dispatcher3 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 Dispatcher3 to collaborate in communication and dissemination activities.

Synergies with other projects (in particular Pilot3 and Engage KTN) will be sought to maximise dissemination opportunities (e.g., collaboration defining meetings with Advisory Board).

Dispatcher3 counts with a diverse consortium including private companies, research institutions (with spin-off creation experience) and universities. The Dispatcher3 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 and a clear path to bring the results to the market are identified. In particular:

- Analysing the first Dispatcher3 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 Dispatcher3 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**
 - Flights planning supporting tools.
 - Data-analysis supporting decisions for optimized operations.
- **Academic developments**
 - Data analysis and processing.
 - Flights optimisation/planning algorithms and machine learning models.

Finally, data plays a key role in Dispatcher3. 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. Dispatcher3 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 the data protection agreement (PDA) as defined by DataBeacon BeSt's governance model.

It is anticipated that novel intellectual property (IP) will result from Dispatcher3, 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.

Dispatcher3 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 Dispatcher3

The primary objective of Dispatcher3 is to develop a prototype for the acquisition and preparation of historical flight data in order to give support on the optimisation of future flights providing predictive capabilities and advice to relevant stakeholders (e.g., dispatchers and pilots). This will be done considering airline preferences and impact of flight missions on the overall airline objectives.

Dispatcher3 focuses on the activities prior departure: dispatching, understood in this case as the broad flight planning from the day prior to operations to the flight plan definition and selection, and advisories to pilot on how to operate the flight. A continuous monitoring of the flight during its execution, suggesting trajectories modifications and with an understanding of the implication of these alternatives on the different objectives defined by the airlines policies, can be carried out to increase the performance of the flight. This is what Pilot3 project will tackle, a Clean Sky 2 Innovation Action granted to members of Dispatcher3 consortium and starting 1st November 2019. Both projects have significant synergies including the collection of flight policies, computation of key performance indicators (KPIs) and the use of the same data infrastructure (BeSt). The coordination between both initiatives contributes to one of the objectives of this Project which is to obtain an improved pilot understanding of the flight and their actions on all the flight process: from before the flight plan to its completion.

Dispatcher3 will focus on providing support to dispatchers and pilots, but also consider the requirements of tactical planners and duty managers in the time-frame ranging from the day prior the flight to minutes before off block.

Dispatcher3 is organised in three layers:

- **Data infrastructure:** powered by BeSt, a multi-sided and open-source data storage and processing platform, developed in the last several years and managed by the company DataBeacon. BeSt provides private environments, secure data frames, the full-stack artificial intelligence environment and a scalable highly available on-demand cluster. The infrastructure will allow further developments, based on data science techniques, to be built on the pre-processed datasets.
- **Predictive capabilities** will be provided by the development of two modules:
 - Data acquisition and preparation: with a first phase of data wrangling and a second step of descriptive analytics.
 - Predictive model: consisting of target variable labelling and feature engineering and training, test and validation of machine learning predictive models for targeted airlines' KPIs.

- **Advice capabilities:** with the same predictions, different advice could be generated considering user policies. The advice capabilities of Dispatcher3 will be provided by a dedicated advice generator module, which will collect all the information from the predictive analytics and build a decision framework, which could be used by dispatchers and pilots.

Dispatcher3 fits within the activities of CS2 Systems ITD WP1.3 "FMS and functions" and addresses some of the high-level objectives and challenges for this ITD defined by CS2. 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. 886461, following the consortium's response to Call "H2020-CS2-CFP10-2019-01" Topic "JTI-CS2-2019-CfP10-SYS-01-16 - Innovative processing for flight practices improvement" (Clean Sky 2 Joint Undertaking, 2019). The action is coordinated by the University of Westminster, with the Universitat Politècnica de Catalunya, the Innaxis Research Institute, Vueling Airlines, skeyes and PACE Aerospace Engineering and Information Technology as partners. Dispatcher3 launched in June 2020 and will last 30 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.

1.2 Scope

The communication and dissemination of the objectives, actions and results of Dispatcher3 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 30 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: Dispatcher3 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 Dispatcher3, 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 Dispatcher3 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 Dispatcher3 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 Dispatcher3 to have continuous communication of the different activities with a target audience for the project product.
 - Participation at **Engage KTN** workshops and/or summer schools.
 - Participation in **conferences** aim at industry and stakeholders.
- Education:
 - Presentation of Dispatcher3 in **lectures** at UPC (BSc. and MSc. degrees on aerospace engineering) and UoW (MSc. in air traffic management).
 - Participation at **Engage KTN** workshops and/or 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 on 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. Dispatcher3 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
Aviation Center of Knowledge
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 Dispatcher3 main findings, or find synergies and potential further collaborations with all or some members of the Dispatcher3 consortium. Dispatcher3 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 (**Table 2**) 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"> • data science, • 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 Dispatcher3 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.
	Dispatcher3 workshop organization	<ul style="list-style-type: none"> • Raise the awareness of Dispatcher3 in the community • Provide input as part of the external evaluation and validation of Dispatcher3 • 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 Dispatcher3 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 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 Dispatcher3 partners are also partners in the KTN that will facilitate collaboration and cross-fertilization.	Dispatcher3 aims to take part in one Engage initiative per year, specially those with high participation of the Advisory Board, if deemed relevant by the Engage 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 summer schools
All targeted audiences	Maintaining a dedicated website, and a presence in social media, with general information and communication 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 Dispatcher3.

* The workshop is scheduled for Winter 2021, at 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 Dispatcher3 if needed.

At the time of writing this report, October-November 2020, most upcoming events are being cancelled or postponed due to COVID-19, and some others are starting to be organized remotely. Accordingly, the events identified in **Table 4** may suffer changes to adapt to this situation. The Dispatcher3 members will closely follow the evolution and continuously update the table as required. If remote events were organized instead, the Dispatcher3 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.
International Journal of Data Science and Analytics (JDSA)	The International Journal of Data Science and Analytics (JDSA) brings together thought leaders, researchers, industry practitioners, and potential users of data science and analytics, to develop the field, discuss new trends and opportunities, exchange ideas and practices, and promote transdisciplinary and cross-domain collaborations.
Big Data Analytics	Big Data Analytics aims to provide an open access platform for the dissemination of research, current practices, and future trends in the emerging discipline of big data analytics.
Data Science and Engineering (DSE)	The journal publishes high-quality, original research papers, brief reports, and critical reviews in all theoretical, technological, and interdisciplinary studies that make up the fields of data science and engineering and its applications.

Table 4. Targeted events for dissemination

Event	Periodicity	Dates	Status
SESAR Innovation Days (SID)	Annual	7-10 December 2020. Budapest, Hungary	On-line edition (Dispatcher3 presented as poster with virtual booth).
International Conference on Research in Air Transportation (ICRAT)	Annual	June 2022	No changes by the moment.
ART Agency Research Team (ART) meetings and workshops	Biannual	April & October 2021	No changes by the moment.
Digital Avionics Systems Conference (DASC)	Annual	September 2021, San Antonio, USA	No changes by the moment.
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	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.

Event	Periodicity	Dates	Status
Data Science in Aviation Workshop	Annual	Spring 2021	No changes by the moment, in preparation
World ATM congress	Annual	March 2021	No changes by the moment.
ACM SIGKDD Conferences on Knowledge Discovery and Data Mining	Annual	14-18 August 2021	No changes by the moment, in preparation.
Strata Data Conference	Bi-Annual	TBA - 2021	TBA

3.2 Exploitation strategy - Delivering innovation to the market

Dispatcher3 counts with a diverse consortium including private companies, research institutions (with spin-off creation experience) and universities. The Dispatcher3 consortium aims at progressing the maturity of generated results and foreground beyond the completion of the project, both jointly and individually, according to the different scope of each consortium member. The exploitation plan presented below corresponds to the 5 years after the project end date aimed at achieving the industrialization of its outcomes. This industrialization may be achieved as a stand-alone 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 Dispatcher3 prototype from an industrial perspective
- Assess and provide requirements to improve the prototype
- Collect the feedback of the industrial experts, including the validation workshop, to be integrated in the final release
- Consideration of the whole Dispatcher3 solution and assessment on how a final product should be released considering aspects such as HMI, connectivity requirements or 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 Dispatcher3 modules and capabilities.

3.2.1 Industrial developments

One of the final users of Dispatcher3 will be **Vueling**, an airline that has been very digital and innovative since its inception, and that in 2016 decided to push its technological boundaries and heavily invest in data & analytics, IT and innovation. Such push has led to the launch of the Vueling INN|UP Innovation Program and the consolidation of three technology/analytics/data/innovation centres in Spain where more than 500 people work to position Vueling at the forefront of technology and analytics. Vueling has two Agile Development Centers (in Barcelona and Zaragoza) and a Vueling Hub (in Barcelona). The foreground generated in Dispatcher3 will be incorporated into the capabilities of their teams. Dispatcher3 uses the data platform BeSt by DataBeacon which has already been used in Vueling flight

safety analysis. This facilitates the potential uptake of the solution by the airline. Besides the specific data analysis performed in the project, Dispatcher3 will provide generic data acquisition and preparation capabilities which facilitate the exploitation of data for other goals by the airline maximising the potential opportunities to expand and integrate some of Dispatcher3 developments.

The broad number of airlines present in the Advisory Board, with different operational characteristics, shows the need in the industry for a tool such as Dispatcher3. These airlines consider that the proposal put forward by this consortium is relevant for their future needs in dispatchers and crew 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 Dispatcher3. **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 airline's 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. PACE is already involved in research activities which consider a holistic flight operations optimisation and which develop a multi-source data streams to build a data value chain in the aviation-related sectors towards data-driven innovation. PACE has worked on several initiatives where post-operational data has been analysed in order to gain operational knowledge. Dispatcher3 will contribute to these activities. PACE background and experience in bringing to the market innovative solutions in the trajectory optimisation, flight plan analysis and decision support environment ensures that the **outcome of Dispatcher3 (fully or partially) will be carried forward**. PACE lead in WP6, which analyses which modifications are required to Dispatcher3 in order to develop it into a fully commercial tool, will ensure that a realistic path to industrialisation is produced.

Skeyes will consider the outcome of Dispatcher3 as part of their activities to identify which datasets provide a higher added value to their airspace users. This could then be further developed in specific data products. **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.

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 **BeSt platform**, whose technology is currently being further developed by DataBeacon as a spin-off of Innaxis. This experience in exploiting research results and paving the way to bring it into market will also be a key asset for the Dispatcher3 project. This will facilitate the uptake of a solution as the one developed in Dispatcher3 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 platform. BeSt is already at a maturity level of TRL6. Dispatcher3 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 comparing 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.

3.2.2 Academic developments

The two universities involved in Dispatcher3 also have a plan to exploit the results to be developed in the project from an academic perspective. UoW and UPC aim to exploit the increased knowledge and expertise on aircraft trajectory optimisation, multi-criteria decision making, performance assessment and validation gained in Dispatcher3, 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.

4 Dispatcher3 Visual identity and web presence

4.1 Project Logo

A Dispatcher3 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 airlines operations. Also, since the Dispatcher3 project is directly connected to the Pilot3 project, a resemblance with Pilot3's logo has been created, by using the same logos and twisting the P-tail shape into a d-tail shape. Both logos also contain 3 horizontal blue lines. This tail-shaped d, plus 3 horizontal lines complete the "D3- Dispatcher3" 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. Dispatcher3 logo, vertical and main version



Figure 2. Dispatcher3 logo, horizontal and secondary versions

4.2 Project main colours

A blue palette was chosen to be the main one for Dispatcher3 project, for its direct and known direction with aviation. A darker blue colour shall be used as the main colour for Dispatcher3, 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 Dispatcher3. More shades of the two chosen blues, can be added if needed along the duration of the project. Note that the palette is maintained for the one developed for Pilot3 to keep the visual identity of both initiatives aligned.



Figure 3. Dispatcher3 colour palette

4.3 Dispatcher3 icons

Two dispatchers icons are developed in the start of the project, so they could be used along the duration of the project as the main 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 Dispatcher3 image materials, together with the logo. A female and a male version are designed. Also, a banner for the Dispatcher3 blog has been designed. The idea represented in the icons is a map of European FIR's and a flight route with alternatives plus the 3 lines that are part of the logo.



Figure 4. Dispatchers icons



Figure 5. Dispatcher3 banner

4.4 Dispatcher3 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 M1 of the project, according to the visual image previously defined for Dispatcher3. It can be found under <https://dispatcher3.eu> and also at the end of this deliverable, in Appendix A project website.

DISPATCHER3

THE PROJECT EVENTS BLOG



The project

Dispatcher3, an Innovative Action within the frame of CleanSky 2 ITD System, will enhance airlines operations by **improving the dispatching and flight operating processes, providing an infrastructure able to lever on historical data and machine learning techniques** to systematically estimate the variability between planned and executed flight plans.

Dispatcher3 focuses on the **activities prior departure**; Pilot3, a CleanSky 2 Innovation Action, focuses on the optimisation of the flight during the execution phase.

Dispatcher3 aims at supporting dispatchers, pilots and the strategic scheduling process:

- **Dispatchers:**
 - Predicting the expected actual performance of flight.
 - Providing advice on the flight plan design and selection process.
 - Identifying the precursors of the different variations between planning and execution.
- **Pilots:**
 - Providing information on the expected variance between the flight plan and the execution.
 - Providing advice on some flight operations.
- **Schedule planners:**
 - Creating the infrastructure needed to store and process flights and operational environment data.
 - Providing advice on which flights are more prone to variability between schedules and execution blocks.

Figure 6. Section of the main page of Dispatcher3 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 Dispatcher3. It also contains a dedicated Events page, where past, present and future events of Dispatcher3 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

Kick-off meeting

25 June 2020

The Kick-off meeting of Dispatcher3 was held on-line!

Dispatcher3 presented at PACEdays 2020

Every year, PACEdays brings together current and prospective users of Pacelab software, international aerospace and aviation professionals and PACE experts for two bustling days of high-level networking and peer sharing. Dispatcher3 was presented as part of the 'PACE/TXT Passion for Innovation' showcase room.

Visit the event's website [here](#)

See the flyer [here](#)

Figure 7. Example of events page in Dispatcher3 website

4.6 Project social media

Dispatcher3 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, EngageKTN 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 Dispatcher3.

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 Dispatcher3 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 Dispatcher3 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 Dispatcher3, 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, Dispatcher3 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 Dispatcher3, both in terms of scope so as common team members:

- **Pilot3**- This Clean Sky 2 Innovation Action aims at developing 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 multi-criteria business objectives of the airline. The consortium of Pilot3 is formed by the members of Pilot3 (the University of Westminster, Innaxis, the Universitat Politècnica de Catalunya and PACE) except for skeyes and Vueling. Pilot3 counts with an Advisory Board which members overlap the participants of the Dispatcher3's Advisory Board. Due to the synergies between the projects (e.g., the consideration of airlines performance indicators and operations), the progress of Dispatcher3 will be further disseminated as part of the consultation activities of Pilot3 (e.g., in the planned Spring 2021 workshop of 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 has brought together more than 50 industry partners. The relevance (in number and quality), together with the links with the educational field (through PhD programmes, summer schools, etc) make Engage an ideal partner to increase the visibility of Dispatcher3, gain awareness among a diverse but specialised audience and strengthen the link with the educational sector, as detailed in Section 3.

There are a number of challenges faced by projects which apply artificial intelligence techniques in the aviation domain due to factors such as limited availability of data. Facing these challenges requires specific capabilities and knowledge in data infrastructure and analytics enabling:

- the access to the data to explore and design of machine learning models, e.g., feature engineering,
- the pre-processing of the data for the training of machine learning models,

- the combination of data from different sources, and
- having access to a computer environment that is secure, scalable, highly available and supports distributed workloads.

Beside synergies with other project for dissemination, Dispatcher3 will seek to have relationship with other initiatives which have previously faced some of these technical issues to gain support and insight on how to minimise these effects, such as:

- **ICARUS** (Aviation-driven Data Value Chain for Diversified Global and Local Operations), an H2020 project (2018-2020) (on the Industrial leadership - Enabling and industrial technologies - Information and Communication Technologies (ICT), in the topic of Big Data PPP: cross-sectorial and cross-lingual data integration and experimentation), coordinated by UbiTech in which PACE is member of the consortium. The objective of ICARUS is to build a novel data value chain in the aviation-related sectors towards data-driven innovation and collaboration across currently diversified and fragmented industry players. Using methods such as big data analytics, deep learning, semantic data enrichment, and blockchain powered data sharing with the objective of address critical barriers for the adoption of Big Data in the aviation industry. ICARUS encompasses more generic data sources related to wider fields, such as aerospace, tourism, health, transport or retail, but some of the approaches and methodologies might be useful to be considered as part of the Dispatcher3 development. PACE as member of both consortiums will facilitate the coordination of potential synergies between both initiatives.
- **BeSt**, an AI data platform developed by DataBeacon (spin-off from Innaxis) which designed with the aviation data needs in mind and provides capabilities such as: 1) accessing various data sources to analyse them and train the ML models on them 2) data pre-processing data capabilities, such as cleaning, or annotating them with labels, so that data can be used in to train ML models; 3) combining and merging different datasets; 4) providing a data science development environment that is secure, scalable, highly available and supports distributed workloads. Dispatcher3 will benefit from the use of the infrastructure, but also from all the data already processed and stored in BeSt.
- **SafeClouds.eu**, a 3-year research project focused on developing aviation safety data analysis techniques from large datasets. This project, coordinated by Innaxis, was funded by the EC H2020 programme starting in October 2016 for three years. In this project, five airlines and three ANSP's plus Eurocontrol have provided years of data of their operations to develop ML models with focus on safety and ATM efficiency. Dispatcher3 will benefit from the lessons learnt from this project, including the understanding of airlines and air traffic management datasets. Dispatcher3 will also benefit from the lessons learnt on executing successfully ML initiatives.
- Several SESAR projects, including exploratory research (**DART, MALORCA, INTUIT**) which have demonstrated the potential of machine learning and AI-based solutions. The results achieved so far are promising in delivering cost-efficient tools capable of supporting current operations at different fronts (e.g., aircraft trajectory prediction, speech recognition for controller assistance or trade-offs in ATM KPAs). An intelligent integration of AI/ML algorithms is needed to achieve an optimum level of data provision to the pilots on the HMI in order to avoid any information overflow. Dispatcher3 will benefit from the experiences of these projects in particular on the identification of challenges to apply these techniques to this particular domain.

6.2 European dimension

The core activities of the project are the development of the different modules and their integration in the Dispatcher3 prototype. These activities will be performed by the members of the consortium on their respective locations: London, Madrid, Barcelona, Berlin and Brussels. However, Dispatcher3 is not just a software development project, it 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. Even if one airline is active member of the consortium, Dispatcher3 considers that the establishment of an Advisory Board is beneficial in order to maximise the capture of different requirements which might arise from different operational constraints. The Advisory Board is also a mean to reach relevant stakeholders which can provide data and expertise (e.g., EUROCONTROL, consultancy companies). Currently 3 airlines are part of the Advisory Board (see Section 2.2), which will be open to other airlines to join once the project starts. The airlines involved are based across different European countries (Switzerland, Norway, UK, Latvia and Spain). Therefore, the activities carried out in Dispatcher3 have already a wide European outreach.

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. PACE will consider how to integrate some of the innovations developed in Dispatcher3 on their products, and Vueling will already count with the infrastructure validated within their data team, incrementing their competitiveness and the potential future uptake of the prototype. The Topic Manager will 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.

The multidisciplinary approach taken in Dispatcher3, opens the access to players like PACE to new air transportation markets. It is expected that the provision of services to increase airline cost-efficiency will generate significant revenues for this type of services. PACE is working with these airlines on how to improve their post-operation analysis. Dispatcher3 will provide the infrastructure and capabilities needed for this. This would open new business possibilities for new comers in the aviation industry and will enhance EU capabilities in this area, with a competitive advantage and innovative solutions.

The costs models developed by UoW are unique in the sense that they are disaggregated (e.g., by type of flight and delay duration). This is a major advantage when accurately estimating the impact of delay on the airlines operations. Dispatcher3 will help to further consolidate the European state of the art on this field as the impact of each flight plan variation will be estimated, among others, in terms of expected cost of delay.

European ANSPs will benefit from Dispatcher3 by better understanding the potential improvements reached by sharing specific dataset with airspace users. This will contribute to the overall European air transport system competitiveness.

The data infrastructure developed in Disptacher3 will strength the European aviation sector as airlines will be able to extract knowledge from the data (with predictive and prospective capabilities) beyond the flight planning.

Finally, Dispatcher3 will contribute to strengthening the European competitiveness in the sector of data science and machine learning. The tools and models developed for this project could be applicable

to other fields also requiring large dataset analysis capabilities. Thus, synergies exist not only in other transport areas such as maritime or rail, but to other industrial sectors as well.

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 Dispatcher3 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	2020.06	Worldwide	General public	Website	First version of the website developed and public	Completed	https://dispatcher3.eu	Website
		Worldwide	General public	LinkedIn	LinkedIn post on project Kick off meeting	Completed	https://www.linkedin.com/posts/ldel_cleansky2-dispatcher3-h2020-activity-6683293909717700608-QAYy	Social media
2	2020.07							
3	2020.08							
4	2020.09	Worldwide	General public	Blog post	Publication of the 1 st blogpost (Topic: Presentation of Dispatcher3 project)	Completed	https://innaxis.aero/dispatcher3-data-flight-dispatching/	Non-scientific and non-peer-reviewed publication (popularised publication)
		Worldwide	General public	LinkedIn	Awareness of 1st Blog entry	Completed	https://www.linkedin.com/posts/ldel_dispatcher3-data-at-the-core-of-flight-dispatching-activity-6716693460612616193-y0Nr	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)	
5	2020.10	Worldwide	General public	Flyer in showcase room	Dissemination of Dispatcher3 on industry	Completed	https://pacedays.txtgroup.com/organizations/2dKPoC4ZAm22Lk9Fa	
		Worldwide	Industry, Scientific community	PACEDays	Participation on PACEDays on a virtual booth with flyer	Completed	https://pacedays.txtgroup.com/organizations/2dKPoC4ZAm22Lk9Fa	
		Worldwide	General public	LinkedIn	Awareness of Dispatcher3 presentation in PACEDays	Completed	https://www.linkedin.com/posts/ldel_pacedays-reseach-pilot3-activity-6719180094453104641-dcwG	
		Worldwide	General public	LinkedIn	Awareness of AB meeting	Completed	https://www.linkedin.com/posts/ldel_dispatcher3-cleansky2-h2020-activity-6721377413210619904-QOZF	
6	2020.11							
7	2020.12	Worldwide	Industry, Scientific community	2020 SESAR Innovation days	Presentation of project with poster/video in virtual booth at conference		Participation to a Conference	
		Worldwide	General public	Blog posts	Publication of the 2nd blog post (Topic: Roles and models supported by Dispatcher3)		Non-scientific and non-peer-reviewed publication (popularised publication)	
8	2021.01							

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)
9	2021.02						
10	2021.03	Worldwide	General public	Blog post		Publication of the 3 rd blogpost (Topic: Datasets and data challenges)	Non-scientific and non-peer-reviewed publication (popularised publication)
11	2021.04						
12	2021.05						
13	2021.06	Worldwide	Air Transport	Paper presentation at ATM seminar			Participation at conference
14	2021.07	Worldwide	General public	Blog post		Publication of the 4th blog post (Topic: Data science techniques for dispatching)	Non-scientific and non-peer-reviewed publication (popularised publication)
15	2021.08						
16	2021.09						
17	2021.10						
18	2021.11	Europe	Aviation stakeholders	Advisory Board meeting and workshop			Organisation of a workshop

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)
19	2021.12	Europe	ATM	Paper presentation at SESAR Innovation Days			Participation at conference
		Worldwide	General public	Blog posts		Publication of the 5th blog post (Topic: First release capabilities)	Non-scientific and non-peer-reviewed publication (popularised publication)
20	2022.01						
21	2022.02	Worldwide	General public	Blog posts		Publication of the 6th blog post (Topic: Further development of Dispatcher3)	Non-scientific and non-peer-reviewed publication (popularised publication)
22	2022.03						
23	2022.04	Worldwide	General public	Blog post		Publication of the 7 th blogpost (Topic: Advice generation from prediction)	Non-scientific and non-peer-reviewed publication (popularised publication)
24	2022.05						
25	2022.06	Worldwide	Air Transport	Paper presentation at ICRAT			Participation to a Conference

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)
26	2022.07	Worldwide	General public	Blog post		Publication of the 8th blog post (Topic: Dispatcher3 capabilities)	Non-scientific and non-peer-reviewed publication (popularised publication)
27	2022.08						
28	2022.09	Europe	ATM	Paper presentation at SESAR Innovation Days			Participation to a Conference
		Worldwide	General public	Blog post		Publication of the 9th blog post (Topic: Further evolution of Dispatcher3)	Non-scientific and non-peer-reviewed publication (popularised publication)
29	2022.09						
30	2022.10	Worldwide	General public	Blog post		Publication of the 10th blog post (Topic: Wrap up!)	Non-scientific and non-peer-reviewed publication (popularised publication)

*Key:

- Organisation of a Conference
- Organisation of a Workshop
- Press release
- Participation to a Conference
- Participation to a Workshop
- Participation to an Event other than a Conference or a Workshop

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- Non-scientific and non-peer-reviewed publication (popularised publication)
- Exhibition
- Flyer
- Training
- Social Media
- Website
- Communication Campaign (e.g., Radio, TV)
- 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

An accurate, precise and efficient data management is essential to the successful development and implementation of the Dispatcher3 project. Dispatcher3 partners have more than 30 years of combined experience in working with aircraft performance, meteorological, air traffic, passengers, airline and economic/financial data. One of the goals of Dispatcher3 is to collect and prepare flight data in order to apply machine learning techniques.

Data plays a key role in Dispatcher3. 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 those purposes, the BeSt data infrastructure will be used in this project.

To ensure confidentiality, privacy and non-disclosure of the data, data owners and consortium members will follow **BeSt's global governance model**, which consists of various layers that ensure secure and responsible data management. It defines who and when has access to which resources via a data protection agreement (DPA) 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, BeSt implements a multilayer cloud architecture focused on data protection and provides the tools to analyse the data in the cloud, so no data leaves the protected environment:

1. From the data provider point of view, the first layer consists of a series of **private local nodes** one for each data provider, which **collect and store raw, identified data**. Data is pre-processed directly from input sources, and it's then protected and de-identified (if required by the data owner) using state-of-the-art cryptography and pushed to the next layer.
2. The second layer consists of several **storage and processing nodes**; one for each data provider. Data stored in this layer is de-identified, cleaned, and standardized, hosted on isolated private clouds environments.

These two layers belong to each data provider and together compose a **private environment**. Private environments scale easily on the cloud, so that when new data provider joins BeSt, the private environment can be replicated and configured within minutes.

To make data accessible and useful to developers, BeSt implements **secure sandboxed environments in which analytics take place**. After a secure login, a data science development environment is launched, which includes popular data science tool sets such as Python, Hadoop, Spark, etc. A secure access to a Jupyter Notebook allows analysts to work remotely with the data - and no data leaves BeSt platform. Additionally, a GitLab repository instance serves as a collaborative and monitoring tool, enabling code versioning and continuous integration pipelines.

Private cloud environments hold data, but are not accessible by analysts directly from the secure sandboxed environments. Instead, data is filtered and consumed by the Secure Data Fusion (SDF) technology. This allows enriching each isolated data set by combining multiple sources of data, creating a 360-degree view of flight data, e.g., more variety, while respecting the privacy of the data owners.

Dispatcher3 consortium might also use a database hosted at UoW for the development of parts of the model (e.g., fast time simulations if required). 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.

Preliminary data requirements have been identified as one of the first activities of the project (WP1) and a dedicated WP for data collection and management is planned (WP2). This includes the creation of a data collection plan, formal data definition and the actual collection and preparation of data activities which will be reported in D2.1 - Data definition and processing report. **Table 6** summarises the high-level datasets that have been identified including: airline data (e.g., flight plans, flight executed data), operational environment data (e.g., route availability, ATFM regulations) and other datasets (e.g., planned and realised meteorological conditions). In some cases, these datasets might be generated or complemented with data from models (i.e., synthetic data), this minimises the need of data acquisition and processing of confidential dataset while enabling the evaluation of proof of concepts.

Table 6. Type of data and corresponding source to be used within Dispatcher3

Data source	Detail	Previous experience
Airline data		
Historic generated flight plans	Computerised flight plans (CFP)	Vueling
Historic operational flight plans	Operational flight plan submitted by the airline	Vueling
Actual flight trajectory executed	FDM data	Vueling and INX
Flight policies	Airline flight policies	Vueling and Advisory Board
Airline schedules	Airline schedule data	Vueling and UoW
Passenger itineraries	Passenger itineraries in flights	Vueling and UoW
Operational costs	Cost of delay, cost of passenger disruptions, other costs	Vueling and UoW
Operational environment		

Data source	Detail	Previous experience
Weather forecast and actual	NOAA, ECMWF, METAR, SIGMET, derived from FDM data	All members of consortium
ATFM regulations	ATFM regulations issued on the day of operations	All members of consortium
Route availability	RAD, NOTAM	All members of consortium
Other network operations	Military, special events, etc.	skeyes
Demand and capacity at airports	Network manager data	All members of consortium
Demand and capacity at airspace	Network manager data	All members of consortium
Sectorisation	Network manager data	All members of consortium
Traffic trajectories	Radar and ADS-B data	skeyes and INX
ATC commands	ANSP	skeyes
CRCO charges	Network manager data	All members of consortium
Air traffic statistics	eCODA, ATFCM and STATFOR	UoW
Other data		
BADA	Aircraft performance database.	UoW, UPC and INX

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, Dispatcher3 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.

8.2 Intellectual Property Rights and open access

It is anticipated that novel intellectual property (IP) will result from Dispatcher3, 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 will in principle jointly owned by the consortium partners. The Consortium Agreement (CA) signed between the members includes 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.

PACE could eventually commercialise a product derived from the foreground generated in Dispatcher3, and Vueling could incorporate the outcome of Dispatcher3 into their data processing activities, 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 marked needs in the most appropriate manner. Yet, Dispatcher3 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

AB: Advisory Board

AI: Artificial Intelligence

ART: Agency Research Team

ATFCM: Air Traffic Flow and Capacity Management

ATM: Air traffic management

BADA: Base of Aircraft Data

CA: Consortium Agreement

CDEP: Communication, Dissemination and Exploitation Plan

CFP: Computerised flight plans

CODA: Central Office for Delay Analysis

COVID-19: Coronavirus Disease 2019

CRCO: Central Route Charges Office

CSJU: Clean Sky 2 Joint Undertaking

DASC: Digital Avionics Systems Conference

DSE: Data Science and Engineering

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

FDM: Flight Data Monitoring

GA: Grant Agreement

H2020: Horizon 2020 research programme

HMI: Human machine interface

IA: Innovation Action

ICRAT: International Conference for Research in Air Transportation

ICT: Information and Communication Technologies

IEEE: Institute of Electrical and Electronics Engineers

INX: Short name of Dispatcher3 partner: Fundación Instituto de Investigación Innaxis

IP: Intellectual property

IPR: Intellectual property rights

JDSA: Journal of Data Science and Analytics

KPA: Key Performance Area

KPI: Key Performance Indicator

METAR: Meteorological Terminal Aviation Routine Weather Report/Meteorological Aerodrome Report

ML: Machine Learning

NOAA: National Oceanic and Atmospheric Administration

NOTAM: Notice to Airmen

PACE: Short name of Dispatcher3 partner: PACE Aerospace Engineering and Information Technology GmbH

PDA: Protection Data Agreement

RAD: Route Availability Document

SESAR JU: SESAR Joint Undertaking

SESAR: Single European Sky & ATM Research

SID: SESAR Innovation Days

SIGMET: Significant Meteorological Information

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

STATFOR: Statistics and Forecast EUROCONTROL

TRL: Technology Readiness Level

UoW: Short name of Dispatcher3 coordinator: University of Westminster



UPC: Short name of Dispatcher3 partner: Universitat Politècnica de Catalunya

Development approach

Close coordination with stakeholders and with the Topic Manager (Thales) are key to ensure that Dispatcher3 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. Moreover, counting with Vueling and Skeyes as partners will allow functionalities of Dispatcher3 to be accepted and deploy as soon as possible. Dispatcher3 will maximise synergies with Pilot3 project.

The project will start with the formalisation of the requirements and case studies to be tested. Two prototype versions will be generated, and you will be able to provide feedback to us on the first version on a dedicated workshop!

Who we are

Coordination and partners

Dispatcher3 is coordinated by the **University of Westminster** (United Kingdom). There are six participants from four countries:

INX: Innaxis, Spain. **PACE:** PACE Aerospace Engineering & Information Technology GmbH, Germany. **Skeyes:** ANSP service provider Belgium. **UPC:** Universitat Politècnica de Catalunya, Spain. **Vueling:** Vueling Airlines, Spain.



Topic Manager

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



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 Prototype verification and validation

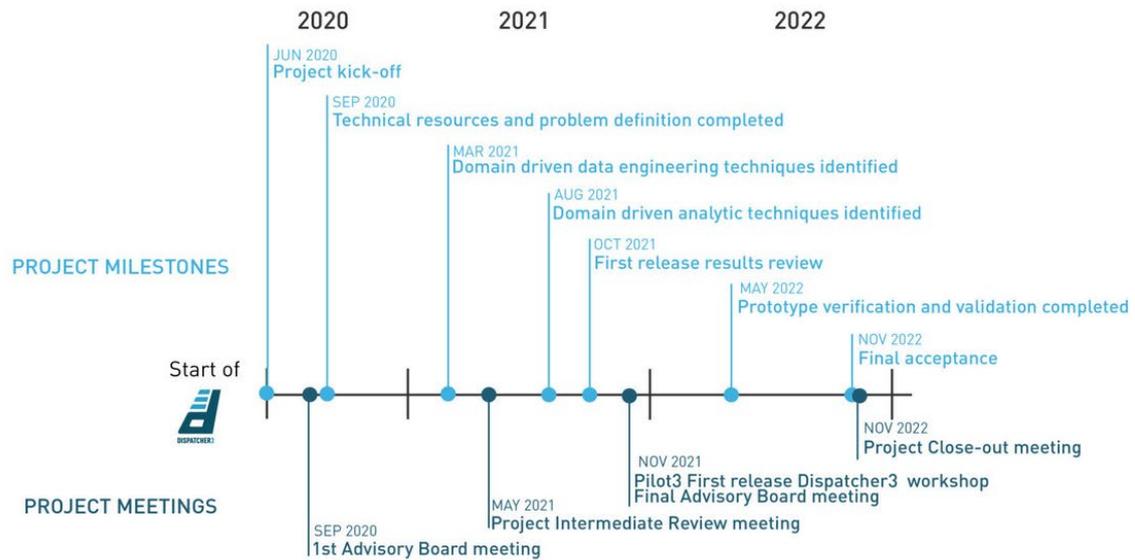
D5.1 Verification and validation plan
D5.2 Verification and validation report

WP7 Communication and dissemination

D7.1 Project communication, dissemination and exploitation plan
D7.2 – Project communication, dissemination and exploitation report

Figure 9. Website– The Project – Part 2

Dispatcher3 timeline



Contact us

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Figure 10. Website – The Project – Part 3

DISPATCHER3

THE PROJECT EVENTS BLOG

Past Events

Kick-off meeting

25 June 2020

The Kick-off meeting of Dispatcher3 was held on-line!

Dispatcher3 presented at PACEdays 2020

Every year, PACEdays brings together current and prospective users of Pancelab software, international aerospace and aviation professionals and PACE experts for two bustling days of high-level networking and peer sharing. Dispatcher3 was presented as part of the 'PACE/TXT Passion for Innovation' showcase room.

Visit the event's website [here](#)

See the flyer [here](#)

Future Events

10th SESAR Innovation Days 2020 – 7-10DEC

A poster describing Dispatcher3 will be presented as part of the SESAR Innovation Days. Don't miss the poster, video and information during the conference!

<https://www.sesarju.eu/sesarinnovationdays>



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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 Dispatcher3. 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 Dispatcher3.

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	Workshop	University of Westminster	Workshop with Advisory Board	09 October 2020	On-line	Industry	17		European Union

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	Conference exhibition	PACE	Dispatcher3 - brochure with main project facts	06 October 2020 - 07 October 2020	On-line	Industry	-	https://pacedays.txtgroup.com/organizations/2dKPoC4ZAm22Lk9Fa	Worldwide
3	Conference - poster and exhibition virtual booth	Innaxis	Dispatcher3: Innovative processing for flight practices - poster and exhibition virtual booth	07 December 2020 - 10 December 2020	On-line	Industry, Scientific Community	-	-	Worldwide

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	Dispatcher3 main website	22 June 2020	https://dispatcher3.eu	Industry, Civil Society, Scientific Community	-	Worldwide
2	Other	University of Westminster	Linkedin post on Kick off meeting	29 June 2020	https://www.linkedin.com/posts/ldel_cleansky2-dispatcher3-h2020-activity-6683293909717700608-QAYy	Industry, Scientific Community	5000	Worldwide
3	Other	University of Westminster	1 st Blog entry	29 September 2020	https://innaxis.aero/dispatcher3-data-flight-dispatching/	Industry, Civil Society	-	Worldwide
4	Other	University of Westminster	Linkedin post on 1 st blog entry	29 September 2020	https://www.linkedin.com/posts/ldel_dispatcher3-data-at-the-core-of-flight-dispatching-activity-6716693460612616193-y0Nr	Industry, Civil Society	1600	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
5	Flyer	University of Westminster	Flyer on project in showcase room from PACE: 'PACE/TXT Passion for Innovation'	06 October 2020 - 07 October 2020	PACEdays https://pacedays.txtgroup.com/organizations/2dKPoC4ZAm22Lk9Fa	Industry, Civil Society	-	Worldwide
6	Other	University of Westminster	LinkedIn post on information on participation in PACEdays	06 October 2020	https://www.linkedin.com/posts/ldel_pacedays-reseach-pilot3-activity-6719180094453104641-dcwG	Industry, Civil Society	1400	Worldwide
7	Other	University of Westminster	LinkedIn post on post Advisory Board meeting	12 October 2020	https://www.linkedin.com/posts/ldel_dispatcher3-cleansky2-h2020-activity-6721377413210619904-QOZF	Industry, Civil Society	2000	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										

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

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

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-

