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Deliverable D.1.2

Di-PEGASUS use case roadmap

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Abstract:

This document presents the Use Case Roadmap, which establishes a structured plan for aligning Di-PEGASUS technologies with the operational needs of each use case. It details the validation activities designed to assess these technologies in real-world scenarios and outlines the approach for evaluating their impact across technical, operational, economic, and societal dimensions. The roadmap defines the validation exercises, their objectives and success criteria, the roles of contributing partners, and the execution timeline within the project.

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LIST OF ACRONYMS

Acronym	Definition
AI	Artificial Intelligence
ATC	Air Traffic Control
eVTOL	electric Vertical Take-Off and Landing vehicle
FTS	Fast Time Simulation
HMI	Human Machine Interface
KPI	Key Performance Indicators
MRO	Maintenance Repair and Overhaul
OEM	Original Equipment Manufacturers
RTS	Real Time Simulation
SAIL	Specific Assurance Integrity Level
SAL	Safe Automatic Landing
SC LUAS	Special Condition Light Unmanned Aerial Systems
SME	Subject Matter Expert
SORA	Specific Operations Risk Assessment
UAM	Advanced Air Mobility
UAS	Unmanned Aerial System
UC	Use Case
WP	Work Package

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PARTNERS' ACRONYMS

Acronym	Name	Country
ART	COLLINS AEROSPACE IRELAND	IRELAND
CAP-PT	CAP GEMINI PORTUGAL	PORTUGAL
CERTH	CENTRE FOR RESEARCH & TECHNOLOGY HELLAS	GREECE
CRA	CRANFIELD UNIVERSITY	UNITED KINGDOM
DBL	DEEP BLUE	ITALY
EUROUSC	EUROUSC ITALIA	ITALY
ITL	FONDAZIONE ISTITUTO SUI TRASPORTI E LA LOGISTICA	ITALY
MH	MEDITERRA HOLDINGS	CYPRUS
RINA	RINA CONSULTING	NETHERLANDS
SED	SAFRAN ELECTRONICS & DEFENSE	FRANCE
UAEGEAN	UNIVERSITY OF AEGEAN	GREECE

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EXECUTIVE SUMMARY

The Use Case Roadmap task aimed to define a structured approach for aligning Di-PEGASUS technologies with the operational needs of each use case, **preparing the groundwork for Work Package 5: Impact Assessment of Di-PEGASUS Technologies in Real Use Cases**. This report presents the outcomes of a series of brainstorming and coordination activities that led to the development of a detailed validation plan for the three Di-PEGASUS use cases.

The plan defines the validation activities required to assess each technology within its intended operational environment and outlines how the impact of each use case will be evaluated across technical, operational, economic, and societal dimensions. It includes the design and scheduling of validation exercises, their link to enabling technologies, objectives and success criteria, partner roles and responsibilities, and the timeline for execution within the project.

The Italian Use Case, "**Delivery of Goods through Drones and Swarms in the Emilia Romagna Region**", focuses on the transport of medical supplies from peri-urban logistics hubs to healthcare facilities in remote or difficult-to-access areas. The validation plan comprises four exercises. A fast-time simulation will evaluate the performance of a swarm intelligence module for drones, integrated with a fleet management module, in a proof-of-concept scenario that reflects the operational and geographical constraints of the region. Additionally, two platform demonstrations will collect feedback from potential end-users and domain experts: one on the Human-Machine Interface (HMI) for AI-tasked drones and another on the Impact Assessment platform for operations optimization for drone services. Finally, a social acceptance survey will assess public perception of drone services in Emilia Romagna, examining attitudes toward various drone-based services.

The Greek use case, **"Environmentally Sustainable Transport Solutions at Water Airports in the Ionian Islands"**, explores the feasibility of an alternative transport network for passenger and cargo mobility across Greek islands using seaplanes and water airports. The validation plan includes five exercises. A lab simulation will assess the performance of anti-biofouling technologies for seaplane operations. Two demonstration activities will evaluate key Di-PEGASUS platforms: one focusing on the Impact Assessment platform for seaplane operations and the other on the circular economy platform. A social acceptance survey will be conducted across Greece to assess public perception of seaplane operations. Lastly, a workshop with potential prosumers of Di-PEGASUS technologies will gather expert feedback on strategies to advance the technologies toward operational deployment.

The French use case, "**Paris Region Advanced Air Mobility Alliance**", focuses on commercial passenger transport in urban and peri-urban areas using Vertical Take-Off and Landing (VTOL) vehicles. Initially, the use case aimed to demonstrate the maturity of Advanced Air Mobility (AAM) services in the Paris region during the 2024 Olympic Games. However, due to technical, regulatory, and financial constraints faced by key AAM service providers in Europe, the focus has shifted from large-scale demonstrations to evaluating critical technological enablers and their integration with Di-PEGASUS safety and sustainability modules. The validation plan includes five exercises. A real-time simulation in lab conditions will assess the performance of Di-PEGASUS safe automatic landing aids for vertiports, followed by a flight test in a sandbox vertiport environment. A series of workshops and demonstrations will support the initial validation of three operational enablers: health management of landed aircraft, de-icing mitigation strategies for vertiports, and sustainable circular economy strategies through digitalization. Another demonstration will collect end-user feedback on the Impact

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Assessment platform for AAM operations optimization. Finally, a public acceptance survey will assess perceptions of AAM operations, identifying key benefits and concerns in urban and peri-urban areas.

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1. INTRODUCTION

1.1. Objectives and scope of the document

The three Di-PEGASUS use cases aim at demonstrating how the project's technological modules can be integrated into real-world solutions, delivering measurable economic, safety, societal, and environmental benefits within their respective regions. Achieving these outcomes requires coordinated activities across the project's work packages, guided by a clear plan that defines each use case's vision and ensures clarity on roles and responsibilities among partners and stakeholders.

This document outlines the results of detailed coordination and planning efforts, including workshops and collaborative sessions, to develop a structured validation plan for the three Di-PEGASUS use cases. It connects the outputs and activities of the technical work packages with the deployment plans of Work Package (WP) 5, aligning with the project's objectives and the stakeholder requirements identified in Task T1.2. The plans outlined in this document will serve as the basis for coordinating the activities and assessing the outputs of all Use Cases in WP5.

For each use case, the document provides an overview of the planned validation exercises linked to the validation of the Di-PEGASUS technologies. Each exercise is connected to specific objectives and success criteria that will allow the evaluation of the solutions from technical, operational, economic and societal perspectives. Additionally, the document includes a draft timeline for the execution of the validation exercises in relation to the project's milestones and deliverables.

1.2. Document structure

This document is organised as follows:

- **Section 1** provides an introduction to the Use Case Roadmap, outlining its purpose and context.
- **Section 2** describes the current status of each use case, describing their operational scenarios and explaining how the validation activities align with their research and innovation needs. It also outlines the rationale behind the roadmap's development and the methodology applied.
- **Section 3** presents the validation roadmap for each use case in a concise, tabular format. This section includes the main components of the roadmap: the planned exercises, validation objectives, involved technologies, roles of contributing partners, and a timeline of key activities and milestones.

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2. CONTEXT OF THE USE CASE ROADMAP

This section presents the use case roadmap by examining the current status of each use case and the key validation needs that have emerged after one year of project work. It also defines the objectives of the roadmap task and its contribution to the project's validation efforts, along with the methodology and steps followed in its development.

2.1. Overview of the Di-PEGASUS use cases

2.1.1. Use Case 1: Delivery of goods through drones and swarms in the Emilia Romagna region (Italy)

The Italian use case explores the use of drones for transporting medical supplies between a logistics hub in Anzola dell'Emilia and healthcare facilities in the mountainous region of Unione dei Comuni dell'Appennino Bolognese, located approximately 30 km southwest of Bologna. These facilities include pharmacies, hospitals, outpatient service providers, and other healthcare infrastructure that may be of interest in the region. The scenario specifically addresses the challenges posed by extreme weather conditions, such as heavy precipitation, which often disrupt traditional logistical operations.

Extreme precipitation events, combined with the area's vulnerable soil and morphology, frequently lead to blockages on key provincial and municipal roads, cutting off ground vehicle access to rural healthcare infrastructure. Even under normal weather conditions, the region's limited and underdeveloped road network makes access to these facilities difficult, resulting in slow, unreliable, and often costly deliveries of critical medical materials such as medicines, devices, and consumables. These logistical challenges can significantly impact the quality of life for local residents by delaying or limiting access to essential healthcare resources.

This Di-PEGASUS Use Case aims to simulate an alternative supply chain network powered by swarms of drones utilizing the technologies developed by the project. The exercise will evaluate the economic, environmental, and social impacts of drone-based logistics in remote regions, providing insights into the feasibility and advantages of such operations compared to traditional methods.

The initial operation scenario designates FarmaCentro in Anzola dell'Emilia as the primary logistics hub. From this hub, medical supplies will be distributed to healthcare facilities in Unione dei Comuni dell'Appennino Bolognese. The drone fleet may operate directly from the logistics hub or from an intermediate base, such as the Civil Protection logistics facility in Sasso Marconi, which offers convenient motorway access. Fleet control will be managed by a remote ground station situated at the Brasimone Research Centre.

The concept of operations for the Italian Use Case will be enabled by several project-developed technologies. A swarm intelligence module will provide real-time collision avoidance and facilitate collaboration among drone swarms controlled by the Di-PEGASUS HMI for AI-tasked UAS. The Fleet Management module, combined with the Impact Assessment platform, will optimize fleet allocation, flight planning, maintenance/recharging, and operational revenue. A social acceptance survey among local citizens will identify preferred operations and key concerns with mitigation strategies. Therefore, validation activities outlined in the roadmap for the Italian Use Case, will assess each technology individually and evaluate their combined support for the concept of operations, thereby establishing a foundation for integrating all modules as they mature.

2.1.2. Use Case 2: Environmentally sustainable transport solutions at water airports in the Greek Islands (Greece)

The Greek use case explores the use of seaplanes as a novel means of transport between the Greek islands and mainland (i.e. connecting mainland to island and island to island). Greek islands often do not have an airport and rely on ferries that operate on scheduled routes to access the mainland or other islands. These connections may be relatively good during the summer months (although even then ferries may reach remote islands only a couple of times a week), but their frequency drops significantly outside the tourist season. Emergency trips, such as those related to medical needs, are usually carried out by helicopter. At the same time, inclement weather conditions may affect even scheduled routes, making connectivity for island destinations even more challenging.

The impact of such limited connectivity, which is also weather-reliant, means that islands may face practical challenges, such as problems with access to goods and supplies, access to skilled workforce that is needed to address problems when they arise locally, access to medical care and supplies, as well as fast access to services to cover everyday needs, impacting the quality of life of islanders. In this context, seaplanes are a new and flexible option that provides fast access while not requiring extensive infrastructure to be built.

The Di-PEGASUS use case will explore how seaplanes, supported by a network of water airports, could operate in the Greek context and benefit from the technologies developed as part of the project. The project will examine the economic, environmental and social benefits of seaplanes operations, as well as the business and regulatory case for their introduction in the Greek islands and mainland.

The concept of operations for the Greek use case will be enabled by several project-developed technologies. The health management of landed aircraft tool and the fleet operations management technology will be discussed with relevant prosumers during a workshop; the biofouling mitigation strategies in water airports will be tested in a lab environment; the circular economy strategies and platform will be demonstrated during a workshop, while there will also be a demonstration of the Di-PEGASUS impact assessment platform. In addition, a social acceptance survey among Greek citizens and experts will explore their views, preferences and key concerns around seaplanes. The validation activities outlined in the roadmap for the Greek Use Case will assess each Di-PEGASUS technology individually as well as the overall operation of seaplanes in the Greek context. As such, the exercises will validate the combined support of the Di-PEGASUS technologies for seaplane operations in Greece and more broadly, thereby establishing a foundation for integrating all modules as the technologies mature.

2.1.3. Use Case 3: Paris Region Advanced Air Mobility alliance (France)

The context in which the Di-PEGASUS technical activities takes place is that of New Air Mobility (or Urban Air Mobility: UAM). At the time of Di-PEGASUS offer, an ecosystem had just been set up to bring together all French players around this Use Case. The UAM alliance (Advanced Air Mobility) was created for this purpose by ADP (Paris Airports operator), Paris region and RATP (French public transport operator), with the aim of demonstrating the maturity of UAM services through pre-commercial flights of flying taxis during the Paris 2024 Olympic Games. Unfortunately, the combination of technical difficulties and administrative authorization issues did not make it possible to deploy flying taxi demonstrations on a significant scale during the Olympic Games. This missed opportunity to demonstrate the maturity of the UAM solutions, as well as the financial difficulties

encountered by European platform providers (Volocopter, Lilium), have slowed the development of the UAM market in France and Europe.

In this difficult context, the automatic landing technologies on vertiport developed as part of task 2.4 of Di-PEGASUS remain a critical technological brick and an enabler for the development of UAM operations in urban areas. We maintain the investigation of this Use Case due to the demanding technical and operational requirements associated to it:

The deployment of this use case will occur in urban and peri-urban zones, necessitating high safety standards. For UAV operations, this corresponds to a minimum safety level of Specific Assurance Integrity Level 6 (SAIL 6; as per EASA's SORA). For UAM, the requirements align with the Special Condition Light UAS (SC LUAS) guidelines, targeting a safety objective of 10^-7 to 10^-9. These stringent safety goals will affect the architectural design, particularly the physical architecture, requiring redundancy and dissimilarity in various technological bricks related to landing positioning.

The architecture meeting these safety levels will be studied throughout the project but will not be implemented on the developed Proof of Concept.

2.2. Objectives of the roadmap

Di-PEGASUS is developing a set of innovative technological modules designed to enable large-scale operations and enhance key performance areas in air mobility for goods and passengers. To ensure these developments are effectively integrated into real-world applications, they must be considered within a broader operational framework that brings together technologies, processes, end users, stakeholders, and civil society.

The Di-PEGASUS Use Case Roadmap serves as a planning tool to support this process by:

- Defining initial **operational scenarios** for each use case, which will later evolve into high-level concepts of operations.
- Outlining the **validation activities required** to assess the performance of the technological modules within these scenarios.
- Facilitating **coordination** among validation activities while identifying potential **interdependencies.**
- Establishing a **structured plan for the execution of validation exercises**, specifying timing, locations, logistics, and sequence of activities.
- Clarifying **roles and responsibilities of each partner**, ensuring efficient allocation of resources and a shared understanding of expected outputs.
- Setting **validation objectives and success criteria** to systematically assess each activity's outcomes against pre-agreed expectations.

The Use Case roadmap structures the validation process in a clear and coordinated manner ensuring that the technologies developed within Di-PEGASUS are tested under realistic conditions and in alignment with operational priorities, stakeholder requirements, and local citizens' needs.

2.3. Methodology of the roadmap

A structured process was followed to collect essential information for the use case roadmap, ensuring that all validation activities were clearly defined. The goal was to document key elements, including validation objectives, success criteria, technologies involved, partner roles and responsibilities, and a tentative timeline.

The process began with the task leader (DBL) identifying the possible validation modes based on the technologies developed and the activities required. These modes included real-time and fast-time simulations, flight tests, lab tests, end-user demonstrations, and dedicated workshops. For each mode, both technical and logistical requirements were specified.

To efficiently capture this information, a “brain walking” workshop was organised during a face-to-face consortium meeting (Paris, November 2024), bringing together all partners contributing to each use case. Participants collaborated on large A0 paper boards, structured into two key components:

1. A fixed section, independent of the validation mode, where participants provided:
    - A timeline of validation activities aligned with project milestones (e.g., deliverable deadlines, task schedules).
    - A table outlining validation objectives and success criteria.
    - A table listing the technologies to be tested.
    - A table defining partner roles and responsibilities.
2. A detachable/attachable section, used to define the applicable validation modes for each use case. Participants first reviewed smaller boards, each corresponding to a specific validation mode and detailing the required information. Based on their vision for the validation exercises, they selected the relevant modes, attached them to the main A0 board, and filled in the necessary details within the available time.

The material prepared for the workshop can be found on Appendix I of the present document.

Following the workshop, each use case leader identified any missing information and held additional workshops with their respective partners to finalise their validation plan. Throughout this process, the task leader provided support by highlighting missing elements, clarifying details, and addressing discrepancies in the draft plans.

Finally, all collected information was consolidated by the use case leaders and integrated into Section 3 of this document.

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3. USE CASE ROADMAPS

This section outlines the planned activities for the validation and impact assessment of each Use Case. The information is organised in table format as follows:

1. **Overview of validation exercises**: a table summarising all activities aimed at testing one or more technologies within a defined operational scenario or assessing their impact. Each exercise is assigned a unique identifier, a coordinator, and a validation mode (i.e., real-time simulation, fast-time simulation, flight test, lab test, demonstration, survey, or workshop).
2. **Technologies evaluated in the use case:** a table listing all technologies and tools assessed, along with the corresponding validation exercises. Each technology is assigned a unique identifier.
3. **Exercise descriptions**: individual tables providing key details for each validation exercise, including the selected validation mode (e.g., simulation, flight test, demonstration, survey, or workshop), schedule, locations, and anticipated outcomes.
4. **Objectives and success criteria**: tables outlining the objectives of each exercise and their associated success criteria, with each exercise linked to at least one validation objective.
5. **Partners' roles and responsibilities:** a breakdown of the main responsibilities assigned to each partner participating in the validation activities for the Use Case.
6. **Activities planning:** a table outlining the timelines for key and intermediate actions required to carry out the validation activities.
7. **Timeline**: a Gantt chart visually illustrating the planned activities and their corresponding timelines.

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3.1. Roadmap for Use Case 1 (Italy)

3.1.1. Validation exercises overview

Exercise Identifier	Title	Mode	Exercise coordinator
UC1.EXE.01	Simulation of drone-based medical supply transport from a peri-urban logistics hub to healthcare facilities in remote areas of Emilia Romagna.	Fast time simulation	ART
UC1.EXE.02	End-user demonstration and validation of the Human-Machine Interface for AI-tasked UAS in Emilia-Romagna	Demonstration of a tool, platform or interface	RINA
UC1.EXE.03	End-user demonstration and validation of the Di-PEGASUS impact assessment platform for drone operations in Emilia-Romagna	Demonstration of a tool, platform or interface and experiments	CAP-PT
UC1.EXE.04	Social acceptance survey on the use of drones for goods transport and services across Emilia-Romagna	Survey	DBL

Table 1 Use Case 1 (Italy) : List of validation exercises

3.1.2. Di-PEGASUS technologies evaluated in the Use Case

Identifier	Technology/Solution	Technology developer (lead)	Covered by exercise
UC1.TECH.1	Swarm intelligence for multi-agent behaviour	ART	UC1.EXE.01
UC1.TECH.2	HMI control station for AI-tasked UAS	RINA	UC1.EXE.02
UC1.TECH.3	Flexible fleet and operations management	RINA	UC1.EXE.01 UC1.EXE.02
UC1.TECH.4	Di-PEGASUS impact assessment platform	CAP-PT	UC1.EXE.03

Table 2 Use Case 1 (Italy): Technologies to be evaluated - Exercise coverage

3.1.3. Description of validation exercises

3.1.3.1. UC1 Validation exercise #1 (UC1.EXE.01)

UC1-Exercise #1: General Information	
Exercise Identifier	UC1.EXE.01
Validation mode of exercise	Fast time simulation
Title	Simulation of drone-based medical supply transport from a peri-urban logistics hub to healthcare facilities in remote areas of Emilia Romagna.
Technologies evaluated	UC1.TECH.1– Swarm intelligence for multi-agent behaviour UC1.TECH.3– Flexible fleet and operations management
Description	The exercise will simulate a swarm of drones delivering medical supplies from a peri-urban logistics hub to a network of healthcare facilities in remote areas of Emilia Romagna. In recent years, severe precipitation events and other extreme weather conditions have significantly disrupted the delivery of vital medical materials to these regions, putting the well-being of local residents at risk. This exercise will involve drone swarms leveraging the above Di-PEGASUS technologies to perform part or all of the medical supply operations, with a focus on operational feasibility, flight planning, mission success rates, timing, and safety.
Exercise coordinator	ART
Location	Online
Start date of the exercise (approximate)	M32 (July 2026)
End date of the exercise (approximate)	M32 (July 2026)
UC1-Exercise #1: Information specific to validation mode (Simulation)	
Exercise scenario(s)	The initial operation scenario designates FarmaCentro in Anzola dell'Emilia as the primary logistics hub. From this hub, medical supplies will be distributed to healthcare facilities in Unione dei Comuni dell'Appennino Bolognese. The drone fleet may operate directly from the logistics hub or from an intermediate base, such as the Civil Protection logistics facility in Sasso Marconi, which offers convenient motorway access. Fleet control will be managed by a remote ground

	station situated at the Brasimone Research Centre. The scenario will explore nominal and extreme weather conditions (e.g., severe precipitation) and will assess their impact on the feasibility, timing and volume of operations.
Key parameters recorded	Indicatively: • Flight paths followed by UAS • Mission success rates • Duration of missions (estimated and actual) • Demand forecast • Estimated resource consumption • Communication latencies • Obstacle detection accuracy • Adherence to original flight plan • Number/rate of loses of separation • Vehicle payload capacity utilization
Outputs of the exercise	• **Report** : The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Dataset**: The above-listed key recorded parameters will be captured in data logs, providing insights through visualisation in deliverable documents related to the assessed technologies

Table 3 Use Case 1 (Italy): Validation Exercise #1 description

3.1.3.2. UC1 Validation exercise #2 (UC1.EXE.02)

UC1-Exercise #2 General Information	
Exercise Identifier	UC1.EXE.02
Validation mode of exercise	Demonstration of platform
Title	End-user demonstration and validation of the Human-Machine Interface for AI-tasked UAS in Emilia-Romagna
Technologies evaluated	UC1.TECH.2– HMI control station for AI-tasked UAS UC1.TECH.3– Flexible fleet and operations management
Description	The exercise will evaluate the Human-Machine Interface (HMI) developed by Di-PEGASUS for remote pilots and drone operators managing medical deliveries in remote areas of Emilia Romagna using drone swarms. The HMI will be demonstrated to operational experts and end-users during a dedicated session, where participants will provide feedback on its functionality, suitability for the specific operations, and overall usability and user experience. The primary goal is to ensure the HMI's seamless integration into fleet management, enhancing navigation, situation awareness, and mission execution. The simulation will validate the HMI's capability to display critical real-time data, including vehicle telemetry, mission status, system health, and geolocation of drones on a map, while supporting autonomous flight modes.
Exercise coordinator	RINA
Location	Online
Start date of the exercise (approximate)	M29
End date of the exercise (approximate)	M29
UC1-Exercise #2: Information specific to validation mode (Demonstration of platform)	
Target audience	• UAS pilots • UAS operators • U-Space Services Providers
Operational scenario	The scenario will focus on the delivery of medical supplies from a peri-urban hub in Emilia Romagna to a number of healthcare facilities in Unione dei Comuni dell'Appennino Bolognese. The fleet management and mission planning will be managed by operators in a remote ground station situated at

	the Brasimone Research Centre. The fleet will operate from either the logistics hub of FarmaCentro in Anzolla dell' Emilia or from an intermediate base, such as the Civil Protection logistics facility in Sasso Marconi.
Key performance metrics	• Usability and User Experience • Human performance metrics such as estimated workload, allocation of tasks between humans/AI and situation awareness will be collected
Feedback/Metrics collection method (demonstration part)	• Structured or open-ended Questionnaires • End-user interviews
Outputs of the exercise	• **Report** : The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Prototype**: A Human Machine Interface prototype will be created and refined based on the feedback collected through the demonstration • **Visual material**: Supplementary material featuring display designs will support the reporting of the exercise and serve as a resource for communication, dissemination activities,

Table 4 Use Case 1 (Italy): Validation Exercise #2 description

3.1.3.3. UC1 Validation exercise #3 (UC1.EXE.03)

UC1-Exercise #3: General Information	
Exercise Identifier	UC1.EXE.03
Validation mode of exercise	Demonstration of platform
Title	End-user demonstration and validation of the Di-PEGASUS impact assessment platform for drone operations in Emilia-Romagna
Technologies evaluated	UC1.TECH.4– Di-PEGASUS impact assessment platform
Description	The exercise involves demonstrating the Di-PEGASUS impact assessment platform to prosumers and relevant stakeholders for the Italian Use Case. Participants will engage with an intermediate version of the platform and provide feedback on operational aspects, such as identifying the most suitable optimisation criteria for this use case and evaluating the relevance of various AI functionalities. Additionally, they will assess the platform's usability and overall user experience. The feedback gathered will guide the final design and refinement activities to deliver the Di-PEGASUS impact assessment platform at TRL 5.
Exercise coordinator	CAP-PT
Location	Online
Start date of the exercise (approximate)	M22
End date of the exercise (approximate)	M29
UC1-Exercise #3: Information specific to validation mode (Demonstration of platform)	
Target audience	• UAS operators / drone services providers • UAS pilots • U-Space Services Providers • Relevant regulators and/or policymakers
Operational scenario	The Impact Assessment Platform for the Italian Use Case will demonstrate its capabilities using the primary exercise scenario, which involves the delivery of medical supplies from a peri-urban logistics hub to healthcare facilities in Unione dei Comuni dell'Appennino Bolognese.

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Key performance metrics	• Usability/User experience • Identification of most appropriate optimization criteria
Feedback/Metrics collection method	• Structured or open-ended Questionnaires • End-user interviews • Feedback collection during platform training sessions
Outputs of the exercise	• **Platform:** The exercise will contribute to the final validation of the Di-PEGASUS Impact Assessment platform • **Report**: The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications

Table 5 Use Case 1 (Italy): Validation Exercise #3 description

3.1.3.4. UC1 Validation exercise #4 (UC1.EXE.04)

UC1-Exercise #4: General Information	
Exercise Identifier	UC1.EXE.04
Validation mode of exercise	Survey
Title	Social acceptance survey on the use of drones for goods transport and services across Emilia-Romagna
Technologies evaluated	The exercise aims to evaluate the Italian use case from a social acceptance perspective, considering both the views of people residing in Italy and the perspectives of experts in the field of drones and unmanned aerial systems. The assessment focuses on the overall use case and its applications, rather than on individual technological modules.
Description	The social acceptance survey for the Italian use case aims to explore attitudes towards drone operations in the Emilia-Romagna region. It will be targeted towards i) residents in the areas where drone services are expected to operate, in order to assess public acceptance of different drone applications, including medical and commercial deliveries, search and rescue missions, and safety-related operations, and to identify key concerns associated with these services. In addition, the survey will be addressed to ii) experts and professionals with experience in the field of drones and unmanned aerial systems, to capture informed perspectives on the operational feasibility, perceived benefits, and challenges associated with drone-based services. The survey design will be informed by the Di-PEGASUS use case definition and related analyses, ensuring that the questions reflect realistic operational scenarios and conditions.
Exercise coordinator	DBL
Location	Online
Start date of the exercise (approximate)	M24 (tentative)
End date of the exercise (approximate)	M32 (tentative)
UC1-Exercise #4: Information specific to validation mode (Survey)	
Target audience	• Persons residing in Emilia Romagna

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	• Experts and professionals with experience in the field of drones and unmanned aerial systems
Distribution method	Social media and other online distribution channels (e.g., e-mails, DBL website, ITL distributions channels)
Feedback/Metrics collection method	• Structured or open-ended questionnaires via an online form
Outputs of the exercise	• **Report** : Detailed outputs of the exercise to be reported in "D5.1 – Use case & social acceptance survey results" • **Dataset**: A dataset containing the aggregated and anonymized results of the survey

Table 6 Use Case 1 (Italy): Validation Exercise #4 description

3.1.4. Objectives and success criteria

UC1– Validation Objective #1	
Objective Identifier	UC1.OBJ.01
Objective title	Assess the impact of Di-PEGASUS technologies on the reliability and timeliness of drone operations for the operational scenarios of the Use Case.
Exercises Linked to objective	UC1.EXE.01
Success Criteria for UC1 – Validation Objective #1	
Success criterion identifier	**Success criterion title**
UC1.OBJ.01.SC.01	The level of service remains consistent across variations in location, weather conditions, and payload configurations, as demonstrated by maintaining mission completion rates and timeliness within acceptable thresholds in the simulated scenarios.
UC1.OBJ.01.SC.02	Drone missions successfully reach their intended destination in more than 95% of cases under nominal conditions
UC1.OBJ.01.SC.03	Drone missions adhere to the predefined flight plan without deviations exceeding acceptable thresholds in at least 95% of operations, under nominal operating conditions
UC1.OBJ.01.SC.04	The total **flight time** for drone missions does not exceed the planned duration by more than 5% (i.e., no more than 1.05 times the planned flight time) in at least 95% of cases, under nominal conditions and within the acceptable time limits for the operation's criticality.
UC1.OBJ.01.SC.05	The total **distance travelled** during drone missions does not exceed the planned distance by more than 5% (i.e., no more than 1.05 times the planned distance) in at least 95% of cases, under nominal conditions.

Table 7 Use Case 1 (Italy): Objective #1 & success criteria

UC1– Validation Objective #2	
Objective Identifier	UC1.OBJ.02
Objective title	Assess the resilience of drone operations supported by Di-PEGASUS technologies when subjected to disruptions.
Exercises Linked to objective	UC1.EXE.01
Success Criteria for UC1 – Validation Objective #2	
Success criterion identifier	**Success criterion title**
UC1.OBJ.02.SC.01	At least 50% of missions experiencing temporary communication loss, unexpected traffic, or airspace closures are completed successfully.

UC1.OBJ.02.SC.02	The drone demonstrates the ability to execute predefined contingency procedures when deviations occur (e.g., unexpected weather), showcasing successful trajectory re-computation and operational feasibility under simulated conditions.
UC1.OBJ.02.SC.03	At least 95% of missions subject to disruption either reach the intended destination or divert safely to an alternative base.
UC1.OBJ.02.SC.04	At least 75% of missions are completed successfully under non-nominal but non-extreme meteorological conditions (e.g., wind gusts)
UC1.OBJ.02.SC.05	The total **flight time** for drone missions does not exceed the planned duration by more than 20% (i.e., no more than 1.2 times the planned flight time) in at least 75% of cases, under disruptive/non-nominal conditions
UC1.OBJ.02.SC.06	The total **distance travelled** during drone missions does not exceed the planned distance by more than 20% (i.e., no more than 1.05 times the planned distance) in at least 75% of cases, under disruptive/non-nominal conditions

Table 8 Use Case 1 (Italy): Objective #2 & success criteria

UC1– Validation Objective #3	
Objective Identifier	UC1.OBJ.03
Objective title	Assess the usability and user experience of the Human Machine Interface for AI-tasked UAS
Exercises Linked to objective	UC1.EXE.02
Success Criteria for UC1 – Validation Objective #3	
Success criterion identifier	**Success criterion title**
UC1.OBJ.03.SC.01	Majority of UAS experts/pilots assess that the task allocation between pilots and AI during operations is acceptable
UC1.OBJ.03.SC.02	Majority of UAS experts/pilots surveyed assess that end-users can perform their assigned tasks effectively when using the HMI
UC1.OBJ.03.SC.03	Majority of UAS experts/pilots surveyed assess that the HMI support sufficiently situation awareness throughout operations
UC1.OBJ.03.SC.04	Majority of UAS experts/pilots surveyed assess that the HMI clearly communicates the AI's behaviour, reasoning, and near-term intentions.
UC1.OBJ.03.SC.05	Majority of UAS experts/pilots surveyed assess that the HMI is easy to learn
UC1.OBJ.03.SC.06	Majority of UAS experts/pilots surveyed assess that the language featured in the HMI is clear and unambiguous
UC1.OBJ.03.SC.07	Majority of UAS experts/pilots surveyed assess that the HMI allows for adequate directability of AI-tasked drones during operations.
UC1.OBJ.03.SC.08	Majority of UAS experts/pilots surveyed assess that the HMI layout, information flow, elements and colours do not lead to excessive visual overload

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UC1.OBJ.03.SC.09	Majority of UAS experts/pilots surveyed assess that the HMI delivers adequate feedback on inputs and system status to support error detection and recovery.

Table 9 Use Case 1 (Italy): Objective #3 & success criteria

UC1– Validation Objective #4	
Objective Identifier	UC1.OBJ.04
Objective title	Assess expert feedback on the feasibility, optimisation, and usability of the Di-PEGASUS Impact Assessment platform for drone operations.
Exercises Linked to objective	UC1.EXE.04
Success Criteria for UC1 – Validation Objective #4	
Success criterion identifier	**Success criterion title**
UC1.OBJ.04.SC.01	Majority of UAS experts assess that the platform's recommended actions and decisions are operationally feasible.
UC1.OBJ.04.SC.02	Business models for drone deliveries that can be supported by the platform are identified during demonstrations with UAS experts.
UC1.OBJ.04.SC.03	Key optimisation criteria for the platform across the areas of economy, environment, social acceptance, and regulatory compliance are identified during demonstrations with UAS experts.
UC1.OBJ.04.SC.04	Initial feedback on the usability and user experience of the platform's interface has been collected during a demonstration with UAS experts
UC1.OBJ.04.SC.05	Key Performance Indicators and initial requirements for the platform's dashboard have been collected during demonstrations with UAS experts.

Table 10 Use Case 1 (Italy): Objective #4 & success criteria

UC1– Validation Objective #5	
Objective Identifier	UC1.OBJ.05
Objective title	Assess local citizens' acceptance of drone operations in the target region.
Exercises Linked to objective	UC1.EXE.05
Success Criteria for UC1 – Validation Objective #5	
Success criterion identifier	**Success criterion title**
UC1.OBJ.05.SC.01	A statistically significant sample of survey responses has been collected from the target area.

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UC1.OBJ.05.SC.02	The survey has assessed the acceptability of various drone use cases based on respondent feedback.
UC1.OBJ.05.SC.03	Survey responses reflect sufficient geographic coverage of the target region.
UC1.OBJ.05.SC.04	Mitigation measures for risk have been assessed in terms of social acceptance
UC1.OBJ.05.SC.05	Insights into public expectations regarding drone safety have been derived from the survey results.
UC1.OBJ.05.SC.06	Key concerns related to privacy, equity, noise, and visual pollution have been collected and assessed
UC1.OBJ.05.SC.07	Possible measures to address concerns and improve acceptance have emerged from the collected responses.

Table 11 Use Case 1 (Italy): Objective #5 & success criteria

3.1.5. Partners roles and responsibilities

No	Stakeholder or Partner	Involvement
1	**ART**	UC1.EXE.01 coordinator Supports UC1.EXE.02 on as needed basis Technology developer (leads UC1.TECH.1)
2	**RINA**	UC1.EXE.02 coordinator Supports UC1.EXE.01 on as needed basis Technology developer (leads UC1.TECH.02, UC1.TECH.3)
3	**ITL**	Supplies data and provides operational scenario for UC1.EXE.01 Supports UC1.EXE.02, UC1.EXE.03 on as needed basis Supports DBL in the distribution of the social acceptance survey (UC1.EXE.04)
4	**CAP-PT**	UC1.EXE.03 coordinator Technology developer (leads UC1.TECH.04)
5	**DBL**	Use Case leader (UC1) UC1.EXE.04 coordinator
6	**External stakeholders**	Participate in workshops/demos and provide feedback for UC1.EXE.02, UC1.EXE.03

Table 12 Use Case 1 (Italy): Partners roles & responsibilities

3.1.6. Activities planning

Project Month	Milestone/Activity
M12	1st Use Case roadmap workshop
M14	ITL to explore possible partners and data providers for UC1.EXE.01

M15	D1.2 – Use case roadmap deliverable finalized submitted
M17	Data for UC1.EXE.02 agreed and collected – If needed a workshop with UC1.EXE.01 partners will be performed to coordinate on data needs
M17	Operational scenario for UC1.EXE.01 defined by ITL
M18	Progress evaluation during consortium meeting (face-to-face)
M24	The concept of operations behind UC1.EXE.01 has been defined in detail
M24	Survey materials for UC1.EXE.04 ready for dissemination
M24	Progress evaluation during consortium meeting (face-to-face)
M28	Software implementation and preliminary testing for all UC1.EXE.01 modules has been concluded
M29	Workshop with all UC1.EXE.01 stakeholders to finalize the exercise and agree on details has been performed
M29	UC1.EXE.02 is performed within the stakeholder workshop for UC1.EXE.01
M29	All UC1.EXE.03 demonstration activities concluded
M30	Progress evaluation during consortium meeting (face-to-face)
M32	The simulation for UC1.EXE.01 is performed (tentative date)
M32	End of data collection for UC1.EXE.04
M35	D5.1 – Use case and social acceptance survey results deliverable finalized and submitted

Table 13 Use Case 1 (Italy): Activities planning

3.1.7. Timeline

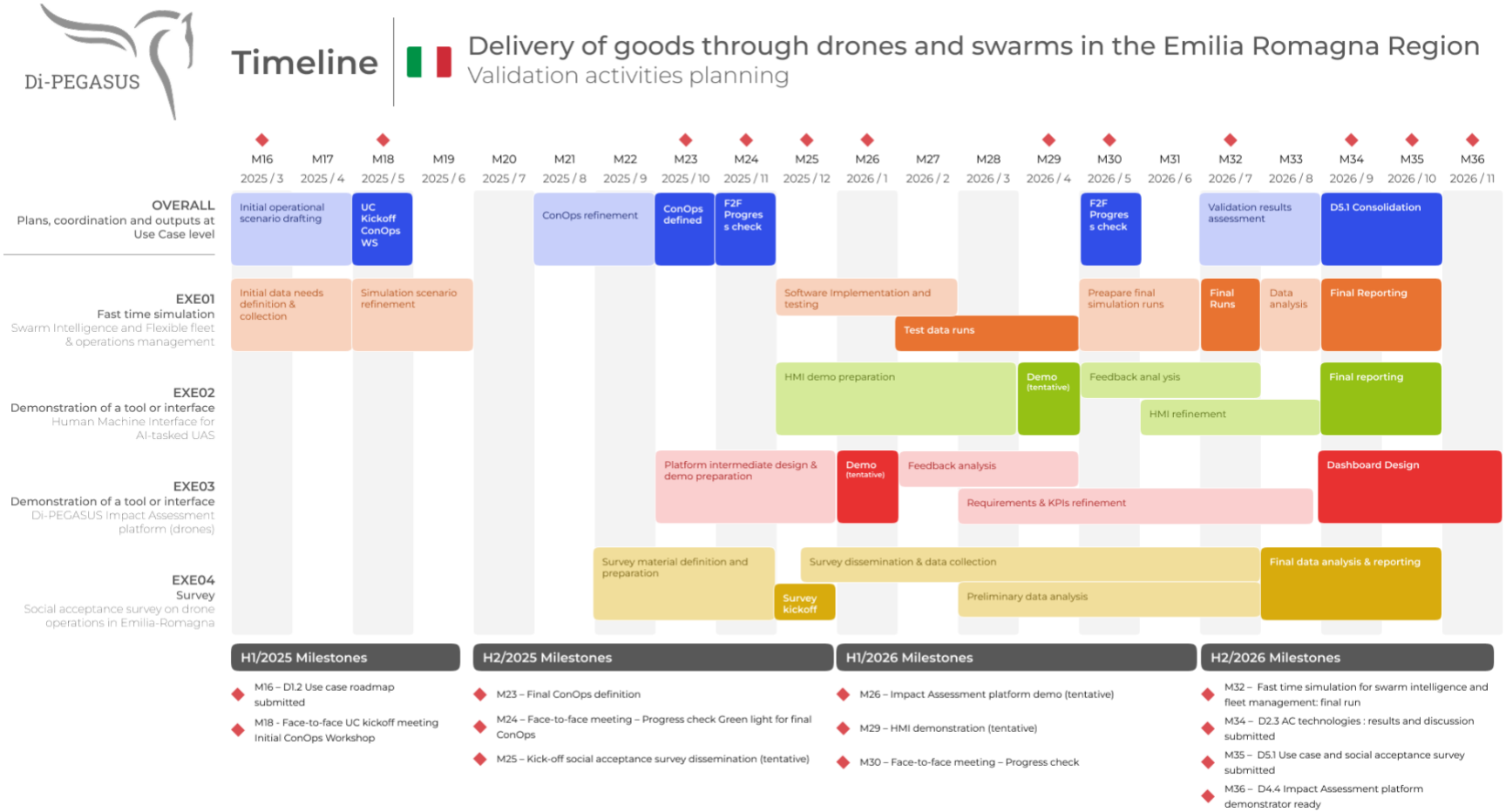

Figure 1 Use Case 1 (Italy): Gantt chart of planned activities

3.2. Roadmap for Use Case 2 (Greece)

3.2.1. Validation exercises overview

Exercise Identifier	Title	Mode	Exercise coordinator
UC2.EXE.01	Simulation of the anti-biofouling technology	Simulation in lab environment	CERTH
UC2.EXE.02	Validation of the Di-PEGASUS impact assessment platform for the Greek use case	Demonstration of a tool, platform or interface	CAP-PT
UC2.EXE.03	Demonstration of the circular economy platform in the Greek use case	Demonstration of a tool, platform or interface	CERTH
UC2.EXE.04	Social acceptance survey of seaplane operations in the Greek islands	Survey	UAEGEAN
UC2.EXE.05	Workshop(s) with prosumers related to Greek use case	Workshop with experts	UAEGEAN with the help of technical partners

Table 14 Use Case 2 (Greece): List of validation exercises

3.2.2. Di-PEGASUS technologies evaluated in the Use Case

Identifier	Technology/Solution	Technology developer (lead)	Covered by exercise
UC2.TECH.1	Health management of landed aircraft	CRA	UC2.EXE.05
UC2.TECH.2	Biofouling mitigation strategies in water airports	CERTH	UC2.EXE.01, UC2.EXE.05
UC2.TECH.3	Sustainable circular economy strategies through digitalization	CERTH	UC2.EXE.03, UC2.EXE.05
UC2.TECH.4	Di-PEGASUS impact assessment platform	CAP-PT	UC2.EXE.02, UC2.EXE.05
UC2.TECH.5	Flexible fleet and operations management	RINA	UC2.EXE.05

Table 15 Use Case 2 (Greece): Technologies to be evaluated - Exercise coverage

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3.2.3. Description of validation exercises

3.2.3.1. UC2 Validation exercise #1 (UC2.EXE.01)

UC2-Exercise #1: General Information	
Exercise Identifier	UC2.EXE.01
Validation mode of exercise	Simulation in lab environment
Title	Simulation of the anti-biofouling technology
Technologies evaluated	UC2.TECH.02 - Biofouling mitigation strategies in water airports
Description	A lab test to assess the effectiveness of the anti-biofouling technologies for water airports. This applies to the Greek context, where water airport infrastructure is submerged in sea water (de-icing does not apply in the Greek use case).
Exercise coordinator	CERTH
Location	CERTH premises, Thessaloniki, Greece
Start date of the exercise (approximate)	M9
End date of the exercise (approximate)	M26
UC2-Exercise #1: Information specific to validation mode (Lab test)	
Exercise scenario(s)	The simulation involves testing the antibiofouling technology in lab conditions on lab-generated biofouling. The biofouling will be grown in lab conditions in a dedicated water tank on materials that are used in water airports. The anti-biofouling technology involves high power ultrasonic technologies, that prevent the attachment and growth of biofouling organisms on submerged surfaces, without the need of harmful biocidal coatings. The simulation will test the technology on different materials, to derive recommendations on the future use and commercialisation of the technology.
Key parameters recorded	Useability Level of automation Inspection time Manpower requirements Detection success rate

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Outputs of the exercise	• **Report**: The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Dataset**: The dataset will include the detailed outputs of the experiments conducted. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications.

Table 16 Use Case 2 (Greece): Validation Exercise #1 description

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3.2.3.2. UC2 Validation exercise #2 (UC2.EXE.02)

UC2-Exercise #2: General Information	
Exercise Identifier	UC2.EXE.02
Validation mode of exercise	Demonstration of platform
Title	Validation of the Di-PEGASUS impact assessment platform for the seaplane use case (Greece)
Technologies evaluated	UC2.TECH.04 - Di-PEGASUS impact assessment platform
Description	The exercise involves demonstrating the Di-PEGASUS impact assessment platform to prosumers and relevant stakeholders for the Greek Use Case. Participants will engage with an intermediate version of the platform and provide feedback on operational aspects, such as identifying the most suitable optimisation criteria for this use case and evaluating the relevance of various AI functionalities. Additionally, they will assess the platform's usability and overall user experience. The feedback gathered will guide the final design and refinement activities to deliver the Di-PEGASUS impact assessment platform at TRL5.
Exercise coordinator	CAP-PT
Location	Online
Start date of the exercise (approximate)	M27
End date of the exercise (approximate)	M30
UC2-Exercise #2: Information specific to validation mode (Demonstration of platform)	
Target audience	• Technology providers • Seaplane operators • Maintenance, Repair and Operations (MRO) services providers • Investors
Operational scenario	A seaplane operator of small fleet size providing transport services among Greek islands on both scheduled and non-scheduled basis
Key performance metrics	• Usability/User experience

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	• Identification of most appropriate optimization criteria
Feedback/Metrics collection method	• Structured or open-ended Questionnaires • End-user interviews • Feedback collection during platform training sessions
Outputs of the exercise	• **Platform:** The exercise will contribute to the final validation of the Di-PEGASUS Impact Assessment platform • **Report**: The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications.

Table 17 Use Case 2 (Greece): Validation Exercise #2 description

3.2.3.3. UC2 Validation exercise #3 (UC2.EXE.03)

UC2-Exercise #3: General Information	
Exercise Identifier	UC2.EXE.03
Validation mode of exercise	Demonstration of platform and experiment
Title	Demonstration of the circular economy platform
Technologies evaluated	UC2.TECH.03 – Sustainable circular economy strategies through digitalization
Description	The exercise involves demonstrating the selected Di-PEGASUS sustainable circular economy platform to prosumers and relevant stakeholders for the Greek Use Case. The concept of sustainable circular economy in aviation will be presented, showcasing how the platform can be used to facilitate the exchange, donation or trade of materials. Participants will provide feedback about the applicability of the circular economy and the platform approach within their operations.
Exercise coordinator	CERTH
Location	Online and integrated with UC2.EXE.05 (workshop)
Start date of the exercise (approximate)	M22
End date of the exercise (approximate)	M29
UC2-Exercise #3: Information specific to validation mode (Demonstration of platform)	
Target audience	• Water airport operators • Seaplane operators • Maintenance, Repair and Operations (MRO) services providers • Investors • Original Equipment Manufacturers (OEM)
Operational scenario	A seaplane operator of small fleet size providing transport services among Greek islands on both scheduled and non-scheduled basis
Key performance metrics	• Useability • User experience
Feedback/Metrics collection method (demonstration part)	• Structured or open-ended Questionnaires • Feedback collection during platform demonstration sessions

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Outputs of the exercise	• **Report**: The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material:** Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications.

Table 18 Use Case 2 (Greece): Validation Exercise #3 description

3.2.3.4. UC2 Validation exercise #4 (UC2.EXE.04)

UC2-Exercise #4: General Information	
Exercise Identifier	UC2.EXE.04
Validation mode of exercise	Survey
Title	Social acceptance of seaplane operations in Greece (Greek islands)
Technologies evaluated	The exercise aims at evaluating the use case in terms of social acceptance by the people residing in Greece and professionals/experts. It relates to all technologies.
Description	The social acceptance survey aims to explore user attitudes towards seaplanes in Greece. It will be targeted towards i) potential end users in targeted locations where seaplanes are expected to operate, in order to gauge their interest and understand their attitudes towards the service, ii) experts in the domains of seaplanes, transport, tourism, etc. to understand the perspective of key experts and stakeholders regarding seaplane services. The survey will be informed by the literature review and business case development for seaplanes carried out as part of Di-PEGASUS, to ensure that questions reflect real-life scenarios and conditions.
Exercise coordinator	UAEGEAN
Location	Greece
Start date of the exercise (approximate)	M25
End date of the exercise (approximate)	M35
UC2-Exercise #4: Information specific to validation mode (Survey)	
Target audience	End users of seaplanes in Greece (including island residents, residents of coastal areas, tourists and business users) and experts/professionals in the domains of transport, tourism, etc.
Distribution method	Social media and other online distribution channels
Feedback/Metrics collection method	• Structured or open-ended questionnaires
Outputs of the exercise	• **Report** : Detailed outputs of the exercise to be reported in "D5.1 – Use case & social acceptance survey results" • **Dataset**: A dataset containing the aggregated and anonymized results of the survey

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Table 19 Use Case 2 (Greece): Validation Exercise #4 description

3.2.3.5. UC2 Validation exercise #5 (UC2.EXE.05)

UC2-Exercise #5: General Information	
Exercise Identifier	UC2.EXE.05
Validation mode of exercise	Workshop
Title	Workshop(s) with prosumers
Technologies evaluated	All related to the Greek use case
Description	A workshop or multiple mini-workshops involving prosumers of the Di-PEGASUS technologies, who will give feedback on each one of them to shape their final versions.
Exercise coordinator	UEAEGEAN with the help of all technical partners
Location	Multiple (physical meetings and online)
Start date of the exercise (approximate)	M25
End date of the exercise (approximate)	M35
UC2-Exercise #5: Information specific to validation mode (workshop)	
Target audience	Health management of landed aircraft tool: Seaplane operators, Maintenance Repairs and Operations (MRO), Water airport operator Innovative de-icing and biofouling mitigation strategies at vertiports/ water airports: manufacturers of seaplanes and water airports, marina operators. Sustainable circular economy technological framework in aircraft and vertiports/ water airports: manufacturers of seaplanes and water airports, Recycling companies for retired aircraft, marina operators. Flexible fleet and operations management: seaplane and water airport operators Di-PEGASUS impact assessment platform and interactive dashboards: all the above
Feedback/Metrics collection method	The data will be collected in a text form and analysed using qualitative methods.

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	If applicable, we will also use interactive survey questions, and we will also analyse the results.
Outputs	Report, transcripts, policy outlook summary, regulatory roadmap, audiovisual materials, refined business models for seaplane operations.

Table 20 Use Case 2 (Greece): Validation Exercise #5 description

3.2.4. Objectives and success criteria

UC2– Validation Objective #1	
Objective Identifier	UC2.OBJ.01
Objective title	Increase the efficiency of seaplane operations through new technologies including health management of landed aircraft and anti-biofouling.
Exercises Linked to objective	UC2.EXE.01 – Demonstration of anti-biofouling technology UC2.EXE.05 - Workshop
Success Criteria for UC2 – Validation Objective #1	
Success criterion identifier	**Success criterion title**
UC2.OBJ.01.SC.01	Reduced downtime for repairs and services.
UC2.OBJ.01.SC.02	Proactive removal of biofouling
UC2.OBJ.01.SC.03	Better fleet reallocation in high-demand times.

Table 21 Use Case 2 (Greece): Validation Objective #1 & success criteria

UC2– Validation Objective #2	
Objective Identifier	UC2.OBJ.02
Objective title	Seaplane services that are more environmentally friendly
Exercises Linked to objective	UC2.EXE.01 – Demonstration of anti-biofouling technology UC2.EXE.03 – Demonstration of sustainable circular economy platform
Success Criteria for UC2 – Validation Objective #2	
Success criterion identifier	**Success criterion title**
UC2.OBJ.02.SC.01	More materials reused
UC2.OBJ.02.SC.02	Fewer chemicals used for the removal of biofouling

Table 22 Use Case 2 (Greece): Validation Objective #2 & success criteria

UC2– Validation Objective #3	
Objective Identifier	UC2.OBJ.03
Objective title	Efficient scheduling of seaplane services

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Exercises Linked to objective	UC2.EXE.05 – Workshop(s) with prosumers
Success Criteria for UC2 – Validation Objective #3	
Success criterion identifier	**Success criterion title**
UC2.OBJ.03.SC.01	More passengers served
UC2.OBJ.03.SC.02	More efficient use of fuel

Table 23 Use Case 2 (Greece): Validation Objective #3 & success criteria

UC2– Validation Objective #4	
Objective Identifier	UC2.OBJ.04
Objective title	Reliability of recommendations of the platform at the end & flexibility of business models we can evaluate as part of the platform. Platform intelligence - more information to make a decision.
Exercises Linked to objective	UC2.EXE.02 – Demonstration of impact assessment platform
Success Criteria for UC2 – Validation Objective #4	
Success criterion identifier	**Success criterion title**
UC2.OBJ.04.SC.01	Number of models that can be developed as part of the platform.
UC2.OBJ.04.SC.02	Reliability of recommendations

Table 24 Use Case 2 (Greece): Validation Objective #4 & success criteria

3.2.5. Partners' roles and responsibilities

No	Stakeholder or Partner	Involvement
1	**UAEGEAN**	Use Case leader (UC2) UC2.EXE.05 coordinator UC2.EXE.04 coordinator
2	**CERTH**	Technology developer (leads UC2.TECH.2, UC2.TECH.3) UC2.EXE.01 coordinator UC2.EXE.03 coordinator UC2.EXE.04 contributor UC2.EXE.05 contributor

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3	CRA	Technology developer (leads UC2.TECH.2) UC2.EXE.03 contributor UC2.EXE.04 contributor UC2.EXE.05 contributor
4	CAP-PT	Technology developer (leads UC2.TECH.4) UC2.EXE.04 contributor UC2.EXE.05 contributor
5	RINA	Technology developer (leads UC2.TECH.5) UC2.EXE.04 contributor UC2.EXE.05 contributor
6	External stakeholders incl. seaplane operators, waterports, prosumers, investors, technology and services providers	Evaluate the technologies and provide feedback during workshops and demonstrations

Table 25 Use Case 2 (Greece): partners roles and responsibilities

3.2.6. Activities planning

Project Month	Milestone/Activity
M12	1st Use Case roadmap workshop
M15	D1.2 – Use case roadmap deliverable finalized submitted
M18	Progress evaluation during consortium meeting (face-to-face)
M24	Progress evaluation during consortium meeting (face-to-face)
M25	Start workshop preparation and identification of prosumers (UC2.EXE.05)
M26	Completion of lab trials (UC2.TECH.2)
M27	Demonstration of online platform for sustainable circular economy (UC2.TECH.3)
M28	Workshops start (UC2.EXE.05)
M30	Progress evaluation during consortium meeting (face-to-face)
M32	Workshops completed (UC2.EXE.05)
M35	D5.1 – Use case and social acceptance survey results deliverable finalized and submitted

Table 26 Use Case 2 (Greece): Activities planning

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3.2.7. Activities planning

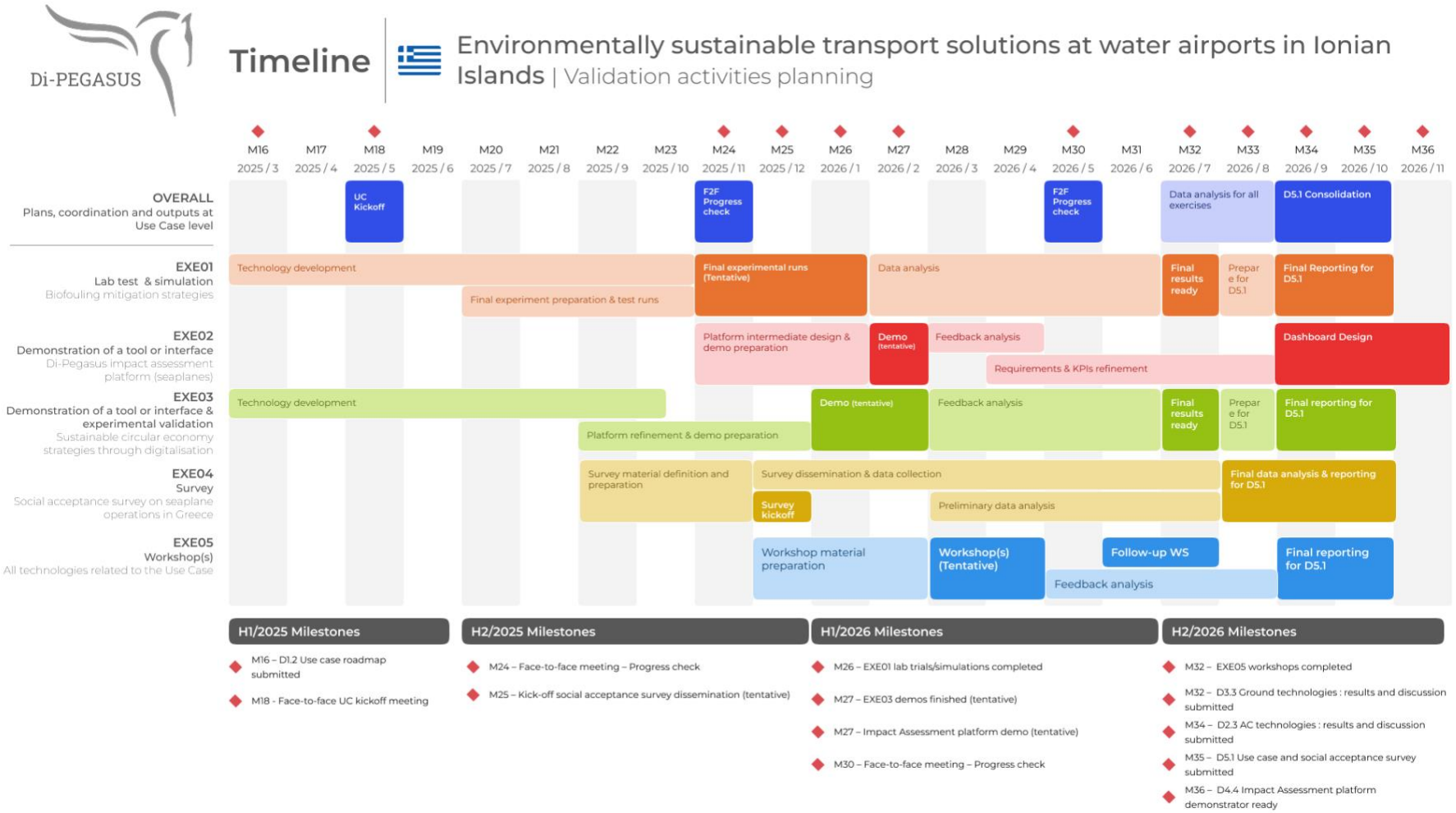

Figure 2 Use Case 2 (Greece): Gantt chart of planned activities

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3.3. Roadmap for Use Case 3 (France)

3.3.1. Validation exercises overview

Exercise Identifier	Title	Mode	Exercise coordinator
UC3.EXE.01	In-flight demonstration and validation of Safe Automatic Landing function embedded on a small-scale UAV	Flight test	SED
UC3.EXE.02	Functional validation and performance assessment of vision-based localization methods for Safe Automatic Landing on vertiports	Real-time simulation / Lab tests	SED
UC3.EXE.03	Demonstration of Di-PEGASUS technology bricks for the French Use Case	Demonstration of a tool, platform or interface within an expert workshop	CERTH & CRA
UC3.EXE.04	Validation of the Di-PEGASUS impact assessment platform for the UAM use case (France)	Demonstration of a tool, platform or interface within an expert workshop	CAP-PT
UC3.EXE.05	Social acceptance survey for UAM operations across France	Survey	EUSC

Table 27 Use Case 3 (France) : List of validation exercises

3.3.2. Di-PEGASUS technologies evaluated in the Use Case

Identifier	Technology/Solution	Technology developer (lead)	Covered by exercise
UC3.TECH.1	Safe automatic landing at vertiports	SED	UC3.EXE.01 UC3.EXE.02
UC3.TECH.2	Health management of landed aircraft	CRA	UC3.EXE.03
UC3.TECH.3	De-icing mitigation strategies in vertiports	CERTH	UC3.EXE.03
UC3.TECH.4	Sustainable circular economy strategies through digitalization	CERTH	UC3.EXE.03
UC3.TECH.5	Di-PEGASUS Impact assessment platform	CAP-PT	UC3.EXE04

Table 28 Use Case 3 (France): Technologies to be evaluated - Exercise coverage

3.3.3. Description of validation exercises

3.3.3.1. UC3 Validation exercise #1 (UC3.EXE.01)

UC3-Exercise #1: General Information	
Exercise Identifier	UC3.EXE.01
Validation mode of exercise	Flight test
Title	In-flight demonstration and validation of Safe Automatic Landing function embedded on a small-scale UAV
Technologies evaluated	UC3.TECH.1 – Safe automatic landing at vertiports
Description	This exercise aims at testing and validating the Safe Automatic landing solution prototyped in Task 2.4 by performing a series of flight tests with a small-scale UAV. The goals of this testing campaign are: • Investigate and confirm the correct behaviour of the function in different situations designed to solicit the various localization means • Validate the technical solutions in real conditions • Validate the main requirements of the Safe Automatic Landing function (see §2.5 in deliverable D2.1) • Provide a first evaluation of performances towards the accuracy KPI (SAL_KPI_02, §3.4 in deliverable D2.1) This exercise will be preceded by an intermediate phase aimed at acquiring real sensor data through a flight campaign. This dataset will be used for ground testing and validation
Exercise coordinator	SED
Location	France Two possible French drone flight centres are being considered for this exercise: • Bretigny: the Hub Drones Systematic is a dedicated area for drone flight testing and demonstration, based on a former Air Force base in the South of Paris region (Bretigny s/Orge). This drone test centre has already been used by SED and other Safran entities

	• Cormeilles: ADP has created a dedicated UAM "sandbox" on the Cormeilles-Pontoise regional airfield. Based on a vertiport area and ADP hosting infrastructures, it is dedicated to UAM experimentations. This airfield is close to Eragny SED R&D centre and is used by SED for flight test of its Patroller drone.
Start date of the exercise (approximate)	M27
End date of the exercise (approximate)	M34
UC3-Exercise #1: Information specific to validation mode (Flight test)	
Exercise scenario(s)	A small-scale UAV simulating an eVTOL operation will perform various approach flights and landings using automatic landing equipment prototyped in task T2.4 of Di-PEGASUS. This flight sequences will solicit the different landing aids to precisely localize the aircraft and guide it during its landing, focusing on nominal behaviour.
Key parameters recorded	The key parameters recorded during this exercise are the following: • Successful landing on vertiports • Landing accuracy towards targeted point on vertiport • Theoretical and real trajectories • Activation time and performance of tested landing aids • Landing duration from entry in approach to aircraft on ground
Outputs of the exercise	• **Report** : The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications

Table 29 Use Case 3 (France): Validation Exercise #1 description

3.3.3.2. UC3 Validation exercise #2 (UC3.EXE.02)

UC3-Exercise #2: General Information	
Exercise Identifier	UC3.EXE.02
Validation mode of exercise	Real-time simulation (lab tests with no pilot involved)
Title	Functional validation and performance assessment of vision-based localization methods for Safe Automatic Landing on vertiports
Technologies evaluated	UC3.TECH.1 – Safe automatic landing at vertiports
Description	These real-time simulations aim at validating the behaviour of the detection chain of landing aids, as well as the precise localization of the vehicle relative to the targeted landing spot, all along the approach and landing phases. These simulations will be performed in SiL (Software in the Loop) and in HiL (Hardware in the Loop) to evaluate the prototyped function towards the defined requirements and the following KPI (based on §2.5 and §3.4 in deliverable D2.1): • SAL_KPI_02 – Safe Automatic Landing accuracy • SAL_KPI_03 – Landing success rate • SAL_KPI_07 – Landing time
Exercise coordinator	SED
Location	SED premises, Eragny s/Oise, France
Start date of the exercise (approximate)	M23
End date of the exercise (approximate)	M31
UC3-Exercise #2: Information specific to validation mode (Simulation)	
Exercise scenario(s)	During the real-time simulations, the aircraft will evolve in a representative 3D environment, where vertiports will be simulated with all their characteristics (size, visual markings, beacons and others equipment) useful to test SAL function). The scenario will aim at testing and validating the approach & landing procedures, as well as the different landing aids prototypes in Task 2.4. Various scenario in nominal and selected degraded conditions will explore the behaviour of the SAL function and evaluate its performances through qualitative

	& quantitative simulations. Simulated nominal cases will also be used to prepare flight tests and demonstrations (UC3.EXE.01)
Key parameters recorded	The key parameters recorded during this exercise are the following: • Successful landing on vertiports in various conditions • SAL robustness to single failure in degraded scenario • Landing accuracy towards targeted point on vertiport • Landing duration from entry in approach to aircraft on ground • Landing success rate in nominal conditions • Theoretical and real trajectories • Activation time and performance of tested landing aids
Outputs of the exercise	• **Report**: The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications

Table 30 Use Case 3 (France): Validation Exercise #2 description

3.3.3.3. UC3 Validation exercise #3 (UC3.EXE.03)

UC3-Exercise #3: General Information	
Exercise Identifier	UC3.EXE.03
Validation mode of exercise	Demonstration of a tool, platform or interface within an expert workshop
Title	Demonstration of Di-PEGASUS technology bricks for the French Use Case
Technologies evaluated	UC3.TECH.2–Health management of landed aircraft UC3.TECH.3– De-icing mitigation strategies in vertiports UC3.TECH.4– Sustainable circular economy strategies through digitalization
Description	A validation activity combining a demonstration of the above-listed Di-PEGASUS technologies with an expert workshop involving participants from industry and policymaking. The workshop will focus on: • Demonstrating the current technical capabilities of the technologies to relevant prosumers and end-users • Gathering additional technical requirements for future developments of the technologies • Assessing the readiness of the technologies for operational integration • Gathering initial feedback on usability/user experience of the platforms enabling the technologies
Exercise coordinator	CRA (for UC3.TECH.2) and CERTH (for UC3.TECH.3, UC3.TECH.4)
Location	Online
Start date of the exercise (approximate)	Scheduled between M22 and M29
End date of the exercise (approximate)	Scheduled between M22 and M29
UC3-Exercise #3: Information specific to validation mode (Demonstration of platform)	
Target audience	• Original Equipment Manufacturers (OEM) • Vertiport/ Heliport operators • UAM operators • Regulators • Local authorities (municipalities, regional administration etc.)

Operational scenario	UAM operator offering passenger transport services in urban areas across France and making use of the Di-PEGASUS technologies listed above (UC3.TECH.{2,3,4})
Key performance metrics	• Usability • User experience • User needs/ additional functional requirements to be considered for future development of the technologies
Feedback/Metrics collection method (demonstration part)	• Structured or open-ended Questionnaires • Minutes from the workshop
Outputs of the exercise	• **Report**: Detailed outputs of the exercise to be reported in "D5.1 – Use case & social acceptance survey results" and related deliverable documents associated with the technologies linked to the exercise • **Scientific paper**: A paper outlining the solution developed along with the validation methods and results will be drafted and submitted to relevant conferences and/or journals. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications.

Table 31 Use Case 3 (France): Validation Exercise #3 description

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3.3.3.4. UC3 Validation exercise #4 (UC3.EXE.04)

UC3-Exercise #4: General Information	
Exercise Identifier	UC3.EXE.04
Validation mode of exercise	Demonstration of platform
Title	Validation of the Di-PEGASUS impact assessment platform for the UAM use case (France)
Technologies evaluated	UC3.TECH.5– Di-PEGASUS Impact assessment platform
Description	A validation activity combining a demonstration of the Di-PEGASUS Impact Assessment platform with an expert workshop involving participants from industry and policymaking. The workshop will focus on aligning and integrating the technologies into real-world UAM operational environments
Exercise coordinator	CAP-PT
Location	Online
Start date of the exercise (approximate)	Scheduled between M22 and M29
End date of the exercise (approximate)	Scheduled between M22 and M29
UC3-Exercise #4: Information specific to validation mode (Demonstration of platform)	
Target audience	• Original Equipment Manufacturers • UAM operators • Vertiport/Heliport operators • Maintenance, Repair and Operations (MRO) services providers
Operational scenario	A UAM operator providing passenger transport services in the Paris region.
Key performance metrics	• Usability/User experience • Identification of most appropriate optimization criteria
Feedback/Metrics collection method	• Structured or open-ended Questionnaires • End-user interviews • Feedback collection during platform training sessions or workshops
Outputs of the exercise	• **Platform:** The exercise will contribute to the final validation of the Di-PEGASUS Impact Assessment platform

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	• **Report** : The outputs of the exercise will be reported in deliverables tied to the technologies assessed. • **Audiovisual material**: Supplementary material to support the reporting of the exercise, also intended for use in communication, dissemination activities, and scientific publications

Table 32 Use Case 3 (France): Validation Exercise #4 description

3.3.3.5. UC3 Validation exercise #5 (UC3.EXE.05)

UC3-Exercise #5: General Information	
Exercise Identifier	UC3.EXE.05
Validation mode of exercise	Survey
Title	Social acceptance survey for UAM operations across France
Technologies evaluated	The exercise aims to evaluate the French use case from a social acceptance perspective, taking into account both the views of people residing in France and the perspectives of experts in the field of Urban Air Mobility and VTOL aircraft. The assessment focuses on the overall use case and its applications, rather than on individual technological modules.
Description	The social acceptance survey for the French use case aims to explore attitudes towards Urban Air Mobility (UAM) operations at different scales in urban and peri-urban areas. It will be targeted towards i) members of the public in areas where UAM services are expected to operate, in order to assess acceptance levels of different types of UAM operations and to identify the main concerns and conditions influencing public acceptance. In addition, the survey will be addressed to ii) experts and professionals with experience in the field of Urban Air Mobility and VTOL aircraft, to capture informed perspectives on the opportunities, challenges, and societal implications associated with UAM services. The survey design will be informed by the Di-PEGASUS use case definition and related analyses, ensuring that questions reflect realistic operational scenarios and conditions.
Exercise coordinator	EUSC
Location	France (and other European Member States if the information collected from France are not sufficient)
Start date of the exercise (approximate)	M24 (tentative)
End date of the exercise (approximate)	M32 (tentative)
UC3-Exercise #5: Information specific to validation mode (Survey)	
Target audience	• Persons residing in France and/or European citizens • Experts and professionals with experience in the field of Urban Air Mobility and VTOL aircraft

Distribution method	Social media and other online distribution channels (e.g., e-mails, Di-PEGASUS LinkedIn Page, other social media).
Feedback/Metrics collection method	Structured or open-ended questionnaires via an online form
Outputs of the exercise	• **Report** : Detailed outputs of the exercise to be reported in "D5.1 – Use case & social acceptance survey results" • **Dataset**: A dataset containing the aggregated and anonymized results of the survey

Table 33 Use Case 3 (France): Validation Exercise #5 description

3.3.4. Objectives and success criteria

UC3– Validation Objective #1	
Objective Identifier	UC3.OBJ.01
Objective title	Validate the concept of multi-sensors landing aids for UAM operations in urban/peri-urban environment (vertiports)
Exercises Linked to objective	UC3.EXE.01 UC3.EXE.02
Success Criteria for UC3 – Validation Objective #1	
Success criterion identifier	Success criterion title
UC3.OBJ.01.SC.01	Landing is executed successfully by SAL function, and comply with targeted approach & landing procedures
UC3.OBJ.01.SC.02	SAL function is robust to a single failure by performing successful landing on tested degraded scenario (SAL_KPI_01)
UC3.OBJ.01.SC.03	SAL ensure targeted landing accuracy compatible with vertiports and landing procedures (SAL_KPI_02)
UC3.OBJ.01.SC.04	SAL fast-time simulation validate a high landing success rate in nominal conditions (SAL_KPI_03)

Table 34 Use Case 3 (France): Validation Objective #1 & success criteria

UC3– Validation Objective #2	
Objective Identifier	UC3.OBJ.02
Objective title	Assess the impact of Di-PEGASUS technologies (SAL function) on UAM market development in urban/peri-urban environments
Exercises Linked to objective	UC3.EXE.01 UC3.EXE.02
Success Criteria for UC3 – Validation Objective #2	
Success criterion identifier	Success criterion title
UC3.OBJ.02.SC.01	SAL function allows UAM operations to comply with standard approach & landing procedures for VTOL aircraft
UC3.OBJ.02.SC.02	SAL function architecture comply with targeted robustness & reliability level for VTOL aircraft in urban/peri-urban environment

Table 35 Use Case 3 (France): Validation Objective #2 & success criteria

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UC3– Validation Objective #3	
Objective Identifier	UC3.OBJ.03
Objective title	Evaluate the technical maturity, operational feasibility, and user acceptance of aircraft health management, de-icing mitigation, and circular economy digitalization technologies for the French use case through expert feedback and demonstrations.
Exercises Linked to objective	UC3.EXE.03

Success Criteria for UC3 – Validation Objective #3	
Success criterion identifier	Success criterion title
UC3.OBJ.03.SC.01	Structured feedback on the technologies' capabilities, potential applications, and limitations is collected from participants
UC3.OBJ.03.SC.02	Technical requirements for future development are documented based on expert input.
UC3.OBJ.03.SC.03	The technologies' potential for operational integration is assessed, with qualitative insights gathered on barriers and enablers.
UC3.OBJ.03.SC.04	Initial feedback on the usability and interface design of the supporting platforms is collected from participants.

Table 36 Use Case 3 (France): Validation Objective #3 & success criteria

UC3– Validation Objective #4	
Objective Identifier	UC3.OBJ.04
Objective title	Assess expert feedback on the feasibility, optimisation, and usability of the Di-PEGASUS Impact Assessment platform for UAM operations.
Exercises Linked to objective	UC3.EXE.04

Success Criteria for UC3 – Validation Objective #4	
Success criterion identifier	Success criterion title
UC3.OBJ.04.SC.01	Majority of UAM experts assess that the platform's recommended actions and decisions are operationally feasible.
UC3.OBJ.04.SC.02	Business models for UAM that can be supported by the platform are identified during demonstrations with UAM experts.
UC3.OBJ.04.SC.03	Key optimisation criteria for the platform across the areas of economy, environment, social acceptance, and regulatory compliance are identified during demonstrations with UAM experts.

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UC3.OBJ.04.SC.04	Initial feedback on the usability and user experience of the platform's interface has been collected during a demonstration with UAM experts
UC3.OBJ.04.SC.05	Key Performance Indicators and initial requirements for the platform's dashboard have been collected during demonstrations with UAM experts.

Table 37 Use Case 3 (France): Validation Objective #4 & success criteria

UC3– Validation Objective #5	
Objective Identifier	UC3.OBJ.05
Objective title	Assess local citizens' acceptance of UAM operations in the target region.
Exercises Linked to objective	UC3.EXE.05
Success Criteria for UC3 – Validation Objective #5	
Success criterion identifier	Success criterion title
UC3.OBJ.05.SC.01	A statistically significant sample of survey responses has been collected from the target area.
UC3.OBJ.05.SC.02	Survey responses reflect sufficient geographic coverage of the target region.
UC3.OBJ.05.SC.03	Insights into public expectations regarding UAM safety have been derived from the survey results.
UC3.OBJ.05.SC.04	Mitigation measures for the risks of UAM operations have been assessed in terms of social acceptance.
UC3.OBJ.05.SC.05	Key concerns related to privacy, equity, noise, and visual pollution have been collected and assessed.
UC3.OBJ.05.SC.06	Possible measures to address concerns and improve acceptance have emerged from the collected responses.

Table 38 Use Case 3 (France): Validation Objective #5 & success criteria

3.3.5. Partners' roles and responsibilities

No	Stakeholder or Partner	Involvement
1	SED	Use case leader (UC3) UC3.EXE.01 coordinator UC3.EXE.02 coordinator
2	EUSC	UC3.EXE.05 coordinator
3	CRA	UC3.EXE.03 coordinator
4	CERTH	UC3.EXE.03 coordinator

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5	CAP-PT	UC3.EXE.04 coordinator
6	OEM operators	Participate in workshops and provide feedback for UC3.EXE03 and UC3.EXE04
7	Maintenance Repair and Operations service providers	Participate in workshops and provide feedback for UC3.EXE03 and UC3.EXE04
8	Heliport and/or vertiport operators	Participate in workshops and provide feedback for UC3.EXE.01, UC3.EXE.02, UC3.EXE03 and UC3.EXE04
9	Regulators	Participate in workshops and provide feedback for UC3.EXE03
10	Local authorities (municipalities, regional administration etc.)	Participate in workshops and provide feedback for UC3.EXE03
11	Citizens	Participate in UC3.EXE05

Table 39 Use Case 3 (France): Partners' roles & responsibilities

3.3.6. Activities planning

Project Month	Milestone/Activity
M12	1st Use Case roadmap workshop (done in Paris meeting / November 2024)
M15	D1.2 – Use case roadmap deliverable finalized submitted
M18	Progress evaluation during consortium meeting (face-to-face)
M23	Start of Real-Time Simulations
M24	Progress evaluation during consortium meeting (face-to-face)
M25	Social acceptance survey dissemination (UC3.EXE.05) kick off
M27	Acquisition flights are completed
M27	Start of Flight tests phase
M29	UC3.EXE.03 demos completed
M29	Impact Assessment Platform demo completed (UC3.EXE.04)
M30	Progress evaluation during consortium meeting (face-to-face)
M31	Real-time Simulations are completed
M32	Data collection for social acceptance survey completed (UC3.EXE.05)
M34	Flight tests are completed

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M35	D5.1 – Use case and social acceptance survey results deliverable finalized and submitted

Table 40 Use Case 3 (France): Activities planning

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3.3.7. Activities planning

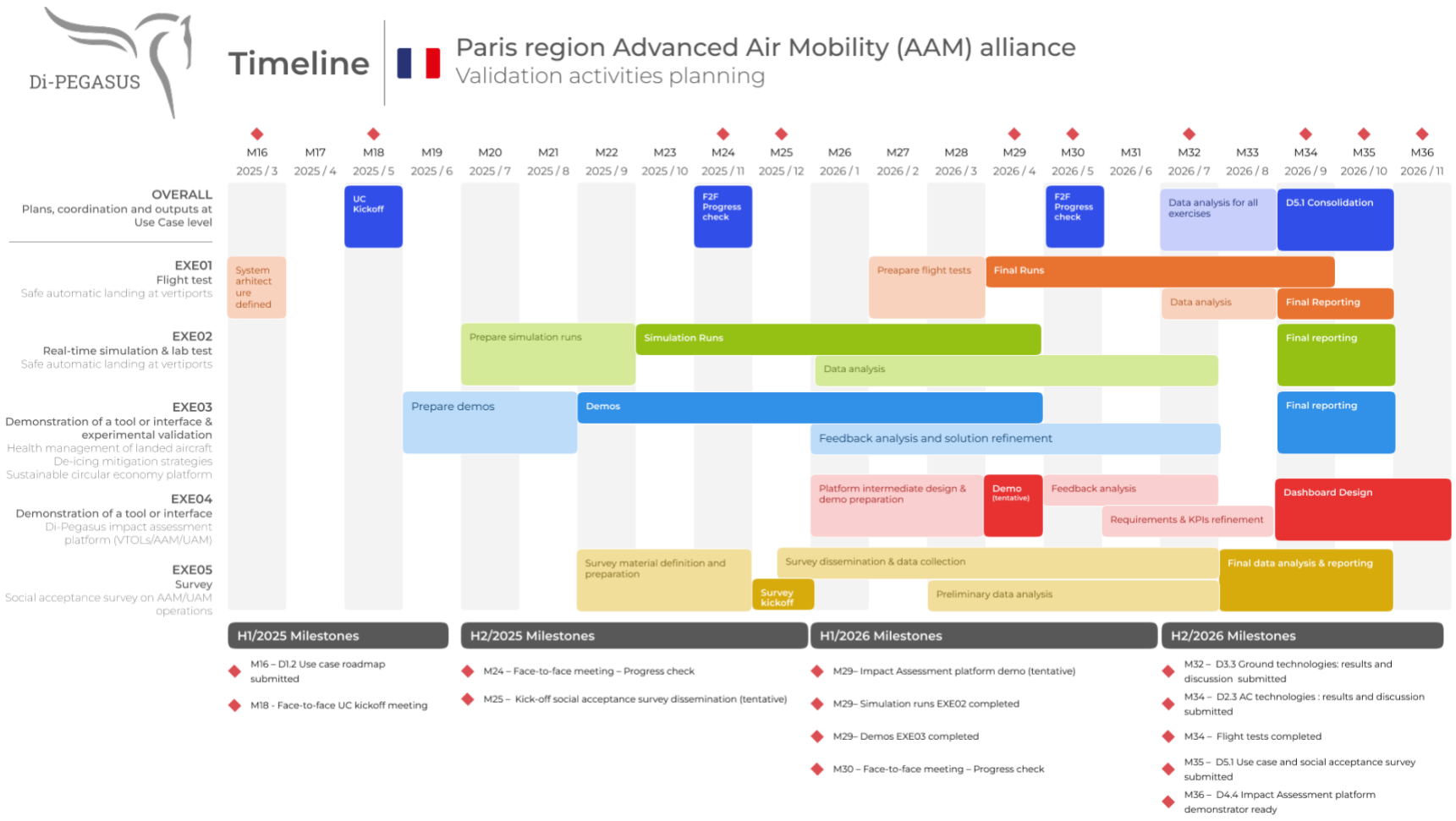

Figure 3 Use Case 3 (France): Gantt chart of planned activities

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4. CONCLUSIONS

This deliverable has defined a comprehensive Use Case Roadmap for Di-PEGASUS, establishing a coherent framework to align project technologies with the operational, regulatory, and societal needs of the three selected use cases. Through a structured validation plan, the roadmap clarifies how Di-PEGASUS solutions will be assessed in realistic operational environments, ensuring consistency across validation objectives, exercises, success criteria, and partner responsibilities.

By addressing diverse operational contexts - drone-based medical deliveries in Italy, seaplane operations in Greece, and advanced air mobility services in France - the roadmap highlights both the common challenges and the specific requirements associated with each use case. The planned validation activities combine simulations, demonstrations, workshops, and social acceptance surveys to capture technical performance, operational feasibility, economic implications, and societal perceptions.

Overall, the Use Case Roadmap provides a solid foundation for the implementation of Work Package 5, supporting a structured and comparable impact assessment of Di-PEGASUS technologies. It ensures that validation activities are clearly defined, traceable, and aligned with project objectives, enabling informed evaluation of the technologies' readiness and their potential contribution to future sustainable and safe air mobility services.

5. REFERENCES

Di-PEGASUS Grant Agreement

Di-PEGASUS Consortium Agreement

Di-PEGASUS Deliverable D 1.1 Di-PEGASUS knowledge base and stakeholders' requirements Version 2.0

APPENDIX I
Material used in workshops for T1.3 Di-PEGASUS use case roadmap

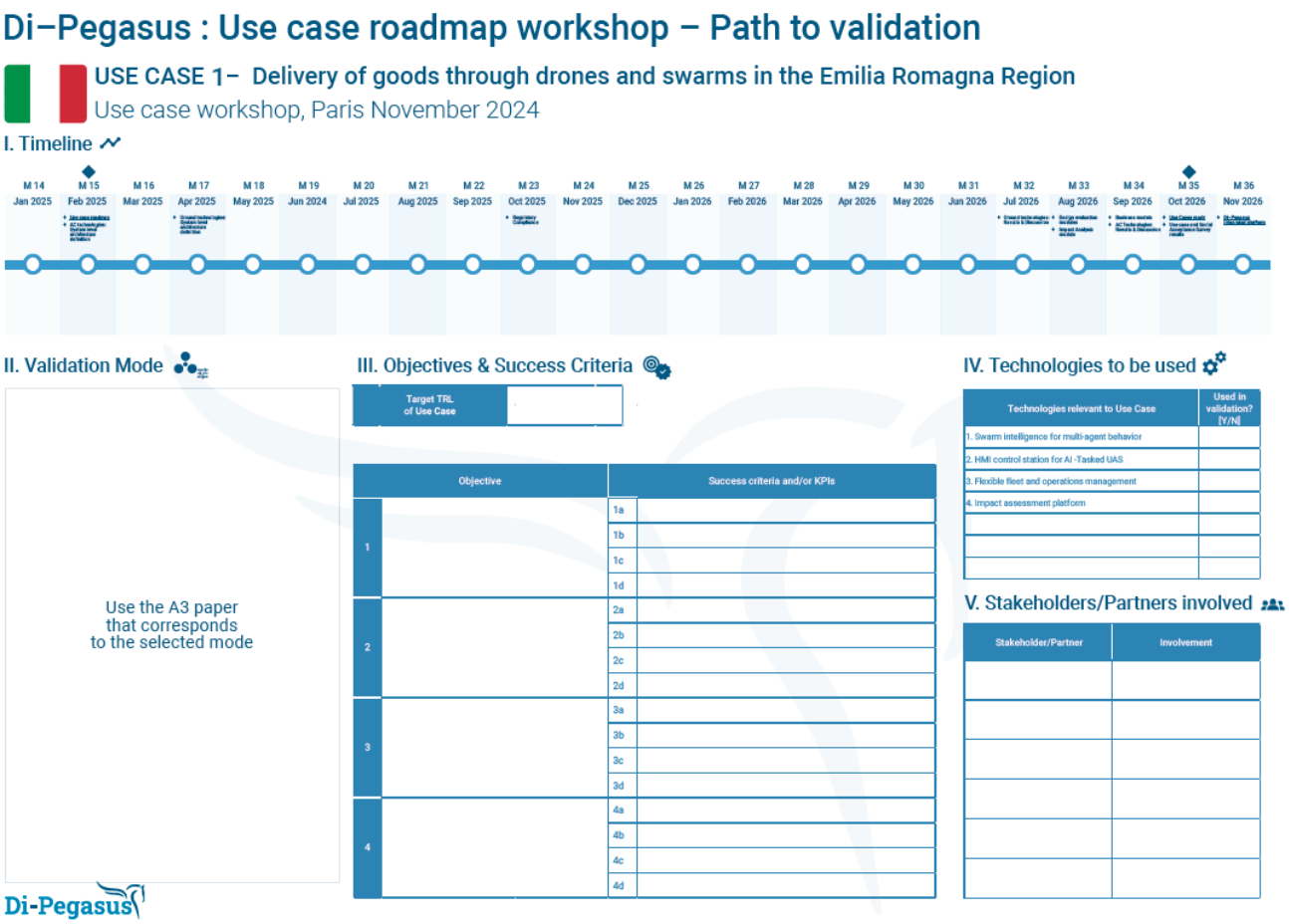

Figure 4 Main board for the Italian Use Case workshop

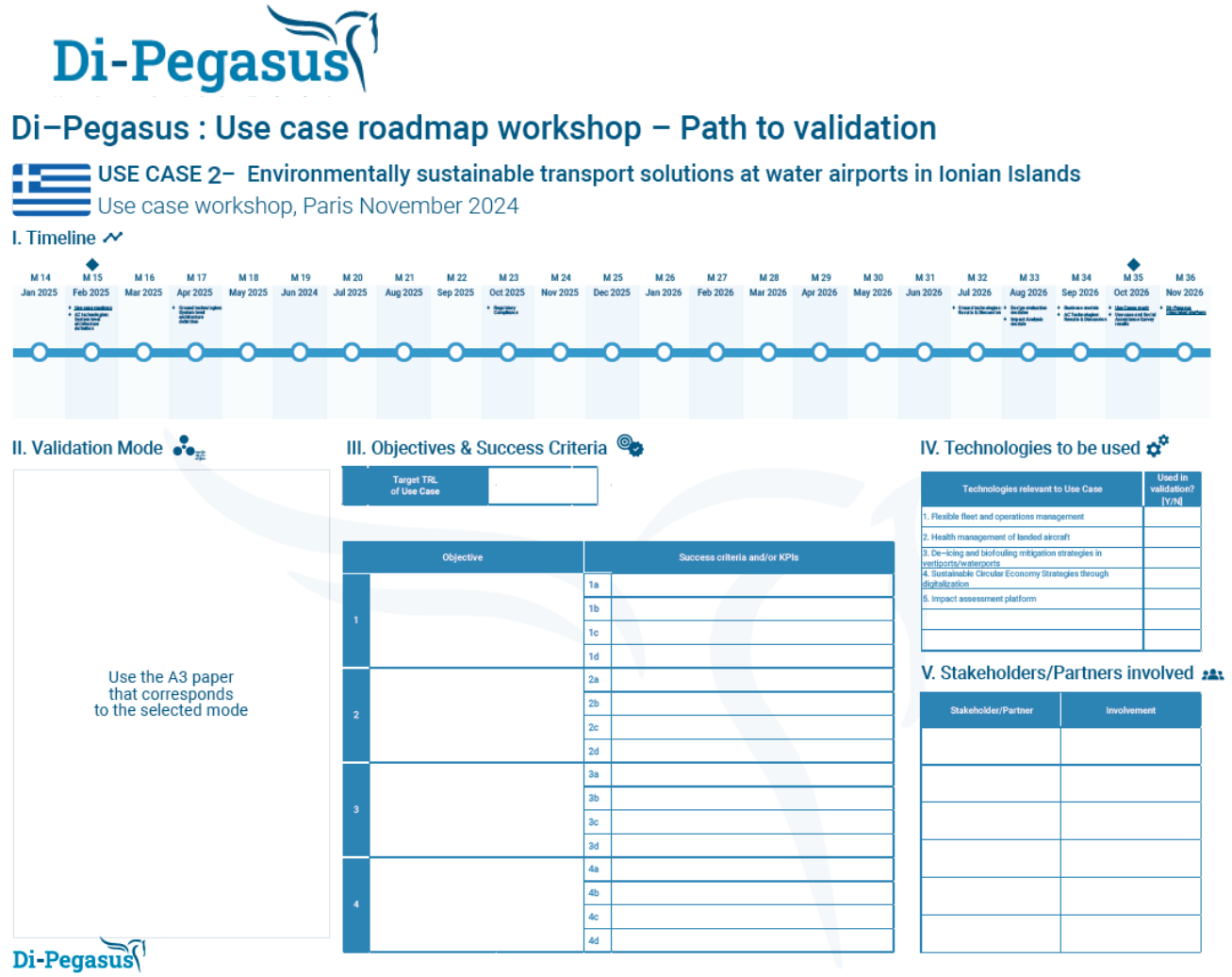

Figure 5 Main board for the Greek Use Case workshop

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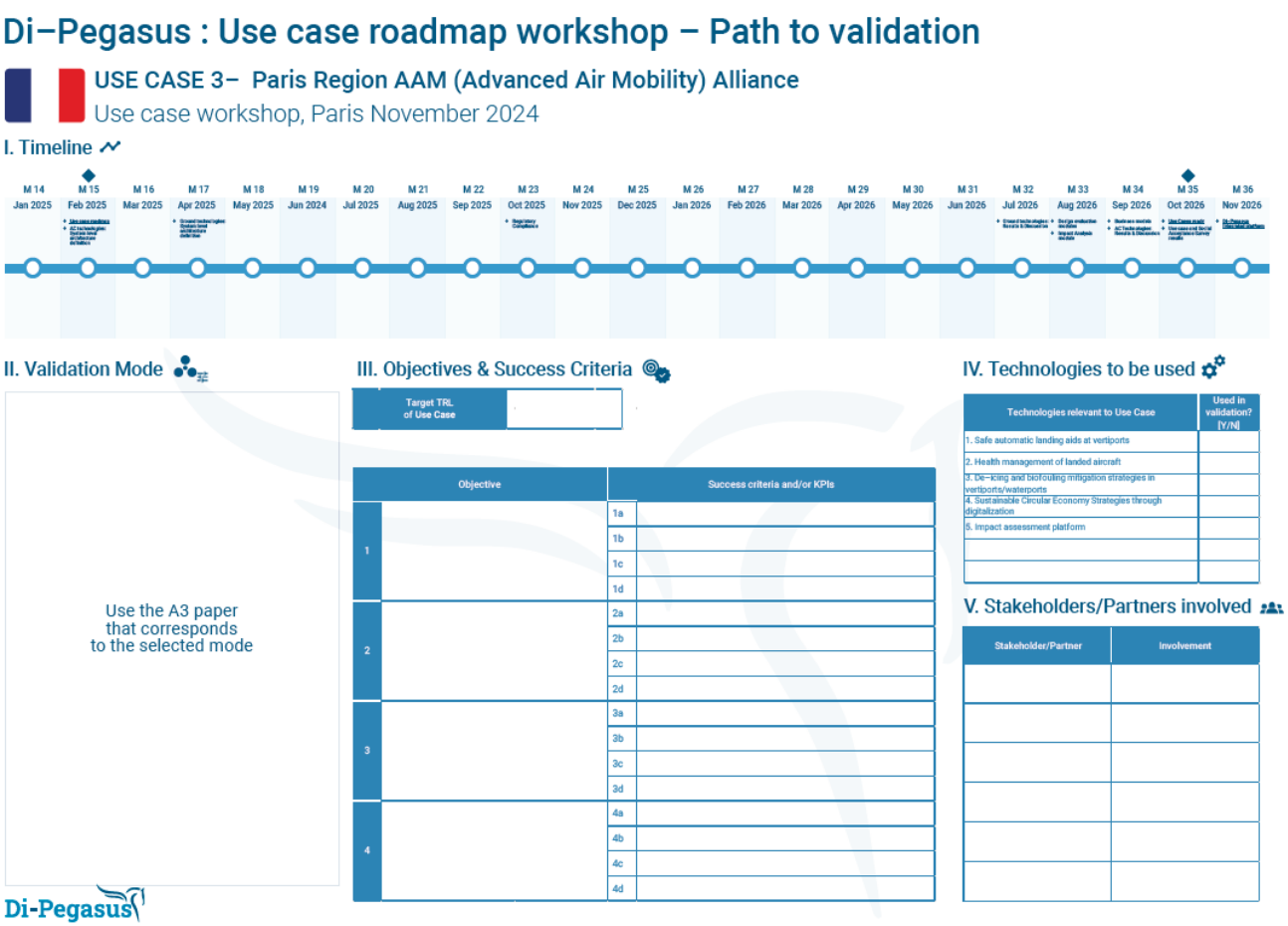

Figure 6 Main board for the French Use Case workshop

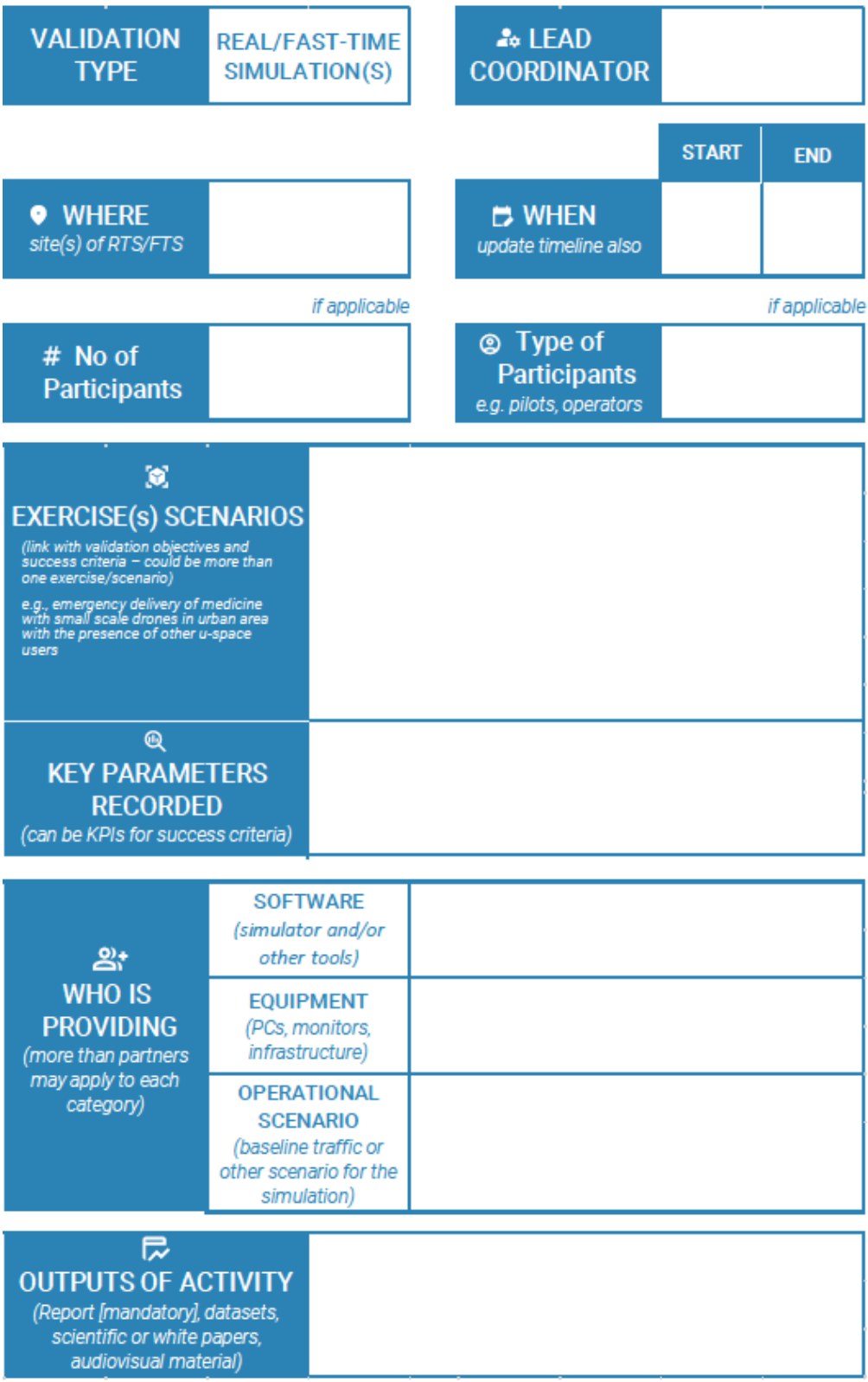

Figure 7 Additional board for choosing validation mode: Real/Fast-time simulation

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VALIDATION TYPE	FLIGHT TEST	LEAD COORDINATOR	
		START	END
WHERE *site(s) of test*		WHEN *update timeline also*	
MAIN SCENARIO *(link to objective and success criteria)*			
KEY PARAMETERS RECORDED *(can be KPIs for success criteria)*			
WHO IS PROVIDING *(more than partners may apply to every category)*	AIRCRAFT *(and/or other vehicles)*		
	EQUIPMENT *(e.g., sensors, telemetry, video)*		
	AIRFIELD *(location and fixed infrastructure for test)*		
OUTPUTS OF ACTIVITY *(Report [mandatory], datasets, scientific or white papers, audiovisual material)*			

Figure 8 Additional board for choosing validation mode: Flight test

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VALIDATION TYPE	DEMO OF TOOL, PLATFORM OR INTERFACE	LEAD COORDINATOR	
		START	END
WHERE *site(s) of demo*		WHEN *update timeline also*	

TARGET AUDIENCE *(e.g., operators, service providers, prosumers, consumers)*	
WHICH DI-PEGASUS TECHNOLOGY *(e.g. HMI for AI tasked UAS)*	
OPERATIONAL SCENARIO *(e.g., UAS fleet management for goods delivery in region X)*	
KEY PERFORMANCE METRICS *(e.g., usability, functionality, responsiveness, acceptance)*	
FEEDBACK/METRICS COLLECTION METHOD *(e.g., standardized questionnaire, interviews, observational notes)*	

WHO IS PROVIDING *(more than partners may apply to every category)*	SOFTWARE *(develops platform, tool or interface)*	
	EQUIPMENT *(PCs, monitors, infrastructure)*	
	OPERATIONAL SCENARIO *(designs **detailed** example use cases for the demo)*	

OUTPUTS OF ACTIVITY *(Report [mandatory], datasets, scientific or white papers, audiovisual material)*	

Figure 9 Additional board for choosing validation mode: Demonstration of a tool/interface

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VALIDATION TYPE	WORKSHOP(S) WITH EXPERTS	WORKSHOP COORDINATOR	
		START	END
WHERE *site(s) of WS*		WHEN *update timeline also*	

No of WS & MAIN FOCUS AREA *(e.g. 4 WS on Regulatory needs and policy enablers for deployment of waterport operations in country X within Y years)*	
TARGET AUDIENCE & MIN No of PARTICIPANTS *(e.g. Target 15: 5 service providers, 5 policy experts, 5 technology providers)*	
DATA COLLECTION & ANALYSIS *(e.g., questionnaires, minutes & analysis, participants write content together)*	
MEETS TARGET TRL?	*Does the Workshop meet the TRL requirements for the UC? Is the expected output sufficient to meet our commitments in the GA or are additional activities required?* ☐ Yes, the WS alone is sufficient ☐ No, additional activities are needed such as: _____

WHO IS PROVIDING *(roles of various partners for preparing the WS)*	**CONTENT** *(drafts agenda/questions, decides how to capture feedback, records and reports feedback in appropriate format.)*	
	LOGISTICS *(finds/invites experts, organizes date/location/services, handles comms)*	
OUTPUTS OF ACTIVITY *(Report [mandatory] transcripts, requirements, scientific or white papers, audiovisual material.l)*		

Figure 10 Additional board for choosing validation mode: Workshop with Subject Matter Experts

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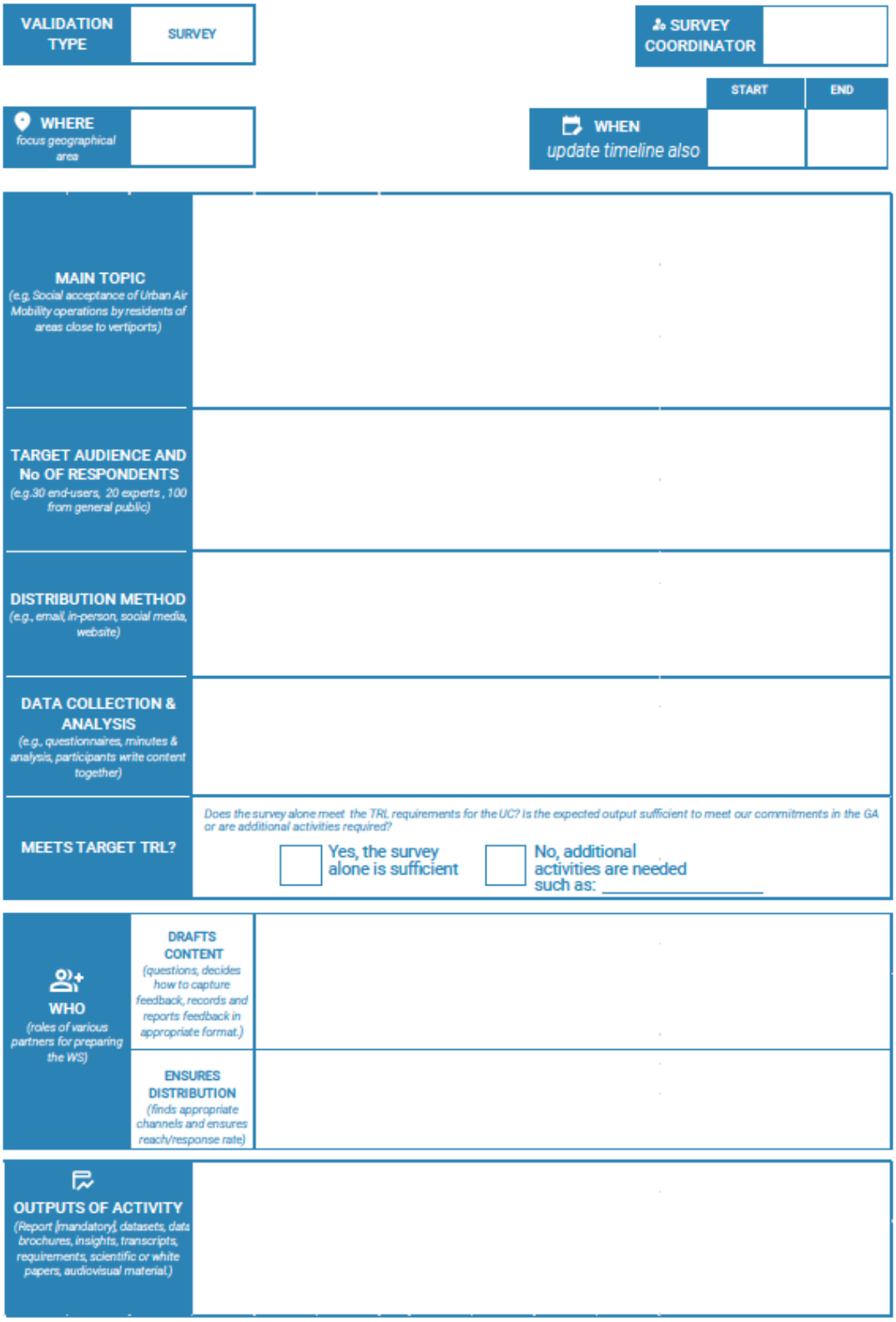

Figure 11 Additional board for choosing validation mode: Public survey

Di-Pegasus

Next Generation Aviation Technologies

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GA 101096000