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D5.2 - Use case implementation plan

Work Package	WP5 | Validation on uses cases
Tasks	T5.1 | Evaluation of Use Cases and Monitoring T5.2 | Farming 4.0 T5.3 | Maintenance and Inspection T5.4 | Personalized Healthcare
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Revision	Date	Editors	Comments
0.1	21/10/2021	Michał Kłosiński	List of contents
0.2	26/11/2021	Michał Kłosiński	Sections 2 and 3.2
0.3	06/12/2021	Enrico Abate-Daga	Compiled section 3.3
0.4	16/12/2021	Michał Kłosiński	Progress reporting
0.5	17/12/2021	Davide Cirillo	Compiled section 3.1
0.6	20/12/2021	Michał Kłosiński	Introduction and conclusion.
0.7	21/12/2021	Christophe Baron	Review comments
0.8	21/12/2021	Agatha Dabrowski	Review comments
1.0	22/12/2021	Michał Kłosiński	Review comments included

Keywords

Artificial Intelligence; Edge Computing; Computing Continuum, Use case implementation.

Disclaimer

Executive Summary

The purpose of the use cases implementation phase is to evaluate AI-SPRINT assets by using them to achieve business and technical goals specific to the use case. So the implementation strategy strongly depends on availability of AI-SPRINT assets. Since various components of AI-SPRINT will be available at different times of the project use cases need to take that aspect into account.

There are 2 points in time where evaluation results are to be reported. The first, interim, point in time is month 24 of the project. The second one, the final one, is scheduled at project end. All the use cases need to reflect that in their planning.

The key part of this deliverable is detailed planning. Every use case defines milestones required to achieve the use case goals and tasks needed to achieve them. This part also describes AI-SPRINT assets required to implement the given functionality and use case specific requirements being addressed. This detailed information can be found in section 3.

To monitor the execution of the plan use case partners will be reporting their progress on milestone level every 6 months.

Table of Contents

List of Figures

List of Tables

1. Introduction

1.1 Context and Objectives

The main purpose of the document is to outline the plan for use case implementation and summarise major milestones required to achieve use case goals. Both planning and milestone definition aspects will be addressed on project level and use case level. Also use case characteristics: description and goals will be provided for completeness sake.

Next to use case planning a simple reporting framework will be provided.

1.2 Structure of the document

The document is organised as follows:

- Section 1 provides a short introduction about document content.
- Section 2 explains the general planning and reporting framework, including project level plan and milestones.
- Section 3 describes a detailed plan, for every use case separately.
- Section 4 concludes the document.

2. Use case implementation planning approach

The purpose of this section is to provide an overview on the planning approach, documentation structure and information on a high level use case implementation plan (including common milestones).

2.1 High level plan and common milestones

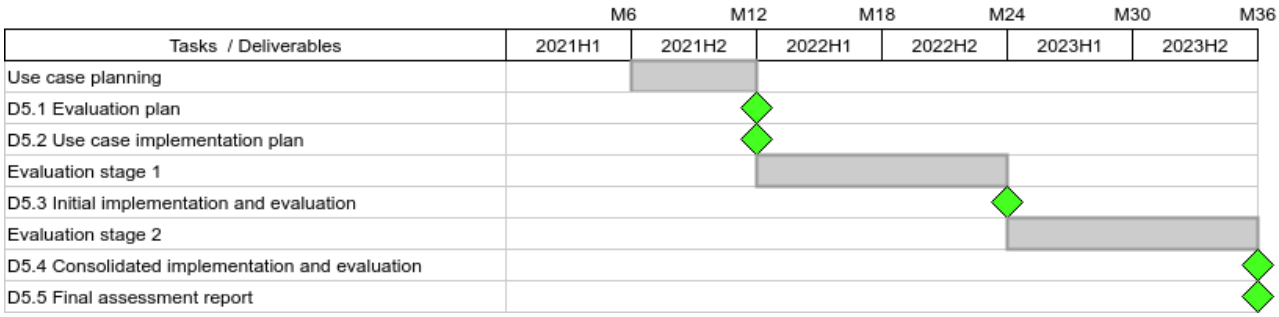

Figure 2.1 High level implementation plan

From a high level there are three major stages of the use case implementation process. The first is the preparation phase that ends with 2 deliverables *D5.1 Evaluation plan* and *D5.2 Use case implementation plan*. The second one is the first evaluation stage. This stage relies on the initial implementation stage that will be summarized by deliverable *D5.3 Initial implementation and evaluation*. The last stage ends with demonstration in production-like conditions and two deliverables: *D5.4 Consolidated implementation and evaluation,* and *D5.5 Final assessment report*.

There are a few common milestones that will be shared by the use cases:

- Detailed use case scenario - to be completed during evaluation stage 1.
- Initial implementation and evaluation of the results. Mostly focused on design time tools, deployment mechanisms and monitoring as they will be available first. To achieve milestone *D5.3 Initial implementation and evaluation* deliverable needs to be prepared and submitted.
- Final implementation using all the required elements of AI-SPRINT toolchain. Deliverables *D5.4 "Consolidated implementation and evaluation*, and *D5.5 Final assessment report are part of the milestone*.

Use cases may need to define additional milestones specific to the UC goals.

Details of activities in phases 2 and 3 will be a subject of detailed use case plans in section 3: Use case implementation plan.

2.2 Planning template

All the use cases provides their plan according to common template consisting of a few elements:

- use case description - very brief summary providing a description of what the use case is about
- use case goals - summary of goals to be achieved by the use case according also to the use case evaluation plan *AI-SPRINT Deliverable 5.1 - Evaluation Plan*, section 4.5 *AI-SPRINT Use Cases Evaluation Plans*
- major milestones - major milestones to be achieved in course of use case implementation with planned dates
- detailed, step by step implementation plan; every step is represented by the table following the template:

Task name	Short task name
Task description	Description explaining task activities
AI-SPRINT tools used	What elements of AI-SPRINT toolset are used in the task?
Use case epics	Which use cases are affected by the task (reference to requirements analysis AI-SPRINT Deliverable section 4: Requirements Definition)?
Requirements	Which requirements are related by the task (reference to requirements analysis)?
Expected outcome	What are the expected results of the task?
Part of the milestone	Part of which milestone(s) is the task?
Start date	DD/MM/YYYY
End date	DD/MM/YYYY

Table 2.1 Task planning template

2.3 Progress reporting

Use case progress tracking will be done on 2 levels. The first one, detailed work scheduling and monitoring, will be handled internally by use case partners. The second one, important from the perspective of this document, is high level progress reporting visible for all the partners.

High level progress report will be updated every six months and will provide an overview on the milestone level. Progress will be expressed as percent value and compared to the expected completion level assuming uniform work distribution. Reporting will be done in a form of spreadsheet following the template:

Use Case Progress Summary								Detailed Progress			
Milestone	DESCRIPTION	STATUS	START DATE	END DATE	DURATION	PROGRESS	EXPECTED	2022H1 (M18)	2022H2 (M24)	2023H1 (M30)	2023H2 (M36)
UCX-MS1	Done	Done	30/01/2021	30/05/2021	120	100%	100%	100%	-	-	-
UCX-MS1	On-Track	In progress	30/05/2021	30/09/2021	120	27%	25%	27%	-	-	-
UCX-MS2	Slightly delayed	In progress	01/01/2021	31/12/2021	360	40%	50%	40%	-	-	-
UC3-MS3	Delayed	In progress	01/01/2021	31/12/2021	360	25%	50%	25%	-	-	-
UC3-MS4	Not started	To Do	01/01/2022	30/06/2022	179	0%	0%	0%	-	-	-

Table 2.2 Reporting template

3. Use case implementation plan

3.1 Personalised Healthcare

3.1.1 Use case description

The Personalised Healthcare use case concerns the development of AI models for health monitoring via wearable devices connected to mobile phones. Specifically, the use case focuses on personalised stroke risk assessment and prevention combining quantitative (heart parameters digital data) and qualitative data (lifestyle information) to create a modelling framework that will be enhanced in edge-to-cloud platforms to manage distribution and parallelism across the resources.

Stroke is a neurovascular condition due to an acute focal injury in the central nervous system by a vascular cause. It is a common disease, with increasing incidence in the ageing population, that affects one in four people over their lifetime. It is the second leading cause of death and third leading cause of disability in adults worldwide. New strategies for preventing and monitoring stroke or its recurrence, in a continuous and non-invasive way, have been developed, namely the use of smart wearable and mobile devices.

The distinctive AI-SPRINT framework makes possible the adoption of wearable and mobile devices to capture new insights on stroke patient care powered by AI, with the smart allocation of the workload between cloud and edge. The use case demonstrates the AI-SPRINT technology in a pilot study involving human participants, namely subjects who suffered from a stroke and healthy individuals, ensuring the protection of sensitive data through GDPR compliant mechanisms and gathering this information anonymously and respecting both privacy and security frameworks. To prioritise privacy preservation, a federated learning setting will be implemented where versions of the model at the edge share local updates on the global model parameters in the cloud rather than personal data.

3.1.2 Use case goals

The goals of the Personalised Healthcare are the following:

- Create an initial model for stroke risk stratification using sensors data from public databases
- Organise and execute a fully GDPR compliant pilot study by recruiting volunteers (stroke survivors and healthy individuals), collect lifestyle information and instruct them on the use of the wearable device.
- Create a comprehensive model for stroke risk stratification using sensors data and lifestyle information
- Demonstrate the applicability of the AI-SPRINT technology using the assets needed from the use case

3.1.3 Major milestones

The following milestones are expected:

- UC1-MS1: A preliminary model is built with available data
- UC1-MS2: A first phase of the pilot study has been executed
- UC1-MS3: The use case architecture has been fully tested

3.1.4 Detailed implementation plan

Task name	Preliminary models development and refinement
Task description	Available data, such as public sensor data and/or produced in-house using smartbands, is used to create preliminary models to serve a demonstrator and to be potentially re-used in the pilot study.
AI-SPRINT tools used	PyCOMPSs/dislib, OSCAR
Use case epics	UC1.E01, UC1.E03
Requirements addressed	UC1.Req001, UC1.Req002, UC1.Req008, UC1.Req010
Expected outcome	Preliminary models related to stroke risk assessment
Part of the milestone	UC3-MS0
Start date	01/07/2021
End date	30/09/2022

Table 3.1 UC1: Preliminary models development and refinement

Task name	Pilot study planning
Task description	Requirements and activities are reviewed for the organisation and execution of the pilot study in one or more of its phases.
AI-SPRINT tools used	N.A.
Use case epics	US1.E01, UC1.E02
Requirements addressed	N.A.
Expected outcome	Detailed planning of the pilot study execution
Part of the milestone	UC3-MS1
Start date	01/01/2022
End date	30/06/2022

Table 3.2 UC1: Pilot study planning

Task name	Volunteers recruitment campaigns and formation
Task description	Recovered from stroke and healthy subjects are recruited by a subcontracted entity and instructed about the pilot study.
AI-SPRINT tools used	N.A.
Use case epics	UC1.E02
Requirements addressed	N.A.
Expected outcome	Successful recruitment and formation of volunteers for one or more phases of the pilot study
Part of the milestone	UC3-MS2
Start date	01/07/2022
End date	30/06/2023

Table 3.3 UC1: Volunteers recruitment campaigns and formation

Task name	Execution of the pilot study
Task description	One or more phases of the pilot study are executed. In each phase, sensor data and lifestyle information is collected, analysed and modelled during an observation time in full compliance with GDPR regulation.
AI-SPRINT tools used	PyCOMPSs, OSCAR, Federated Learning, SCONE, Monitoring infrastructure, SPACE4AI-R, Performance models
Use case epics	UC1.E02
Requirements addressed	UC1.Req003-010
Expected outcome	Completion of UC1-MS2
Part of the milestone	UC1-MS2
Start date	01/10/2022
End date	30/09/2023

Table 3.4 UC1: Execution of the pilot study

Task name	Stroke risk assessment model development and refinement
Task description	A stroke risk assessment model will be developed throughout the execution of the pilot study based on preliminary models. The model will be continuously evaluated and refined during all the phases of the pilot study.
AI-SPRINT tools used	PyCOMPSs, OSCAR, Federated Learning
Use case epics	UC1.E02, UC1.E03
Requirements addressed	UC1.Req003, UC1.Req005, UC1.Req006, UC1.Req009
Expected outcome	An accurate stroke risk assessment model that demonstrates the applicability of the AI-SPRINT technology
Part of the milestone	UC1-MS2
Start date	01/10/2022
End date	31/12/2023

Table 3.5 UC1: Stroke risk assessment model development and refinement

Task name	Integration of required AI-SPRINT assets
Task description	The goal of this task is to enable the interoperability of the AI-SPRINT assets that are required for the use case. Particular emphasis will be given to the crosstalk among the models (stroke risk models in a federated learning with simulated hospitals setting) and the run-time and design-time tools.
AI-SPRINT tools used	PyCOMPSs, OSCAR, Federated Learning, SCONE, Monitoring infrastructure, SPACE4AI-R, Performance models
Use case epics	UC1.E02, UC1.E03
Requirements addressed	UC1.Req003, UC1.Req005, UC1.Req006, UC1.Req009
Expected outcome	The use case architecture is functionally operational.
Part of the milestone	UC1-MS3
Start date	01/07/2021
End date	31/12/2023

Table 3.6 UC1: Integration of required AI-SPRINT assets

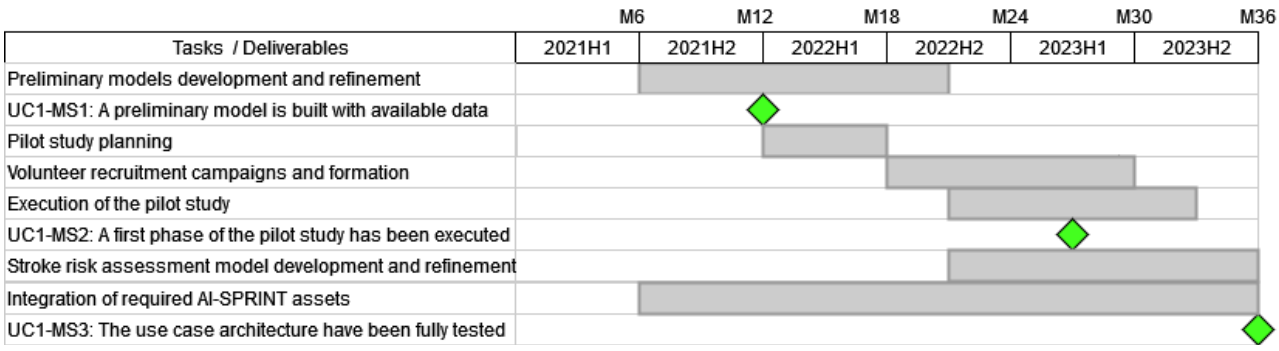

Figure 3.1: Summary of UC1 tasks and milestones

3.2 Maintenance and Inspection

3.2.1 Use case description

This Use Case exploits AI models for identifying windmill blade damage based on vision and thermal images collected by drones (both actual and prospective damages will be considered). Given bandwidth and connection stability constraints coupled with the limited flight time of a drone which is typically below 30 minutes, the selection of relevant images (including objects that need to be further analyzed or general non-repetitive images of clear regions) occurs at the edge (ground station) and only relevant data are transmitted over the edge-cloud channel. Edge processing will also be in charge of calling for a new acquisition (detailed images of certain regions) when required. Inspection time and operator effort can be significantly reduced at IoT level (on the drone, exploiting power/weight-efficient GPU modules, already available as prototype today) by providing image quality feedback to the operator, allowing less conservative flight. Furthermore, the amount of data to be processed can be reduced by doing semantic segmentation on the fly (getting rid of the background data). AI-SPRINT tools will enable optimal interaction of cloud-based (computationally intensive, longer) analysis and local processing using lighter data pattern recognition routines.

3.2.2 Use case goals

There are a few goals to be achieved by using AI-SPRINT in this Use Case:

- Improve the quality of data collected in the field
- Reduce software maintenance overhead by providing effective tools for deployment and monitoring of ML models, both on edge and in cloud
- Optimize computation resources required to execute and train ML models

3.2.3 Major milestones

The following milestones are expected:

- UC2-MS1: detailed scenario defined - exact use case definition and required hardware specification - even though high level goal of UC is clear exact scenario that will be demonstrated need to be defined; as a result hardware platform (Unmanned Aerial Vehicle - UAV configuration) needed for the use case will be specified
- UC2-MS2: Hardware platform ready for tests - UAV is specified, configured and available for software tests
- UC2-MS3: Interim tests completed. *D5.3 Initial implementation* and evaluation delivered.
- UC2-MS4: AF platform adjusted to work with AI-SPRINT tools -- new inference infrastructure, leveraging the AI-SPRINT toolset is available and ready
- UC2-MS5: Laboratory tests finished - laboratory tests are completed and platform is ready for field tests
- UC2-MS6: Field tests completed. *D5.4 Consolidated implementation and evaluation*, and *D5.5 Final assessment report* delivered.

3.2.4 Detailed implementation plan

Task name	Detailed UC scenario preparation
Task description	The goal of this task is to define an exact scenario that will be tested by the UC. The task will specify the type of ML models to be used, data pipeline processing steps and hardware configuration of UAV that is required to execute such tests.
AI-SPRINT tools used	-
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04, UC2.E02.US01
Requirements	-
Expected outcome	Data pipeline and UAV specification
Part of the milestone	UC2-MS1
Start date	01/01/2022
End date	01/04/2022

Table 3.7 UC2: Detailed UC scenario preparation

Task name	UAV setup
Task description	This task requires cooperation with an external supplier who will setup and rent UAV in the appropriate configuration.
AI-SPRINT tools used	--
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04
Requirements	-
Expected outcome	UAV available for experiments
Part of the milestone	UC2-MS2
Start date	01/04/2022
End date	01/07/2022

Table 3.8 UC2: UAV setup

Task name	AF platform adjustments stage 1
Task description	The task is to rebuild the AF data processing platform to leverage the AI-SPRINT toolchain. Stage one focuses on design time components, deployment, and monitoring.
AI-SPRINT tools used	SPACE4AI-D, IM, Monitoring infrastructure
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04, UC2.E02.US01
Requirements	UC2.Req001. UC2.Req002, UC2.Req003, UC2.Req005, UC2.Req007, UC2.Req009
Expected outcome	Setup of AI-SPRINT toolchain. Initial verification of AF platform and AI-SPRINT tools working together.
Part of the milestone	UC-MS3
Start date	1/07/2022
End date	1/01/2023

Table 3.9 UC2: AF platform adjustments stage 1

Task name	AF platform adjustments stage 2
Task description	The task is to rebuild the AF data processing platform to leverage the AI-SPRINT toolchain. Stage two focuses on runtime components and preparation for the field tests.
AI-SPRINT tools used	SPACE4AI-R, OSCAR
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04, UC2.E02.US01
Requirements	UC2.Req004, UC2.Req005, UC2.Req006, UC2.Req008
Expected outcome	Cloud and edge infrastructure ready.
Part of the milestone	UC-MS4
Start date	1/01/2023
End date	1/07/2023

Table 3.10 UC2: AF platform adjustments stage 2

Task name	Laboratory tests
Task description	Tests of the complete infrastructure in laboratory conditions.
AI-SPRINT tools used	SPACE4AI-D, SPACE4AI-R, IM, OSCAR, Monitoring infrastructure
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04, UC2.E02.US01
Requirements	UC2.Req001. UC2.Req002, UC2.Req003, UC2.Req004, UC2.Req005, UC2.Req006, UC2.Req007, UC2.Req008, UC2.Req009
Expected outcome	Tests passed. Platform ready for field tests.
Part of the milestone	UC-MS5
Start date	1/04/2023
End date	1/07/2023

Table 3.11 UC2: Laboratory tests

Task name	Field tests
Task description	Tests of the whole infrastructure involving actual use of UAV in real conditions.
AI-SPRINT tools used	SPACE4AI-D, SPACE4AI-R, IM, OSCAR, Monitoring infrastructure,
Use case epics	UC2.E01.US01,UC2.E01.US02, UC2.E01.US03, UC2.E01.US04, UC2.E02.US01
Requirements	UC2.Req001. UC2.Req002, UC2.Req003, UC2.Req004, UC2.Req005, UC2.Req006, UC2.Req007, UC2.Req008, UC2.Req009
Expected outcome	Tests passed. Final report prepared. Technical (WP2, 3, and 4) KPIs evaluation and Business KPIs (related to the maintenance and inspection use case) evaluation
Part of the milestone	UC-MS6
Start date	1/07/2023
End date	31/12/2023

Table 3.12 UC2: Field tests

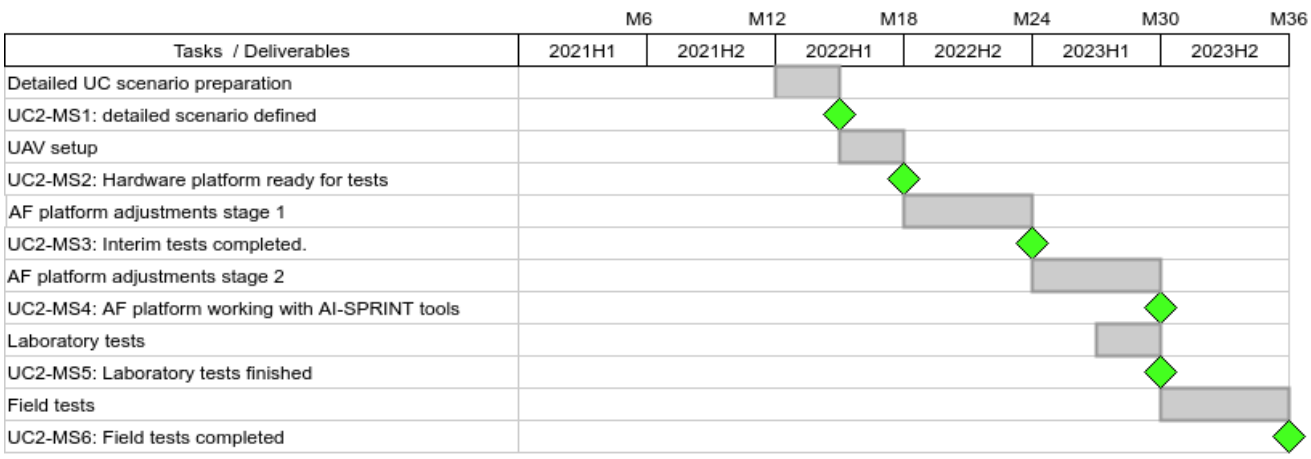

Figure 3.2: Summary of UC1 tasks and milestones

3.3 Farming 4.0

3.3.1 Use case description

The primary task of this Use Case is to develop an AI-driven system to compute the required quantity of phytosanitary treatment based on foliage volume and canopy shape. The input data used by the system to estimate foliage volume and canopy shape are provided by sensors mounted on board of the agricultural machine administering the treatment. The software which will use the trained models will run on an edge device (Smart Farming Device, or SFD), also providing data acquisition from local sensors. The SFD benefits from intermittent connectivity to a management application (Adaptive Farming Management, or AFM) which will be used to show the used quantity of treatment in the different areas of the vineyard. The SDF and the AFM should achieve a TRL of 6.

Additional tasks are the training of models to identify specific grape diseases and to estimate the yield. It is unclear if diseases can be identified at this stage, therefore the SFD will be linked to a multispectral camera to collect images to train a model and perform the first lab experiments. Moreover, it is clear that data collected within this project will not be sufficient to estimate yield; nevertheless, this project will enable collection of data and first laboratory experiments.

3.3.2 Use case goals

Goals of the Use Case are

- Build an edge device (SFD) to compute in the field quantity of required treatment based on foliage volume and canopy shape of individual plants
- Build a management application (AFM) to show performance and results and to tune configuration of SFD
- Collect data and develop a first version of a yield estimation model
- Collect data which can possibly help to identify grape diseases

3.3.3 Major milestones

The following milestones are expected:

- UC3-MS0: Preparation work for use case complete, use case may start
- UC3-MS1: SFD can be used to collect data (i.e. it has been built and mounted)
- UC3-MS2: Data collected (first iteration)
- UC3-MS3: SFD ready for field test
- UC3-MS4: AFM application ready
- UC3-MS5: Final report completed

3.3.4 Detailed implementation plan

Task name	Use case planning
Task description	Review requirements and plan activities for M12 - M36
AI-SPRINT tools used	N.A.
Use case epics	N.A.
Requirements addressed	N.A.
Expected outcome	Section of D5.1 and D5.2 documents
Part of the milestone	US-MS0
Start date	01/07/2021
End date	31/12/2021

Table 3.13 UC3: Use case planning

Task name	Build SFD for data collection
Task description	Finalize hardware and sensor requirements, order hardware, configure software components, mount SFD on tractor, perform field test
AI-SPRINT tools used	OSCAR, IM
Use case epics	UC3.E01, UC3.E02, UC3.E03, UC3.E04, UC3.E05
Requirements addressed	UC3.Req01
Expected outcome	All sensors and hardware components pass test in field environment Data can be collected in the field.
Part of the milestone	UC3-MS1
Start date	01/09/2021
End date	30/04/2022

Table 3.14 UC3: Build SFD for data collection

Task name	Collect data from vineyard
Task description	Mount SFD on tractor and collect data throughout the season
AI-SPRINT tools used	OSCAR
Use case epics	UC3.E05, UC3.E06, UC3.E07
Requirements addressed	UC3.Req01, UC3.Req002, UC3.Req007, UC3.Requ011 (possibly UC3.Req004)
Expected outcome	Data for training models (foliage volume, disease detection, yield estimation) available
Part of the milestone	UC3-MS2
Start date	01/04/2022
End date	30/11/2022

Table 3.15 UC3: Collect data from vineyard

Task name	Train model - Foliage volume/canopy shape
Task description	Train models to detect foliage volume and shape of canopy. Identify ways of computing exact time of PWM Spraying activation
AI-SPRINT tools used	POPNAS, GPU Scheduler
Use case epics	UC3.E08
Requirements addressed	UC3.Req007
Expected outcome	Model provides precision and recall sufficient for preliminary testing of the system
Part of the milestone	UC3-MS3
Start date	30/11/2022
End date	31/03/2023

Table 3.16 UC3: Train model - Foliage volume/canopy shape

Task name	Build SFD for adaptive farming
Task description	Build all components of the SFD so that it can run inference on the edge without any connectivity to cloud (or on-premise infrastructure)
AI-SPRINT tools used	PyCOMPSs, dislib, Quality Annotations, COMPSs, OSCAR, IM, Monitoring/data storage, Monitoring/data delivery
Use case epics	UC3.E01, UC3.E02, UC3.E05, UC3.E06, UC3.E08
Requirements addressed	UC3.Req001, UC3.Req002, UC3.Req003, UC3.Req004, UC3.Req005, UC3.Req006, UC3.Req008, UC3.Req009, UC3.Req010, UC3.Req012
Expected outcome	The SFD is fully functioning and can be mounted on a tractor and can work without any connectivity. SFD can be managed centrally and automatically connects to the cloud when connectivity is available.
Part of the milestone	UC3-MS3
Start date	01/04/2022
End date	31/03/2023

Table 3.17 UC3: Build SFD for adaptive farming

Task name	Build AFM application
Task description	Build application to manage the SFDs and to inform farmers about e.g. used quantity of treatment
AI-SPRINT tools used	Quality Annotations, IM, OSCAR, SPACE4AI-R, Monitoring/data storage, Monitoring/data delivery
Use case epics	UC3.E04, UC3.E05, UC3.E07, UC3.E09, UC3.E10
Requirements addressed	UC3.Req001, UC3.Req002, UC3.Req003, UC3.Req004, UC3.Req010, UC3.Req011
Expected outcome	The AFM application can be used, also to manage the SFD device
Part of the milestone	UC3-MS4
Start date	30/11/2022
End date	30/06/2023

Table 3.18 UC3: Build AFM application

Task name	Train models - yield estimation and disease detection
Task description	Train first version of models to estimate yield and detect diseases. Assess feasibility and define tasks for possible follow-up project
AI-SPRINT tools used	POPNAS, GPU Scheduler
Use case epics	UC3.E06, UC3.E08
Requirements addressed	UC3.Req007
Expected outcome	Models have been tested, expected precision and recall in real life environment can be assessed Model inference is part of AFM application
Part of the milestone	UC3-MS4
Start date	01/01/2023
End date	30/09/2023

Table 3.19 UC3: Train models - yield estimation and disease detection

Task name	Improve SFD based on test results
Task description	Analyse performance of SFD in field tests and improve based on results
AI-SPRINT tools used	To improve models: POPNAS, GPU Scheduler To deploy and test improvements: Quality Annotations, IM, OSCAR, SPACE4AI-R, Monitoring/data storage, Monitoring/data delivery
Use case epics	UC3.E01, UC3.E04, UC3.E10
Requirements addressed	All
Expected outcome	It is possible to assess the performance of SFD. SFD can be managed (e.g. deployment of improved model) centrally
Part of the milestone	UC3-MS5
Start date	01/04/2023
End date	31/12/2023

Table 3.20 UC3: Improve SFD based on test results

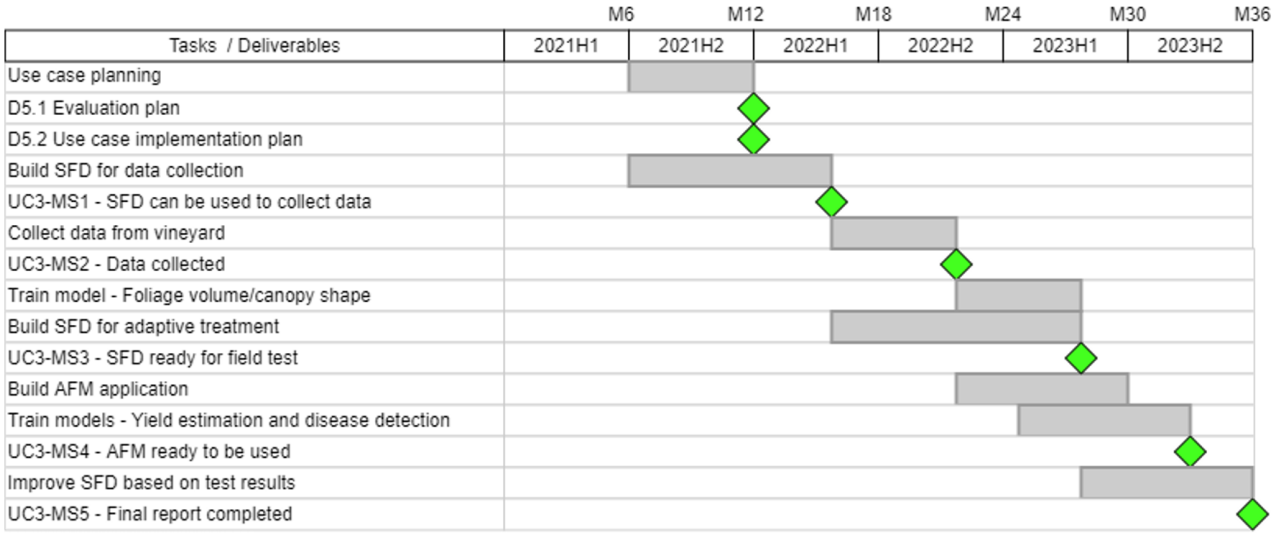

Figure 3.3: Summary of UC3 tasks and milestones

4. Conclusions

The deliverable explains how use case implementation is distributed over the time, but also shows what kind of milestones are expected to be achieved in the course of the project. All the activities described here are required to achieve goals assumed by the use cases, both business and technical. In order to provide some transparency towards the rest of the consortium regarding work progress a reporting framework has been proposed. It's supposed to provide a quick view into the current work state without posing too much reporting burden on use case implementation teams.