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D5.1 PILOTING PLAN AND EVALUATION METHODOLOGY, V1

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Acronyms and Abbreviations

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AgroSTAC	Global repository on key agronomy observations
AI	Artificial Intelligence
ATB	Institut für angewandte Systemtechnik Bremen GmbH
AUTH	Aristotle University of Thessaloniki
AVR BVBA	AVR BVBA (Belgium)
BIOPAR	Biophysical Parameters
CA	Consortium Agreement
CAP	Common Agricultural Policy
CEADS	Common European Agricultural Data Space
CNH	CNH INDUSTRIAL Belgium
CSV	Comma Separated Values
CSW	Catalogue Service for the Web
DES	Deimos Spain
DGA	Data Governance Act
DME	Deimos EngenhariaENGENHARIA SA
DSS	Decision Support System
DSSC	Data Space Support Centre
EC	Electrical Conductivity
EnMAP	Environmental Mapping and Analysis Program
EO	Earth Observation
EOD	Earth Observation Data
EOSC	European Open Science Cloud
ERP	Enterprise Resource Planning
ESA	European Space Agency
ET	EvapoTranspiration
ETa	actual EvapoTranspiration
EU	European Union
EURAC	Accademia Europea di Bolzano (Eurac Research)
EV ILVO	Eigen Vermogen van het Instituut voor Landbouw en Visserij Onderzoek
FAIR	Findable, Accessible, Interoperable, and Reusable
fAPAR	fraction of absorbed Photosynthetically Active Radiation
Fcover	Fraction of vegetation cover
fPAR	fraction of absorbed Photosynthetically Active Radiation
GA	Grant Agreement
GB	Giga Byte

GDPR	General Data Protection Regulation
GEOGLAM	Group on Earth Observations Global Agricultural Monitoring initiative
GeoJSON	Geospatial Java Script Object Notation
GeoTIFF	Geographic Tagged Image File Format
GIS	Geographic Information Systems
HORTA	HORTA SRL
IA	Innovation Area
ICCS	Institute of Communications and Computer Systems
iCM	integrated Crop Management
IFAPA	Instituto Andaluz de Investigación y Formación Agraria, Pesquera y Alimentaria
IoT	Internet of Things
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
LAI	Leaf Area Index
LUE	Light Use Efficiency
MIGAL	MIGAL Galilee Research Institute
ML	Machine Learning
MSI	MultiSpectral Instrument
NDVI	Normalized Difference Vegetation Index
NDWI	Normalized Difference Water Index
NIR	Near Infra-Red
NP	Neuropublic SA
NPP	Net Primary Productivity
OAuth	Open Authorization protocol
OGC	Open Geospatial Consortium
OHB	OHB Digital Services GMBH
OpenAIRE	Open Access Infrastructure for Research in Europe
OpenDEI	Open Digitizing European Industry
PPP	Plant Protection Product
PSNC	Instytut Chemii Bioorganicznej Polskiej Akademii Nauk
R&D	Research and Development
R&I	Research and Innovation
RIA	Research and Innovation Action
RIL	Research and Innovation Lab
RS	Remote Sensing
SciHub	Scientific Hub
SITRA	Finnish innovation fund

SOC	Soil Organic Carbon
STAC	Spatio Temporal Assets Catalog
UAV	Unmanned Aerial Vehicle
UGent	Universiteit Gent
VITO	Vlaamse Instelling voor Technologische Onderzoek
VNIR	Visible and Near Infra-Red
VPO	Vlaams Planbureau voor Omgeving
VRI IES	Foundation "Institute for Environmental Solutions"
WODR	Wielkopolski Osrodek Doradztwa Rolniczego w Poznaniu
WP	Work Package

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Executive Summary

ScaleAgData is a response to the call HORIZON-CL6-2022-GOVERNANCE-01-11 Upscaling (real-time) sensor data for EU-wide monitoring of production and agri-environmental conditions. It is a four-year project, running from January 2023 until December 2026.The project's consortium is comprised of twenty-six partners from fourteen countries.

The purpose of Deliverable D5.1 "Piloting Plan and Evaluation Methodology" is to present the methodology for the development of the six so called Research and Innovation Labs (RILs) of the first iteration. Therefore, this document will provide generic guidelines and materials common to all the RILs included in the project. Additionally, it includes a brief overview of the project's background, vision and objectives and expected results, as well as a presentation of Work Package 5 (WP5) context. The realization of the RILs has been split in two iterations, where both iterations are containing the same phases and are building upon each other as well as offering the opportunity to refine objectives and the approach. This deliverable is the first deliverable of WP5, which is related to the RILs deployment, demonstration and evaluation and will serve as a methodological guideline during the first iteration. Based on the findings and results of the first iteration, the piloting plan and evaluation methodology will be updated in December 2024 for the second iteration of the RILs.

1 Introduction

1.1 ScaleAgData Background

Nowadays, the detailed monitoring of the agricultural production sites, as well as the environment within which this production occurs, has become a critical asset in order to face challenges linked to the increasing demand and global competition for agricultural productivity and escalating risks caused by an adversely changing climate. At the same time, the need to remedy the huge environmental impact of agricultural practices is very important.

Detailed monitoring requires more information to optimize the production process and to evaluate the environmental impact and effectiveness of this optimization. Several monitoring initiatives have been based on satellite data, yet often the level of detail or the information needed cannot be derived from them. Further advances in satellite or processing capacities could enhance the monitoring ability of the agri-environmental conditions, but still there is a need for reliable reference data.

To upscale the monitoring capacities of the agri-environmental conditions through EO data to a level of analysis of 10 m or beyond at the European scale, a tremendous amount of ground truth data would be required, which should be adequately geo-referenced and with a sufficient density.

At the same time, there is an enormous and underexplored potential of the sensors that are increasingly being deployed by farmers and advisory service providers. These sensors capture essential information, from very detailed proximal sensing of crop characteristics, over field-based mapping to more environmental conditions. Also, they have proven to be an added value in the early detection of possible issues in the production process (such as lack or excess of soil moisture), and to enable the steering of the production process.

The challenge of data scarcity to further scale the European agri-environmental monitoring capacities could be tackled by integrating sensors and EO data in existing and new monitoring capacities. To this end, two issues have been identified that should be overcome: on the one hand the organization of the data streams and the onboarding of the different stakeholders (including among other farmers, farmers' advisors and policy makers) and on the other hand, the adaptation that is required to optimally integrate the sensor data into the Earth Observation (EO) based monitoring tools.

Based on the above, the main vision of ScaleAgData was developed, and its main objectives were defined. These are both presented in the following section.

1.2 ScaleAgData Vision, Objectives and Innovations

The main vision of ScaleAgData is to obtain insights in how complex data streams, linked to sensors and Earth Observation (EO) data, should be governed and organized, as well as to develop the data technology (from data streaming, data analytics and artificial intelligence (AI) applications) needed to aggregate data collected at the farm level for generating regional datasets built for agri-environmental monitoring and the management of agricultural production.

Based on the vision of ScaleAgData, the following five main objectives of the project have been defined:

i. Developing innovative approaches for collecting in-situ data and applying data technologies related to mining, storage, analytics and visualization of data, by actively involving stakeholders in the agricultural production process.

ii. Enabling and promoting data sharing along the entire data value chain.

iii. Demonstrating how the readily accessible, locally collected sensor data can be scaled to agri-environmental data products at the national, regional, or European level.

iv. Demonstrating the benefit of the improved monitoring capacities of the agri-environmental conditions in a precision farming context.

v. Demonstrating the benefit of upscaled regional datasets for the agricultural sector in general.

To accomplish these objectives, several innovations have been identified that are needed, along the different aspects of the data stream from sensor to upscaled monitoring products. The innovation areas (IA) that are foreseen in ScaleAgData are the following:

- **IA1:** Innovative sensor technology.
- **IA2:** Edge processing.
- **IA3:** Data sharing architecture and data governance.
- **IA4:** Satellite data augmentation.
- **IA5:** From data assimilation to service development.
- **IA6:** Privacy-preserving technology.
- **IA7:** Data integration methodologies.

1.3 ScaleAgData Concept, Activities and expected Results

Improving the capacities for monitoring the agri-environmental conditions at a European scale, through the integration of in-situ sensor and EO data, requires the participation and collaboration of different partners that are part of the involved data streams, in order to organize these data streams to the benefit of all stakeholders.

In ScaleAgData, these stakeholders are brought together aiming at the identification and alignment of the different needs and concerns. Also, they analyze the methodological frameworks and solutions as well as the demonstration and evaluation of the usability and relevance of the outcomes.

The activities of the project involve data collection from local level, advanced sensor signal processing and regional monitoring platforms based on EO data, cumulated to final applications for stakeholders showcased in six Research and Innovation Labs (RILs). This sequential development process will be executed in four work-packages:

- WP2: Concept and co-design of innovative approaches.

- WP3: Sensor selection, spatial and temporal processing design, data sharing and governance approaches.
- WP4: Data integration in farming services as well as agri-environmental monitoring data products.
- WP5: Demonstration of these concepts in six concrete applicationsrelated to agricultural production in general.

All these will be organized following an agile multi-step development approach. As presented in Figure 1, ScaleAgData follows an iterative approach comprised of two iteration rounds, each of which includes the four phases:

- Phase 1: Co-design and definition (WP2).
- Phase 2: Development of methodological frameworks and prototypes (WP3 and WP4).
- Phase 3: Technology implementation and validation in a testing environment (WP3 and WP4).
- Phase 4: Demonstration and evaluation in the RILs (WP5).

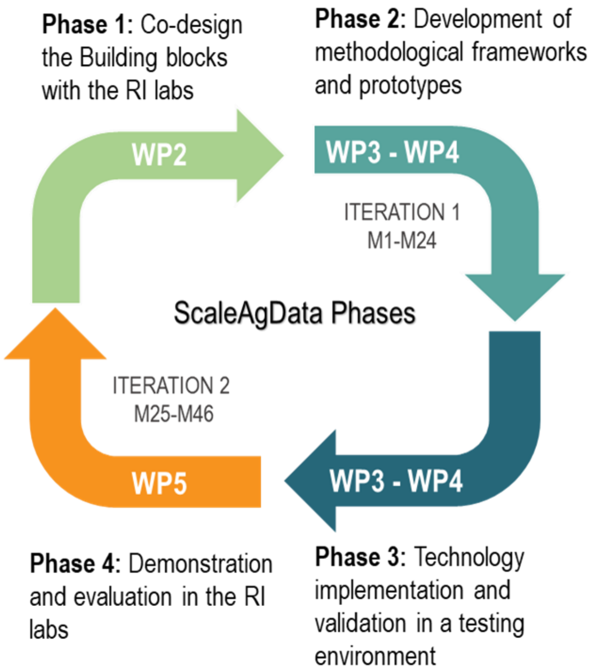


Figure 1. ScaleAgData agile development approach.

1.4 WP5 Context

The overall goal of WP5 is to support the RILs to build on top of the outcomes of the co-design process in WP2 (Phase 1) and the outcomes of WP3 and WP4 (Phase 2 and 3). Specific objectives of WP5 are:

i) To organize and facilitate the integration and deployment activities of the RILs.

ii) To coordinate and support the RILs in their demonstration activities.

iii) To monitor and evaluate the impact of the RILs' innovations.

iv) To share the resulting knowledge and creation of guidelines for replicating results across Europe.

Activities of WP5 are grouped into four tasks. In Task 5.1 the guidelines for the deployment, demonstration, and evaluation of the RILs are provided (D5.1). Based on those guidelines, the first iteration of integration, deployment, and setup of the demonstrations as well as the coordination, monitoring and evaluation will be accomplished during Tasks 5.2 and 5.3 respectively. With the completion of the first iteration of the RILs in December 2024, the implemented demonstrations will be described in a short report (D5.2) and the methodological guidelines will be updated for the second iteration (D5.3). The demonstrators of the second iteration will be deployed, integrated, coordinated, monitored, and evaluated according to the updated guidelines (T5.2 and T5.3) and they will be shortly described in D5.4 when the second iteration is completed, scheduled for October 2026. In Task 5.4, the approach for sharing the knowledge produced during the project, as well as the guidelines for replicating its results will be developed (D5.5) at the very end of the project (December 2026).

More specifically, the activities included in the tasks of WP 5 are the following.

- **Task 5.1** RIL deployment, demonstration, and evaluation plan methodology M9-M24 (NP, all WP participants)

Within Task 5.1, the methodology that will be followed by the RILs will be specified and the plans for the iterative implementation will be co-designed by and for each RIL.

- **Task 5.2** Integration, deployment, and setup of demonstrators M14-M46 (NP, all WP participants):

In T5.2, the RILs will deploy and integrate the validated results of Phase 3 and develop end-user applications (demonstrators) running over the project's validated methodological frameworks and prototypes.

- **Task 5.3** Coordination, monitoring, evaluation, and impact analysis M18-M46 (EV ILVO, all WP participants):

The focus of T5.3 is ensuring the smooth operation of the demonstration and evaluation process in Phase 4, demonstrating the validated methodological frameworks and prototypes of Phase 3. Also, the performance of the demonstrators, and the project results in general, will be analyzed, potential shortcomings, and drawbacks in demonstrators' operation will be identified. Furthermore, the applications' impact will be evaluated and the evaluation results of the first iteration process will be fed back into WP2, to feed the co-design phase.

- **Task 5.4** Knowledge sharing and replication guidelines M36-M48 (ATB, all WP participants):

Task 5.4 activities focus on the analysis of the initial plans of the RILs, the approach for sharing knowledge with a larger external target audience and the development of replication guidelines.

1.5 Scope of the Document

Deliverable 5.1 "Piloting Plan and Evaluation Methodology" is the first deliverable of Work Package 5 (WP5), led by Neuropublic. The objective of this deliverable is to present the methodology for the development of the demonstrators and pilot trials of the first iteration. Therefore, this document will provide generic guidelines and materials common to all the RILs included in the project.

First, the background, vision, objectives and innovations of the ScaleAgData project are briefly presented, specifying also the concept of WP5 (the overarching work package in which this deliverable is situated) . Then, the different RILs associated with the project will be presented, explaining the context within ScaleAgData, the selected application domains and innovation areas.

As the core of this document, the different procedures needed for monitoring and coordination of RILs are established, as well as communication channels used for an agile and fluid interaction between all the agents. In addition, the document includes the organization of meetings at different levels, both within each RIL (RIL leader with partners) and between RIL leaders with Task Leader.

Finally, the Annexes show different templates for RIL leaders and partners involved in the project to use, including templates related to Meeting Minutes, Meeting Agenda, Execution Plan, Progress Report and KPIs, with the aim of combining methodologies and documents, to facilitate the monitoring and evaluation of the achievement of the milestones.

1.6 Document Structure

This document is structured as follows:

- Chapter 1 provides the background and the general objectives of the project including the objectives of WP5 (to which this deliverable is part of).
- Chapter 2 presents the Research and Innovation Labs (RILs) and their basic elements.
- Chapter 3 presents all the procedures and the documents necessary for piloting and reporting, as well as evaluation mechanisms of all RILs.
- Chapter 4 establishes specific guidelines for the communication channels around the project and sets the different levels and frequencies of the meetings.
- Chapter 5 describes the upcoming activities.
- Chapter 6 presents the main conclusions of the deliverable.
- Annexes I-IV include the various templates presented in this document.

2 RILs Context and Presentation

2.1 Broader Context of RILs

In the context of ScaleAgData, a series of Research and Innovation Labs (RILs) have been launched. Each RIL has its own specification and thematic focus and will evaluate and monitor different data upscaling and integration models or approaches. Based on these integrated data sets, recommendations will be formulated which can be capitalized in the direction of strengthening the competitiveness and sustainability of European agriculture. The RILs will also help ensure that the recommendations produced are comprehensive, relevant for the agri-food sector in general, and scalable throughout Europe.

In total, six RILs have been defined, covering a variety of thematic areas with unique data streams, from locally collected sensor data to the upscaled regional monitoring capacities. They reflect a multiplicity of application domains, different biogeographical zones, various crops, diverse levels of maturity, a wide range of sensor technologies and data products, as summarized below:

- **Application domains:** Water productivity, Crop management, Yield monitoring, Soil Health, Grasslands and Dairy.
- **Biogeographical zones:** Pilot activities will take place in five different biogeographical zones (Boreal, Atlantic, Continental, Alpine and Mediterranean) in nine countries (Belgium, Germany, Greece, Israel, Italy, Latvia, Poland, Finland, and Spain (see Figure 2)
- **Targeted crops:** peppermint, quinoa, cotton, potatoes, tomatoes, wheat, cereals, grasslands, barley and arable crops, such as rye, rape, maize, sugar beet.
- **Maturity levels:** In terms of services to the farmers, available sensor technology, data products, and data governance the TRL levels will vary between TRL2 and TRL6.
- **Range of Technologies:** including IoT meteorological and soil stations, airborne platforms with sensors, observation sensors, harvester-yield sensors, soil and crop scanners, hyperspectral cameras mounted on UAVs and flux towers
- **Range of Data:** Across the different RILs, data streams will be integrated including weather data, soil analysis data, satellite data, crop model data, farm log data (information about phenological phases of crops, cultivation practices), soil data, yield measurement data, field observations related to pest infestations and laboratory analysis data about milk quality and quantity.

To ensure a wider coverage of the sensor data, in some RILs there are several sub-RILs. This enables enhanced decision-making regarding the useability of the products and services in different agro-ecological conditions. In addition, it facilitates the evaluation of the regional transferability of the results and outcomes.

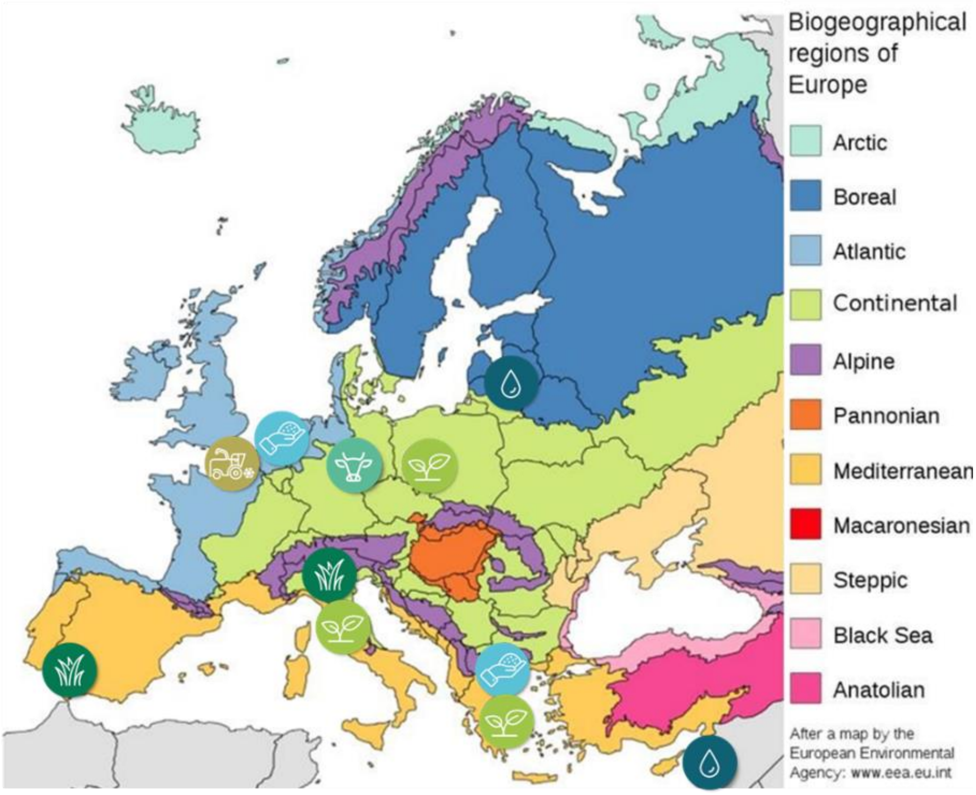


Figure 2. The overall approach of the sensor data acquisition planning and sensor data collection in ScaleAgData: Presentation of the six RILs, with corresponding icons.

2.2 RILs Presentation

In the following sub-sections, the main elements of each RIL are presented, including their application domain, their innovation areas, and their plan for the deployment of innovative approaches. In addition, the area of interest, the targeted crops or products, the main inputs and outputs and the characteristics of the pilot fields of the first iteration are briefly described.

2.2.1 RIL1 Water Productivity

Lead / Partners:	**VRI IES / MIGAL**
Challenges and objectives:	Drought caused stress is a well-known issue across Europe, but it is gaining in importance in the Northern regions like Latvia. However, timely drought prediction remains challenging to allow for effective decision making on field management. The main objective of the Water productivity lab is thus the development and demonstration of a service prototype for the early prediction and early detection of drought stress, through the integration and fusion of information from sensors with high temporal (soil probes, weather stations) and high spatial resolution (remote sensing imagers) to address the above-mentioned challenges.

Innovation Areas:	• IA3: Data sharing architecture and data governance • IA4: Satellite data augmentation • IA5: From data assimilation to service development
Deployment of Innovative Approaches:	• Service prototype through the digital twin concept, combined with data fusion models from different data sources for early prediction and detection of drought caused stress in target crops. • Data sharing and model transferability between two distant regions (Latvia and Israel). • Combination of high spatial resolution data from airborne spectral/thermal imagers with available satellite data to improve temporal resolution.
Areas of interest:	• Vidzeme region in Latvia • Hula Valley, Northern Israel
Pilot fields of 1st iteration	• Parcels with four different irrigation regimes in Latvia with an estimated total extend of 4 ha • "GADASH"experimental farm in Israel with an estimated total extend of 3.6 ha
Targeted crops / products:	• Peppermint (Mentha × piperita) • Quinoa (Chenopodium quinoa)
Main Inputs: i. Sensor data	• IoT meteorological stations measuring air temperature, moisture, precipitation, wind speed and direction, atmospheric pressure, irradiation • IoT soil moisture sensors measuring soil moisture, temperature • Airborne platforms with sensors capturing VNIR spectral and thermal image data
Main Inputs: ii. EO data to be exploited:	• Evapotranspiration and soil moisture data products estimating water availability status, prepared by DHI • Vegetation indices data products estimating vegetation health, prepared by VITO
Main Inputs: iii. In-situ, and other data	• Yield assessment through measurement of peppermint and quinoa yields • Irrigation water supply estimation based on water meter data
Main outputs:	• Field water status for target crops • Satellite data-based field water status for target crops • Predicted yield for target crops • Satellite data-based predicted yield for target crops

2.2.2 RIL2a Crop Management – Agri-environmental Monitoring for Policy Makers

Lead:	**NP**
Challenges and objectives:	One of the most common types of Digital Agricultural solutions offered across Europe, are DSSs that combine weather and soil data from in situ sensors to support crop management. Typically, these DSSs are based on IoT Agrometeorological Stations and combine their data with a variety of other data (EO imagery, soil analysis, farm logs etc.) to offer a range of Smart Farming (SF)

	services. The main objective is to unlock the potential of these data for a) expanding SF services and b) enabling monitoring of sustainability performance for policy purposes, at a European level. There are numerous challenges: a) IoT sensors are expensive and there is need for a way to maximize coverage with the least possible sensors; b) there is no established way for aggregating data from multiple sources to support agri-environmental policy monitoring apps; c) there is no way to collect needed data such as the use of pesticides in an automated way; d) there is lack of the needed data and AI algorithms to support services like the early detection of pest infestations in given regions
Innovation Areas:	• IA3: Data sharing architecture and data governance • IA5: From data assimilation to service development • IA6: Privacy-preserving technology • IA7: Data integration methodologies
Deployment of Innovative Approaches:	• A mechanism and a governance plan will be created for collecting the IoT and farm log data at the farm level and aggregating them at a regional level to support policy makers in making decisions. • A new sensor for automatic pesticides detection will be used to collect data needed by policy makers to monitor Common Agricultural Policy (CAP) sustainability KPIs. • Data assimilation and data fusion will be used to maximize the reach of its IoT network while minimizing the number of sensors needed to support proper advice to farmers.
Areas of interest:	• Crete in Greece • Thessaly in Greece
Targeted crops / products:	• Potato • Tomato • Cotton
Pilot fields of 1st iteration	• 2 potato pilot fields in Crete with an estimated total extend of 0.5 ha • 3 tomato pilot fields in Thessaly with an estimated total extend of 30 ha • 3 cotton pilot fields in Thessaly with an estimated total extend of 15 ha
Main Inputs: i. Sensor data	• IoT Weather Stations recording temperature, soil moisture & salinity, rainfall, wind speed & direction. • Pesticide Sensor used for the detection of specific pesticides
Main Inputs: ii. EO data to be exploited:	• Sentinel-2 products acquired by ESA and processed by NP's earth insight Engine to produce indices: NDVI, EVI, LAI, NDWI. • Dynamic World V1 data acquired through Google Earth Engine and processed by NP's earth insight Engine. They contribute to land use change monitoring.
Main Inputs: iii. In-situ, and other data	• Farm log data regarding cultivation practices (irrigation, fertilization, pest control, land management, harvest), phenological stages of plants, pest events
Main outputs:	• Soil moisture aggregation at LAU / Commune Level • Calculated indicators (aggregates) based only on ground truth evidence. • Calculated indicators (LUKE) based on data assimilation mechanisms along with the respective annotations. • Aggregated pesticide use for policy makers

2.2.3 RIL2b Crop Management – Sustainability Performance

Lead:	**HORTA SRL**
Challenges and objectives:	One of the most common types of Digital Agricultural solutions offered across Europe is DSSs that combine weather and soil data from in situ sensors to support crop management. Typically, these DSSs are based on IoT Agrometeorological Stations and combine their data with a variety of other data (EO imagery, soil analysis, farm logs etc.) to offer a range of Smart Farming (SF) services. The main objective is to unlock the potential of these data for a) expanding SF services and b) enabling monitoring of sustainability performance for policy purposes, at a European level. There are numerous challenges: a) the IoT sensors are expensive and there is need for a way to maximize coverage with the least possible sensors; b) there is no established way for aggregating data from multiple sources to support agri-environmental policy monitoring apps.
Innovation Areas:	• IA7: Data integration methodologies
Deployment of Innovative Approaches:	• Weather and soil data from in-situ sensors will be combined with Sentinel2 data for better crop monitoring and more precise input for the DSS. • Using advanced modelling techniques and based on the farm log, the DSS will calculate the sustainability KPIs of the farms for the selected operations, offering guidance and proof.
Areas of interest:	• Northern Italy
Targeted crops / products:	• Wheat
Pilot fields of 1st iteration	• 10 wheat pilot fields with an estimated total extend of 10 ha.
Main Inputs: i. Sensor data	• Weather Stations temperature records, rain, relative humidity, leaf wetness data.
Main Inputs: ii. EO data to be exploited:	• Sentinel-2 products acquired by AIRBUS and used for the production of the vegetation index NDVI.
Main Inputs: iii. In-situ, and other data	• Farm log data, where all the operations carried out in field are registered. • Soil data regarding soil texture from in situ analysis.
Main outputs:	• Calculated sustainability indicators • DSS model outputs (fertilization rate, disease risks, crop yield and quality, soil moisture) • Vegetation indices, crop nutrient status

2.2.4 RIL2c Crop Management - Early Pest Detection

Lead:	**WODR – PSNC**
Challenges and objectives:	One of the most common types of Digital Agricultural solutions offered across Europe, are Decision Support Systems (DSSs) that combine weather and soil data from in situ sensors to support crop management. Typically, these DSSs are based

	on Internet of Things (IoT) Agrometeorological Stations and combine their data with a variety of other data (EO imagery, soil analysis, farm logs etc.) to offer a range of Smart Farming (SF) services. The main objective is to unlock the potential of these data for a) expanding SF services and b) enabling monitoring of sustainability performance for policy purposes, at a European level. There are numerous challenges: a) the IoT sensors are expensive and there is need for a way to maximize coverage with the least possible sensors; b) there is no way to collect needed data such as the use of pesticides in an automated way; c) there is lack of the needed data and AI algorithms to support services like the early detection of pest infestations in given regions
Innovation Areas:	• IA2: Edge processing • IA3: Data sharing architecture and data governance • IA5: From data assimilation to service development • IA6: Privacy-preserving technology • IA7: Data integration methodologies
Deployment of Innovative Approaches:	• Data coming from phenological observation stations will be combined with weather stations, soil sensors and machinery. • AI algorithms and data fusion/integration will be implemented to: • Estimate the probability of occurrence of pests. • Identify pests on the fields. • Integration into a national Pest Signaling System to enable early detection of pest infestation in given regions.
Areas of interest:	• Belgium • France • Germany
Targeted crops / products:	• arable (wheat, rye, rape, maize, sugar beet)
Pilot fields of 1st iteration	• 5 regions over Europe
Main Inputs: i. Sensor data	• Observation stations • Meteo sensors
Main Inputs: ii. EO data to be exploited:	
Main Inputs: iii. In-situ, and other data	• Field observations regarding pest infestations
Main outputs:	• Statistical data on the accuracy of observations of the occurrence of agrophages • Improved predicted agrophage occurence data based on geolocation. • Predicted overall level of agrophage occurence risk for the selected region.

2.2.5 RIL3 Yield Monitoring

Lead / Partners:	**VITO / UGent, AVR BVBA, CNH**
Challenges and objectives:	Harvesters are an invaluable source of information on crop productivity, given the detailed information on the actual yields they record, as well as the extensive coverage at which they are already operational throughout the EU. The main

	objective is to unlock the potential of these data for European-wide yield monitoring. To this end, two key issues will be addressed, namely (1) enabling the access to these often very scattered data, while respecting the privacy of the owners of these data (farmers), and (2) translating these data in a yield monitoring tool at different scales throughout the EU, taking into account the different growing conditions. This will enable the monitoring of crop productivity over larger scales, providing essential information on food availability and enabling benchmarking the productivity over regions and between years
Innovation Areas:	• IA3: Data sharing architecture and data governance • IA5: From data assimilation to service development • IA6: Privacy-preserving technology • IA7: Data integration methodologies
Deployment of Innovative Approaches:	• Enable the accessibility to harvester data [CNH, AVR] through a data sharing architecture with a sound data governance plan. • Turning yield variability data into essential information on where growth conditions were suboptimal, to the benefit of the farmers, using the Digital Twin concept from section [UGent]. • Setting up a flexible ML-based yield estimation model [VITO], that makes use of EO products (veg indices, SOC, etc.), weather and harvester data from the current growing season. • Privacy preserving AI-technologies will be used as the base model depending on the architecture that will be technically feasible.
Areas of interest:	• Belgium • Finland
Targeted crops / products:	• Wheat • Potatoes
Pilot fields of 1st iteration	• ~ 100 wheat pilot parcels in Belgium with an estimated total extend of 500 ha. • ~ 200 potato pilot parcels in Belgium with an estimated total extend of 1,000 ha. • 4 wheat fields in Finland with an estimated total extend of 50ha.
Main Inputs: i. Sensor data	• AVR harvester yield sensor recording potato yield. • AVR harvester recording machine parameters (traction, fuel usage,...). • CNH harvester yield sensor recording wheat yield. • CNH harvester recording machine parameters. • Weather stations recording weather data (Smart Farm sensor). • Soil scanner measuring soil data (EC, soil sample analysis: pH, EC, T°, RH, NPK). • Crop scanner measuring crop data (CNH CropScanner, Raven/Augmenta).
Main Inputs: ii. EO data to be exploited:	• Sentinel-2 products (NDVI, LAI, fAPAR, Fcover, RGB) providing input for crop yield estimation acquired by ESA SCIHUB and processed by VITO. • Sentinel-1 - Sentinel-2 products (CropSAR Fapar) providing input for crop yield estimation acquired by ESA SCIHUB and processed by VITO. • Terrascope Phenology data providing information on start, peak, end of season. Acquired by ESA SCIHUB and processed by VITO. • Terrascope Phenology data providing information on emergence. Acquired by ESA SCIHUB and processed by VITO. • Terrascope Phenology data providing information on harvest. Acquired by ESA SCIHUB and processed by VITO. • Evapotranspiration data, providing input for crop yield estimation acquired by DHI. • Soil moisture data, providing input for crop yield estimation acquired by DHI.

Main Inputs: iii. In-situ, and other data	• Soil texture data acquired by public data layers. • Soil type data acquired by public data layers. • Crop cultivar acquired by farmers via WatchITgrow. • Planting density acquired by farmers via WatchITgrow. • Usage of pesticides and fertilizers acquired by farmers via WatchITgrow.
Main outputs:	• Yield variability maps (pixel-based). • Field level yield estimates. • Regional yield estimates. • Provide methods to use harvester data to improve yield estimates. • AVR yields from harvesters. • CNH yields from harvesters.

2.2.6 RIL4 Soil Health

Lead / Partners:	**EV ILVO / AUTH**
Challenges and objectives:	Productive soils are the foundation of almost any farming system and their protection is of paramount importance for achieving a climate-neutral EU by 2050 (F2F strategy and EU Soil mission). Despite the progress achieved in soil monitoring applications, the adoption of ICT solutions in support of variable rate fertilization (VRF) is still not optimal. This is partly because delays due to transmission link and computation are often not considered when deciding to proceed with an off-loading process. The adoption of the technology has been further hindered by a lack of trust (e.g. poor performance of existing systems) due to an insufficient spectral and spatial resolution. In this context, the Soil Health RIL aims to deliver EO-based products on soil health assessment, and edge-driven services in support of automating decision support for soil-related management applications.
Innovation Areas:	• IA1: Innovative sensor technology • IA2: Edge processing • IA3: Data sharing architecture and data governance • IA6: Privacy-preserving technology • IA7: Data integration methodologies
Deployment of Innovative Approaches:	• Mount hyperspectral sensors on different platforms (tractors, UAVs, robotics) to increase the mapping ability on different soil parameters. • Application of edge computing to ensure high data quality while at the same time minimizing the size of information transmitted to the cloud by different platforms or farmers (handheld sensors), enabling more real-time feedback. • Use of Federated AI to topsoil Soil Organic Carbon (SOC) model building at regional and national level. • Combine sensor data with satellite images to produce an optimal estimate of soil parameters. • Apply innovative standardization processes in the development of soil health products that rely on satellite data to increase interoperability, data sharing and reuse.
Areas of interest:	• Flanders (Belgium) • Central Macedonia (Greece)
Targeted crops / products:	• Potato • Mixed crops

Pilot fields of 1st iteration	•	20 potato pilot fields in Belgium with an estimated total extend of 55 ha.
Main Inputs: i. Sensor data	•	Hyperspectral sensors recording absorbance values of surface for hyperspectral bands.
Main Inputs: ii. EO data to be exploited:	• •	Hyperspectral data recording reflectance values of surface for hyperspectral bands, acquired by Hyperfield from KUVA. Copernicus Sentinel-2 data recording reflectance values of surface, acquired by Conventional Data Access Hubs.
Main Inputs: iii. In-situ, and other data	• •	Soil data related to soil Texture and soil Associations. Soil measurements (in situ): laboratory analysis data on soil properties.
Main outputs:	• • •	EO based regional Soil Organic Carbon maps. Soil health indicator estimates at field level. Methodology on federated AI and IoT sensor data for EO-based product development.

2.2.7 RIL5 Grasslands

Lead / Partners:	**IFAPA / EURAC, DME**
Challenges and objectives:	Regular monitoring of grasslands productivity is important for a sustainable use of their resources and understanding how ongoing and predicted extreme events impact their productivity and the adaptations needed in their management. The overall objective of this RIL is to develop biomass products specifically tailored to grassland ecosystems, using ground sensors and state-of-the-art data fusion technologies to make the most out of optical and radar satellite data for the derivation of grassland biophysical parameters. In addition, this RIL will collect spatially distributed ground sensor observations of grassland quantitative traits, which are seldom available, for the validation and/or calibration of biomass and biophysical parameters. The output will be used to provide technical recommendations to farmers to make better management decisions, and will inform index-based drought insurance, letting farmers protect their income from yield losses, avoiding land abandonment and the related consequences on landscape conservation, soil quality, and biodiversity.
Innovation Areas:	• IA3: Data sharing architecture and data governance. • IA4: Satellite data augmentation. • IA7: Data integration methodologies.
Deployment of Innovative Approaches:	• Fuse optical and radar data to improve the temporal resolution of grassland biophysical parameters (Biopars, fPAR and LAI) derived from Sentinel-2. • Optimize the Biopar data products to the local growing conditions by integrating local sensor data. • Estimate Gross Primary Productivity (GPP) through the integration of eddy covariance data, Sentinel-2, and Sentinel-1 using machine learning algorithms. • Estimate grasslands NPP with a biophysically based LUE model for grasslands using previously calibrated Biopars and meteorology.
Areas of interest:	• Southern Spain. • European Alps in the NE of Italy.

Targeted crops / products:	• Mediterranean grasslands. • Alpine grasslands.
Pilot fields of 1st iteration	• 10 sites of Mediterranean grasslands in Spain with an estimated total extend of 9 ha. • 8 sites of Mediterranean grasslands in Spain with an estimated total extend of 7.2 ha.
Main Inputs: i. Sensor data	• Flux towers providing continuous CO2/H2O measurements. • Weather stations recording meteorological variables (Ta, u, win dir, Radiation). • Soil probes measuring soil moisture and soil heat flux. • Sensors measuring fPAR and LAI.
Main Inputs: ii. EO data to be exploited:	• Sentinel-2 MSI L2A reflectance acquired by ESA scihub and processed by EURAC. They will provide information regarding the estimation of grassland biophysical parameters. • Sentinel-1 backscattering acquired by ESA scihub and processed by EURAC. They will be used for developing a data fusion algorithm between Sentinel-1 and Sentinel-2. • Sentinel-2 NDVI acquired by ESA scihub and processed by IFAPA. They will provide information regarding Grassland Gross Primary Production. • Sentinel-2 and Sentinel-1 products acquired by ESA scihub and processed by DEIMOS. They will provide information regarding Grassland Net Primary Production.
Main Inputs: iii. In-situ, and other data	• In situ measurements of grassland biomass (green and dry), fPAR, LAI, heith, by IFAPA. • In situ measurements of Chlorophyll content, soil moisture, height, weight: in the field, dry, lodging, date, and number of mowing events, by EURAC • LUE model output estimating grasslands biomass, by IFAPA. • Ground measurements of grassland LAI and yield ground measurements, by IFAPA.
Main outputs:	• EO based regional LAI maps. • NPP and GPP estimates at field level.

2.2.8 RIL6 Sustain Dairy

Lead / Partners:	**ATB / DMK, OHB DS**
Challenges and objectives:	Fusion of EO data with agricultural parameters, considering animal feed-related crops production. Acquiring in-situ data from feed production up to measuring milk quality related data. Developing services for dairy farmers and their input producers to facilitate application of smart farming practices and agri-environmental monitoring. Reducing the amount of in-situ data required as a reasonable basis for planning and control, by correlating data with EO data. Those correlations shall enable monitoring, planning and control for areas lacking in-situ data. Involved end-users (i.e. farmers and Germany's largest dairy cooperative) aim at using and providing new services for the stakeholders along the dairy chain. Main challenge is to realize a solution combining data from diverse sources, facilitate validation of EO data (e.g. methane emissions) with the help of in-situ data and to provide analysis results based on related algorithms as

	well as to interpret KPIs to report on economic, environmental, and sustainability performance.
Innovation Areas:	• IA1: Innovative sensor technology. • IA2: Edge processing. • IA3: Data sharing architecture and data governance. • IA4: Satellite data augmentation. • IA5: From data assimilation to service development. • IA6: Privacy-preserving technology. • IA7: Data integration methodologies.
Deployment of Innovative Approaches:	• Data sets at hand (i.e. specifically milk quality and quantity data) shall be analyzed and correlated with indicators relevant for environmental performance of dairy farms (e.g. usage of pesticides, water, land). Measuring performance using Earth Observation Data (EOD) based on regional in-situ data correlation. • Adopting models facilitating forecasting and simulation, making use of Machine Learning (ML), facilitating model adaptation for different optimality criteria and for scaling towards extended usage of EO data in other regions. The RIL aims at combining data from dairy farmers, arable/crop, feed producers and dairy sales projections. • Upcoming EnMAP data shall be tailored and processed, facilitating access and adaptation to related data models, investigating potential synergies with services from the OHB data platform.
Areas of interest:	• North & Northeast Germany • Regions in the Netherlands
Targeted crops / products:	• Dairy farms specifically with grass land
Pilot fields of 1st iteration	• N/A (data is aggregated over whole regions, individual fields are not yet observed)
Main Inputs: i. Sensor data	• Grass yield data, like harvested amount and humidity. • Data from forage harvesters, aggregated over geographical regions.
Main Inputs: ii. EO data to be exploited:	• Sentinel 2 data acquired by ESA SciHub, providing information on the development of available Biomass on dairy farmers fields, specifically grass land. • Hyperspectral data acquired by EnMAP Portal, providing information on the development of available Biomass on dairy farmers fields, specifically grass land.
Main Inputs: iii. In-situ, and other data	• Milk quantity & quality data derived by laboratory analysis data and milk delivery details.
Main outputs:	• Expected deviation of milk quality & quantity. • Regional productivity of dairy farms. • Yield estimates at regional level.

3 Procedures for Piloting, Reporting, Troubleshooting and Decision-making

To make sure that the six Research & Innovation Labs (RILs) will be implemented successfully and achieve the maximum potential impact, clear and efficient procedures for monitoring, recording and progress evaluation will be established.

To clarify the procedures and the implementation of the guidelines, several documents have been prepared. An overview and description of the procedures as well as the relevant documents are provided in the following sections.

3.1 RILs Governance Structure, Roles and Decision-making

In order to establish clear decision-making and to facilitate communication with each RIL, a clear structure has been established for each RIL of the ScaleAgData project. This common structure is presented in the following figures: Figure 3 corresponds to RILs with Sub RILs and Figure 4 to RILs without Sub RILs. The number of participating members may vary depending on each RIL.

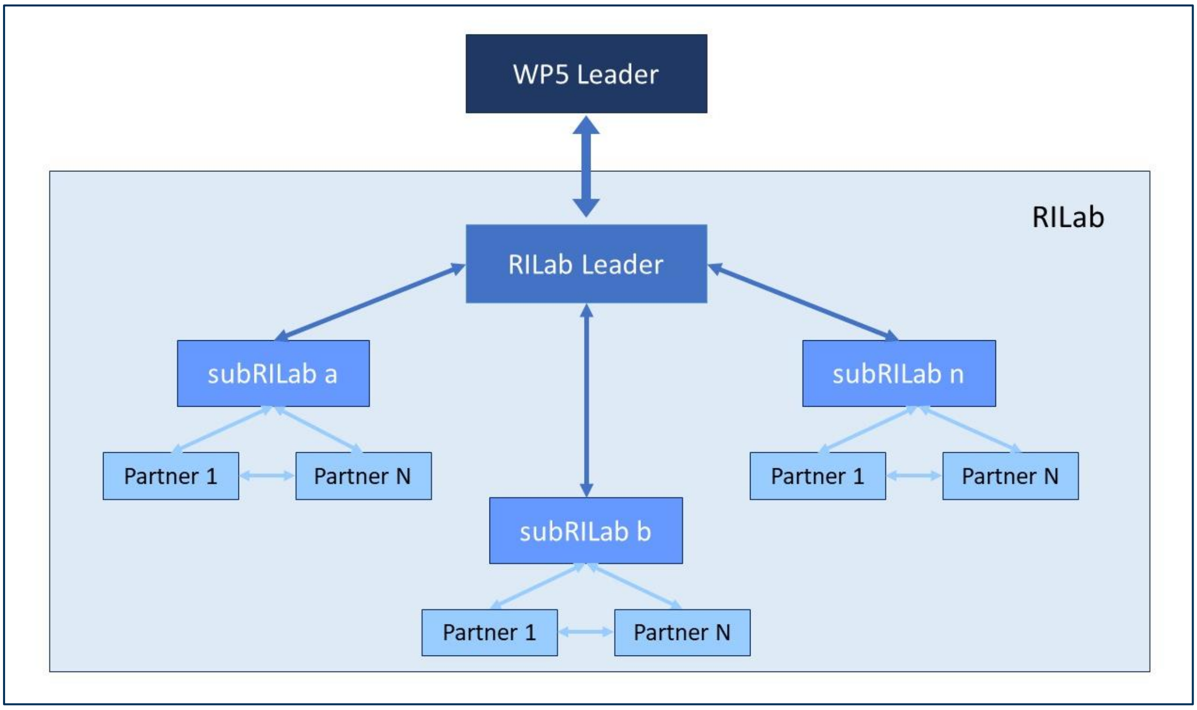


Figure 3a Overview of the structure of RILs with Sub RILs.

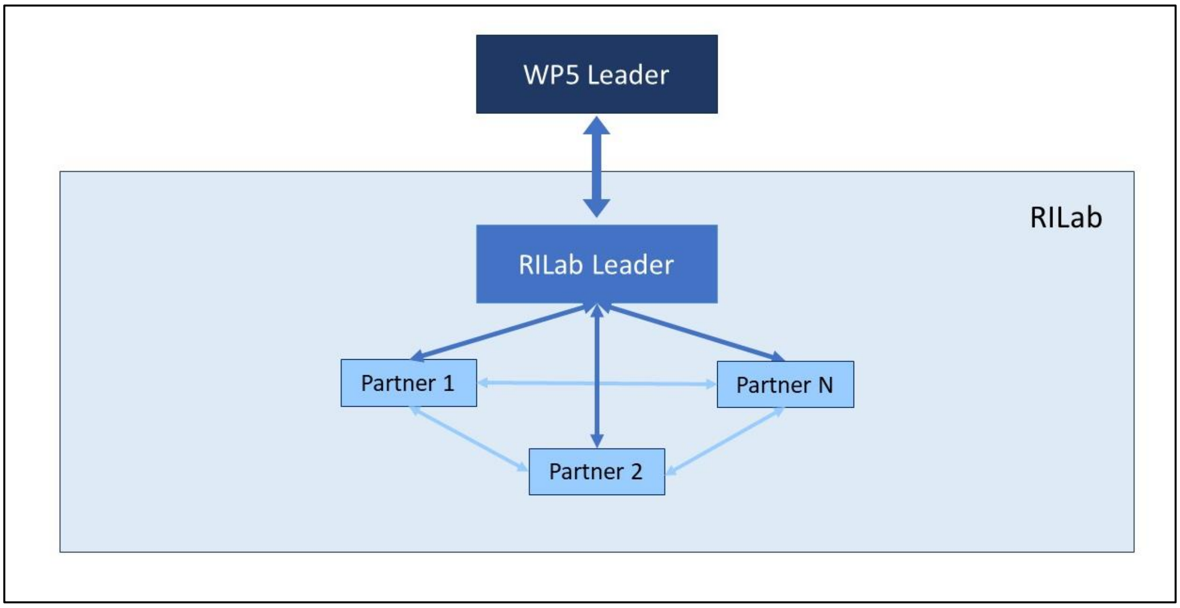


Figure 4 Overview of the structure of RILs without Sub RILs.

As presented in Figures 3 and 4, the overall WP5 and RILs structure includes the following roles.

WP5 leader: The WP5 leader (Neuropublic) is responsible for ensuring the proper functioning of the work package, as well as leading all aspects related to the supervision and monitoring of the different RILs with the help of the Task Leaders. In this sense, the WP5 leader and Task leaders will oversee the coordination of the execution of all RILs in close collaboration with WP2, WP3 and WP4. It is especially important to search for synergies, common challenges and solutions that can affect all RILs in terms of the economic, environmental, and social impact of the project along the agri-food value chains.

RIL leader: The RIL leader will be responsible for coordinating the partners of the RIL. Therefore, the RIL leaders must seek to ensure that each activity carried out is aimed at achieving the specific objectives of the RIL and its contribution to each sustainability dimension. At proposal stage, each RIL defined its focus and prepared an initial detailed planning with respect to both the supply and the demand side, specifying most probable solution alternatives in terms of efforts and costs based on most recent state-of-the-art. However, since innovations are at a high pace, planning made in the proposal and kick-off phase may need updating.

Sub RIL leader: Some RILs include several Sub RILs. In this case, each Sub RIL is responsible for executing the activities that have been described in their plan for deployment of selected innovative approaches.

RIL partner: Each RIL consists of the RIL leader and different partners who actively participate in the activities of the RIL.

3.2 RILs Execution Plans and Timelines

Each RIL needs to keep in mind its main objectives and its plan for the deployment of their innovative approaches. This will support a successful Execution Plan and data collection, allowing effective monitoring and evaluation vis-a-vis what was planned.

Therefore, each RIL leader will have to establish an Execution Plan for the pilot of the RIL, which will include information regarding the first iteration of the project. This plan will be further developed for the second iteration, based on the outcomes and results of the first iteration. An overview of the Execution Plan is presented in Annex I and its main elements and structure are described more analytically in the following sub-sections.

3.2.1 Structure of the RILs Execution Plans

The RIL's Execution Plan provides an analytical overview of each RIL and its plan of action during the first iteration. It is a dynamic file that will be updated throughout the project. The information in the Execution Plan is organized horizontally and vertically (Figure 4).

Vertically, the Execution Plan is divided in three different sections based on the time phases of the project, according to the following.

- Phase 1 – Initial Phase of realizing the RILs:
  The first phase contains information regarding the planning of the work of each RIL.
- Phases 2 & 3 – Realizing the RILs:
  The second and the third phases contain information about the planned activities in the first and second iteration respectively.

The horizontal sections are thematic based, as presented in Table 1.

Table 1: Thematic sections of the Execution Plan.

1	Areas, crops/ products of interest and pilot parcels
2	Input data ,divided in three subsections: • Sensor data • Earth Observation (EO) data • Rest input data (in-situ measurements, etc.)
3	Deployment of innovative approaches: - Plan of deployment - Technical providers contributing to it and user stories of the RILs.
4	User stories and their requirements
5	Outputs of the RILs.
6	KPIs that indicate the impact of the RILs

Through the combination of the time phases and the thematic sections, the RILs Execution Plan is produced, and the overview of its structure is presented in Figure 5.

Figure 5. Overview of structure of Execution Plan.

3.2.2 Structure of the RILs Timeline

Based on the information that is included in the Execution Plan of each RIL, the timeline of activities is prepared, as presented in Figure 6 and Annex I. It is an important additional source of information, as it presents the time sequence of the activities of the RILs. In the template of the timeline, 7 major activities have been included. These will be adjusted by each RIL so as to outline its plan of work in the best way.

The major activities included in the template of the timeline are the following:

a. Preparatory activities
b. Data Collection
c. Data ingestion
d. Data processing / modelling
e. Data reporting
f. Data offering
g. Analysis of results & evaluation

These activities are further analyzed by each RIL and are split up into sub-activities. The sub-activities are activities that comprise a part of the major activities. For example, the activity "b. Data Collection" can be broken down to collection of sensor data, collection of EO data and collection of farm log data.

In each sub-activity included in the Timeline of a RIL, the main contributor and the participants in the execution of the sub-activity are defined. Also, the planed starting month and the estimated month of completion of each sub-activity are included in the timeline.

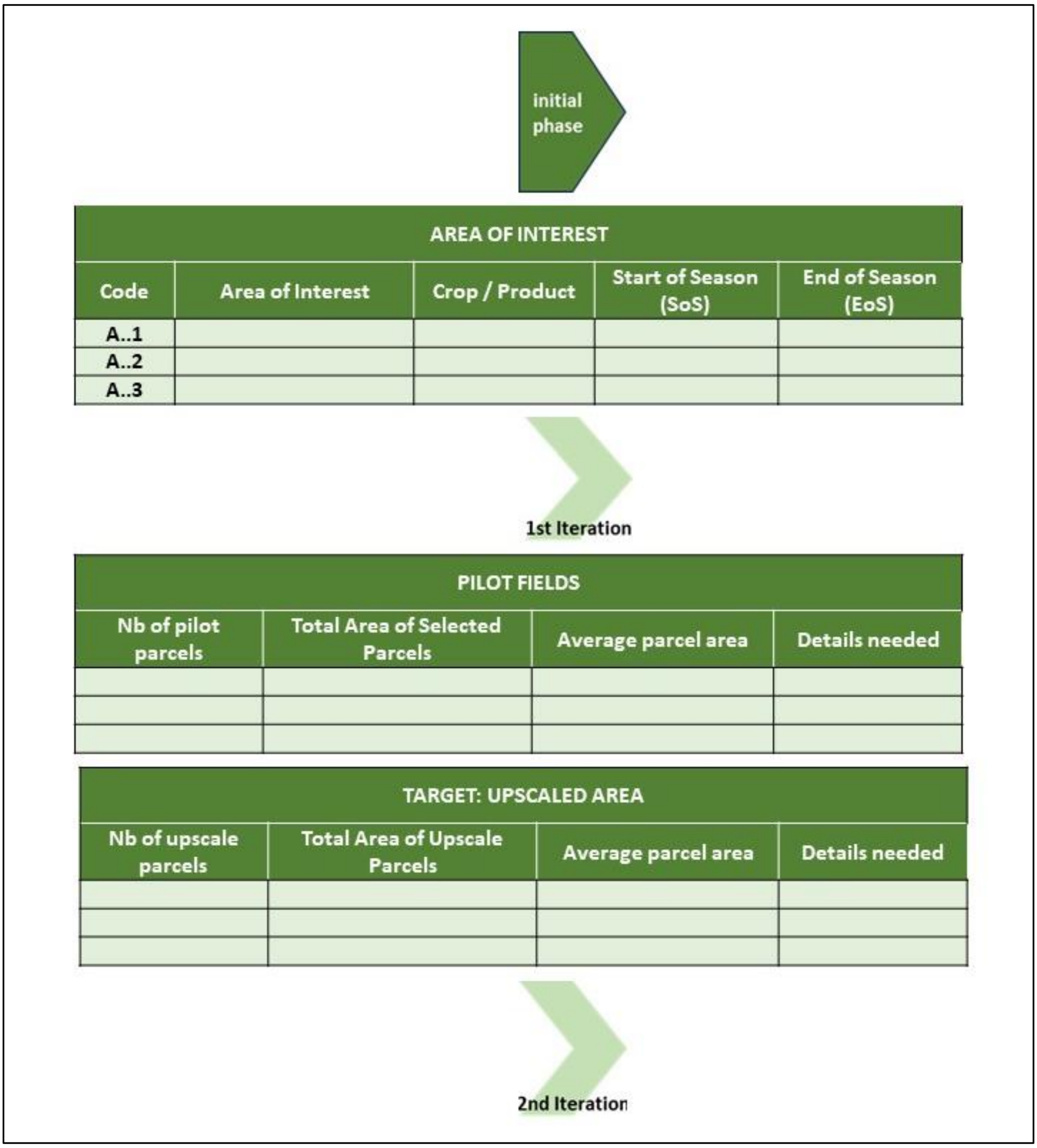
The Execution Plan and the timeline will be updated during the lifespan of the project and will contribute to meaningful monitoring of the progress of each RIL.

RIL xx	Activities	Main particpant	Contributors	2023												2024												2025												###										2026	
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
a	Preparatory activities																																																		
a.1																																																			
a.2																																																			
a.3																																																			
b	Data Collection																																																		
b.1																																																			
b.2																																																			
b.3																																																			
c	Data ingestion																																																		
c.1																																																			
c.2																																																			
c.3																																																			
d	Data processing / modelling																																																		
d.1																																																			
d.2																																																			
d.3																																																			
e	Data reporting																																																		
e.1																																																			
e.2																																																			
e.3																																																			
f	Data offering																																																		
f.1																																																			
f.2																																																			
f.3																																																			
g	Analysis of results & evaluation																																																		
g.1																																																			
g.2																																																			
g.3																																																			

Figure 6. RILs’ Timeline Template

3.2.3 Main elements in the RILs Execution Plans

The first thematic section of RILs' Execution Plans (Figure 7) is focused on the areas of interest and the crops or products that will be researched in each area of interest. Also, the start and end of season for each crop is mentioned, which is related to the task scheduling of the RILs. Furthermore, information on the pilot fields of the first iteration in each area of interest is included, such as the number of pilot fields, their total area, the average pilot parcels extend per area of interest and any details each RIL may consider important.



AREA OF INTEREST				
Code	Area of Interest	Crop / Product	Start of Season (SoS)	End of Season (EoS)
A..1				
A..2				
A..3				

PILOT FIELDS			
Nb of pilot parcels	Total Area of Selected Parcels	Average parcel area	Details needed

TARGET: UPSCALED AREA			
Nb of upscale parcels	Total Area of Upscale Parcels	Average parcel area	Details needed

Figure 7. First Section of Execution Plan

In the next thematic section of the Execution Plan, information regarding the input data of the RILs is included. This thematic section comprises of three sub-sections: sensor data, EO data and other type of input data. In Figure 8, the sub-section of RILs' sensor data is presented. It includes a brief description of the sensors each RIL will use, the data each sensor will provide, the number of already installed sensors and the RIL partner that will be responsible for each sensor type. Regarding the first iteration, more information is required including the number of sensors that will be installed and used, the plan for technological upgrade of sensors and the time priority of the upgrade. Lastly, the sub-activities that are related to sensor data are listed, such as the collection and the processing of sensor data, fusion with EO data and offering of sensor data. For each sub-activity, the programmed start and end month is provided, as well as possible dependencies or risks and solutions to the risks.

initial phase

EXISTING SENSORS				
Code	Description	Data recorded	Nb of installed sensors	Partner responsible
S..1				
S..2				
S..3				

1st Iteration

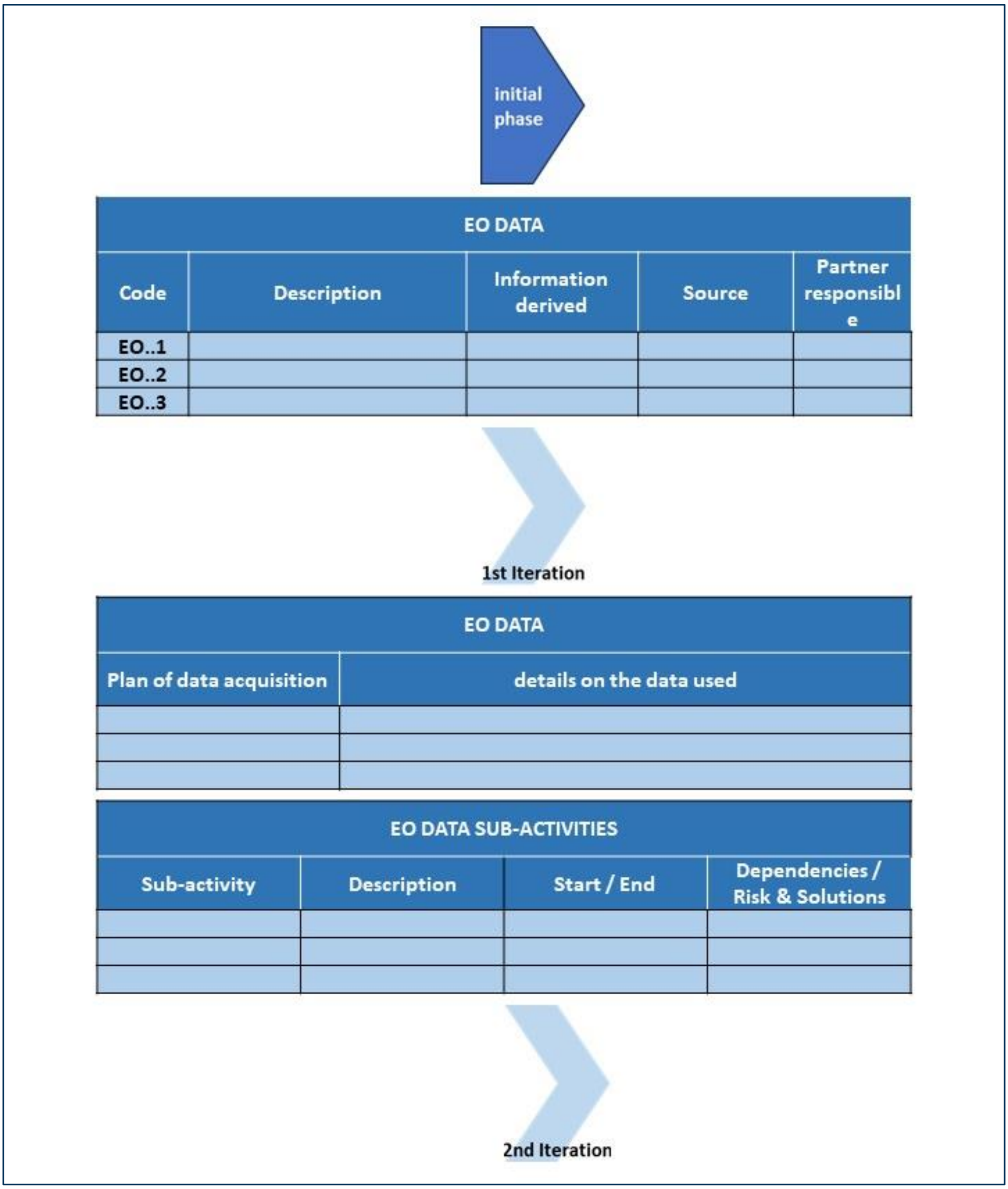
ENHANCED SENSORS			
Nb of sensors planned to be installed/ used	Data recorded	Plan for technology upgrade	Time priority of Upgrade

SENSOR DATA SUB-ACTIVITIES			
Sub-activity	Description	Start / End	Dependencies / Risk & Solutions

2nd Iteration

Figure 8. Sub-section of Execution Plan related to Sensor Data.

In the next sub-section of the Execution Plan (Figure 9), information is required about the EO data each RIL will utilize in its research. For every type of EO data, a brief description is provided, the information derived from them, their source and the RIL partner responsible for them. Regarding the first iteration, extra information is given about the plan of EO data acquisition and details on the data. Furthermore, the sub-activities that are related to EO data are listed, such as the collection and the processing of EO data, fusion with in-situ data and offering of EO data. For each sub-activity, the planned start and end month is included, as well as possible dependencies or risks and solutions to the risks.



EO DATA				
Code	Description	Information derived	Source	Partner responsibl e
EO..1				
EO..2				
EO..3				

EO DATA	
Plan of data acquisition	details on the data used

EO DATA SUB-ACTIVITIES			
Sub-activity	Description	Start / End	Dependencies / Risk & Solutions

Figure 9. Sub-section of Execution Plan related to EO Data.

In-situ measurements or any other type of input data are listed in the next sub-section of the Execution Plan, as presented in Figure 10. Information about the type of input, the data that is derived, their utility for the RIL and the RIL partner that is responsible for them is included. Concerning the first iteration, information about the plan of data acquisition and extra details about the data are given. Also, the sub-activities related to this input are listed, also including the start and end month of each sub-activity and the possible dependencies, risks, and proposed solutions.

initial phase

OTHER TYPE OF INPUT DATA				
Code	Type of input	Data	Utility	Partner responsible
I..1				
I..2				
I..3				

1st Iteration

OTHER TYPE OF INPUT DATA	
Plan of data acquisition	details on the data used

OTHER TYPE OF INPUT DATA SUB-ACTIVITIES			
Sub-activity	Description	Start / End	Dependencies / Risk & Solutions

2nd Iteration

Figure 10 . Sub-section of Execution Plan related to Rest Input Data.

The next section of the Execution Plan is related to the innovative approaches each RIL has selected that it will focus on. It comprises of two sub-sections: the first sub-section analyses the description of the deployment of the RILs' innovative approaches and the second is relevant to the technical providers that will contribute to this deployment. In Figure 11, the sub-section that is analyzing the deployment of the innovative approaches of the RILs is presented. It includes information on what each RIL is planning to deploy, the innovation areas it will focus on, the project's tasks that are relevant to each innovation area and the contributors to each task. Also, the sub-activities that are related to the deployment of the innovative areas are listed and for each task the planned start and end month for each sub-activity is included. Furthermore, the possible dependencies, risks, and proposed solutions to the risks of each sub-activity are included. Lastly, the deployment is evaluated based on the criteria each RIL will set and points for update are proposed.

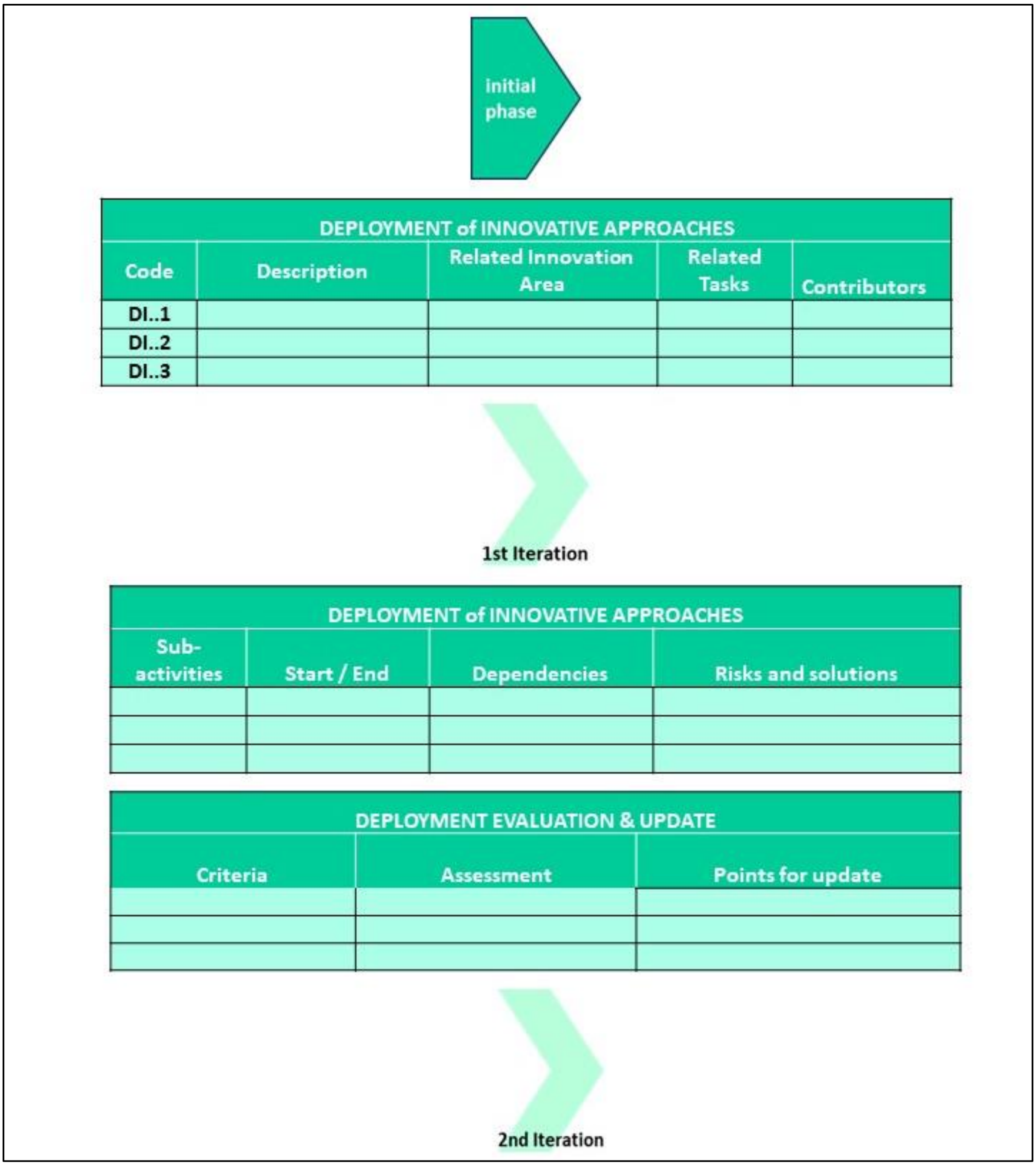


Figure 11. Deployment of the RILs' Innovative Approaches.

The next sub-section of the Execution Plan is related to the technical providers that contribute to the deployment of the innovative approaches of each RIL (Figure 12). It includes information about the description of the contribution of each provider and the time priority. Furthermore, for each provider the most relevant plan for deployment of innovative approaches and sub-activities are required and a brief description for the first iteration. Also, the criteria of evaluation, the assessment, and points for possible update of the contribution of each technical provider are included.

Initial phase

TECHNICAL PROVIDERS CONTRIBUTING to the RIL			
Provider	Description	Innovation Area	Time priority
XXX			
XXX			
XXX			

1st Iteration

TECHNICAL PROVIDERS CONTRIBUTING to the RIL		
Deployment of Innovation Area they contribute to	Sub-activities they are involved in	Risks & Solutions

EVALUATION & UPDATE		
Criteria	Assessment	Points for update

2nd Iteration

Figure 12. Section of Execution Plan related to the technical providers contributing to the RIL.

The next section of the Execution Plan is analyzing the user stories that the RILs developed during WP2 workshops that aimed at the description of the identification of the users' requirements. This section comprises of a sub-section where the RILs' user stories are described and a second sub-section where the requirements of the RILs' user stories are presented. In the user stories sub-section (Figure 13), firstly the user-stories are described, their acceptance criteria are given as well as their time priority. This information was provided by each RIL during WP2 workshops and should be updated accordingly by each RIL. Regarding the RILs first iteration, the sub-activities that are related to each user story, the possible dependencies, risks, and proposed solutions are required, as well as information related to evaluation of their implementation and points for update.

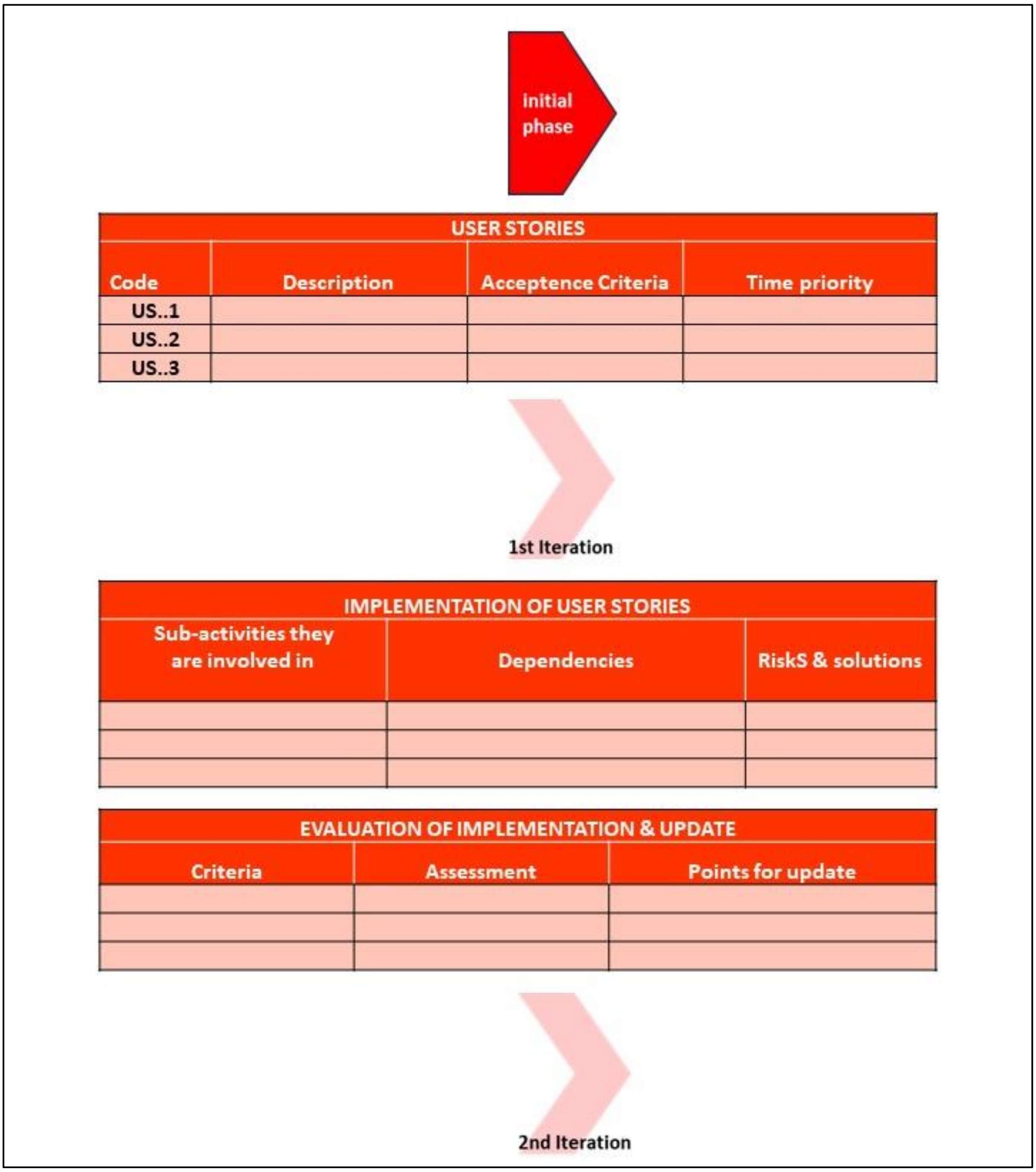


Figure 13. RILs User Stories.

The sub-section that analyses the general requirements of the RILs is presented in Figure 14. It includes a brief description of each requirement, the user story it is linked to and its time priority. Also, regarding the first iteration, extra information is required concerning the relevant deployment of approach each requirement is linked to and sub-activities it is involved in, as well as a possible risks and proposed solutions. Furthermore, information relevant to the evaluation and update of each requirement is included.

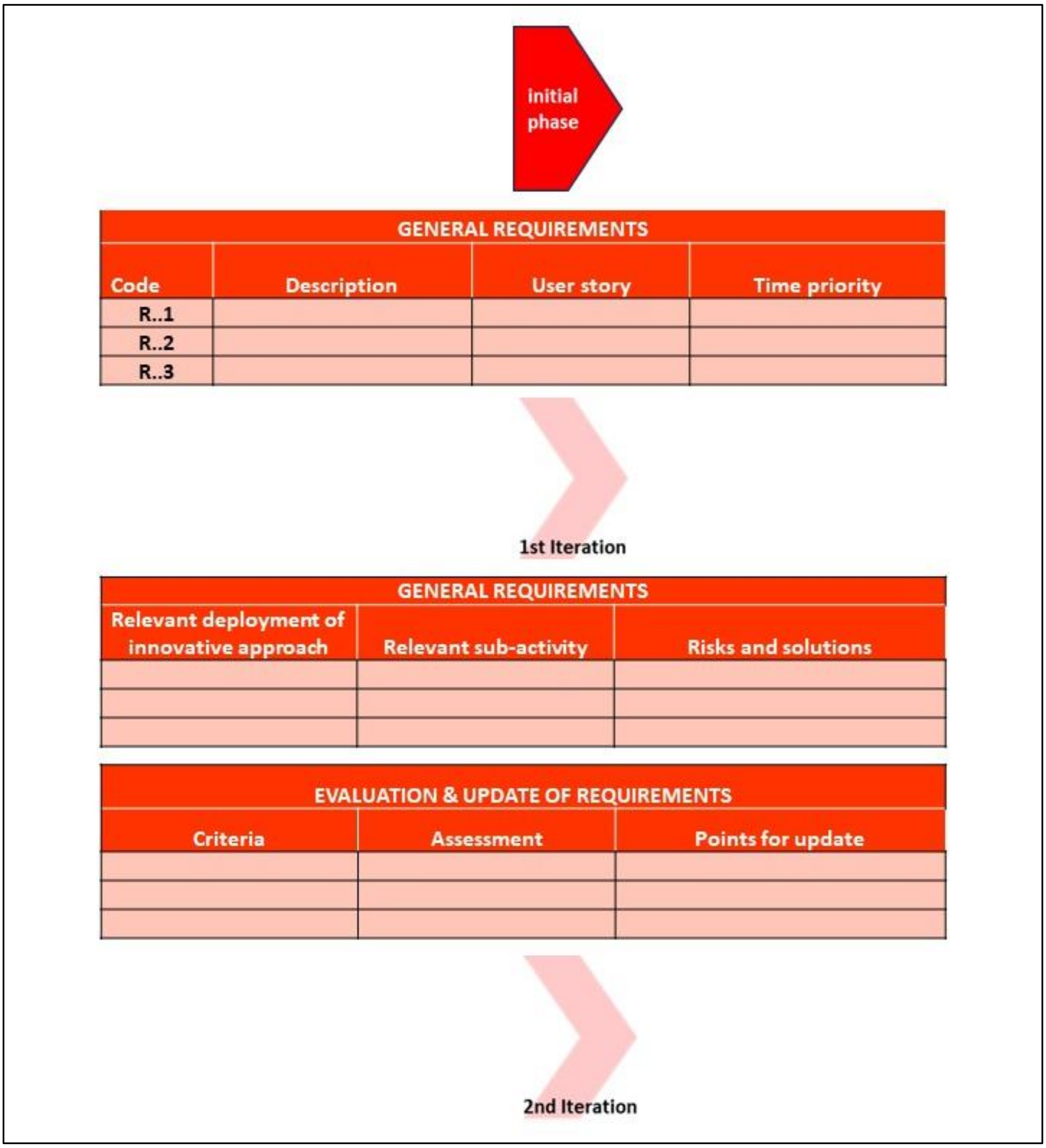


Figure 14. General Requirements of the RILs.

The next section of the Execution Plan is related to the outputs of each RIL and their possible usage (Figure 15). It includes a short description of each output, the RIL partner that is responsible for it, as well as the plan for deployment of innovative approaches and user story it is relevant to. Regarding the first iteration, the sub-activities related to each output, the estimated time of achievement, possible dependencies, risks and proposed solutions are also required.

initial phase

OUTPUTS & USAGE				
Output	Description	Partner	Deployment of Innovative Approaches	User Story
O..1				
O..2				
O..3				

1st Iteration

OUTPUTS & USAGE			
Sub-activities they are involved in	Estimated time of achievement	Dependencies	Risk & solutions

2nd Iteration

Figure 15. RILs Outputs.

In the last section of the Execution Plan, the KIPs of each RIL are presented (Figure16). For each KPI, a brief description is included as well as the RIL partner that is mainly responsible, the relevant plan for deployment of innovative approaches and user story. Concerning the first iteration, the target for each KPI and the estimated time of achievement is also included.

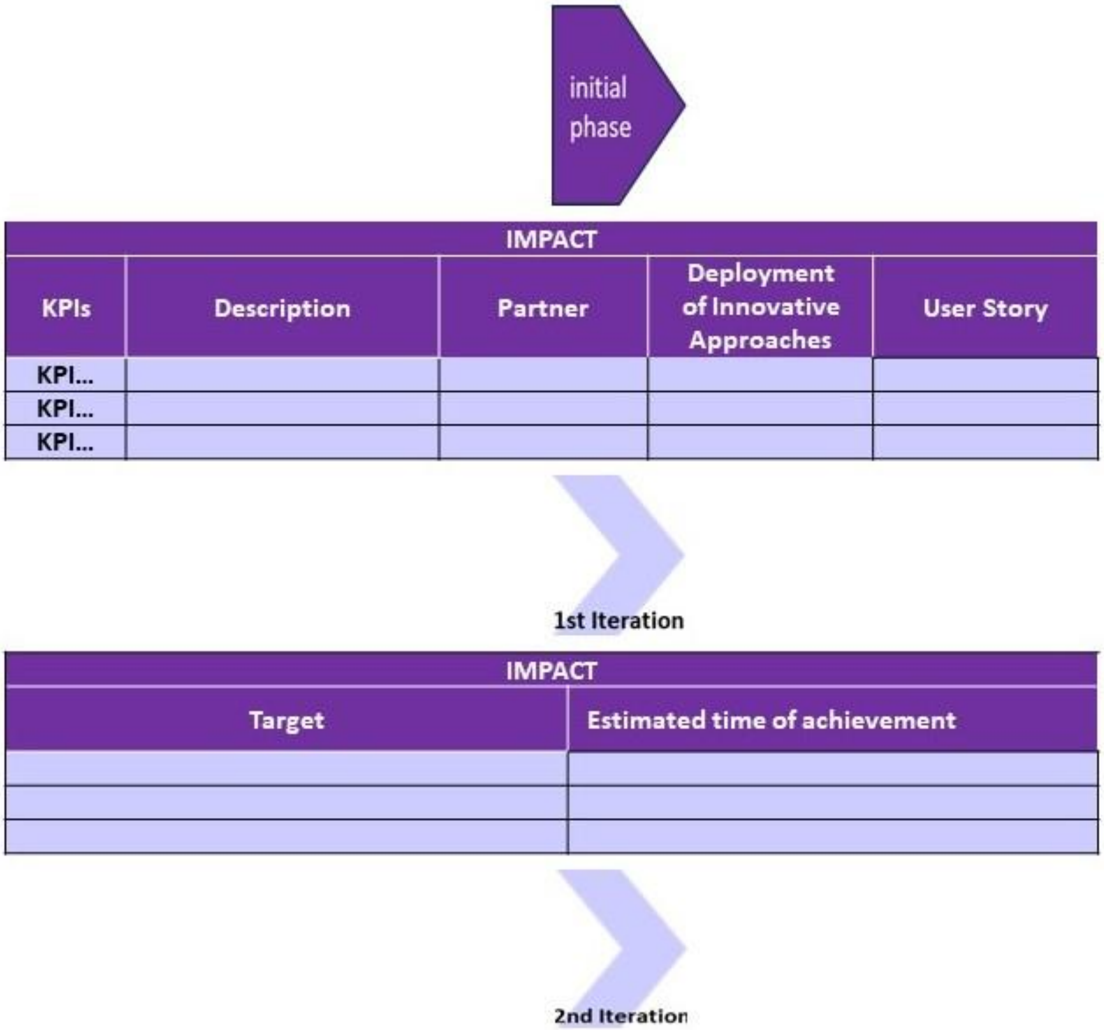


Figure 16. RILs KPIs

It is important to note that all the elements of the Execution Plans are coded and have a unique code for each RIL, according to the following approach (Table 2).

Table 2. Coding system of the Execution Plans

Element	**First letter of RIL**	**A/a**	**Final code**
AREA OF INTEREST (A)	W	1,2,3,,,	AW1,2,3,,,
EXISTING SENSORS (S)	W	1,2,3,,,	SW1,2,3,,,
EO DATA (EO)	W	1,2,3,,,	EOW1,2,3,,,
INPUT, OTHER TYPE (I)	W	1,2,3,,,	IW1,2,3 …
REQUIREMENTS (R)	W	1,2,3,,,	RW1,2,3..

DEPLOYMENT OF INNOVATIVE APPROACHES (DI)	W	1,2,3,,,	DIW1,2,3…
USER STORIES (US)	W	1,2,3,,,	USW1,2,3…
OUTPUT (O)	W	1,2,3,,,	OW1,2,3…

The only elements that are not coded like that are Technological Providers and KPIs, which have a common coding for all RILabs. Technological Providers are coded through the name of the provider. The KPIs are coded as described in Section 3.4 and the KPIs template is included in Annex IV.

3.3 Monitoring and Reporting

In order to make sure that everything is running smoothly, that issues are identified in time and that needed mitigation and troubleshooting actions are performed, a monitoring process will be established. The defined process is based on regular meetings during which a Progress Report will be filled out aiming at monitoring and troubleshooting.

3.3.1 Regular Meetings for Monitoring and Troubleshooting.

Due to the large number of partners in the project, WP5 related meetings will be scheduled ahead of time and will take place at two levels: Task Leader-RIL Leader and RIL Leader-Sub RILs and / or RILs Partners. However, depending on the needs of each RIL, it will also be possible to arrange meetings where the Task Leader, the RIL Leader and the RIL's partners participate.

3.3.1.1 Meetings between Task Leader and the RILs / Sub RILs Leaders

These meetings will take place monthly starting from January 2024 and their concept is presented in Figure 17.

In each RIL meeting, the RIL leader should participate and if it is considered helpful the RIL partners can also participate. These meetings will be managed by Task 5.2 Leader and WP5 Leader (NP). The frequency of the meetings can be changed to once every two months during the project if decided that this serves best the RILs' needs.

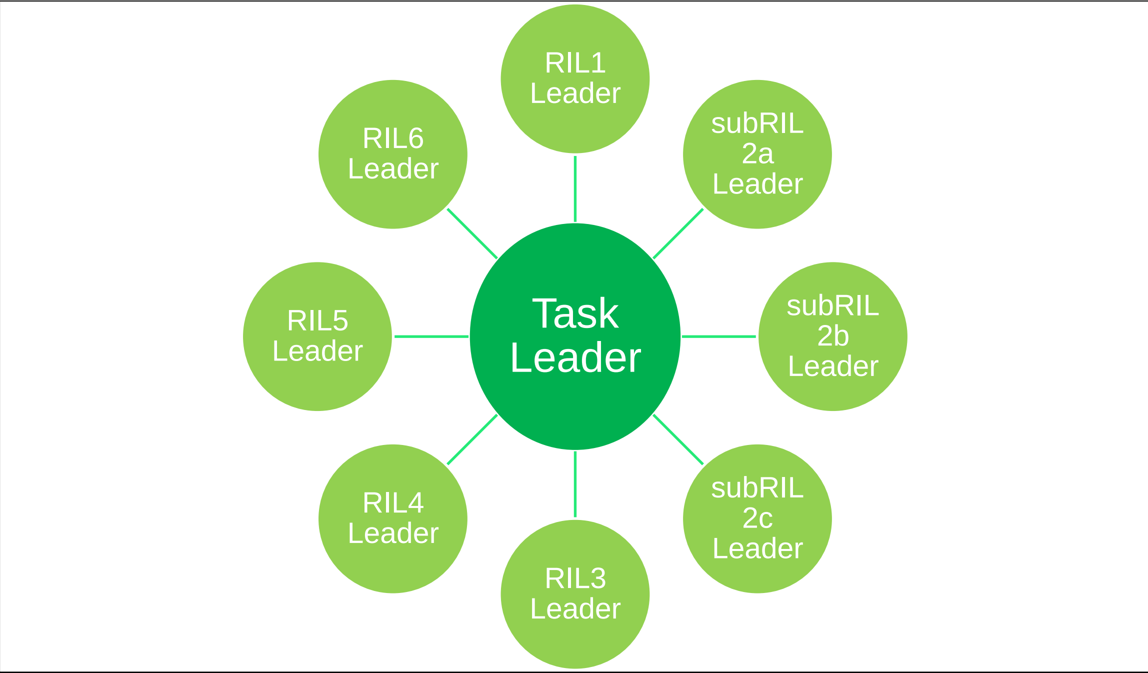


Figure 17. Concept graph of the RIL follow-up meeting with Task Leader.

The scope of these meetings is:

- Intra- and inter-RILs interactions and synergies.
- Discuss challenges and potential solutions during RIL implementations or evaluations, as well as seeking synergies (of solutions) among RILs.
- Actively monitor progress KPIs, supporting periodic evaluation of the RILs.
- Gathering information and experiences from all RILs for the methodology update regarding the second iteration and the compilation of the replication guidelines.

3.3.1.2 Meetings between (Sub) RIL Leader and Partners

The frequency of these meetings will be decided by the RIL or Sub RIL Leader and its partners according to the needs of each RIL (Figure 18). Both the RIL leader and all the partners involved in the RIL must participate in this meeting. Nevertheless, the RIL Leader could organize specific meetings with any of the partners to solve a specific issue.

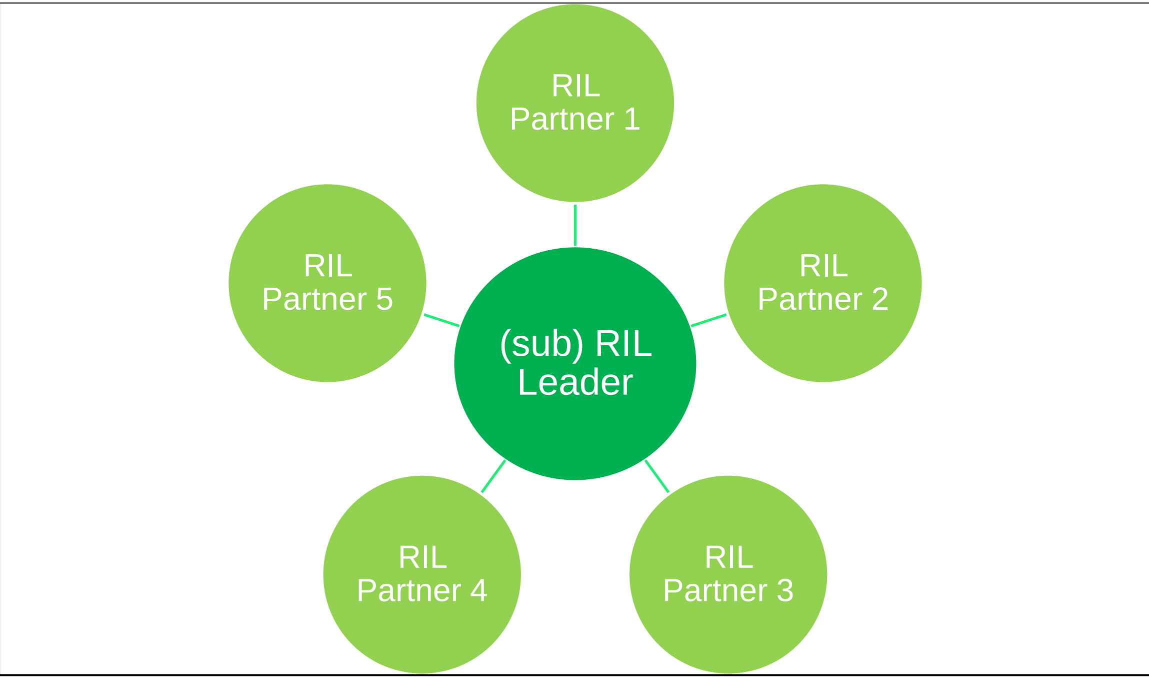


Figure 18. Concept graph of the internal RIL meeting.

The scope of these meetings is:

- Coordination of all partners within the RIL, including implementation.
- Sharing of and reporting on status of the activities, including detailed planning, challenges, risks, and solutions
- Assuring constant KPIs evaluation for each RIL.

In addition, the RIL leaders are also members of the Executive Board which currently convenes on a regular basis. In this forum the RIL leaders can also share updates with all the WP leaders as well as the coordinator. To ensure close communication between RI Labs and other WPs, RIL leaders participate in the project Executive Board regular meetings as members of the Executive Board. In this forum, RIL leaders share updates with all WP leaders and the coordinator.

3.3.2 Meeting Schedule

The following table presents an overview of the meetings' schedule.

Table 3. RIL meetings schedule.

Type of Meeting	Frequency	Means
Meeting between Task leader and the different RILs leaders	Monthly or every two months	Online meeting
Meeting between RIL leader and partners inside each RIL	Monthly or based on needs	Online or face2face meeting
ExBo meeting	Monthly or every two months	Online meeting

3.3.3 Meeting Documents

For the meetings between the Task Leader and the RILs, a draft meeting agenda will be prepared by the Task Leader and will be shared with participants seven calendar days in advance of the meeting. The agenda will be an online dynamic file, as it will be updated in real time, and it will be prepared following the template of Annex III. The final content of the agenda will be jointly created during the meeting to ensure that the agenda reflects the priorities and concerns of all participants.

After the meeting, the Meeting Minutes will be prepared and distributed within seven calendar days following the meeting by the Task Leader of T5.2 following the template of Annex III. The Meeting Minutes template is also maintained within the project Teams folder and all Meeting Minutes of all nature will be uploaded at the document repository. The minutes (or a corrected version of them) shall be considered as accepted within fifteen calendar days from distributing them, provided that no partner has sent an objection in writing. All decisions become binding after they have been recorded in the Meeting Minutes and the Meeting Minutes are accepted.

3.3.4 Progress Reporting and Monitoring Modifications

Following the regular monitoring meetings, a Progress Report will be filled out by the RILs, providing an update on the progress of their work and the active sub-activities during the reporting period following the template of Annex II (Figure 19).

More analytically, an update on the progress of each RIL will be provided concerning each sub-activity that was ongoing during the reporting period under the defined major activities. The name of the sub-activity must be provided, as it is mentioned in the RILs timeline, as well as the name of the major activity the sub-activity is part of. Also, a short description of the progress of the sub-activity, and the main contributors to it need to be included. Furthermore, it is important to mention possible risks, or dependencies, that have been identified, as well as to describe proposed solutions to the risks, if any.

In the Progress Report, information regarding possible collaborations with other RILs or external collaborations with other projects or initiatives will be provided. This information includes key elements of the collaborations such as the nature of collaboration, joint efforts, and notable achievements.

Finally, the progress in the achievement of each RIL’s KPIs will be included in the Progress Report. For each KPI, it’s code is required, the sub-activity that is linked to the achievement of the KPI, RIL partners involved in it and a short description.

Any possible modifications regarding the elements included in the RILs’ Execution Plans (e.g. any changes, additions or deletions in activities, participants, timing, user story/requirement etc.) must be monitored and listed in a specific sheet included in the excel file of the Execution Plans (Figure 20).

The preparation of the RILs Progress Reports and the update of the Execution Plans with possible modification will be monthly, within 7 calendar days from the RILs monitoring meetings.

<table>
<tr><td colspan="2">Partner Organization name: [Please enter the partner organization name]

Contact Person: [Please provide the name of the contact person]</td></tr>
<tr><td>RIL Activity Progress</td><td>RIL sub-activities

[Please add information about on-going activities during the reporting period]
● Name of the sub-activity
● Name of major activity the sub-activity is part of
● Short description of the sub-activity
● Main contributors of the sub-activity
● Possible risks / dependencies / proposed solutions</td></tr>
<tr><td>Collaborations</td><td>Collaborations with other RILs – external collaborations

[Please provide details of collaborations (if any) with other RILs: Identify the RIL and include key details on the nature of collaboration, joint efforts, and notable achievements)]

External collaborations

[Please provide details of external collaborations (if any) with other initiatives and / or projects: Identify the project or initiative and include key details on the nature of collaboration, joint efforts, and notable achievements]</td></tr>
<tr><td>KPIs</td><td>Please provide details of KPIs that have been achieved during the reporting period.
● Code of KPI
● Sub-activity linked to KPI
● RIL partners involved.
● Short description</td></tr>
</table>

Figure 19. Progress Report Template.

Month	Code	Justification

Figure 20. Monitoring RILs modifications in Execution Plans

3.4 KPIs Monitoring, Evaluation, and Impact Assessment

The monitoring of the achievement of the KPIs will be accomplished through a file which will be prepared from the information that all RILs will provide about their goals. This file is organized in three sections, whereby KPIs are grouped based on their relation to objectives of the project, to an impact or to dissemination activities. The template of the KPIs monitoring file is attached to Annex IV. This file contains all the KPIs of the project and each RIL is expected to indicate the KPIs that are relevant to their work and include it in their Execution Plan in the corresponding section (Figure 16).

Based on the feedback of the RILs, the Task Leaders of T5.2 and T5.3 will update the KPIs monitoring file, adding information about the targets that each RIL has set for its selected KPIs. After all the RILs have provided their input, a first version of the file will be produced, and it will be possible to estimate the exact percentage of achievement of the selected KPIs. The updated KPIs monitoring file will be presented and discussed during the ExBO meetings of the project.

The KPIs monitoring file will be updated monthly by T5.2 and T5.3 Task Leaders regarding the selected KPIs of the RILs, based on the information that is provided by the RILs on their Progress Reports and Execution Plans. As a result,, it will be possible to monitor and evaluate the progress of the RILs considering the achievement of the selected KPIs' and collected reports. Through this, also impact assessment will be achieved and the possible delays and other issues will be identified throughout all phases of the project.

4 Communication Channels

The consortium consists of twenty-six project partners based in fourteen different countries across Europe as well as Israel, making it important to establish specific guidelines with regards to communication channels. Therefore, the main communication channels that will be utilized during WP5 activities are specified below:

- SharePoint of the project: Platform which will be used to share all the information related to the ScaleAgData project between the members.
    - Table with information contact of partners, RILs leaders and WPs leaders.
    - Specific folder for each RIL and task.
    - Templates to use for monitoring, and reporting the RILs (Meeting Agenda, minutes of the meetings, Execution Plan, Progress Report and KPIs).
    - Presentations shown in the meetings, as well as webinars or recorded meetings.
    - Other important documents and reports of the RILs.
    - In addition, a specific folder has been created for each RIL in the SharePoint. This will facilitate the RILs' partners collaborating and sharing activities during the preparation of their Execution Plans, Progress Reports and any other shared document may be needed.
- Microsoft Teams, Google Meet, Webex, Skype: Any kind of similar platform could be used for the majority of the aforementioned project meetings, due to the impossibility of having numerous physical meetings. The coordination and the set-up of the meetings can be done using doodles or timesheets.
- Emails: These will be used for daily and frequent communications, as well as for documentation and information exchange.

In addition, it is necessary to make clear that the overall information flows within the project will be ensured by the following means / guidelines:

- Activities like exchange of information, internal technical and business documents (i.e. Meeting Minutes), technical documentation generated by the project, notifications of relevant new publications, reports from external / bilateral meetings (if any), notifications of the consortium of any updates from the relevant standardization bodies, are foreseen to occur in electronic format via the project's web based repository (SharePoint) as well as by email. For each document upload the consortium will be notified by email.
- Urgent correspondence over email will be sent with a request for explicit acknowledgement and indicated in the title with "URGENT".
- Ordinary email will be used for strictly formal correspondence, i.e. when executive signatures are required.

5 Upcoming Activities

Starting from January 2024, a monthly meeting will be organized between the Task 5.2 and WP5 leader and the RIL leaders in order to finalize the Execution Plans and ensure that activities regarding the first iteration are up and running. During the first six months, there will be monthly meetings and each RIL will provide input on their activities through the Progress Report. After that period, the frequency of the meetings can be changed to every two months but there still will be a monthly update on the Progress Report. As the first iteration will be nearing its completion, the activities, and the results of each RIL will be summed up and evaluated in the first version of the Deployment and Evaluation Report (D5.2).

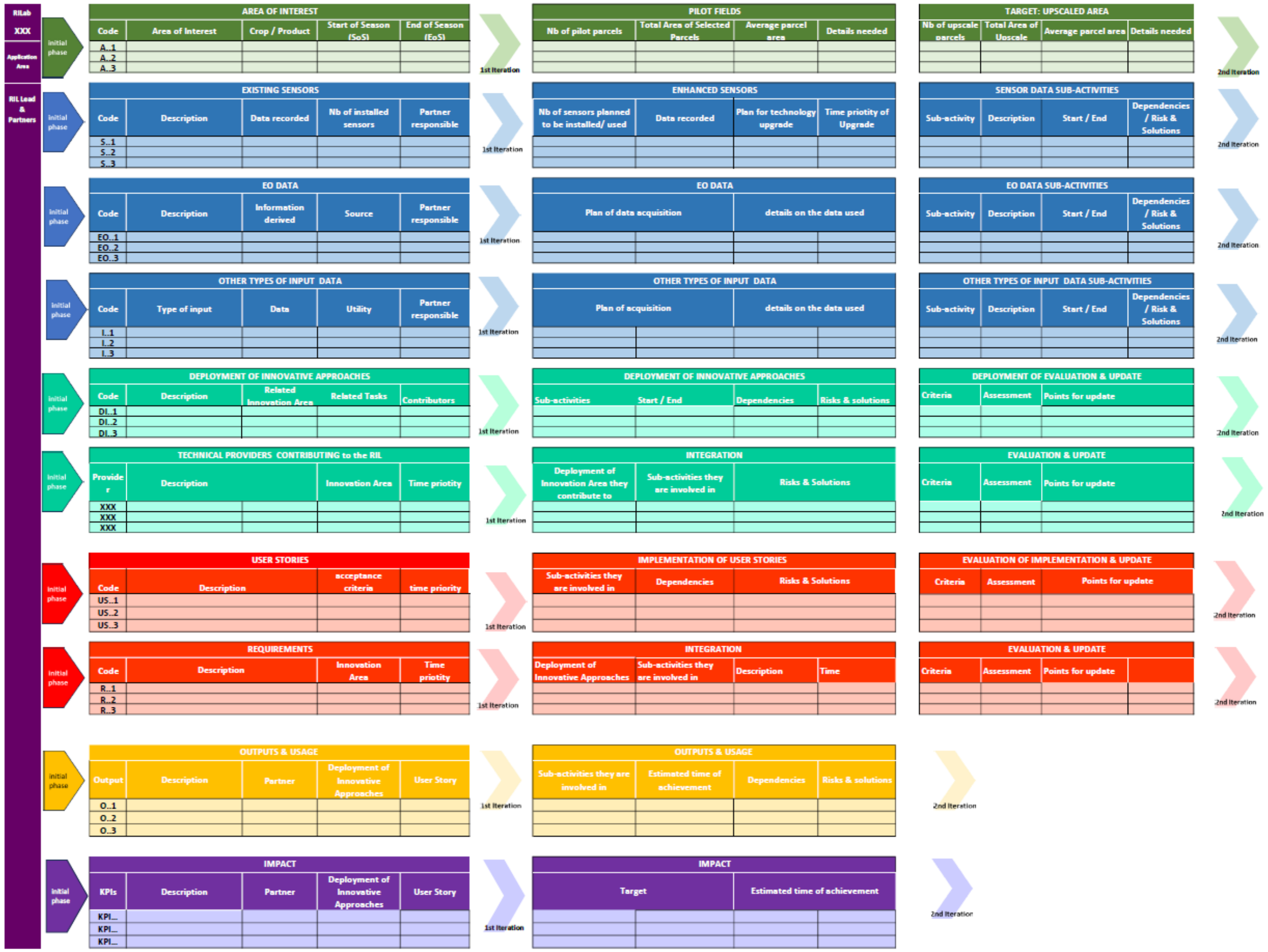
6 Conclusions

The information provided throughout this deliverable represents the overall guidelines to carry out a good and comprehensive procedure for piloting, reporting, troubleshooting and decision-making mechanisms for all Research and Innovation Labs (RILs). In addition to presenting the background, vision, objectives, and innovations within the project, as well as the WP5 and the RILs context, this document has clarified the RIL structure and the function of its members. Moreover, the deliverable has determined the procedures and the documentation templates that will serve as a reference for the RILs leaders during the project. All the documentation related to the project, as well as deadlines or contact information, will be shared on SharePoint to be accessible for all the members.

In this sense, the deliverable "Piloting Plan and Evaluation Methodology" has also specified the procedure and tools for the communication between WP5 leader, Task leader, RIL leaders and RIL partners. This cooperation is one of the keys to the success of the project, ensuring its progress through a multi-actor approach. With all the partners actively involved throughout the lifespan of the project, efficient solutions to different arising problems will be found.

Annexes

Annex I: Template for RIL Execution Plan



RILs Timeline

				2023												2024												2025												2026											
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
RILabs	Activities	Main particpant	Contributors	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
XXX	Application Domain																																																		
2a	0																																																		
2b	Data Collection																																																		
2c	Data ingestion																																																		
2d	Data processing / modelling																																																		
2f	Data reporting																																																		
2g	Data offering																																																		
2h	Analysis of results & evaluation																																																		

RILs Modification Tab

Month	Code	Justification

Annex II: Template for RIL Progress Report

RILxx Progress Report – Mxx

[Please enter the number of the RIL - Please enter the month of the project]

Partner Organisation name: [*Please enter the partner organization name]* **Contact Person**: *[Please provide the name of the contact person]*	
RIL Activity Progress	**RIL sub-activities** [Please add information about the on-going activities during the reporting period] ● Name of the sub-activity ● Name of major activity the sub-activity is part of ● Short description of the sub-activity ● Main contributors of the sub-activity ● Possible risks / dependencies / proposed solutions
Collaborations	**Collaborations with other RILs – external collaborations** [Please provide details of the collaborations (if any) with other RILs: Identify the RIL and include key details on the nature of collaboration, joint efforts, and notable achievements)] **External collaborations** [Please provide details of the external collaborations (if any) with other initiatives and / or projects: Identify the project or initiative and include key details on the nature of collaboration, joint efforts, and notable achievements]
KPIs	*Please provide details of the **KPIs** that have been achieved during the reporting period.* ● *Code of KPI* ● *Sub-activity linked to KPI* ● *RIL partners involved.* ● *Short description*

Annex III: Template for RIL Meeting Agenda & Minutes

AGENDA – MINUTES

RILxx- Monthly Meetings

1st Meeting 2024

Date – Hour

Meeting Space:

Agenda

Topic 1

Topic 2

…..

…..

Participants

…..

…..

Minutes

Next meeting:

Annex IV: Template for KPIs' Monitoring

OBJECTIVES			RIL Description title											
			1a	1b	2a	2b	2c	3	4	5	6			
			Water productivity		Crop management									
			Medicinal plants	Quinoa	Agri-environmental monitoring	Sustainability performance	Early Pest Detection	Yield monitoring	Soil health	Grasslands	Dairy	Total Value	Target	% achievement
Obj.1: Developing innovative approaches for collecting in-situ data and applying data technologies by actively involving stakeholders in the agricultural production process.	**KP1:** Implementation of sampling an sensor innovation	**Target: 100%** of the RI labs	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	KPI2: Applicability of sensors in different agri-ecological zones or agri-environmental systems.	**Target: ≥ 3** field-based sensors (electrochemical, optical and piezoelectric biosensors) will be investigated	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	KPI3: Data processing architecture: Testing and application of new technology in processing platforms	**Target:** Testing and application of **edge analytics and federated learing** technology	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
Obj.2: Enabling and promoting data sharing along the entire data value chain.	**KPI4:** RILs adopt and demonstrate data sharing best practices. The sensor data is readily available according to the metadata and governance models	**Target: 100%** of the RI labs	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	KPI5: Implementation of a best practice document on the different governance models, with drawbacks and benefits for the different stakeholders.	**Target:**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	KPI6: Workshops to highlight the importance of data sharing can be organized.	**Target:**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
Obj.3: Demonstrating how the readily-accessible, locally-collected sensor data can be scaled to agrienvironmental data products at the national, regional or European level.	**KPI7:** Development of new data products which are available to the different stakeholders, both within the RI labs as to other stakeholders and cover the different environmental axes (water, air, soil and living organisms).	**Target: ≥ 10** data products	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
Obj.4: Demonstrating the benefit of the improved monitoring capacities of the agri-environmental conditions in a precision farming context.	**KIP8:** the improved data products of RILs are used to optimize the services to farmers, providing information or a service that is not feasible with the in-situ sensors alone	**Target: ≥ 5** RILs	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	KPI9: The improved data products of RILs can be used in a precision farming context outside of the RI labs, where the farmer(s) don't have access to sensor technology.	**Target: ≥ 1** demostration	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
Obj.5 Demonstrating the benefit of upscaled regional datasets for the agricultural sector in general	**KPI10:** The improved data products are evaluated by at different users (both from within as outside the consortium) on their relevance and useability	**Target: ≥ 4 users**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Number and feedback of the project's co-engagement activities such as workshops, webinars with national or EU policy makers, or with other liaised projects or initiatives such as the "Partnership of Agriculture of Data"	**Target:**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %

IMPACT				RIL Description title											
				1a	1b	2a	2b	2c	3	4	5	6	Total Value	Target	% achievem
				Water productivity		Crop management			Yield monitoring	Soil health	Grasslands	Dairy			
				Medicinal plants	Quinoa	Agri-environmental	Sustainability performance	Early Pest Detection					XX	XXX	XX %
TOPIC OUTCOME	Topic Outcome 1: Strengthening capacities for smart farming, and thus to enhance the environmental and economic performance of the	KPI 1: number of newly developed Smart Farming	Target: 8	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of regions where those solutions were	Target: 10	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 3: Number of engaged possible users for all SF	Target: 16	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Topic Outcome 2: Strengthening capacities for agri-environmental (climate) monitoring, particularly of soil and crop conditions	KPI 1: Number of agri-environmental soil and crop parameters covered. Target	Target: 11	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of regions where these solutions will	Target: 11	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 3: Number of engaged possible users for each soil and crop related data	Target: 22	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Topic Outcome 3: Provision of inputs to the work of the Horizon Europe candidate partnership "Agriculture of Data" and the potential R&I mission on soil health	KPI 1: Number of project agriculture data products that are of interest for the "Agriculture of	Target: 14	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of developed services and data that are of interest to the R&I mission	Target: 3	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
WIDER IMPACT	Wider Impact 1: Innovative governance models enabling sustainability and resilience notably to achieve better informed decision-making	KPI 1: Number of defined governance and business models.	Target: 3	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of stakeholders involved in the definition of the governance and	Target: 40	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Wider Impact 2: Green Deal related domains benefit from further deployment and exploitation of	KPI 1: Number of Green Deal objectives and actions contributed to.	Target: 3	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Wider Impact 3: A strengthened Global Earth Observation System of Systems (GEOSS)	KPI 1: Number of project-specific data collections available in	Target: 14	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of engaged GEO activities that are testing or providing feedback on	Target:	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Wider Impact 4: Sustainability performance and competitiveness in the domains covered by Cluster 6 are enhanced	KPI 1: Number of Cluster 6 areas of intervention	Target: 5	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of Cluster 6 related policies and strategies	Target: 3	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Wider Impact 5: More informed and engaged stakeholders and end users including primary producers and consumers thanks to effective platforms such	KPI 1: Number of engaged users.	Target: 40	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of co-design workshops.	Target: 12	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 3: Number of capacity building webinars and	Target: 6	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
	Wider Impact 6: Strengthened EU and international science-policy interfaces to achieve the Sustainable Development Goals	KPI 1: Number of SDG indicators the project is directly contributing to.	Target: 5	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
		KPI 2: Number of SDG targets the project is indirectly contributing	Target: 2	X	X	X	X	X	X	X	X	X	XX	XXX	XX %

DISSEMINATION		RIL Description title									Total Value	Target	% achievement
		1a	1b	2a	2b	2c	3	4	5	6	XX	XXX	XX %
		Water		Crop management							XX	XXX	XX %
		Medicinal plants	Quinoa	Agri-environmental monitoring	Sustainability performance	Early Pest Detection	Yield monitoring	Soil health	Grasslands	Dairy	XX	XXX	XX %
KP1: Participation in key user communities events (T6.3)	**Target: ≥ 2**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
KPI2: RI Labs workshops (Wider Impact 5)	**Target: 12**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
KPI3: Capacity Building Webinars (Wider Impact 5)	**Target:** 6	X	X	X	X	X	X	X	X	X	XX	XXX	XX %
KPI4: Project Conferences	**Target: 1**	X	X	X	X	X	X	X	X	X	XX	XXX	XX %