



D3.2 IE EXECUTION PLAN

This is the public version of the deliverable. The confidential version contains the detailed execution plans of all FIEs.

WP 3

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PROJECT SUMMARY

Digital technologies enable a transformation into data-driven, intelligent, agile and autonomous farm operations, and are generally considered as a key to address the grand challenges for agriculture. Recent initiatives showed the eagerness of the sector to seize the opportunities offered by ICT and in particular data-oriented technologies. However, current available applications are still fragmented and mainly used by a small group of early adopters. Against this background, SmartAgriHubs (SAH) has the potential to be a real game changer in the adoption of digital solutions by the farming sector.

SAH will leverage, strengthen and connect local DIHs and numerous Competence Centres (CCs) throughout Europe. The project already puts together a large initial network of 140 DIHs by building on its existing projects and ecosystems such as Internet of Food and Farm (IoF2020). All DIHs are aligned with 9 regional clusters, which are led by organizations that are closely related to national or regional digitization initiatives and funds. DIHs will be empowered and supported in their development, to be able to carry out high-performance Innovation Experiments (IEs). SAH already identified 28 Flagship Innovation Experiments (FIEs), which are examples of outstanding, innovative and successful IEs, where ideas, concepts and prototypes are further developed and introduced into the market.

SAH uses a multi-actor approach based on a vast network of start-ups, SMEs, business and service providers, technology experts and end-users. End-users from the agri-food sector are at the heart of the project and the driving force of the digital transformation.

Led by the Wageningen University and Research (WUR), SAH consists of a pan-European consortium of over 160 Partners representing all EU Member States. SAH is part of Horizon2020 and is supported by the European Commission with a budget of €20 million.

EXECUTIVE SUMMARY

The deliverable D3.2 Execution Plan is the result of joint effort between SmartAgriHubs Work Packages (WPs) and Flagship Innovation Experiments (FIEs). The aim of the deliverable is to present Execution Plans (EPs) of all 28 FIEs, with some analytical overview on the current status of Experiments. The deliverable forms the baseline for measuring yearly progress of the FIEs, which will be done through the annual deliverable D3.4 *Periodic evaluation of the IEs performance*. Nonetheless, the EPs should be considered as living documents, where plans and activities can be modified in order to obtain more significant results for the project.

The collaboration between WPs resulted in a comprehensive Execution Plan template, which covers main aspects of the experiment implementation:

- General info – short description, goal, objectives, challenges, current and target TRL levels
- Participants – full partners, subcontracted ones and involved DIHs and CCs
- Implementation – activities, duration, related deliverables and KPIs
- Conceptual description
- Foreseen demonstration activities
- Impact description – economic, environmental and social (with defined current and target values)
- High-potential collaborations
- Risk management

A very important part of every EP is the financial aspect, which describes resources that are foreseen for each activity, per involved partner. The special focus is on subcontracted parties, which have defined the payment frequency, connected to the work conducted and submitted deliverables.

All 28 FIEs provided input in due time, proving high-quality performance. At this stage, all FIEs will implement at least 135 activities in cooperation with 48 DIHs and 65 CCs. Of course, since the experiment implementation is a dynamic process, additions of activities and DIHs/CCs are possible.

The distribution of FIEs among agricultural sectors is as follows:

- Aquaculture: 4%
- Fruit: 10%
- Vegetables: 10%
- Livestock: 35%
- Arable: 41%

The future steps to assure the success of the H2020 SmartAgriHubs project include a coordinated sheer volume of actions involving all the WPs. WP3 will keep closely following up the FIEs activities through the FIE monthly meetings and RC monthly meetings.

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1. INTRODUCTION

The H2020 SmartAgriHubs consortium consists of more than 164 partners from all over Europe coordinated by Wageningen University & Research. BioSense Institute, as a leader of Work Package 3 (WP3), together with ILVO, are responsible for the implementation and monitoring of all Regional Clusters (RCs) and Flagship Innovation Experiments (FIEs) across Europe. The project has chosen 28 IEs and highlighted them as Flagship IEs based on a number of criteria such as: the innovativeness of the experiment; the endorsement by existing Digital Innovation Hubs; and the degree to which it unites end-users and technology providers, by solving various agricultural challenges. All FIEs are divided in 9 Regional Clusters, based on their geographical coverage (UK & Ireland, Scandinavia, France, North West Europe, Central Europe, North East Europe, Iberia, Italy & Malta, and South-East Europe). Based on sector, FIEs are divided in following categories: Aquaculture, Arable farming, Livestock, Fruits and Vegetables.

After establishment of D3.1 which was focused on the guidelines for successful Innovation Experiments implementation, the deliverable D3.2 Execution Plan is the second deliverable of WP3. The objective of this deliverable is to provide a comprehensive and detailed FIEs' implementation plan in order to assure successful execution of all experiments. The main aim of this deliverable is to define the working dynamic in order not only to anticipate and respond to possible emerging issues with the available resources, but also to set a base for the FIEs progress monitoring, to check whether project is on-track and aligned with the planned working activities. The FIE EPs are reflecting the work that is statutory required and additionally to assist in defining tangent-line-relation across FIEs.

The deliverable presents a detailed overview on implementation of each FIE, outlining the main responsible partners for each activity within the experiment (i.e. who does what, when and how) as well as the targeted goals. The FIE EPs template is developed in collaboration between various WPs in order to cover as much fields as possible and to make the IE monitoring as smooth as possible.

The Innovation Experiments Execution Plan deliverable (D3.2), beside executive summary, is divided in five main chapters:

Chapter 1 – Introduction

Chapter 2 – Approach and methodology explains the background of the activities and how the work was conducted;

Chapter 3 analyses the EPs and brings some general statistics;

Chapter 4 concludes the deliverable.

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2. APPROACH & METHODOLOGY

2.1 METHODOLOGY USED FOR INNOVATION EXPERIMENT EXECUTION PLAN TEMPLATE CREATION

For proper explanation of the methodology used for the Innovation Experiment Execution Plans (IE EP) template creation it is important to understand the overall structure of the SmartAgriHubs project work plan. For a project as complex as SmartAgriHubs is, in terms of actors involved, with pan-European coverage, various technologies applied, diverse DIHs and CCs engaged, a proper methodology was developed and established from the project beginning. WP1 is in charge of Ecosystem building and straightening and expanding the network; WP2 is focused on development of specific expansion pathways through the open call mechanisms; WP3 is in charge of monitoring and evaluation of all IEs, focusing on identification (and fostering) synergies, reusable components, and joint activities among IEs; WP4 supports the establishment of DIHs across Europe and ensuring their sustainability by providing effective learning and knowledge exchange mechanisms; WP5 will establish a pan-European network of excellence of digital Competence Centres (CC). SmartAgriHubs is based on a lean and agile management structure that accounts for the project's complexity, enables flexibility, and explicitly includes feedback mechanisms to allow adaptation and optimisation of the technological and business approach.

Nonetheless, project management in H2020 SmartAgriHubs project goes beyond a simple management structure, due to complexity of tasks, sheer number of partners involved and variety of involved partners' backgrounds. SmartAgriHubs combines a hierarchical top-down management model, but, at the same time, it allows a synergetic bottom-up management, focusing on the IEs in WP3.

For the purpose of creating the FIE Execution Plan template, WP3 has prepared a first draft, based on previous experience in similar projects. The initial draft template covered fields such as experiment description, partners involved, envisioned work plan, technical requirements, impact, deliverables and milestones, and risk management. The template was then delivered to related WPs and coordination team, who provided significant inputs, comments and suggestions for template improvement. This approach demonstrated firm collaboration between WPs, which generated a comprehensive document encompassing all the different perspectives, approaches, needs and goals, all in line with the general aim of the project – digital transformation of the European Agri-Food Sector (Figure 1).



Figure 1: Synergies in template creation for successful project implementation

With precisely defined Work Packages' roles, SmartAgriHubs managed to integrate specific approaches of each of them in the process of FIE EP formulation by incorporating their knowledge and expertise with lowering (administrative) work required from FIEs.

After receiving all feedback, WP3 has consolidated all inputs and shared the final version for the last check. After the agreement on the final version, WP3 has distributed EP templates to FIE coordinators, which is graphically presented on Figure 2.



Figure 2: The communication flow during EP template creation

2.2 METHODOLOGY FOR FILLING IN THE FLAGSHIP INNOVATION EXPERIMENT EXECUTION PLAN TEMPLATE

Flagship Innovation Experiment Execution Plan aims to collect detailed information about the execution of each Flagship Innovation Experiment. The content of the document acts as the guide for implementation and will be used to monitor the progress of each FIE. All potential changes on the execution plan need to be submitted to WP3 team for approval, proving that the overall impact of the FIE to the maturity of DIHs involved will not be decreased.

The starting chapter on general details, descriptions and characteristics of the FIE, covers general goal, objectives and challenges. In addition, each FIE has to define their agri-food sector and subsector, current and targeted values of Technological Readiness Levels, geographical coverage and used areas/facilities of experimentation, as shown on the Figure below.

1. GENERAL FLAGSHIP INNOVATION EXPERIMENT DESCRIPTION

Regional Cluster name	Flagship Innovation Experiment name	Flagship Innovation Experiment coordinator(s) and e-mail

FLAGSHIP INNOVATION EXPERIMENT GENERAL INFORMATION	
FIE general goal	Please describe the FIE general goal. Text limit 200 words.
FIE short description	Please briefly describe the FIE. Text limit 200 words.
FIE specific objectives	Please describe the FIE specific objectives. Text limit 200 words.
FIE specific challenges	Please describe the FIE specific challenges. Text limit 200 words.

FLAGSHIP INNOVATION EXPERIMENT CHARACTERISTICS		
FIE sector(s)	Please state the FIE agrifood sector (e.g. livestock, arable farming, aquaculture etc.).	
Technology Readiness Level (TRL)	Current value	Target value
Geographical coverage	Please list the European regions/countries covered by your FIE.	
Area(s) / facility(ies) of experimentation	e.g. field, barn, laboratory etc.	
Agrifood Subsector	Please state your agrifood subsector, which e.g. crop(s)/animal(s) will you address	

Figure 3 General Flagship Innovation Experiment Description

For the definition of partners involved within the FIE (Figure 4 & Figure 5), WP3 took into consideration multiple partner options as well as possibilities of subcontracted parties involved in the FIE. For keeping the track of all partners included in the FIE, the following should be specified: partner details with type, role description and responsibilities, defined region and country, as well as contract person details, with the option to add/remove rows to describe involved actor. Since SmartAgriHubs aims to build strong connections and embed DIHs and CCs into each FIE, each FIE participating DIH/CC also must be precisely defined, with special emphasis on envisaged support, reusability and sustainability. Finally, in case subcontracted parties' involvement in FIE, each party must define its SmartAgriHubs budget, with payment scheme following the starting date for subcontracted activities, deliverable descriptions for second and third payment and % of budget to be allocated per payment.

2. FLAGSHIP INNOVATION EXPERIMENT PARTICIPANTS INVOLVED

PARTICIPANTS INVOLVED*			
Participant name and type (e.g SME, RTD etc.)	Participant role in the FIE	Region / Country	Contact person name and e-mail

DIGITAL INNOVATION HUBs INVOLVED			
DIH name	Role in the FIE	Region / Country	Contact person name and e-mail
DIGITAL INNOVATION HUBs SERVICES			
DIH envisaged support	Please describe the concrete support services provided to your FIE by each involved DIH. Text limit 100 words.		
DIH support reusability	Please explain how the services provided can be reused by other DIH(s) and how they will be made available. Text limit 100 words.		
DIH support sustainability	Please briefly explain the business model behind the services. How the costs of the services will be covered in the future. Text limit 100 words.		

Figure 4 Flagship Innovation Experiment participants involved, part I

COMPETENCE CENTRES INVOLVED			
CC name	Role in the FIE	Region / Country	Contact person name and e-mail

COMPETENCE CENTRES SERVICES	
CC envisaged support	Please describe the concrete support services provided to your FIE by each involved CC. Text limit 100 words.
CC support reusability	Please explain how the services provided can be reused by other CC(s) and how they will be made available. Text limit 100 words.
CC support sustainability	Please briefly explain the business model behind the services. How the costs of the services will be covered in the future. Text limit 100 words.

Please, if needed, add or remove row(s) to describe involved CC.

SUBCONTRACTED PARTY		
Subcontracted party (SCP) name		
Total budget of SCP		XY EUR
Payment scheme for subcontracted party ¹		
First payment	Starting date for subcontracted activities	% prepayment
	MXX	XY % of total SCP budget XY EUR
Second payment	Deliverable	% of budget
	Please describe the deliverable and means of verification	XY % of total SCP budget XY EUR
Third payment	Deliverable	% of budget
	Please describe the deliverable and means of verification	XY % of total SCP budget XY EUR

¹ Please note that deliverables are a precondition for payments.

Figure 5 Flagship Innovation Experiment participants involved, part II

The next chapter brings the FIE Execution Plan details. The table is structured in an intuitive and easy to follow manner. It covers start and end months, activity name, goals and brief description. For each involved participant, FIE coordinator needs to specify person months (PMs), cost per participant and participant's responsibility. In addition, for every activity success indicators (KPIs) are identified, together with baseline value, target value and comment (if any).

3. FLAGSHIP INNOVATION EXPERIMENT EXECUTION PLAN

Activity No. X	Start month	MX	End month	MX	Total PM	XX		
Activity name				Activity cost in €				
Activity goal								
Activity description	Text limit 250 words.							
Participants involved	Participant 1		Participant 2	Participant 3	Participant 4	Participant no		
	Partner name							
Person months	XPM							
Conducted activity cost per participant	XY €							
Participant's responsibility in the activity	Short responsibility description							
Activity success indicators (KPIs)		Success indicators Baseline value		Success indicators Target value		Comment		

Figure 6 Flagship Innovation Experiment execution plan

Fourth chapter of the EP template is *Conceptual Description Of Flagship Innovation Experiment*. It is aimed at presenting the overall concept in an open structure, tailored to every experiment's needs. They were encouraged to use methods/tools for visual representation. One of the examples can be found below:

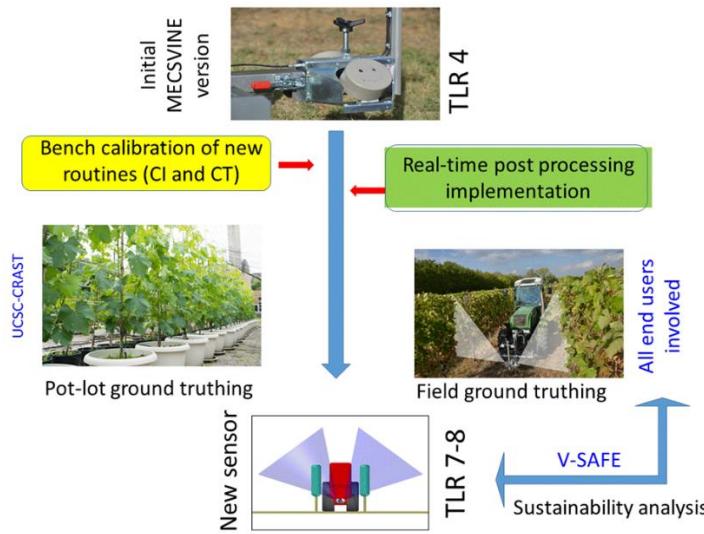


Figure 7: Conceptual design of FIE

Considering the importance of presenting the results not just to project partners, but also to external audience, the EP foresaw one chapter specially focused on demonstration activities. Here, FIEs needed to plan their demonstration activities and to present main aspects – foreseen environment, infrastructure, frequency, involved DIHs and the results they expect.

5. DEMONSTRATION ACTIVITIES

DEMONSTRATION ACTIVITIES	
What is subjected to demonstration?	Please state what will you demonstrate.
Demonstration activities environment	e.g. in a (near to) operational environment, whether industrial or otherwise, laboratory or simulated environment
Needed infrastructure for demonstration activities	e.g. which location, tools, personnel
Demonstration activity interactive aspect	e.g. feedback collection etc.
Demonstration frequency	e.g. monthly, quarterly, yearly etc.
Targeted audience group	
Involved DIHs in demonstration activities	Please list the DIHs that will be involved in the demonstration activities.
Demonsstration activities expected results	What are expected results? How will DIHs benefit from planned demonstration activities?

Figure 8: Demonstration activities

Flagship Innovation Experiments impacts are described and measurable through three types of impacts and their key performance indicators (KPIs): economic, environmental, and other (social impact). For a clear overview of impact description, KPIs, chosen measurement technique, and both current and targeted values, the tables for collecting this valuable inputs have been prepared, as shown in the Figure 9.

6. FLAGSHIP INNOVATION EXPERIMENT IMPACT

Variable	KPI description	Target	Baseline value	Target value
ECONOMIC IMPACT				
e.g. Resources efficiency	e.g. m³ water use on crop cultivation per m² per year	e.g. Water consumption reduction		
ENVIRONMENTAL IMPACT				
OTHER IMPACT (SOCIAL)				

Figure 9 Flagship Innovation Experiment impact

In order to foster synergies and cross-fertilization among FIEs, it is essential to identify and outline the collaboration opportunities with other FIEs. If such potential is recognized, FIE coordinators should determine what reusable components or approaches or integration of data/services are shareable with which FIEs, as demonstrated in the Figure 10. Likewise, in previous cases, adding or removing of table rows is optional.

7. COLLABORATION WITH OTHER FLAGSHIP INNOVATION EXPERIMENTS AND DIHs/CCs

REPLICABILITY		
What is replicable in FIE?	How it will be replicable?	Whom it concerns?

COLLABORATION		
FIEs/ DIHs/ CCs	Potential for sharing assets or approaches identified	Shared asset or approach application

Figure 10 Collaboration with other FIEs and DIHs/CCs

Deliverables and milestones are elaborated separately, since each of them have its own subchapter. FIE coordinators should provide information regarding deliverable name (Figure 12) in correlation with activity number previously defined in the EP chapter, additionally describing the nature of each deliverable and due date. For nature description, the following options should be used: R – document, report; DEM – demonstrator, pilot, prototype; DEC – website, patents filling, press and media, videos; OTHER – software, technical diagram.

8. DELIVERABLES AND MILESTONES

DELIVERABLES					
Deliv. No.	Deliverable name	Activity No.	Nature ²	Due date (DD/MM/YYYY)	Comments
	Please provide deliverable name	Please refer to the activity number from the section 4 of this document			

MILESTONES				
Miles. No.	Milestone name	Due date (DD/MM/YYYY)	Means of verification	Comments
	Please provide milestone name			

Figure 11 Deliverables and Milestones

The final chapter, but equally valuable, risk management deals with use case risk description, to which task is entitled to and proposed risk – mitigation measure. Adding or removing rows is optional.

9. RISK MANAGEMENT

Description of risk	Activity concerned	Proposed risk-mitigation measures
Insert risk description	Insert activity number from the section 4 of this document	Insert mitigation measure

Figure 12 Risk Management

3. FLAGSHIP INNOVATION EXPERIMENT ANALYSIS

After receiving all 28 FIE EPs, in order to better understand the experiments, their planned impact and more importantly, in order to organize project management and WP teams, WP3 briefly analysed Execution plans.

The statistics show that most of the FIEs are focused on Arable farming (41%). Livestock is particularly interesting for 35% of all FIEs, while fruit and vegetables are sharing the third place with 10% each. Last, but certainly not the least is the aquaculture, with one experiment that is moving the edge of technical solutions in this field forward. The analysis is presented on the chart below:

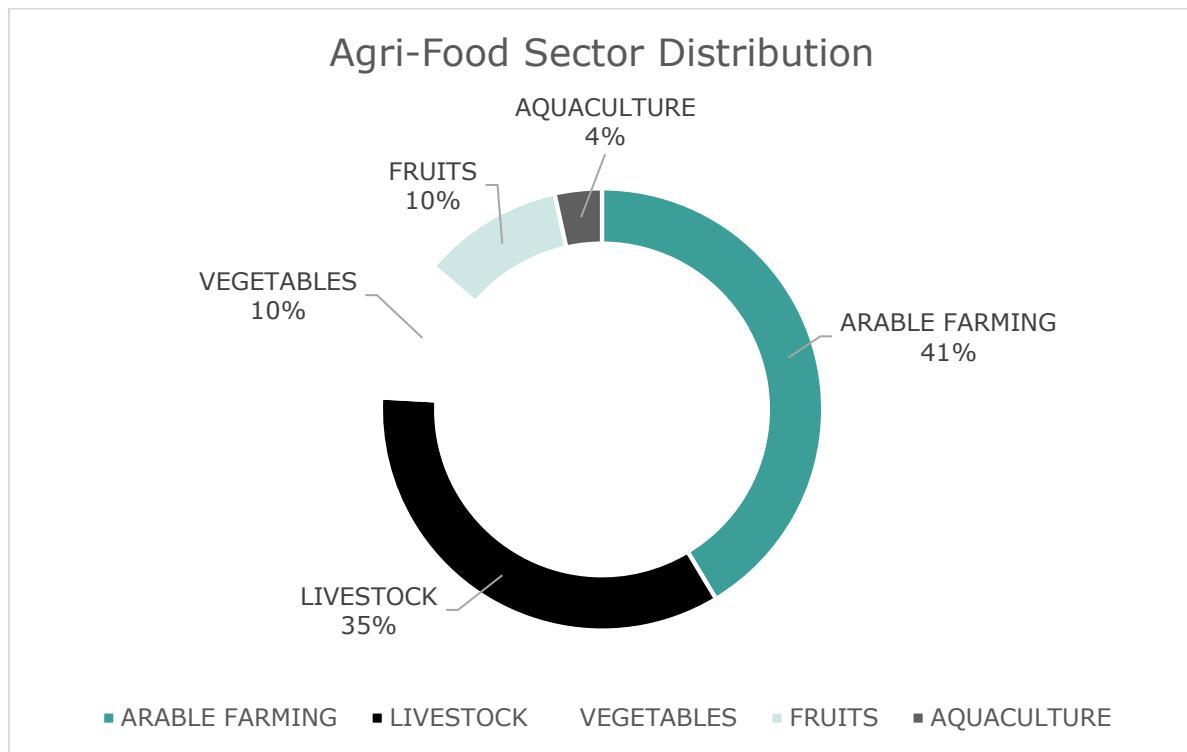


Figure 13: Agri-Food sector distribution

In order to visualize the advancement that SmartAgriHubs project is aiming to achieve, we compared the current average TRL level (average of all 28 experiments) with the planned ones. The results are optimistic, but certainly achievable: from current 5.5 SmartAgriHubs FIEs will progress to 7.9.

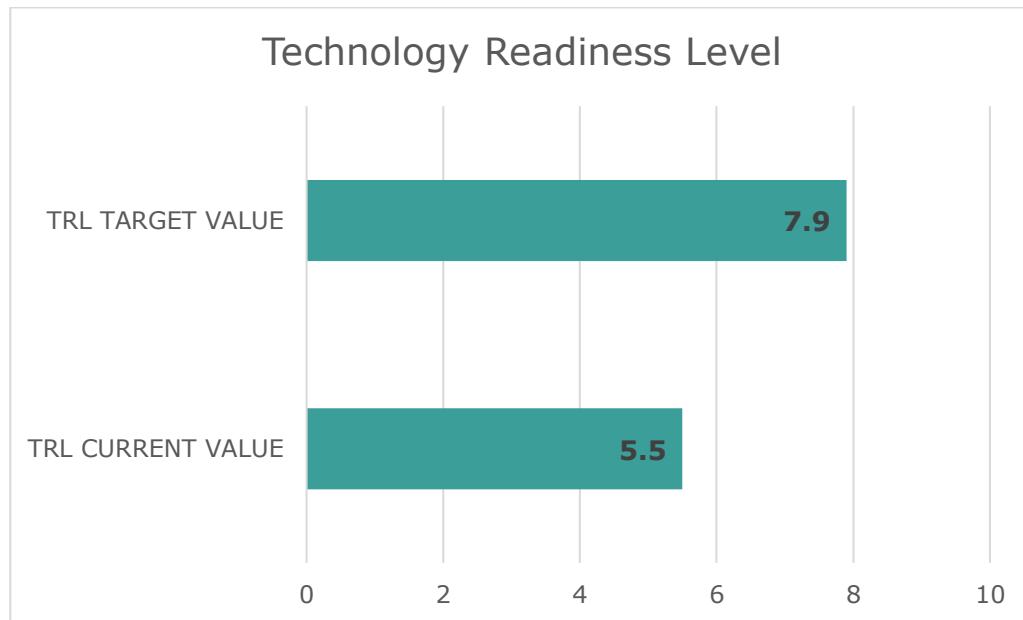


Figure 14: Technology readiness level (current and planned)

If analysing all the activities envisioned in EPs, 28 FIEs will implement 135 activities. Beside main participants (129), experiments will involve 70 more institutions as subcontracted parties that will assist in activities fulfilment. Experiments will actively collaborate with 65 Competence Centres and 48 DIHs. Considering that SmartAgriHubs aims to transform the Agri-Food sector, relevant WPs will take an active role in creation of network of DIHs and

CCs that will allow cross-fertilization and synergies creation between already involved actors and those who are still performing individually.

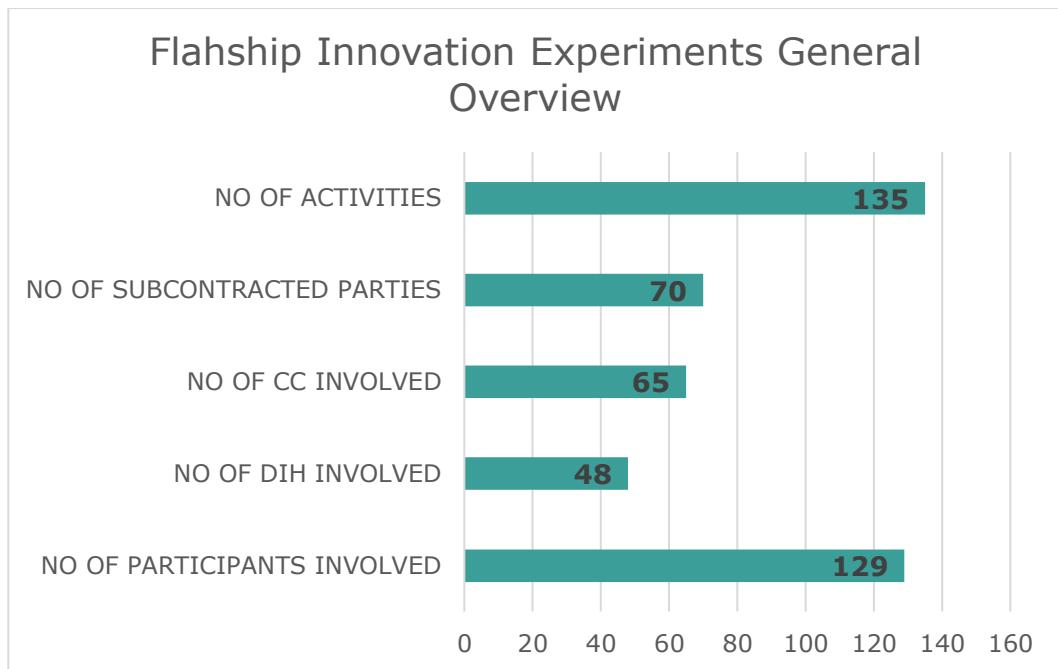


Figure 15: FIE general overview

If number of deployment sites is analysed per country, Spain is by far country with the largest number of sites – 5. On the second place is Belgium, with 4, while third place is shared between Denmark, Sweden, France, Poland and Portugal.

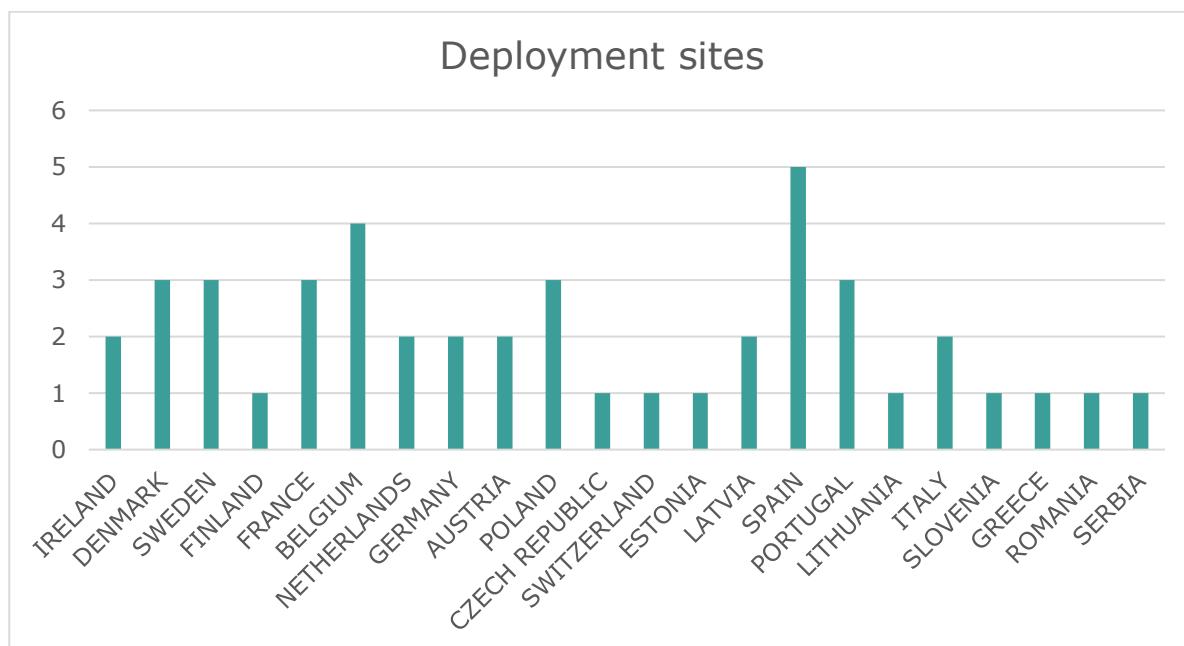


Figure 16: Deployment sites per country

The project expects that all above presented results to be significantly increase by the end of the project.

4. CONCLUSIONS

The deliverable D3.2 Execution Plan is the result of the cooperation between all WPs involved in the project and the inputs provided by the FIEs. The execution plans represent a concrete base for SmartAgriHubs - the starting point and foundation of the work that will be performed by the FIEs, and a proof of their agreed-upon plans.

FIE EPs are living documents, where plans and activities can be modified in order to obtain more significant results for the project. In case of changes, they must be accepted beforehand by the relevant WPs and the project management.

Throughout the FIE EPs collection process, FIEs coordinators have shown eagerness to cooperate and professionalism, nonetheless we have faced postponement challenges, that were caused due to a work load, amount of required data and partners' daily tasks and obligations.

General impression is that the FIE EPs are well-structured, written with detailed and high-quality inputs.

After analysing the collected data, the first indicators are showing that, even in this early stage, SmartAgriHubs is proving to reach the project objectives. These results, at initial project phase, represent a solid starting point for the project.

During this systematic series of actions directed to the FIE EPs creation and filling in process, we got the opportunity to have a detailed insight into each FIE, learning about their challenges, field of expertise and envisaged outcomes by close collaboration with all partners involved.

The future steps include sheer volume of predefined actions, among which the most substantial ones are process of installation and deployment of components, customization, integration and demonstration of achieved results.

5. LIST OF ABBREVIATIONS

Abbreviation	Explanation
EP	Execution Plan
FIE	Flagship Innovation Experiment
RC	Regional Cluster
WP	Work Package
KPI	Key Performance Indicator
CC	Competence Center
DIH	Digital Innovation Hub

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