



**SMART
AGRI
HUBS**

D3.7 REPORT ON MAXIMISATION OF IES MARKET TAKE-UP – V3

WP 3

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This is the public version of the deliverable.

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
ATN	Agricultural Navigator Tool
CC	Competence Centre
CE	Central Europe
DAP	Demonstration Activity Procedure
DIH	Digital Innovation Hub
FIE	Flagship Innovation Experiment
ICT	Information and Communication Technology
IE	Innovation Experiment
IoF2020	Internet of Food and Farm 2020
IP	Innovation Portal
NEE	North-East Europe
NWE	North-West Europe
OC	Open Call
PULS	Poznan University of Life Sciences
RC	Regional Cluster
SAH	SmartAgriHubs
SEE	South-East Europe
TRL	Technology Readiness Level
UAT	User Acceptance Testing
WODR	Wielkopolska Agriculture Advisory Centre
WP	Work Package
WUR	Wageningen University and Research

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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 put 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 organisations that are closely related to national or regional digitisation 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

This report, delivered in M48 of the project, on the maximisation of the market take-up is the second iteration of the D3.7 report. The first iteration of the report was submitted in M36. This is an extensive report, presenting activities implemented under Task 3.4 Demonstration of IEs outputs and Market Take-up maximisation. The task is implemented by WP3 in collaboration with WP4. The approach and methodology used to gather all the data and draw conclusions is available in Chapter 2.

Implemented demonstration and dissemination activities by FIEs, IEs, and RCs.

The organisation and implementation of demonstration activities is an important consideration when it comes to service/product development. Not only do stakeholders become better informed about concrete solutions and their benefits, but demonstration events are also valuable for exchanging experiences, knowledge, and practices between different parties. Feedback received during a demo event is intended to enable further improvements and developments of the solution/service. The main target audiences of these events were industry and scientific representatives, along with DIHs, policy makers, and general public, to name a few. These events are also good for making connections and new partnerships, potentially leading to new collaborations.

Combining the number of FIE/IE demonstrations and RC events in M37-M48, a total of 194 was achieved, with 119 demonstrations conducted in the face-to-face modality, 61 online, and 14 in hybrid mode. This way, at least 28,000 people were involved as participants across all the events. This and other kind of information (demonstration aim, interactive aspect, potential collaboration with other H2020 projects, and so forth) is collected through a procedure created in the previous reporting period.

Dissemination activities also play a notable role. That includes conferences, workshops, press releases, blog articles, social media campaigns, and more. According to the numbers available, the FIES/IEs reached over 650,000 people this way. Details about dissemination activities are provided through FIE/IE final progress reports (available in Annex 1).

More information about the demonstration and dissemination activities can be found in Chapter 3.

Analysis of the feedback received from farmers through the User Acceptance Testing questionnaire

The questionnaire is a tool created by WP3 (also in the previous reporting period) that aims to boost FIEs' digital product/solution user acceptance. Analysing user feedback can provide helpful insight when it comes to the detection of potential acceptance problems and thus facilitate the solution of such problems. In M37-M48, nine farms and two companies from seven FIEs provided responses about usability, technical quality, user-friendliness and more through the questionnaire.

FIE solutions/products mostly received positive feedback as they are generally considered easy to use/understand, able to offer benefits, boost productivity, etc. More details are available in Chapter 4.

Activities implemented under business support for FIEs

To provide business support, a set of training modules were organised to cover the following topics: business plan development and mission vision strategy, creating and managing start-ups, pitching, and funding opportunities, and marketing plan and market analysis and ecosystem, collaboration, and competition. The sessions were organised as a support to FIEs, and the modules were delivered by DIHs. In total, 44 persons attended these modules, also available on the SAH YouTube channel and the Innovation Portal (IP). Feedback received afterwards regarding the usefulness of the content is positive, and it is presented within Chapter 5.1.

Reusable components

(F)IEs were solving agricultural challenges and developing innovative solutions, and the SAH project does not claim to determine the best (non-)technological solutions, but all stakeholders can learn from them. Reusable components, both technological and non-technological, were collected, and the final number is 296 (201 technological and 95 non-technological ones). Additionally, the market readiness status of the developed solutions was analysed through the Final Progress Reports of the (F)IEs from the last reporting period (M37-M48) or earlier submitted reports (M17-M36) if (F)IEs already ended before M36 and from Additional Questions documents completed at the end of the SAH project (all annexed). A Thing Link tool was created by WP3 to showcase the reusable components. Forty digital solutions on the market will be presented in the IoT catalogue and an Agricultural Technology Navigator tool has been developed by WP5 to help CCs to increase the visibility of their systems and competences and related technologies. Several workshops have been organised to highlight the development of these tools and catalogue and to promote them. All these topics are covered in Chapter 5.2.

The final section, Chapter 6, briefly describes the conclusions stemming from the results described above.

This is the public version of the deliverable.

1. INTRODUCTION

The focus of the SAH project is on developing and supporting agricultural DIHs. DIHs support digitising farmers and agricultural communities at local level by offering a variety of services (technical, business, funding, ecosystem). In the SAH project, IEs have a specific function related to developing the DIHs. In each IE, at least one DIH is involved in order to provide one or more services. Apart from the IE objectives in terms of developing innovative digital applications, the most important SAH objective is to develop, test, and apply DIH services.

One of the DIH services is to support FIEs in the maximisation of the market take up. At the project level, DIHs involved in the FIEs were stimulated via meetings organised by RCs to work specifically on this service and webinars, tools and instruments that could be used for that service. The DIHs have provided support aimed at maximising FIE market take up by implementing business modules for DIHs, providing support in implementing demonstration activities, and providing services related to ecosystem building, including dissemination, communication, connecting to potential partners, expanding the network, etc. The actions that were taken for this are reported in this document.

In this report, we are not able to identify the more qualitative outcome of these actions and final results in terms of impact as the DIHs involved were not able to collect this type of information. We have to consider that, as observed in a broader perspective, most of the DIHs are in their early stage of development and are just starting to develop and apply services. In this respect, the actions that were taken are already impressive, and we can conclude that many DIHs have made good progress in developing a service on market take-up support, but there still is a way to go.

2. APPROACH & METHODOLOGY

This reporting period involves much of the approach and methodology that was described in the previous iteration of D3.7. As a reminder, in collaboration with WP4, WP3 created the so-called Demonstration Activity Procedure (DAP) template to gather all the relevant information about such activities, i.e., demo events organised and conducted by FIEs and IEs, as well as events organised or attended by RCs. The procedure is drafted for online and face to face event separately. In addition, the beginning of the document offers guidelines and tips on how to organise and set up a demo event. Although demonstration activities of FIEs and RCs have different outcomes, the DAP templates utilise a standardised approach. The DAP templates are described in detail in the previous version of the deliverable, so this document offers only the summary of what they contain.

The procedure envisages three phases: planning, execution, and performance monitoring (the closing phase). There are three annexes to be submitted by FIE/IE coordinator.

- Annex 1 refers to the core information (event name, date, location, organisation team, promotional materials used, and so forth).
- Annex 2 covers proposed questionnaires for attendees.
- Annex 3 is a lessons learnt report, with highlights and attention points.

As for RCs, there is a single procedure covering both face-to-face and online activities. The reporting procedure is slightly different compared to the one described previously, since the RC were mostly attending events with the aim to present the project results and outcomes. Progress report template for FIEs/IEs and RCs also include a separate chapter on demonstration events that is tackled as part of the annual reporting procedure.

Moreover, the User Acceptance Testing (UAT) practice was also carried over to the third reporting period. WP3 developed the UAT aiming at better market acceptability by increasing the user acceptance of digital solutions and products provided by FIEs. This tool typically serves as one of the final steps before a solution or a product enters the market, but within the SAH project, it also served as a means of collecting feedback from users and detecting potential acceptance problems during the product development cycle. Much like the DAP, this tool was described in detail in the previous version of the deliverable, but its essence can be summarised in the following way.

The UAT was in the form of two questionnaires provided to participating farms and companies via Google Forms. The UAT included a number of fill-in and multiple-choice questions concerning the name of the FIE/solution, basic information about the respondent (name, job position, age, gender, education level, etc.), the farm's/company's focus and number of employees, solution/product usefulness, technical quality and infrastructure, cost-efficiency and feasibility, and so forth. In the third reporting period, the UAT was used by seven FIEs. It covered all OCs apart from PREPARE IEs because they focused on proposal preparation rather than demonstrations.

Furthermore, an assessment of business training need FIEs was conducted in the previous reporting period. Implementation of business modules, based on identified needs from FIEs, was coordinated by WP3, while the trainings were realised by four DIHs (Smart Digital Farming, VzF GmbH Erfolg mit Schwein, Equihub, and BioSense) volunteering to provide expert trainers. The sessions took place online, which allowed for their recording and uploading on the Innovation Portal (IP) and the SAH YouTube channel, allowing greater visibility.

WP3 also collected reusable components (technological and non-technological) from all the experiments' via the Final Progress Reports, along with their solutions' market readiness status. That includes reports from M37-M48, but also earlier ones if a certain (F)IE ended earlier, together with additional questions sent to them at the end of the SAH project. WP3 created a Thing Link tool to showcase the SAH reusable components. As for digital solutions on the market, they will be presented in the IoT catalogue, which is developed by the Portuguese SME Unparallel, so WP3 provided support in that respect. Finally, several synergy workshops were organised to present the reusable components and the Thing Link tool within

the SAH network, as well as to show the digital solutions on the market and IoT catalogue. Both the tools and catalogue will remain available after the end of the SAH project.

3. RESULTS

Conducting demonstration and dissemination activities is of great importance for (F)IE development. Not only do such activities allow stakeholders to learn more about the project and attract a larger audience, but feedback received after demo events serves as a guide in product/service further development. As proved throughout the project, collaboration with the end users is of a great importance in defining and developing the solution/service. Additionally, RCs organising/attending events and supporting the experiments in doing so contributes to better visibility of the project, the sustainability of the SAH network and the creation of new connections.

This chapter focuses on the results achieved by all these SAH actors. A compilation of lessons learned along the way is presented within Annex 2.

3.1 DEMONSTRATION AND DISSEMINATION ACTIVITIES OF FIES (M37-M48)

A total of 13 FIEs were active in M37-M48, but not all of them reported demonstration and dissemination activities. That is most likely to be due to the fact their experiments ended soon after this reporting period started (they did report these activities in the M3-M36). An analysis of the activities from the last year of SAH is available below. Lower number of demonstrations is also expected having in mind that the project was coming to its end and the FIEs were wrapping up their activities.

3.1.1 Demonstration Activities of FIEs

A total of 13 FIEs ended within M37-M48, and eight of them had demonstrations, along with one FIE that has previously ended (FIE8) but had a demo event in this reporting period. The following table shows how many demonstrations pertain to each FIE and their implementation modality.

FIE Number	FIE Name	Number of Demonstrations	Online	Face to Face
1	Farm Sustainability Audit	1		1
2	STREAM	0		
3	Digitizing farm machinery produced by SMEs	1		1
7	DIGI-PILOTE	0		
8	STRATE-GEEK	1	1	
9	AI 4 AGRICULTURE	3		3
11	SmartPigHealth	1		1
12	DIG-ITfarm	2		2
13	AEMON	0		
14	Mower-robot for Vineyards	0		
15	Precision farming on small-scale farms	0		

FIE Number	FIE Name	Number of Demonstrations	Online	Face to Face
17	On-line DSS for optimizing fertilizers	2	2	
18	Autonomous Greenhouses	1		1
21	SAIA – Sensoring, Artificial Intelligence Algorithms for early detection of crop disease symptoms	2	2	
TOTAL		14	5	9

Table 1 - Number of demonstrations per FIE

The nine FIEs registered **14 demo activities** in total (details available in Annex 3). Face-to-face demonstrations were more common, accounting for over 60% of the overall number. The most suitable demonstration environment usually depends on the demonstration subject. For example, for FIE9 (showcasing drone technology), FIE 11 (digital equipment to investigate stable climate and pig behaviour), and FIE18 (a solution based on robotic equipment and application connected to the cloud server) it made sense to choose a farmer's field, a barn, and a field/showcase tent, respectively. On the other hand, for FIE8 (demonstrating the SYSTERRE tool), FIE17 (DSS and ODI functionality), and FIE21 (an olive fruit fly pest prediction tool), the online format was adequate.

The FIEs made these events **interactive** in several ways. For instance, when updating the farmers on the progress of the Farm Sustainably Audit Web Tool, FIE1 provide Power Point handouts, including slides with their own energy data to view. When demonstrating the Cameleon control system developed, FIE3 allowed the participants to test drive the equipment. FIE12, demonstrating results obtained from experiments with the Pig cough monitor and Chicken Boy, stated brainstorming sessions as the interactivity aspect.

According to the FIEs, their main **aim** was to present their solutions to clients or potential future clients, but also the general public. The events were also a good opportunity to get feedback. As for the **dissemination channels**, emails were used the most. In some cases, the FIEs also used social media, telephone invitations, and newsletters.

The **target audience** mostly consisted of scientific and industry representatives, and to a lower extent also policy makers, general public, civil society, media, and customers. **At least 7,410 people** attended the events (the number is not available for several events, so the actual total must be somewhat higher).

We can also look at **roles and responsibilities** for each FIE. In the vast majority of the cases, the FIE coordinator organised and implemented the demonstrations.

- For the two events of **FIE21**, everything was done by ec2ce, the SME coordinating the experiment. Similarly, the event of **FIE17** was entirely prepared and implemented by the coordinator Poznan University of Life Sciences (PULS) and that of **FIE12** by the coordinator DIG-ITfarm.
- In most other cases, the main responsible is the FIE coordinator that is also an involved DIH/CC in the FIE. In the case of **FIE1**, DIH Teagasc therefore provided technology- (testing and validation) and ecosystem-related (representation and promotion) services. For **FIE8**, Arvalis (FIE coordinator/CC) and Terrasolis (FIE participant/DIH) covered all the roles (event organisation, dissemination, communication, ecosystem building). As for **FIE9**, one of its demonstrations happened at an event prepared by RC NWE, but the very demonstration was prepared by CC ILVO (dissemination, communication, event organisation, ecosystem building). CC ILVO also performed this role in the other two events of FIE9, and it also organised the entire event (not just the demonstration). In the case of **FIE11**, the FIE

coordinator is also an involved DIH (DIH MSG), taking care of ecosystem building (communication-related services) and organisation and facilitation of the demonstration, while the overall event itself was prepared by RC NWE. Additionally, CC CALS provided support to event organisation on-site. The demonstration of **FIE18** was also done by its coordinator and DIH/CC (L-PIT or PIMR), performing the preparation responsibilities, communication, and ecosystem building, even though the event itself was organised by the Wielkopolska Agriculture Advisory Centre (WODR), which is the FIE16 coordinator.

- **FIE3** is the only case where the coordinator was not responsible; instead, the main responsible was DIH SmartAgri, in close cooperation with presenters at the event from the companies A-Electronix and Lyckegård, serving as a facilitator and communication responsible, respectively.

All in all, the FIEs made a notable effort to carry out their demonstrations. Lessons learnt along the way and feedback from the participants are available in Annex 2.

3.1.2 Dissemination Activities of FIEs

Half of the FIEs covered by this deliverable reported some dissemination activities in M37-M48. As explained earlier, the lack of these activities for some FIEs can be attributed to the fact that many of the FIEs stopped being active early in the reporting period M37-M48. The ones that did list dissemination activities in their progress reports (FIEs 1, 2, 3, 12, 17, 18, and 21) have **15 such entries**.

Face-to-face and online dissemination activities were present to an almost equal extent. Online meetings have become common ever since the pandemic, but the restrictions have mostly been lifted, so live events are on the rise again. Online FIE activities include social media posts, two videos, a webinar, a scientific publication, and two online conferences. The live events were a conference workshop, a meeting, presence at a fair booth, three trade fairs, a conference, and an event for forestry production managers. FIEs 2, 17, and 21 were the most active in this respect, reporting three dissemination activities each.

When it comes to the **target audience**, that was mostly the scientific community, industry, and policy makers, closely followed by the general public and media. The audience also included investors, customers, DIHs, and CCs to a somewhat lower extent. The numbers indicated that the total amount of people reached was **at least around 3,000**, but it must be noted that the numbers were not available in some cases, so the total is likely to be higher. Out of the FIEs that were able to provide the total number of people reached, FIE17 recorded the highest number (about 2,000).

3.2 DEMONSTRATION AND DISSEMINATION ACTIVITIES OF OPEN CALL PROJECTS (M37-M48)

This section refers to EXPAND and SERVICE IEs in terms of demonstration activities and EXPAND, SERVICE, and RESTART IEs in terms of dissemination activities. Due to the nature of the RESTART OC, demonstration events were not the subject when it comes to these IEs. Therefore, they only have a sub-chapter on dissemination.

3.2.1 Demonstration Activities of Open Call Projects

3.2.1.1 EXPAND IEs

The following table provides a quick overview of the demonstration activities in the EXPAND category and their implementation modality.

EXPAND Number	Project Acronym	Number of Demonstrations	Online	Face to Face
1	IntelWines	0		
2	<u>WWW.POT.DIGI</u>	1		1
3	PREPIPE	3	1	2
4	F2FHUBCONNECT	0		
5	AquaHubs	3	1	2
6	AgriHub CZ&SK	2	2	
7	RAINaDiv	1		1
8	GoINN4Digital	2	1	1
9	FORSSC	2	2	
10	WEAVER	1		1
11	DIGIWINE	0		
TOTAL		15	7	8

Table 2 – Number of demonstrations per EXPAND IE

As can be seen above, out of 11 EXPAND IEs, eight reported demonstration activities. Each of the eight IEs had either one or two demonstrations, apart from EXPAND 5 (AquaHubs), which managed to report three demonstrations. In total, there were **15 demonstrations**. In eleven cases, the IE was the (co-)organiser, while in the remaining four cases, the IE was a guest at an event. A complete list of the demo activities containing the exact date, location, and demonstration subject is available in Annex 3.

Out of the 15 demonstrations, **eight were conducted face-to-face and seven online**. The live events happened in different formats: two were in the form of a workshop, another two happened at a fair, three were conducted in a field, and one took place in indoor farming facilities. Online events mostly happened via the platforms Zoom or MS Teams. Naturally, certain demonstration subjects are more or less suitable for either of the two formats (live or online). For instance, EXPAND 5 (AquaHubs) was able to demonstrate a software solution for automated fish stock estimation virtually, but showcasing an indoor pool with smart monitoring and management systems and a NIR spectrometer is much more convenient in person. Similarly, for EXPAND 8 (GoINN4Digital), it was very reasonable to demonstrate virtually a platform for the digital management of agricultural processes and agro-weather services. On the other hand, it made much more sense to go to fields and vineyards to show technology for multispectral image processing and production of orthophotos for vegetable indexes. EXPAND 10 (WEAVER) demonstrated the ANT ROBOTICS Transport Robot, so doing in an open field was a logical choice. For EXPAND 9 (FORSSC), it was suitable to demonstrate its demand forecasting service and data visualisation. Moreover, sometimes a certain demonstration subject can be effectively shown both online and in person – for example, EXPAND 3 (PREPIPE) and its Barter Exchange Platform.

Regardless of the environment, most of the demonstration activities were quite **interactive**. This was mainly achieved through interactive discussions and Q&A sessions. Some EXPAND

IEs made it interactive by making the demonstration a workshop. There are two such cases: EXPAND 2 (WWW.POT.DIGI), focusing on data sharing, and EXPAND 7 (RAINaDiv), focusing on the work of the DIH Kapernikov in the project. EXPAND 6 (AgriHub CZ&SK) ensured interactivity through active participation in its hackathon.

The **aim** of these events was primarily to generate interest, provide information to the target audience, attract customers, and collect feedback. The **dissemination channels** were mostly emails and social media (most commonly LinkedIn and Twitter). In a few cases, the IEs also relied on their websites, personal invitations, and newsletters. There is only one instance in which telephone calls are listed as a dissemination channel.

As for the **target audience** attending the demo events, industry representatives rank the highest, closely followed by the scientific community. Policy makers, civil society, media, customers, general public, and investors also attended the events, but they were slightly less frequent than the two highest-ranking categories. According to the numbers available, **at least 9,253 people were reached in total**. In some cases, a certain IE was not able to provide the exact number because they were only a guest at a fair, for example, and it was difficult to make an estimate. As expected, much more people were reached online compared to face-to-face events owing to the fact that geographical location is no obstacle when it comes to virtual events.

As for **potential collaborations with other H2020 projects**, only a few EXPAND IEs provided a response to this question, listing also other EU projects apart from those under H2020. EXPAND 9 (FORSSC) noted that feedback received during its online event would be used for the development of services in the Farm2Fork ATLAS project (H2020). EXPAND 8 (GoINN4Digital) said that the Life ADA project (LIFE programme) was involved in one of its demonstrations and the Highlander project (H2020) in another demonstration.

3.2.1.2 SERVICE IEs

All SERVICE IEs reported demonstration activities, as can be seen from the following table.

SERVICE Number	Project Acronym	Number of Demonstrations	Online	Face to Face	Hybrid
1	AB Smart DIH Services	8		4	4
2	CREDas	5		5	
3	DemocraTech	3	1	2	
4	DigiWine	1	1		
5	DIH-Challenger	1			1
6	Grow2d	4		3	1
7	HORDI	2	1	1	
8	DDADI	6	1	5	
9	PROAGRO	1		1	
10	AgEnt	7	4	1	2
11	CompEAT	11		11	
12	SmartGeoFish	1		1	
13	BLIVE-Europe	6	2	4	
14	SA'HDF	1	1		
15	HELFIHUB	9	1	7	1
16	AIDM	4	1	3	
17	AgriTEAM Innovator	4	1	2	1

SERVICE Number	Project Acronym	Number of Demonstrations	Online	Face to Face	Hybrid
18	FITeam	4	1	3	
19	DFTB	1		1	
20	DIVAx	1	1		
21	AgTechBridge	3	1	1	1
22	PACC	1		1	
TOTAL		84	17	56	11

Table 3 - Number of demonstrations per SERVICE IE

Out of the **84 demonstration activities** in total, 55 (around 65%) happened live, while online and hybrid events were less frequent. Face-to-face events took place in various environments: farms, fields, vineyards, and stables. Sometimes, a single IE managed to report several different environments. For example, SERVICE 2 (CREDAS) showcased cutting-edge technologies for the organic agriculture sector in a field, precision agriculture technologies on two wine-producing farms, systems and technologies for the livestock and cultivation sector in a lab and field, and innovative technologies used in shellfish farming on an aquafarm.

In about 85% of these events, the IE was the organiser, while in the remaining cases, it carried out the demonstration as a guest. To avoid making this section too lengthy, considering the number of SERVICE IEs, only several events will be used as examples and accompanied with certain details. For a complete list of these events with the exact date, location, and demonstration subject, please look at Annex 3.

When asked about the **aim** of their events, the IEs mostly said promoting their services and potentially gaining partners, interacting with people from the area of interest, sharing experiences, and identifying new ideas. Social media (LinkedIn, Facebook, Twitter, Instagram) and direct mailing are the most common **dissemination channels**. The IEs also relied on newsletters, local and regional newspapers, company websites, direct contact with clients, and flyers.

SERVICE IEs made their demo events **interactive** in different ways. SERVICE 1 (AB Smart DIH Services), which mostly organised hackathons and events promoting the project results, had mentors interacting with the participants during the hackathons and tried to incorporate the networking aspect into other events. SERVICE 3 (DemocraTech), which demonstrated IoT stations and decision support systems, made it interactive through open discussions. SERVICE 4 (DigiWine) showcased digital technologies for grape growing via a webinar and had a chat open for the attendees' questions. At an event demonstrating Energy monitoring with data & IoT platforms, SERVICE 8 (DDADI) allowed the audience to work with the provided platform and tools. Similarly, when showcasing hyperspectral cameras, SERVICE 22 (PACC), the participants were allowed to try them. Presenting the outcome of its project, SERVICE 18 (FITeam) involved the attendees by using interactive polling software (Mentimeter).

Regarding the **target audience**, the category of industry was the most common by far. The scientific community, civil society, policy makers, and general public were rather frequent, as well. Other audience members present are categorised as customers, media, investors, and DIHs. The number of people reached at these demo events is **at least 5,445**, but as is case with other IEs and FIEs, the SERVICE IEs were not always able to provide this number for every event, thus the total is believed to be notably higher.

Only a few of these IEs said something about a **potential collaboration with other H2020 projects**. For an event aimed at demonstrating Mortoff's data collection solution used in the milling industry, SERVICE 5 (DIH-Challenger) listed DIH-World but did not provide more details. This project was also mentioned by SERVICE 15 (HELFIHUB), which demonstrated the FIWARE-powered IoT solution that integrates liquid pH and EC sensor at an event

organised under DIH-World. This IE also collaborated with the PRIMA2018 MEDITOMATO project when organising *Technology Showroom – Internet of Things technologies in Agrifood*.

3.2.2. Dissemination Activities of Open Call Projects

3.2.2.1 EXPAND IEs

The 11 projects within the EXPAND category listed **nearly 50 dissemination activities** in their Final Progress Reports. Most of them were online, and the vast majority of these IEs (EXPAND 1, 2, 3, 4, 6, 7, 9, and 10) relied on social media, newsletters, or blogpost articles. EXPAND 6 and 8 also attended two webinars each. EXPAND 10 and 11 both had a dissemination activity involving television. There were also other online events/publications such as expert articles, press releases, and an online presentation/conference. As for dissemination done face-to-face, there was a workshop, a conference, periodic meetings with partners, and others.

Regarding the **target audience**, industry representatives are the most numerous, followed by the scientific community. The general public, civil society, policy makers, customers, and DIHs were also commonly targeted. Investors, media, and CCs were also listed, but not as frequently. The number of reached persons is not available for every activity, but from what is provided, it seems the total is **nearly 21,000**. If we also count the estimated audience number of the TV stations involved, the number exceeds eight million.

3.2.2.2 SERVICE IEs

The 22 SERVICE IEs reported **over 90 dissemination activities** in their Final Progress Reports. The most frequent activity is the publishing of press releases and various kinds of articles (blog, media, newspaper) – 17 in total. As expected, the use of social media for dissemination was also frequent, with just over half of the SERVICE IEs reporting this. Workshops, newsletters, fairs, conferences, and webinars were also reported several times by different IEs. Other kinds of activities that were less common but still present are: local media space, a brokerage event, video broadcasting, an exhibition, a seminar, webpages, leaflets/flyers, a matchmaking/networking event, a website advertisement, two radio interviews, and several other live and online events.

As for the **target audience**, the industry category was the most dominant, present in almost every dissemination activity details. The scientific category was also prominent, closely followed by DIHs. Other noteworthy target audience structures are policy makers, media general public, civil society, CCs, investors, and customers. The number of people reached is **at least 505,980**. The actual number must be somewhat higher because some IEs were not able to provide this information for certain activities.

3.2.2.3 RESTART IEs

In M37-M48, six IEs were active within the RESTART OC (RESTART 2-7). In total, they reported **19 dissemination activities**. In this case, online or printed media were more dominant than live events. Most IEs (RESTART 2, 3, 4, 5, and 6) utilised social media for dissemination purposes. RESPOND 3, 4, and 7 listed a newsletter as one of their activities. There were two press releases, a blog article, a newspaper article, a website post, and a TV broadcast. As for face-to-face dissemination, some of the IEs reported a conference, a networking event, and distribution of promotional materials.

In terms of the **target audience**, RESTART IEs mostly focused on civil society and industry representatives, closely followed by the scientific community and general public. Policy makers and the media were targeted, as well. Investors, customers, and DIHs were the target audience somewhat less frequently but still present. Unfortunately, most of the IEs were not able to provide the number of people reached. Only RESTART 3 (IFH) and RESTART 5 (HIBA Accelerathon) offered actual numbers, and their **total exceeds 140,300**. If the rest of the IEs had their numbers, it is safe to assume that the total would be significantly higher.

3.3 RC EVENTS (M37-M48)

In M37-M48, the nine RCs organised/attended a total of **81 events**. The following table shows the number of events per RC.

Regional Cluster (RC)	Number of Events	Online	Face to Face	Hybrid
Central Europe (CE)	7	7		
France	7		7	
Iberia	1		1	
Ireland & UK	5	3	2	
Italy & Malta	2	2		
North-East Europe (NEE)	14	2	12	
North-West Europe (NWE)	40	16	21	3
Scandinavia	1		1	
South-East Europe (SEE)	4	1	3	
TOTAL	81	31	47	3

Table 4 – Number of events per RC

Out of the 81 events, 22 were (co-)organised by a certain RC, while in the remaining 59 cases, the RCs attended as a guest. Because the latter case is more frequent, the RCs were not always able to provide the exact number of attendees, audience structure, etc. as they did not have such insights.

In total, there were **47 live, 31 online, and three hybrid events**. The face-to-face ones were the most numerous, accounting for over 50% of all the events. Online events were also frequent, whereas hybrid events only happened three times, and all of them were attended by RC NWE. This cluster was the most active when it comes to events in general.

Due to limited space in this report, not every event can be described in detail (even titles, dates, and locations are provided in Annex 3), but we can look at several examples with the largest audience. That would be an event called *Trefdag Digitaal Vlaanderen*, held in Gent, Belgium. RC NWE was a guest presented there, and it is estimated that the audience exceeded 3,000 people. We must also underline RC CE's *Agrihub INSPIRE Hackathon 2022*, with 634 online attendees. Another event worth highlighting is *Baltic Geospatial IT Conference*, attended by RC NEE as a presenter, with 600 attendees in Tallinn, Estonia.

In some cases, two different RCs established a collaboration. For instance, RCs NEE and Ireland & UK (together with the DEMETER project) had a joint workshop (*Semantic interoperability and data sharing in agriculture*) at the SAH Final Event in Lisbon. Moreover, RC NWE attended events organised by RC CE (*Digital Innovation -Implementing practical digital strategies on the ground* and *PÖTTINGER – Heading forward by innovation and continuity*).

RCs sometimes attended events organised by IEs falling under their region or co-organised events with them. RC SEE was present at events pertaining to SERVICE 3 (GreenSupplyChain DIH demonstrating two digital solutions on two occasions), SERVICE 15 (*MEDITOMATO Technology Showroom*, organised by Hellenic FIWARE iHub), and SERVICE 19 (Green Digital Innovation Hub demonstrating food traceability using blockchain technology). RC NWE attended events of SERVICE 22 (PhotonicNet GmbH's kick-off event and a knowledge transfer event), SERVICE 13 (RootCamp's *Demo Days* and *Expert talk: Towards climate smart livestock*), as well as ILVO's meeting with the Walloon Agricultural Research Centre (CRA-W)

under SERVICE 18. RC NWE and ILVO also co-organised the RC's closure event. Additionally, RC CE organised a hackathon with EXPAND 6 (Plan4all, Czech Centre for Science and Society and other Czech partners including Agricultural Association of the Czech Republic and CzechInno).

Other events that may be important to emphasise are those where the RCs presented FIEs. For instance, RC NEE was a guest at the *Conference at Agroshow 2021 event - Innovation in agriculture here and now*, presenting results and achievements of each of the Polish FIEs. At the *Agriculture Fair – Seminar* in Latvia, organised by RC NEE, FIE20's poster was used as promotional material. This FIE's results were also presented at the events *Innovative technologies for farm management* and *Baltic Geospatial IT conference*. Furthermore, FIE16's results were presented at *AGROMARSZ Spring Agricultural and Horticultural Fair*. Moreover, at a Paris event called *LFDAY*, RC France presented FIES 6, 7, and 8 and the DIH DIGIFERMES. Also, at the *IoT Week*, RC France and RC NWE presented the results and lessons learnt from the FIEs.

When it comes to the **aim** of the organised/attended events from the RC perspective, the most common responses are informing the public about various topics (FIES, the IP, trends, and solutions in agricultural production, and so on), representing the RC/SAH project, and building connections. The **dissemination channels** used to spread the word about the events were the IP, mailing lists, social media (LinkedIn, Facebook, Twitter), involved organisations' websites, newsletters, and press releases. Targeted mailing and social media were utilised the most in this respect.

The reported number of attendees is close to 6,000 (an estimated 5,986), but the actual number is higher since, as mentioned earlier, the RCs do not have this number for some of the events as they did not organise them. The attendees mostly fall under the industry and scientific categories, but there were also quite a lot of attendees pertaining to general public, media, policy makers, and civil society. Other audience groups reported are investors, customers, DIHs, and CCs.

By organising these events or attending them as participants, guest presenters, etc., the RCs fulfilled an important role in SAH. To begin with, they contributed to **community building**, fostering connections amongst people from various relevant fields and allowing the building of trust. That way, the RCs also created opportunities for **knowledge and experience sharing**. Moreover, through these events, the RCs performed the service of **representation and promotion** of the project in general, as well as the interest of the ecosystem within their region.

4. USER ACCEPTANCE TESTING

The UAT exercise was introduced by WP3 during the second reporting period as a tool to assess user acceptance of digital solutions and services offered by FIEs. The methodology applied is described in the previous iteration of the report, and it was put in place during the third reporting period as well. In total, 23 FIEs took part in this activity, but as explained in the previous iteration of D3.7, responses from SMEs in the previous reporting period were, unfortunately, inaccessible due to technical issues. For that reason, we have responses from 18 FIEs in the two reporting periods, with 37 questionnaires collected, mostly from farmers. While most of the testings were conducted as part of the previous reporting period, several FIEs continued it as part of the last reporting period as well. Therefore, this iteration of the report provides a summary and analysis of the collected responses in M37-M48 (nine farms and two companies from seven FIEs), divided based on the farm/company category and further divided based on the FIE number. Personal information provided by the individuals taking the survey (their names, emails, and so forth) will not be revealed in this document. This chapter general conclusions, while more detailed analysis is presents in Annex 4.

4.1 GENERAL CONCLUSIONS ABOUT THE UAT

This is a public version of the deliverable. Results that are part of this chapter are presented within the confidential version of the document.

5. BUSINESS SUPPORT TO FIES

Business support to FIEs was started during the second reporting period through the implementation of several activities to bring FIEs and the solutions closer to the market. During the third reporting period these activities were continuous and included implementation of business modules, collaboration with Unparallel aiming to transfer FIE results within the IoT Catalogue, creation of a tool for presentation of reusable components, representation of FIEs, within the IoT Week in Dublin in 2022, and participation and presentation of all FIEs during the final event of SAH.

5.1 BUSINESS MODULES

To align with the project approach towards strengthening DIH competences, the project management decided that providing business modules should be done by DIHs rather than the project's WPs. During the previous reporting period, WP3 worked on the identification of training needs from FIEs within the scope of business support. Based on the received inputs and methodological approach, DIHs were invited to conduct four modules, with the support in the content from WP3, in on the following topics:

- M1 Business plan development and mission vision strategy (entry level) conducted by DIH Smart Digital Farming
- M2 Marketing Plan and Market analysis and ecosystem, collaboration, and competition, conducted by DIH VzF GmbH Erfolg mit Schwein.
- M3 Pitching and funding opportunities, conducted by DIH Equihub
- M4 Creating and managing start-ups, conducted by DIH BioSense

DIHs were chosen on a voluntary basis, based on their competence. All the modules were recorded and are available on the IP. Three of the modules are also available on the SAH YouTube channel. Module on pitching and funding opportunities is not available on YouTube, as requested by the lecturer, due to privacy reasons.

The four modules were followed by evaluation questionnaires sent to all the attendees shortly after each session. Both the questionnaire and a detailed analysis of all the answers is available in Annex 5). This sub-chapter offers a brief overview of those responses.

The combined number of attendees of all four sessions is 44, but only nine were willing to fill out the questionnaire afterwards. In fact, no attendee responded to the questionnaire sent after M3 Pitching and funding opportunities, so that is not included in this analysis. As for the remaining three, 33% of the respondents were from a RC, 22.22% from an FIE, while the categories FIE, OC, SERVICE, DIH, and Other (Interested individual) involved one person each (11.11% each).

The attendees were also asked to rate the overall module delivery on a scale 1-5, and the average across all four sessions is 4.67. When asked if some aspects could be improved or covered more thoroughly, a few respondents noted that including more real-life examples would be helpful. Nevertheless, the vast majority of respondents say that their expectations regarding the content of the sessions were met and that it was relevant and easy to follow. That is particularly important for those who have not engaged in the practices covered by the modules before (for example, their organisation does not have a business plan). One of the aims of the sessions was precisely to motivate such organisations to introduce these practices.

At the end, the respondents were also asked to specify which additional business modules would be useful for improving their business. They suggested a few topics such as business process modelling, obtaining funding, and a business model workshop.

As assessed by WP3, the DIHs delivering the modules were equipped with the knowledge and experience to deliver the subject content and support the FIEs interested to learn more about the business element of FIE development. Several FIEs replied that within their consortia, there is already sufficient knowledge on the business aspects, and those FIEs did

not take part. From the evaluation perspective, it could be observed that some of the DIHs had more and some less experience in the topic. Nevertheless, it is encouraging to see their willingness to take part in the activity, as not many DIHs expressed their interest. Those four participating DIHs were also more among the more proactive DIHs during the SAH implementation.

5.2 DEMONSTRATION OF REUSABLE COMPONENTS AND DIGITAL SOLUTIONS ON THE MARKET

5.2.1 Reusable Components Tool

In total, 296 reusable components were used and/or developed within the SAH project, 201 technological and 95 non-technological ones. Technological reusable component were categorised into five groups:

- Data: e.g., API, platform, app, data analysis
- Drones: a separate category was made as we received some external questions to list the drone-based cases within the project
- Hardware: e.g., camera, robot, battery
- Sensors
- Systems: e.g., software, AI model, algorithm.

The non-technological reusable components are shown in one group in the tool. More details about the reusable components can be found in D3.4 "Periodic evaluation of the IEs performance."



Figure 14 - Thing Link tool presenting the reusable components of the (Flagship) Innovation Experiments per sector

For capturing and presenting reusable components, WP3 analysed several tools available on the market, and Thing Link seemed the most appropriate platform to showcase the reusable components per sector and per category while adding links to the SAH website. This tool is

developed by WP3 and is constantly being updated as the FIEs and IEs had different end dates.

<https://www.thinglink.com/scene/1583099841347584003>.

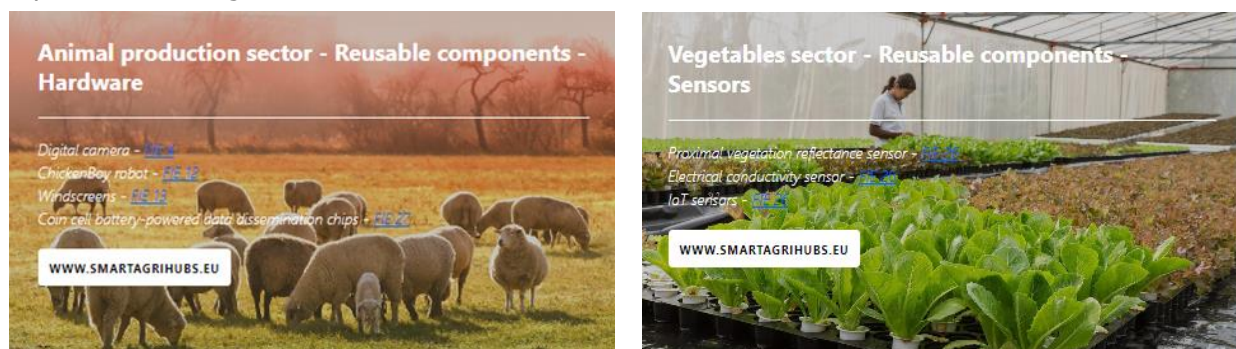


Figure 15 – Examples of the Thing Link tool presentation of the reusable components of the (F)IEs per sector

Reusable components are of a great potential value to other parties, primarily to DIHs considering the replication potential they have, but also to future FIEs. The networking potential is foreseen between current FIEs (reusable component owners) and DIHs interested in the component. The Thing Link tool will be placed on the SAH website and remain available to all stakeholders after SAH, but it will also be promoted by WP3 partners.

5.2.2 IoT Catalogue

5.2.2.1 IOT CATALOGUE

The digital solutions developed within the 28 FIEs will be demonstrated in the IoT catalogue: <https://www.iod-catalogue.com/> to allow their better visibility and accessibility. Coordinators from the RESPOND OC for SMEs and EXPAND open call IEs were also asked if they want their developed digital solutions to be shown in the IoT catalogue.

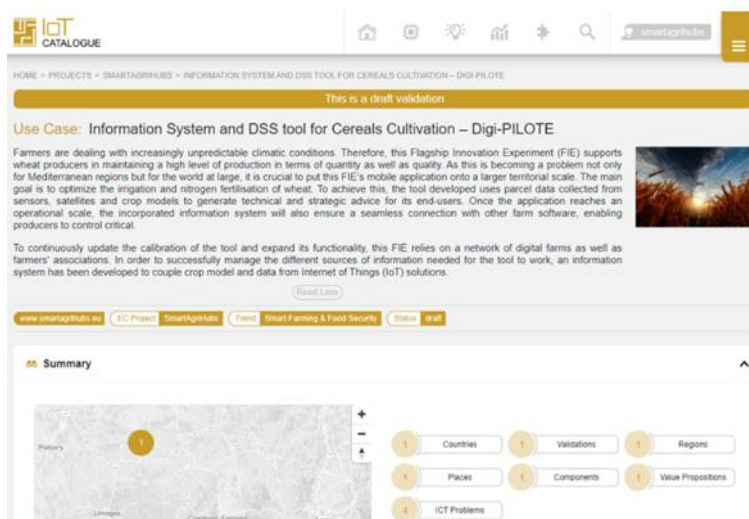


Figure 16 - Presentation of FIE7 Digi-PILOTE in the IoT Catalogue

In addition to 28 FIEs, five IE coordinators expressed their interest in the IoT catalogue:

- RESPOND for SMEs 7 CODIPLAF2F – Cooperative digital platform for Farm2Fork – Belgium (RC NWE)
- EXPAND 1 IntelWines – Smart palletisation system for the optimisation in winery logistics – Spain (RC Iberia)
- EXPAND 4 F2FHUBCONNECT – Expanding and linking the Farm2Fork network to serve large canteens – Belgium (RC NWE)
- EXPAND 9 FORSCC – Forecasting for the Short Supply Chain – Belgium (RC NWE)
- EXPAND 11 DIGIWINE – R&D on the digitalisation on the wine production workflow – Belgium (RC NWE)

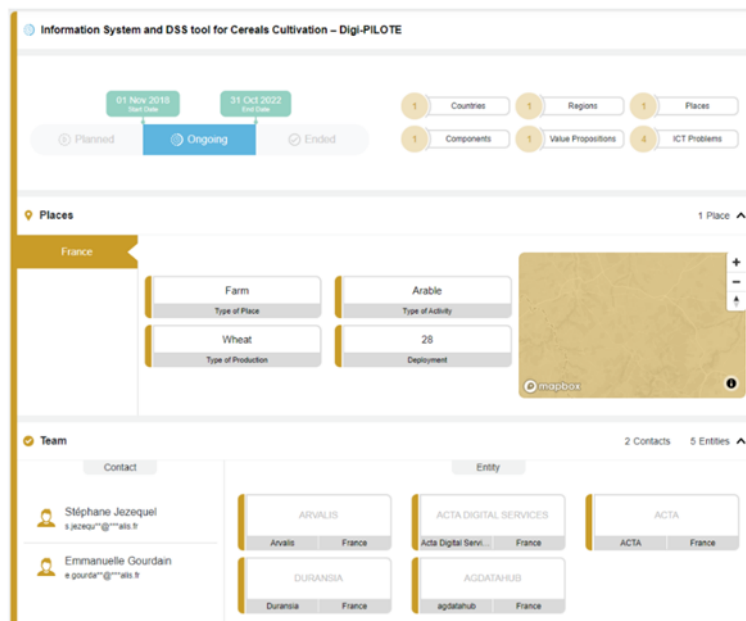


Figure 17 – Presentation of FIE7 Digi-PILOTE in the IoT Catalogue

WP3 supported Unparallel, the Portuguese SME developing this catalogue and monitored this task. Draft pages were created by Unparallel based on input from the Final Progress Reports and responses from the (F)IE coordinators. Currently, pages are being finalised. The final page of FIE7 Digi-PILOTE (RC France) is shown in Figures 16, 17, and 18.

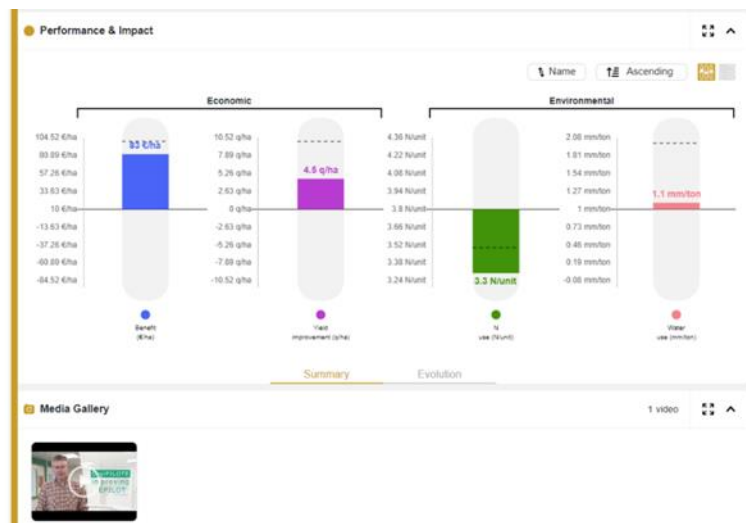


Figure 18 – Presentation of FIE7 Digi-PILOTE in the IoT Catalogue

The SAH project will soon be visible in the IoT catalogue (<https://www.iot-catalogue.com/>) with presentation of 28 FIEs and 5 IEs.

5.2.2.2 ATN Tool

The Agricultural Navigator Tool (ATN) was created by the University of Almeria (lead of WP5) and gives the CCs the opportunity to increase their visibility and to showcase their competences and systems (Figure 19 and 20). Technologies, developed within or outside the scope of the SAH project, can be added and linked to projects in the ATN tool. WP3 encouraged CCs to complete the ATN tool and supported them in this process. The progress of this task was monitored by asking in the Final Progress Reports or in the Additional Questions documents. More detailed information can be found in the Deliverables of WP5.

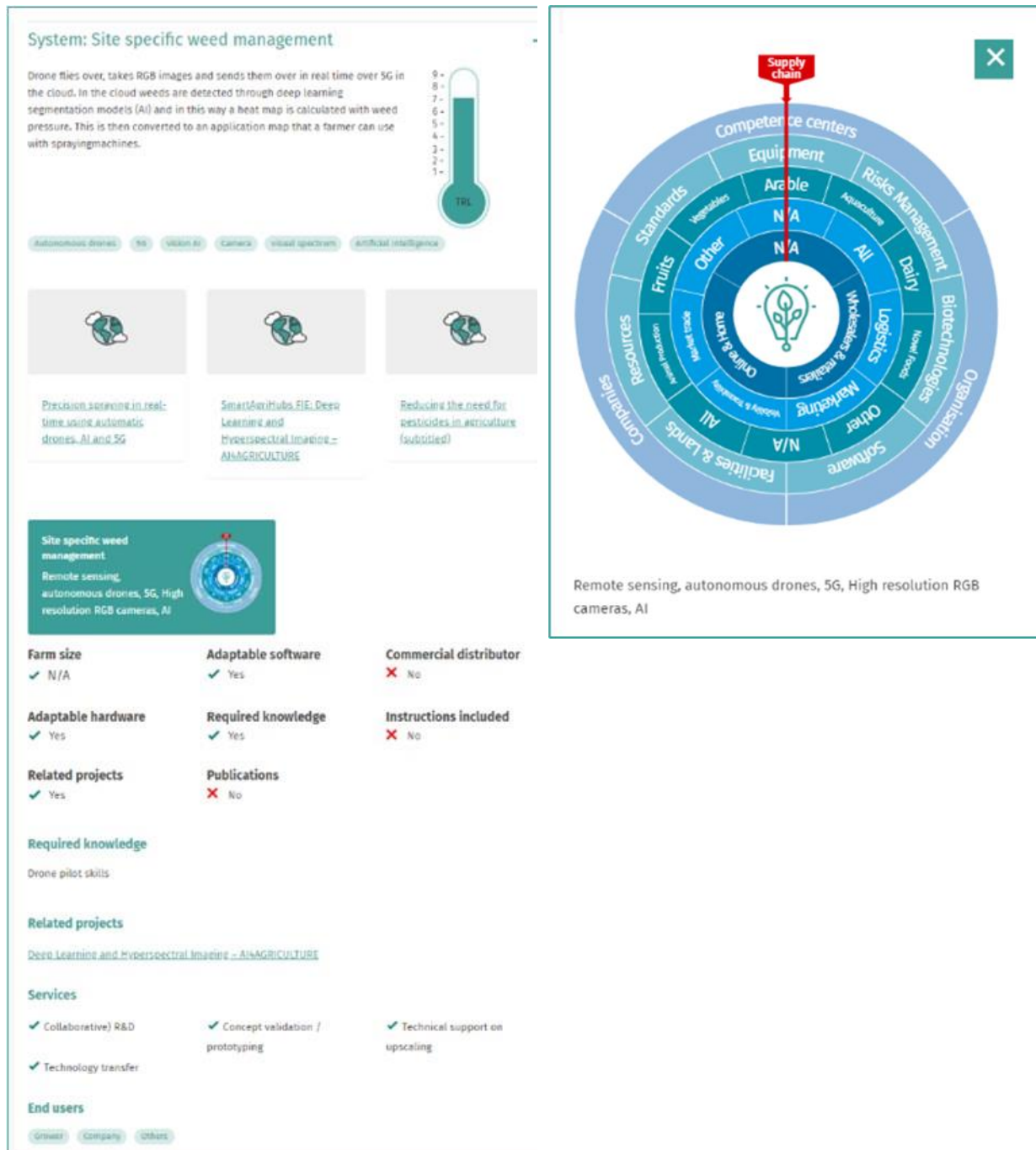


Figure 19 – Systems of CC ILVO presented in the Agricultural Technology Navigator tool

The ATN tool was available during the life of the project to all CCs registered on the IP and assigned as CC and is part of the <search tool of this SAH IP. More detailed information can be found in the deliverables of WP1.

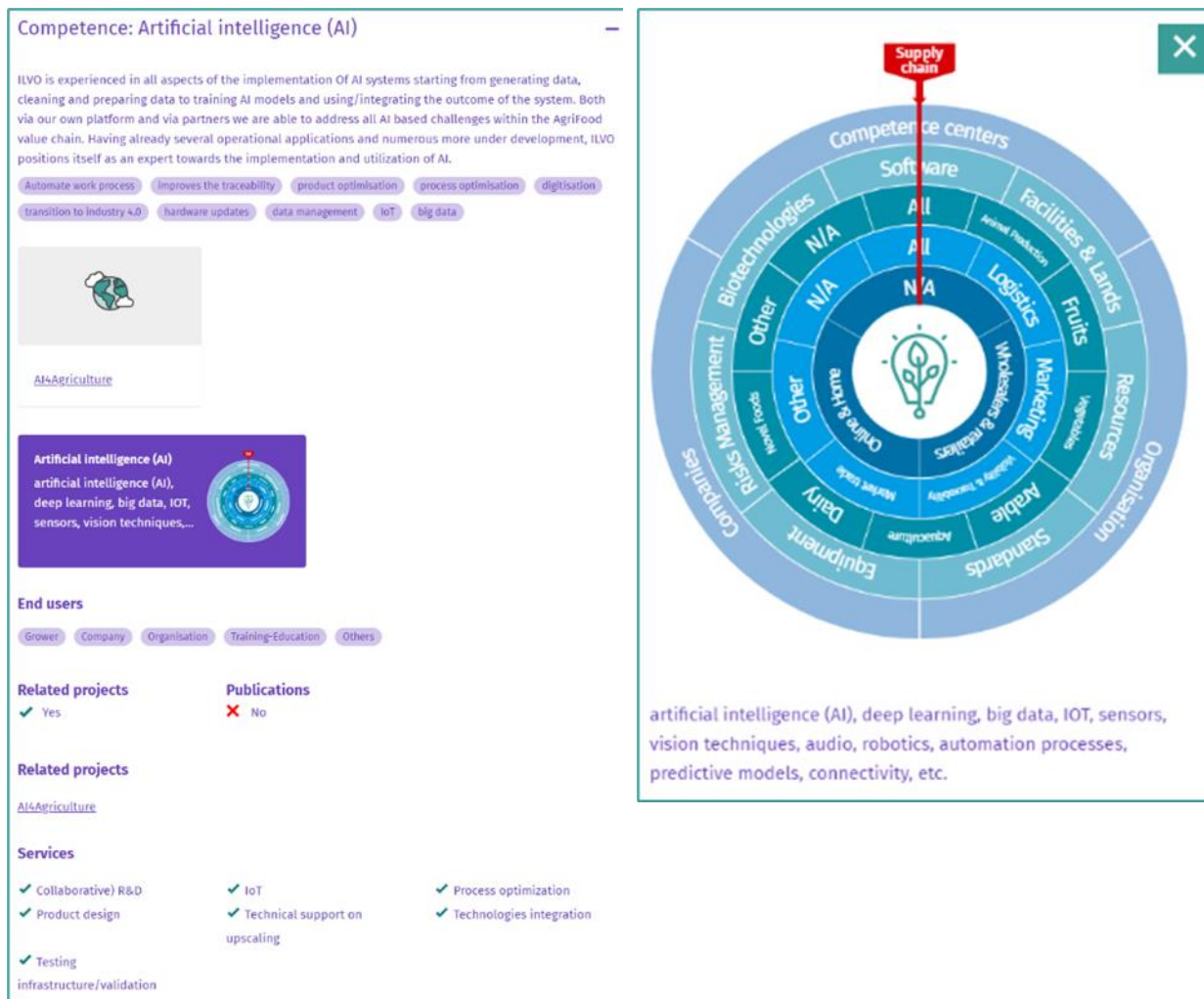


Figure 20 – Competence of CC ILVO presented in the Agricultural Technology Navigator tool

5.2.3 Workshops

Several synergy workshops were organised to present the collected reusable components and the developed Thing Link tool as well as to show the digital solutions on the market and IoT catalogue:

- online “Sector-based support and synergy workshop”
- session “Actor of SmartAgriHubs – Technology and lessons learnt”
- session “Discover how SmartAgriHubs addresses 5 key objectives”
- workshop “Sector-specific developments, challenges and future demands: animal production and dairy sectors”
- workshop “Sector-specific developments, challenges and future demands: fruit, vegetable and arable sectors.”

An **online Sector-based support and synergy workshop** has been organised June 1, 2022, by WP3. In a plenary session FIEs, IEs, and their agricultural challenges and digital solutions on the market were presented. The reusable components categorisation was explained, and the Thing Link tool was shown for the first time (Figure 21).

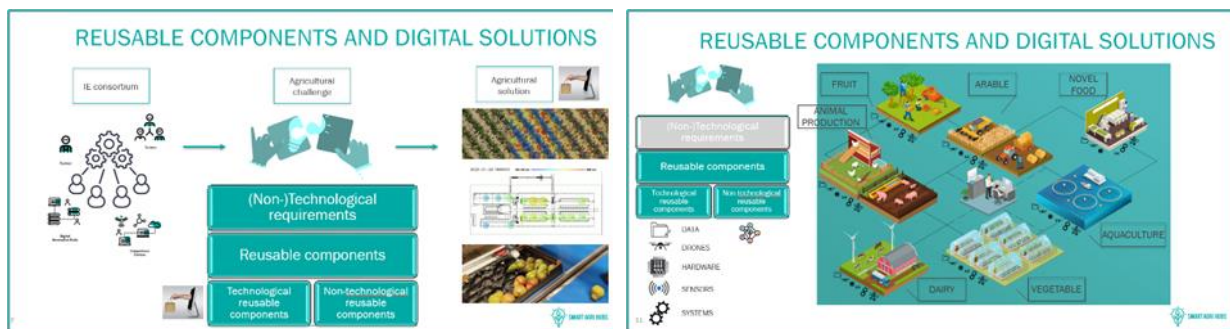


Figure 21 – Presentation of the reusable components and Thing Link tool (PowerPoint slides) during the online Sector-based support and synergy workshop

Attendees (N registrations = 96) had interactive discussions in seven separate sector-specific break-out rooms with an expert in the field. The break-out sessions were moderated by ILVO colleagues.

A Mural workspace was used and the “I like, I wish, I wonder” feedback principle formed the basis to talk about success stories, constructive feedback, and new ideas. Future developments and collaborations were also discussed using 3 post-it boxes, i.e., “I am available,” “I search for,” or “I plan to” (Figure 23).



Figure 23 – Interactive discussions in sector-specific break-out rooms (Mural workspace) during the online Sector-based support and synergy workshop

SmartAgriHubs and Unparallel were present at the IoT week at end-June 2022 in Dublin (Ireland) and organised several workshops and presentations such as the “**Actor of SmartAgriHubs – Technology and lessons learnt**” session. The general objectives of the SAH project, FIEs and IEs, and their reusable components and digital solution on the market were shown by WP3 (Figure 24) followed by detailed presentations of some digital solutions of five Regional Clusters. Unparallel presented the IoT catalogue and progress made for the SAH pages.



Figure 24 – Presentation of the FIEs' and IEs' and their reusable components and Thing Link tool (PowerPoint slides) at the IoT Week in Dublin (Ireland)

During the final event of SAH at the Lisbon Congress Centre in Portugal all WPs presented their results and achievements at the first day of the conference (Monday, September 26, 2022, Lisbon Congress Centre, Portugal) during the **“Discover how SmartAgriHubs addresses 5 key objectives” session**. The BioSense Institute and ILVO presented the work of the monitor and evaluation team (WP3) and gave an overview of FIE and IE support. Reusable components, the Thing Link tool, the IoT catalogue, and the ATN tool were also demonstrated to the audience (Figure 25).



Figure 25 – Presentation of the reusable components and Thing Link tool (PowerPoint slides) during the WP3 overview workshop at the SAH final event in Lisbon (Portugal)

Two synergy workshops were also organised by the BioSense Institute and ILVO at the SAH final event in Lisbon on September 27, 2022 (Lisbon Congress Centre, Portugal).

- **Sector-specific developments, challenges and future demands: animal production and dairy sectors:**

Expert panel:

Natasha Browne – Teagasc (Ireland)

Intiaz Shams – Flox (UK)

Srdjan Krco – DunavNET (Serbia)

Hubert Gerhardy – Marketing Service

Gerhardy (Germany)

Tomas Johansson – RISE (Sweden)

Moderator:

Anneleen De Visscher – ILVO (Belgium)

Fourteen attendees participated in this interactive workshop. Participants and experts gave their ideas on post-its and discussed (1) the main challenges related to technology and collaboration (e.g., with farmers), (2) achievements of SAH or other projects or industry, and (3) the future demands and ideas with emphasis on new projects and recommendations for future calls.

The Thing Link tool with reusable components was presented to the audience at the start of the workshop (Figure 26).



Figure 26 – Presentation of the Thing Link tool (PowerPoint slide) during the Sector-specific workshop at the SmartAgriHubs final event in Lisbon (Portugal)

- **Sector-specific developments, challenges and future demands: fruit, vegetable and arable sectors:**

Expert panel:

Karel Charvat – Wirelessinfo (Czech Republic)

Erik Pekkeriet – Wageningen University & Research (The Netherlands)

Maciej Zacharczuk – Wielkopolska Agricultural Advisory Center (Poland)

Andrea Cruciani – Agriculus (Italy)

Koen Uyttenhove – AVR – DIH ODYC (Belgium)

Moderator:

Jovana Vlaskalin – BioSense Institute (Serbia)

24 attendees participated in this workshop and discussed with the expert panel, using Mentimeter, future challenges, recommendations, and collaborations.

6. CONCLUSIONS

The report on maximisation of IEs market take up is the second iteration of such report, covering M37-M48, while the first version was submitted in M36. This document describes activities aimed at maximising FIE market take-up: demonstration activities implemented by FIEs and OC IEs and feedback thus collected, and events organised or attended by RCs. Besides this, there is an analysis of collected User Acceptance Testing questionnaires conducted by FIEs and their testing partners, implementation of the business sessions, and demonstrating reusable components and digital solutions on the market.

Conducted events and demonstration and dissemination activities

In M37-M48, FIEs reported 14 and OC IEs 99 demonstration activities, while RCs organised/attended 81 events. Combining all the numbers, we get a total of **194 demonstrations**. The majority (119) happened face-to-face, while online (61) and hybrid events (14) were somewhat less frequent. This is likely to be related to the fact that COVID-19 restrictions have been lifted, and people enjoy physically being present to see solutions/products working, participate in discussions, network, etc. Still, (F)IEs and RCs acknowledge that both physical and online events have their advantages. For instance, seeing a product in person may allow one to test it, attendees may feel more comfortable asking questions and providing feedback, making connections and potential future collaborations may be more natural, etc. On the other hand, online events allow people from all over the world to join, they can be recorded for later viewing, and so forth.

Regardless of the format, events such as these are beneficial for sustaining the SAH network. Together, through all these events, (F)IEs and RCs reached some **28,000 people**, mostly from the industry and the scientific community, but also policy makers, general public, civil society, media, and others. The most common promotional channels used to gather the audience were targeted mailing and social media. Event organisers agree it is useful to have a detailed agenda, several speakers, if possible, to ensure a dynamic atmosphere, the networking aspect, to use language that is not too technical, and to take into account factors that could potentially hinder an event (such as the weather, unstable Internet connection, etc.). Speaking of event organisers, in most cases, FIE coordinators organised their demonstrations, and in almost all the cases, those coordinators were also participating DIHs, providing the services related to technology, event organisation/implementation, communication & dissemination, and ecosystem building.

The feedback received indicates that there was a lot of interest raised among the stakeholders and potential collaborators, and it can be used to improve solutions/products or boost the quality of similar events that will be organised in the future. All of this is crucial for projects aiming to find success on the market.

As for IEs' dissemination activities, they occurred in various forms, most notably newsletters, social media, conferences, webinars, and newspaper/blog articles. According to the numbers found in Final Progress Reports, the FIES/IEs reached over **650,000 people** this way, which proves that it is important to spread information this way.

User Acceptance Testing

The UAT questionnaire was filled out by representatives from nine farms and two companies from seven FIEs. When it comes to the farm category, there is plenty of positive feedback: most respondents agree that the additional benefit for the farm is clear, that the given solution/products offer more benefits than the current practice, that is reliable, logical, and easy to use, that it can increase productivity and reduce working time, etc. There is some apprehensiveness about the solution's/product's ability to increase profits and its interoperability with the existing machines on the farm. Some respondents were also unsure whether they would need external support to maintain and repair the given product/solution.

In the company category, there were only two respondents. They also had positive feedback: they agree that the solution/product contributes to more precise decision-making and offers

more benefits than the current practice, that it is logical and user-friendly, that it could boost profits, and that they would recommend it. However, one of the two is not convinced that the product/solution in question could boost productivity and reduce costs. Also, the two respondents do not believe that it contributes to societal goals.

We can conclude that the UAT is useful because it shows that **the developed products and solutions are deemed satisfactory by the users**. As for some answers that might not be as highly satisfactory, it is still very valuable information because it points out what improvements can be made.

Business support to (F)IEs

As an opportunity to strengthen their business skills, four training sessions (so-called business modules) were organised for (F)IEs. Expert volunteers from four DIHs covered the following topics: Business plan development and mission vision strategy (entry level), Marketing Plan and Market analysis and ecosystem, collaboration, and competition, Pitching and funding opportunities, and Creating and managing start-ups. On the one hand, this was useful to improve the (F)IEs' business performance, familiarise them with the knowledge and skills necessary when approaching the market, and enhance their confidence, while on the other hand it was a beneficial exercise for the DIHs who were able to deliver the content to FIEs and therefore improve their skills.

When it comes to reusable components, the SAH project's 296 reusable technical and non-technical components are shown in the Thing Link tool and will remain visible and available after the lifetime of SAH. At least one DIH and one CC were involved in each FIE execution resulting in 111 reusable components whereas 185 reusable components were identified in the IEs which had a DIH coordinator. The outcome of the (F)IEs and 40 digital solutions on the market will be presented in the IoT catalogue. The tool and catalogue contribute to the sustainability of the SAH project and its network. Technologies, competences, and systems of CCs are showcased in the ATN tool as part of the SAH IP, strengthening the searching tool of this portal.

All in all, we can conclude that all FIEs will continue to work on improving their solutions to some degree. Striving toward that goal, they are searching for additional sources of funding and new partnerships. The SAH project helped these organisations to learn about the benefits of digital solutions. They especially appreciate learning a lot from interactions with end-users. OC IEs also intend to continue to work on their solutions. IEs under the SERVICE category deserve particular recognition in terms of improvements and service demonstration, and they will continue to better their services through future collaborations.

7. ANNEXES

Annex 1 – (F)IE Final Progress Reports M37-M48

Link to this Annex is included in the confidential version.

ANNEX 2 - Lessons learnt from the organisation of demo events

In M37-M48, different valuable lessons were learned and described by the SAH participants analysed in this deliverable. This subsection showcases highlights and attention points provided by FIEs, OC IEs, and RCs in that order.

FIE Lessons Learnt

Not all FIEs had demo events in the third reporting period, but those that did have them offered several conclusions.

To begin with, it is important to state that most FIEs report a good **reception of the solution by the stakeholders**. For instance, FIE1 states that farmers were positive about the demonstrated tool and the usefulness of the data that will be provided. They were also interested enough to take part in a discussion. Nonetheless, it is underlined that seeing the tool actually work would make it easier to understand. For that reason, FIE1 plans an interactive demonstration using a laptop/screen once the tool is developed and shown in its working form. In addition, FIE8 emphasises that the participants seemed keen and had questions. FIE9 noted that acceptance by the attending farmers would have been better if the solution had worked better, but this was a challenge primarily due to lighting conditions. Moreover, FIE18 reports a lot of interest expressed by the scientific community, along with a willingness to further develop the solution with the nearest prospects of European projects (Horizon Europe). Finally, FIE21 also mentions a good reception, noting that clearly stating economic and environmental benefits was the main reason.

When it comes to **communication with stakeholders**, FIE3 pointed out that it was easy to have verbal communication with the attendees because it was a relatively small group. Furthermore, FIE9 concludes that it made the right move by letting the communication team of ILVO deal with that because they are well-experienced with that type of events. FIE11 says that a Q&A session is a great way to make the interaction with stakeholders better and easier. This FIE also noticed that the participants were happy that it was a face-to-face event. FIE9 points out that it is important to communicate with the stakeholders after the event, as well.

Some of the lessons learnt pertain to **demo event preparation and execution**. FIE9 points out that Power Point presentations should not be too long. This FIE adds that the presentations were well-prepared in advance, which is important because it allows for the transition from one topic to another to flow smoothly even when there are many stakeholders present. Speaking of a large number of visitors, FIE18 concluded that there should be a bigger organisation team in that case. FIE3 serves as a good example of a dynamic presentation environment because part of it was held outdoor and part of it indoor. That way, the attendees could acquire new knowledge through the indoor presentation and then experience the demonstration in a real field.

Although the outdoor presentation proved successful for FIE3, some others experienced **issues during demo events** precisely because of the weather outside. In the case of FIE9, the lighting conditions were changing constantly, making it challenging to make the technology chain work for the event. Similarly, FIE18 explains that it is difficult to see an audio-visual presentation in open spaces like greenhouse and fields. In their case, there were also temporary issues with the Internet access. Another obstacle registered by FIE18 is issues with the language used during the demonstration as there were both Polish- and English-speaking participants present.

Several FIEs were also able to draw conclusions on how **feedback from the participants** could be used in the future. For example, FIE3 believes it could organise presentations with a bigger focus on technology for those who are interested. Other than that, the main plan for the future is to improve the solution. That was stated by FIE1, explaining that an additional meeting would provide more user feedback and the chance to further improve the tool. Similarly, FIE8 used the feedback to improve its tools support materials. FIE18 says that the participants' feedback is crucial for the further development of its prototype, and all the proposals/suggestions will be analysed and possibly implemented during the improvement phase of the research. Finally, FIE21 says that the feedback will lead to the adjustment of its platform to improve the visualisation of results.

OC IE Lessons Learnt

Within the OC category, EXPAND and SERVICE IEs provided their lessons learnt reports. The analysis of their responses is available below.

EXPAND IEs Lessons Learnt

In the EXPAND OC category, several topics emerge as valuable. Generally speaking, the participants expressed a lot of **interest**. In the case of EXPAND 2 (WWW.POT.DIGI), the participants even said they would like more sessions to be organised. EXPAND 5 (AquaHubs) points out that the interest observed during their demo activities is primarily thanks to the fact that the digital solutions were very innovative and effective in resource-saving and healthier fish stock outcomes. EXPAND 6 (AgriHub CZ&SK) adds that thanks to interesting challenges, they were able to reach and connect with a large number of listeners and interested parties from all over the world. EXPAND 3 (PREPIPE) says that at one of their demo events, "DIH found it interesting and were very mind blown by the workshop and matching resources within the system."

As for what else makes a presentation interesting, there are several points. EXPAND 8 (GoINN4Digital) made sure to address the issue that was important for their target audience because they need support in that area – the integration of different smart agriculture solutions by cooperatives. This IE also had very concrete presentations in order to maintain high attention of the attendees. Similarly, EXPAND 11 (DIGIWINE) says that not too many points should be covered in one event because the audience might lose focus. This IE underlines that a good visualisation of the presentation is needed, as well as avoiding too much text. EXPAND 9 (FORSSC) also says that strong visual components were utilised in their online demonstrations. EXPAND 6 (AgriHub CZ/SK) highlights that relying on various types of materials can be extremely helpful. They also used an interactive voting feature, and similarly, EXPAND 5 (AquaHubs) used online polls. EXPAND 7 (RAINaDiv) notes that the public is largely unfamiliar with IT infrastructure, which made them focus more on an AI workflow that was also suitable for prospects without deep IT infrastructure knowledge.

The lessons learnt reports also tackles demo event **planning and organisation**. EXPAND 2 (WWW.POT.DIGI) mentioned the need for good planning, which should involve a way to involve the participants. EXPAND 8 (GoINN4Digital) explains that is important to create an event with scheduled timing and organise it in a dynamic way to avoid downtime. EXPAND 9 (FORSSC) also claims that their planning was clear and the technology well-prepared.

Some IEs talk about the advantages of **face-to-face vs. online demonstrations**. For example, EXPAND 10 (WEAVER) emphasises that introducing a solution in person boosts communication with stakeholders. EXPAND 11 (DIGIWINE) claims that a real environment instead of a digital one helps reconnect with the audience. EXPAND 8 (GoINN4Digital) says that the involved cooperatives truly appreciated the demonstration of the flight of a drone over a vineyard because they had the chance to see the operational tasks to be performed and to ask for clarifications with the technicians, step by step. On the other hand, EXPAND 6 (AgriHub CZ/SK) was able to have participants from all over the world because it used an online platform to gather the attendees. They also made the recording available on YouTube, which is extremely handy for those who were not able to attend but wish to see what was demonstrated.

As for **communication with stakeholders**, EXPAND 2 (WWW.POT.DIGI) says they had a bit of a slow start, but it ended well. Moreover, EXPAND 9 (FORSSC) states that their communication with the stakeholders was successful because it was quick and respectful, but they should be given more heads up closer to the date. EXPAND 8 (GoINN4Digital) learned that one-to-one communication (emails or phone calls) is very effective, as well.

Several **potential obstacles** were discussed, as well. For instance, EXPAND 2 (WWW.POT.DIGI) observes the need to speak the stakeholders' language; otherwise, your message might not be clear. EXPAND 7 (RAINaDiv) mentions the fear of a project with a long tail, stating that getting to 90% is probably rather straightforward, but the last few %, which is essential in a low margin sector, might be more difficult. EXPAND 9 (FORSSC) explains that despite good planning and technology preparation, it was not entirely clear how the user can apply the data in question.

Finally, the IEs reflected on ways they could implement **feedback received from the participants**. Several of them talk about organising more sessions in the future. EXPAND 2 (WWW.POT.DIGI) says it will continue with more sessions. EXPAND 7 (RAINaDiv) says that Kapernikov will develop a hands-on workshop to teach participants how to approach machine learning projects in a way that is feasible for people without IT infrastructure knowledge yet powerful enough to keep track on the machine learning experiments, which is necessary to achieve reproducible results. EXPAND 10 (WEAVER) says that there could be follow-up meetings. Furthermore, EXPAND 5 (AquaHubs) notes that the feedback clearly encouraged further development of the concept, for which additional funding will be required. EXPAND 3 (PREPIPE) states that they went through the feedback together with the start-ups during the OIC planning so that they derivate the influence on their business model. This IE adds that the feedback was transported to the development team to be accounted during the production. Lastly, EXPAND 8 (GoINN4Digital) will use the feedback improve the weaker aspects when preparing similar events in the future, which is likely to be something all IEs will do.

SERVICE IEs Lessons Learnt

Many IEs within the SERVICE category reflected on the **significance of demo activities**. For example, SERVICE 1 (AB Smart DIH Services) says that presenting an innovative solution in this way brings the possibility of being contracted based on the innovation. SERVICE 3 (DemocraTech) believes that their demonstrations allowed the participants to see the potential value of the presented technology solutions. SERVICE 12 (SmartGeoFish) learnt that the aquaculture sector in Hungary may be small, but there is a lot of interest towards it, and demo events are an excellent way to provide the reassurance that the implemented technological concept is relevant to the sector. SERVICE 16 (AIDM) reports that one of the IE's demo events (Aerial Agri Tech Training) managed to spark the interest from those who were initially sceptical of the technology.

As for **organisation and structure**, SERVICE 1 learnt that having a small presentation followed by a discussion with a few people seems more fruitful than a single presentation to a large group of people. However, in cases when one wishes to increase the attendance, especially corporate attendance, contacting the invited stakeholders should happen considerably earlier. SERVICE 2 (CREDAS) says that organisers should strive towards a dynamic structure of events where they can be present different technologies. SERVICE 3 (DemocraTech) noticed that their training session on proposal writing had, unfortunately, been too short to be effective. According to this IE, such a presentation would need to actually be a dedicated webinar of at least ten hours. SERVICE 4 (DigiWine) says that one of the reasons why their B2C webinar on winemaking was a success is because the 11 speakers perfectly kept to their allocated time and the overall duration of the webinar. That is primarily thanks to detailed instructions regarding the speech structure and the template given by the organiser. SERVICE 8 (DDADI) believes the agenda should be determined at least six weeks before an event to achieve better organisation and preparation. Similarly, SERVICE 11 (CompEAT) and SERVICE 17 (AgriTEAM Innovator) both agree that the agenda needs to be detailed and followed as close as possible. SERVICE 9 (PROAGRO) learnt that having several

different presenters keeps the attention level high, while controlling presentation duration. SERVICE 16 (AIDM) concludes that the timing is a huge factor in the farming community, and the IE will aim to host events at an evening time slot in the future. Several IEs point out that presentations should be easy to understand, avoiding elements that are too technical for the majority of the audience. Additionally, organisers should consider the weather when preparing the event. SERVICE 2 (CREDAS) had to slightly alter the initial programme due to adverse weather conditions. SERVICE 15 (HELFIHUB) was not able to roll up some banners due to strong wind.

What also appears to be useful is encouraging **networking and a relaxed atmosphere**. SERVICE 9 (PROAGRO) says that networking and matchmaking events are highly appreciated. SERVICE 10 (AgENT) also incorporated the networking aspect in several of its demo events, underlining how useful it is to network in person. One of the attention points in the report of SERVICE 12 (SmartGeoFish) is that there was no dedicated timeslot for networking. SERVICE 19 (DFTB) says that networking sessions during their demo event led to being in contact with some stakeholders regarding the implementation of a first pilot project. SERVICE 18 (FITeam) explains that this IE managed to create a relaxed mood through a networking lunch. SERVICE 2 (CREDAS) learnt that a roundtable discussion allows participants to exchange their observations about the event in a warm atmosphere. SERVICE 8 (DDADI) suggests that professional and “cold” event locations are not always a good choice if you aim for a creative environment because the atmosphere might be too serious. SERVICE 13 (BLIVE) reported two networking sessions offered at an event, allowing the participants to interact with each other.

Some IEs emphasise that their audiences also appreciated **Q&A sessions and discussions**. SERVICE 9 (PROAGRO) believes that enough time for Q&A sessions needs to be provided. SERVICE 10 (AgENT) ensured that each of its events had discussions and time for questions. SERVICE 15 (HELFIHUB) adds that such sessions are very useful in communication with stakeholders. SERVICE 3 (DemocraTech) states that visiting a pilot farm together with stakeholders and partners resulted in fruitful discussions and knowledge exchange about the technology implemented. SERVICE 14 (SA’HDF) points out that, even if it is a small group, a discussion can be very rich and interactive if the participants have the relevant experience.

Much like other event organisers described in this deliverable, SERVICE IEs reflected the difference between **face-to-face and online demo events**. SERVICE 9 (PROAGRO) suggests that combining two, i.e., having hybrid events works well. SERVICE 1 (AB Smart DIH Services) agrees that the hybrid approach is effective but adds that live demos are more useful. SERVICE 3 (DemocraTech) says that their online demonstrations were fine, but the participants would love to visit the demonstration farms more. SERVICE 14 (SA’HDF) notes that in the case of virtual events, not all the people registered actually show up, but online events can be recorded, and those people can replay them, which is a big advantage. SERVICE 21 (AgTechBridge) says that online and hybrid events worked best for the IE. For SERVICE 4 (DigiWine), organising the demo event online was a fantastic decision because they thus reached nearly 2,000 stakeholders from all major wine countries around the world. Similarly, SERVICE 5 (DIH-Challenger) noticed that their online events attracted more participants, but this IE still says that face-to-face contact encourages collaboration between partners more.

When it comes to **communication with stakeholders**, many IEs in this category report good results. Emails, newsletters, telephone or video calls, and business cards are mentioned as an excellent way to attract the audience. Some IEs believe it the communication will continue after the demo events, as well. In fact, several SERVICE IEs intend to organise **follow-up events or actions**. SERVICE 3 wrote that more materials would be sent to the participants on how to apply the technology in action. SERVICE 11 (CompEAT) and SERVICE 17 (AgriTEAM Innovator) both recognise the need to organise future meetings and collaborations. SERVICE 6 (GROW2D) says more concrete features and functions should be presented next time since market potential seems promising.

Finally, when it comes to **feedback collected from their audiences**, the vast majority of SERVICE IEs said that it would be kept in mind when preparing similar events in the future. In addition, several IEs will use the feedback to improve their solution/service or create new ones. For instance, SERVICE 2 thinks the feedback could serve to create a new series of services to connect not only producers but also players in the organic supply chain. SERVICE 3 (DemocraTech) will focus on further refinements to the smart farming solution in order to be offered as an integrated solution with more user-friendly interfaces. SERVICE 5 says that the feedback will be incorporated into the development of Innoskart-DIH services and its business plan, as well as the cross-border go-to market strategy of the developed solution. From the feedback collected by SERVICE 13 (BLIVE), the IE concluded that more interactive sessions (e.g., brainstorming, group discussions) should be included in this type of event.

RC Lessons Learnt

During the events where RCs represented SAH, they generally noticed a lot of **interest** and a **positive reception**. For instance, RC Italy & Malta says that there was a lot of curiosity expressed during two training meetings organised by the training agency Coldiretti despite low-level knowledge of the EU R&I programme and topics addressed by SAH. Furthermore, RC NWE reported individual meetings with interested participants as a result of the CHAIN event organised by the RC at ILVO, Merelbeke (Belgium), where the challenges of digital collaborations across companies are mapped out. RC NEE learnt that farmers coming from small and medium-sized farms are willing to start adopting and testing innovations (such as drones from FIE16), especially if they come at a low cost/for free. Moreover, after an event, RC Iberia was approached by two scientists from a CC in Portugal, saying they were interested in SAH and being part of it through the RC.

What is also a good sign of interest is sparking **discussions, questions, and suggestions**. For example, immediately after RC CE's event *Joint Conference 2021 & Agriculture 4.0*, there were questions about the availability of the presented papers. RC NEE was a guest at a conference at the *Agroshow 2021* event and reported that there was interesting discussion about ways to strengthen the agricultural innovation ecosystem in Poland, after presenting all the final results of SAH FIEs in the country. At the *SAH Final Event* in Lisbon, this RC reported a discussion on how approaches to semantic operability and data sharing presented by various speakers (from the DEMETER project, IDSA, advisory centres, etc.) could be connected. RC Ireland & UK heard from farmers that agricultural education in schools would be useful, as well as actions aimed at encouraging youth and females into farming. RC NWE reported dynamic Q&A sessions after several events.

When it comes to the **organisation and structure** of events, several aspects need to be considered. For example, RC CE reflected on the importance of choosing a good time frame so that all the participants stay until the end. It is also a good idea to have several speakers to ensure variety. RC France learnt that B2B business meetings are not the best format for presenting a European project. Also, at the *IoT Week 2022* in Dublin, this RC concluded that a five-minute presentation was too short to bring FIEs to the fore. RC Ireland & UK adds that using Mentimeter was a success, so this and similar tools should be introduced when possible.

As for the matter of **live vs. virtual events**, RC NWE noticed positive feedback regarding meeting face-to-face after several years of COVID-19 restrictions. This RC notes that a lot of webinars are still organised these days, but people often register and do not attend them. RC CE, on the other hand, reported many registrations for virtual events despite "online tiredness." In fact, this RC observes that many people have become accustomed to meetings and trainings online. A big advantage of virtual events is also that they can receive webinar recordings in case they are not able to attend at the scheduled time.

In conclusion, RC events accumulated notable interest and positive feedback. These events are a great way to connect DIHs, CCs, IEs, and individuals.

Annex 3 – Demonstration Activities M37-M48

Link to this Annex is included in the confidential version.

Annex 4 – UAT Responses M37-M48

Link to this Annex is included in the confidential version.

Annex 5 – Business Modules Evaluation Questionnaires and Response Analysis

Link to this Annex is included in the confidential version.