D2.7 SCALE-UP DEMONSTRATION REPORT

WP 2

November 22nd, 2019

The Report will describe all implemented demonstration activities, informational/promotional material used, tools used to collect feedback, and present the collected feedback and analysis thereof. The report will be published two times during the course of the project, to capture the distinct phases of the demonstration activities.

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PROJECT SUMMARY

The internet of things (IoT) has a revolutionary potential. A smart web of sensors, actuators, cameras, robots, drones and other connected devices allows for an unprecedented level of control and automated decision-making. The project Internet of Food & Farm 2020 (IoF2020) explores the potential of IoT-technologies for the European food and farming industry.

The goal is ambitious: to make precision farming a reality and to take a vital step towards a more sustainable food value chain. With the help of IoT technologies higher yields and better-quality produce are within reach. Pesticide and fertilizer use will drop, and overall efficiency is optimized. IoT technologies also enable better traceability of food, leading to increased food safety.

Nineteen use-cases organised around five trials (arable, dairy, fruits, meat and vegetables) develop, test and demonstrate IoT technologies in an operational farm environment all over Europe, with the first results expected in the first quarter of 2018.

IoF2020 uses a lean multi-actor approach focusing on user acceptability, stakeholder engagement and the development of sustainable business models. IoF2020 aims to increase the economic viability and market share of developed technologies, while bringing end-users' and farmers' adoption of these technological solutions to the next stage. The aim of IoF2020 is to build a lasting innovation ecosystem that fosters the uptake of IoT technologies. Therefore, key stakeholders along the food value chain are involved in IoF2020, together with technology service providers, software companies and academic research institutions.

Led by the Wageningen University and Research (WUR), the 100+ members consortium includes partners from agriculture and ICT sectors and uses open source technology provided by other initiatives (e.g. FIWARE). IoF2020 is part of Horizon2020 Industrial Leadership and is supported by the European Commission with a budget of €30 million.

EXECUTIVE SUMMARY

This document provides an overview of the activities conducted in order to boost the opening of the 33 UCs towards the public and, more importantly, towards potential end-users.

This report, entitled: deliverable 2.7 “Scale-up Demonstration Report” has the objective to present the procedure established for UCs in order to help them during demo events organization; collaboration between project WPs, where each provided input from their perspective; the demonstration activities plans of all UCs and summary of already conducted events.

The preparatory material for procedure preparation was the FarmDemo kit – the guidelines for successful farm demonstrations, with careful tailoring to best fit the needs and nature of IoF2020 Use Cases. Valuable input provided all WPs – each WP gave their contribution in procedure establishment and indicated the most important aspects of the demonstration. In addition, the main motto of the procedure was to make scaling up as easy as possible to UCs, to lower the paperwork as much as possible. The special challenge was to make the procedure obligatory in order to be able to monitor the progress, but flexible enough so all 33 UCs be able to adjust it to their own needs and the circumstances of the demonstration. This deliverable brings all demonstration activities plans, from all UCs. Each UC needed to indicate at least one demo event in the period Q2 2019 – Q2 2020. The maximum number was not limited.

UCs were encouraged to participate at large fairs and place themselves next to large industrial partners; to collaborate and join forces with other complementary UCs, as well as to organize events independently. We didn’t want to limit the number of participants, so UCs had all the freedom to organize their presentations at Open Days, fairs and farm machinery demonstrations – all involving large number of participants. At the same time, our UCs were encouraged to organize field walks on research / commercial farms, workshops on experiments and to directly interact with small group of farmers directly involved in the type of agricultural production that is in line with their UC objective.

According to the Demonstration Activities Plans, a total of 72 events was planned. During the period from May to August 2019, IoF2020 UCs organized 22, while more is planned for Q3 and Q4 2019 and Q1 2020.

The last aspect of the deliverable are the lessons learnt for the conducted activities and recommendations for the following ones.

The most often received feedback is that the topic of the presentations needs to be in line with the attendees’ background. Many UCs reported that although the demo event was highly visited, just a few farmers were interested in the solution if the presentation was mainly focused on technical

aspects. At the same time, when presenting on a machinery fair, many UCs reported that the catchy and visually appealing presentation is a must in order to attract the visitors. For example, during the IoT week, several UCs had a presentation at the IoF2020 stand, which was very successful, since visual representation of the project attracts attention. Nevertheless, UCs reported that they needed to be better prepared and able to present the solution in one or two minutes. The reason for this is the high number of different companies, all attracting visitors, which do not have so much time to dedicate to every solution. The main conclusion of attendance at large fairs – exceptional visuals and short teaser that will provoke visitor's attention to stay and listen to entire presentation.

When it comes to smaller events, the main conclusion and recommendation for the upcoming demonstrations is that the value of the demonstration would be increased if it was combined with prototype presentation in real life conditions (on field, in barn, etc.) and explaining the readings of the instrument in the computer. The most common question was regarding the security of the device – in terms of potential for stealing if it is installed in the open filed or potential impact on animal in the lifetime of the device.

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1. INTRODUCTION

The internet of things (IoT) has a revolutionary potential. A smart web of sensors, actuators, cameras, robots, drones and other connected devices allows for an unprecedented level of control and automated decision-making. The project Internet of Food & Farm 2020 (IoF2020) explores the potential of IoT-technologies for the European food and farming industry.

The goal is ambitious: to make precision farming a reality and to take a vital step towards a more sustainable food value chain. With the help of IoT technologies higher yields and better-quality produce are within reach. Pesticide and fertilizer use will drop or phased out and overall efficiency is optimized. IoT technologies also enable better traceability of food, leading to increased food safety.

Nineteen use-cases organized around five trials (arable, dairy, fruits, meat and vegetables) develop, test and demonstrate IoT technologies in an operational environment in Europe, benefiting both conventional and organic agri-food chains. IoF2020 Open Call had onboarded new teams to join the journey within the Internet of Food and Farm to enlarge the IoF2020 ecosystem and create more impact in the European food and farming sector. Today, the total number of IoF2020 Use Cases is 33.

IoF2020 uses a multi-actor approach focusing on user acceptability, stakeholder engagement and the development of sustainable business models. IoF2020 aims to increase the economic viability and market share of developed technologies, while bringing end-users' and farmers' adoption of these technological solutions to the next stage. Once the use case solutions reach the TRL indicated in the Work Plan, scale-up demonstrations activities are being organized with the aim to maximize the impact in terms of acceleration of the market take-up by reaching the widest possible group of stakeholders spanning across the whole agri-food value chain from farmers to citizens. Relevant stakeholders are being invited to pilot sites to attend the demonstration of implemented IoT solutions. A set of promotional/informational material is designed for each of the Use Cases and distributed during demonstration days on site, as well as using other communication channels, such as social media, forums, fairs, conferences, magazines, etc.

The objective of this D2.7 deliverable is to present the process of planning, executing and monitoring of Use Case demonstration activities, used tools, visuals, etc. In addition, the deliverable is describing IoF2020 internal and external collaboration, together with established synergies.

The deliverable 2.7 consists of two major parts. Chapter 2, approach and methodology, is covering the planning phase, initial setup of demonstration activities and established collaborations. Chapter 3, called results, is giving the overview of Use Case`s demonstration activities plans, monitoring and feedback of conducted demonstration activities and plans for the upcoming period. In Chapter 4, conclusions and some lessons learnt are drawn.

2. APPROACH & METHODOLOGY

2.1. DEMONSTRATION ACTIVITIES PROCEDURE

Aiming to have unformed approach in all IoF2020 Trials and Use Cases, WP2 has prepared a **Demonstration Activities Procedure** that is defining all the steps and roles in the context of demonstration activities set-up. The purpose of this procedure is to establish a starting position and guidelines for conduction of demonstration events in the course of IoF2020 project. In order to have clear overview of each step and action, Demonstration Activities Procedure has three envisaged phases:

- Planning phase,
- Executing phase, and
- Performance monitoring phase.

Since the success of Use Case demonstration activity closely relies on the attendance rate, proper event promotion and attraction of targeted audience is a must. For that purpose, Demonstration Activities Procedure foreseen a strong involvement of IoF2020 WP5. The 2.2. chapter is giving more detailed elaboration on WP2 collaboration with other IoF2020 Work Packages, including WP5.

Before introducing the Demonstration Activities Procedure to the IoF2020 Use Cases, WP2 wanted to make sure that the term demonstration activity is properly understood and reflects to the demonstration activity that is meant to complement IoF2020 Use Cases, bringing already supported ideas steps further towards the full realization of their market potential. In that light, demonstration activities can include the following:

- testing of prototype,
- scale-up studies,
- performance verification,
- implementation of new technological,
- detailed market studies and business plans or market strategies, and
- other activities to facilitate the take-up of results, in particular training and dissemination.

Demonstration activities are aimed at presenting work done within each of the Use Cases and knowledge/experience exchange on three levels – among IoF2020 partners, with other relevant H2020 projects and with external participants interested in the topic of demonstration. The common characteristics of demo activities are:

- Knowledge/ experience exchange,
- Involvement of different stakeholder groups (farmers, IT community, researchers, etc.),
- Broad promotion of the event (both as an announcement, prior to the event as well as after),
- Lessons Learned (LL) collection, which could be used in later a phase of the project.

Demonstration activities can be hosted on farms (deployment sites) or in laboratories/ facilities, where solutions are being developed. Alternatively, the solution demonstration can be conducted during fairs, demo-shows or other similar events, that can bring added value to the demonstration of IoF2020 successes.

In addition, demonstration activity should present the impact of the deployed IoT solutions to the widest group of stakeholders from public and private sector, including farmers, large holdings, government officials, etc., through the scale-up demonstration activities that will include primarily on-site demonstration of developed solution, but also demonstration and presentation on relevant fairs, forums, conferences, printed articles in journals and magazines, etc.

Aforementioned planning phase included joint action of WP2 and WP5 in terms of preparation of dissemination package and templates for demonstration activity planning. **Dissemination package** for demonstration includes:

- IoF2020 Booklet (Annex 1): designed in eye-catching manner, enabling the reader to get the full understanding of IoF2020 project, its structure and governance, key facts and overview of involved Trials and Uses Cases;
- Demo leaflets and Agenda (Annex 2): are supposed to give interested persons all the necessary information about the upcoming demonstration activity. It should create awareness and interest while being short and concise. There are five leaflet templates for each Trial. On page 2 of the leaflet, the text fields can be edited with the individual information about demonstration activity, designed in two styles - with cropmarks for printing, the other one without cropmarks for digital advertising. These leaflets are supposed to be attached to every invitation email as a marketing tool to advertise demonstration;
- Use Case poster (Annex 3): a brief one pager Use Case description (similar to an EIP-Agri fact sheet) with Use Case objectives and impact, brief architecture, involved partners, deployments sites and elaboration on `how it works`;
- Draft Invitation e-mail (Annex 4): along with the predefined editable text, each invitation should have the IoF2020 logo on the top, or to be used below the text as part of the signature. Also, each email should contain the same subject - IoF2020 Demonstration - [*Insert title of demonstration*]; and

- Attendee list (Annex 5): is supposed to help demonstration activity organisers keep track of the demonstration activity participation and it further should also help IoF2020 to widen the project's ecosystem by asking for GDPR consent (the EU General Data Protection Regulation 2016/679 entered into force on May 25, 2018).

Together with Dissemination package, planning phase also included process of filling in so called **Demonstration Activity Plan template**. Use Case coordinators are responsible for preparing the demonstration activities plan (all Use Case plans are available in the chapter 3. Results).

Demonstration Activity Plan template (Figure 1) is giving the overview of the whole demonstration activity setup and provides the answers to the who, when, what, where and how questions. It also enables timely promotion of the planned activities, as presented on the IoF2020 webpage, link.

Demonstration Activity Plan	
Topic	*Your answer*
Use Case	*Your answer*
Event overview	*Please, indicate:* • *Event title* • *Date and time* • *Place* • *Main technologies that will be presented*
Constraints	*Do you need a permission from any institution (both private and public)? If yes, which one? If the demo event will be linked to some other event (e.g. fair), are tickets envisioned? Are there any restrictions in the number of people that can/might be invited (if it's a closed demonstration, open to the general public, members of some organizations, etc.)*
Planned stakeholders' groups	*Please indicate main stakeholders' groups that you intend to invite (e.g. Farmers association – XYZ; Advisory…)*
What do you want to achieve with this particular demonstration	*Inform the general public, come in the local press, represent my organization, arouse the interest of private capital bodies, …, or actually attract customers for my products*
Dissemination channels envisioned	*Please, indicate through which channels you plan to inform stakeholders about the event (e.g. newsletters of the organization; social media – please indicate accounts; local media, targeted mailing …)*

Potential collaboration with other H2020 projects	*Please indicate main components of your demonstration that can act at as a link to other H2020 projects and initiatives (e.g. Place: vineyard in Italy; Specific audience: young farmers…). We will use this information to select appropriate H2020 project/initiative and to invite representatives to attend.*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – UC coordinator* • *Local logistics* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders* *Please, have in mind that one person can be in charge for more than one topic*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. e.g.:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

*In case of more than one event, please copy-paste the table as many times as events planned.

Figure 1 Demonstration Activity Plan template

Executing phase is supposed to be organized in accordance with the Demonstration activity plan. Use Case coordinator is fully responsible for demonstration organization, acting as a demonstration activity main responsible. Based on the Demonstration activity plans, WP5 is attracting relevant EU and H2020 initiatives and projects, and WP2 is monitoring and evaluating the Use Case progress.

In the phase of Performance monitoring, upon realisation of demonstration activity, latest one month after the event, all attendees should fill in the **Questionnaire for attendees** (Figure 2) and the Use Case coordinator is filling in the **Lessons Learnt Report** (Figure 3).

Questionnaire for attendees

General questions:

1. How did you learn about this demonstration event (tick box)?
   - ☐ Personal invitation
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media

- ☐ Other (indicate which):_____

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good
   - ☐ Good
   - ☐ Fair
   - ☐ Poor
3. What did you like about the event?
4. What did you dislike about the event?
5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☐ Some of the information
   - ☐ A little of the information
   - ☐ None of the information
6. How do you think this event could have been improved?
7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ☐ Likely
   - ☐ Very likely
8. What are the two most useful things you got out of the event?
9. Please identify any specific priority areas for you that could be the focus at future events.

Feedback to Use Case

	Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
The **additional benefit** for the farm is clear.					

This product can be **useful** for my daily work.					
The product **improves** my **farm management**.					
The product provides a better **decision making**.					
The product makes my **production** more **transparent**.					
The product is **easy to use** and **understand** by all persons working with in.					
The **design** of the solution is easy to understand.					

Figure 2 Questionnaire for attendees

Tools for collecting the feedback from external stakeholders are developed and extensively utilized during the demonstration phase in order to provide valuable information to the ecosystem on possible obstacles and barriers to market. Report on conducted activities and feedback from attendees is created in collaboration with WP4 (please see Chapter 2.2).

Lessons Learnt Report		
Demonstration Activity field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)		
Solution presentation (how, what additional material was used, structure of demonstration, etc.)		
Communication with stakeholders		

Open field for suggestions		

Figure 3 Lessons Learnet Report template

2.2. WP2 COLLABORATION WITH OTHER IOF2020 WPs

Work Package 3

The scaling up of the developed solutions would be hard to realize without a solid technical support and constant supervision of the WP3. During establishment of demonstration procedure, WP3 shared their point of view on how IoT solutions should be demonstrated and made closer to the potential users. One of the methods that shorten the way between solutions and public is the IoT catalogue, which was created in close collaboration with all UCs. Lessons learnt from the process of establishment and maintenance of the catalogue were introduced to the demonstration activities procedure. Based on such inputs, plan templates were adjusted and tailored to best fit the scaling up goal.

Work Package 4

The work in WP4 on business support has a rather entrepreneurial character compared to classical business plan driven approaches. An underlying concept is the application of elements from the lean-start-up approach that are applicable to start-ups as well as to large organizations and will facilitate to think in terms of a “demand-driven development of products”, instead of a technology driven provision of features. This enables an early validation of results with end-users in real-world settings. Therefore, WP4 has played important role in the process of demonstration activities and reaching the full benefit of such an event. Moreover, WP4 has provided input for Questionnaire for attendees, especially in the section on *Feedback to Use Case (*Figure 2*)*.

In addition, WP4 has created User Acceptance Test, a survey tool to support Use Cases in increase user acceptance of IoT products and solutions. The survey offers a chance to receive feedback from the IoT users itself and allows to identify acceptance problems during the development cycle. The results of the test can be used to adjust the product according to the users’ needs. Survey should be filled in together with all the known test farms/ demo companies within Use Case. The survey contains mainly multiple-choice questions and takes approximately 10-15 minutes to complete.

Work Package 5

WP5 has provided immense support in the process of demonstration activities preparation. WP5 team has created the Dissemination package that contains booklet, posters, invitation mails, leaflets and agendas all tailored to specific needs of each Trial and Use Case. In addition to this, WP5 ensured proper promotion of demonstration activities in the IoF2020 webpage, as depicted below.

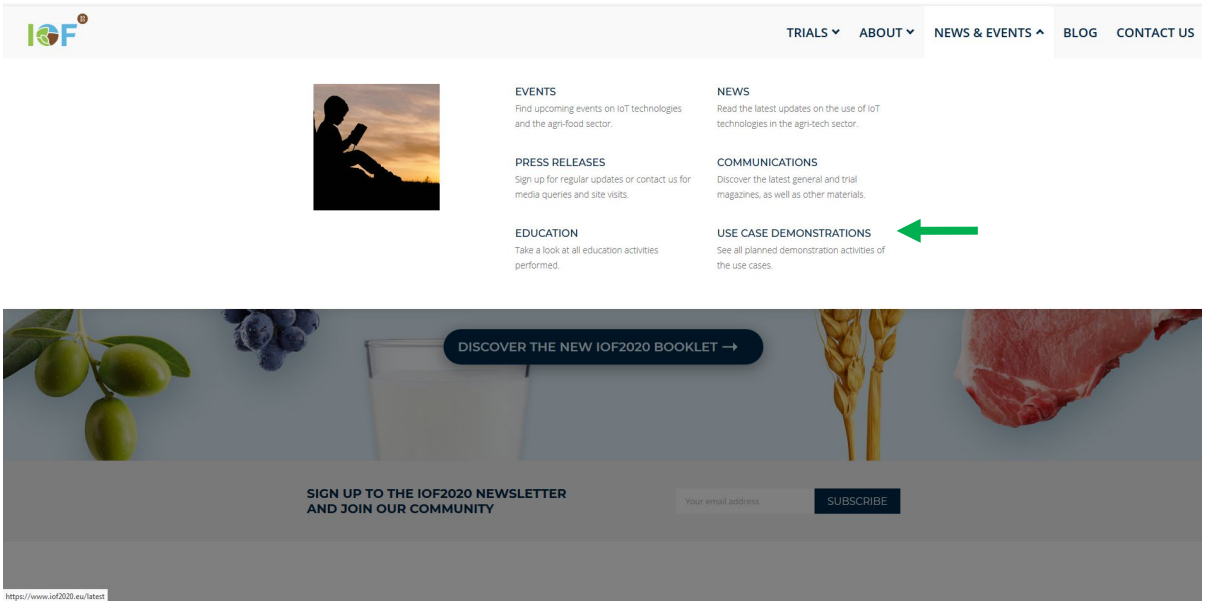


Figure 4 IoF2020 webpage

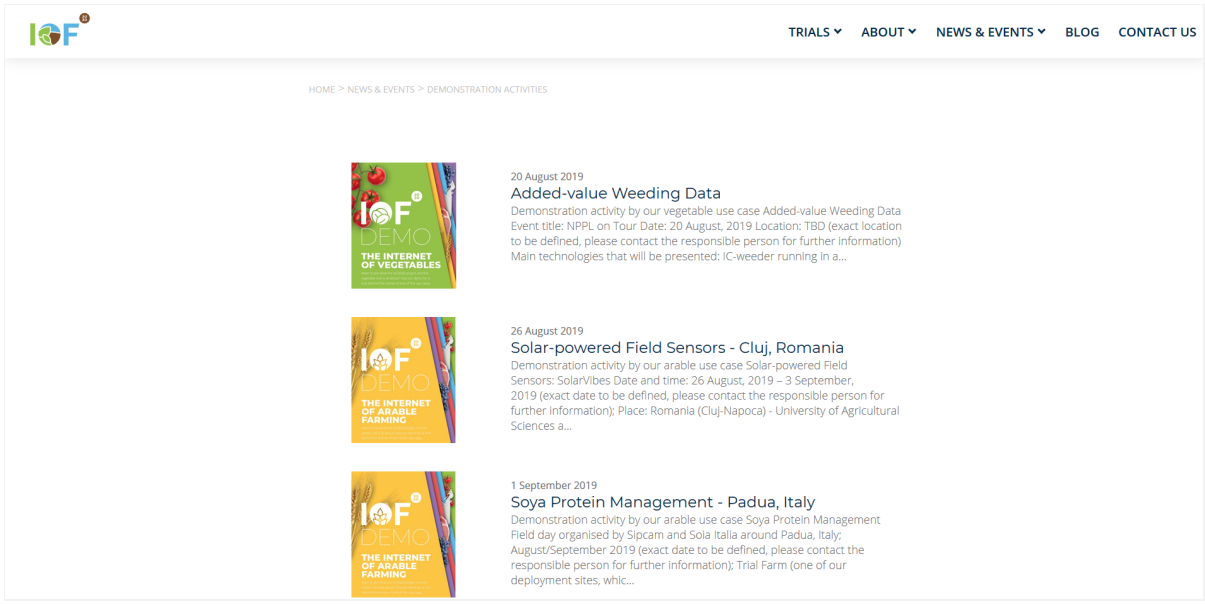


Figure 5 IoF2020 webpage - Demonstration activities section element

Concerning the WP5, their activities go beyond reaching individual target audiences, it also exploits the potential of match making different target audiences with each other. This takes advantage of the available contact points in WP2 to properly develop the ecosystem with establishment realizing an optimal communication strategy to serve the needs from an internal and an external perspective. Therefore, WP5 serves as a project gateway for communication ensuring that all IoF2020 social media networks are timely updated with correct and new materials, occasionally related to demonstration activities.

Work Package 6

WP6 is focused on ethical aspect of IoT implementation in agrifood sector. Therefore, the main focus of the WP in demo procedure establishment was on classification of results that can be shared openly, and which ones not (for example because this might be detrimental to the company producing them). In addition, the inputs were related to the data sharing regulations and its impact on work achievements demonstration.

2.3. IOF2020 COLLABORATION WITH OTHER PROJECTS, INITIATIVES, NETWORKS

FarmDemo

FarmDemo is a close collaboration of 3 European projects funded under Horizon 2020: PLAID, AgriDemo-F2F and NEFERTITI. They all aim to enhance peer-to-peer learning and focus on farm demonstration as a tool to boost innovation uptake.

AgriDemo-F2F and PLAID focus on understanding the role of European commercial demonstration farms and prepare for more connectivity between actors involved in on-farm demonstrations. These projects develop a geo-referenced online inventory of demonstration farms and build an online FarmDemo-Hub community.

NEFERTITI focuses on the establishment of 10 interactive thematic networks covering the 3 main agricultural sectors: animal production, arable farming and horticultural production. They bring together 45 regional hubs of demo-farmers and innovation actors - advisors, cooperatives, NGOs, industry, education, researchers and policy makers. One of the project aims is to have around 225 demonstration events per year, involving all relevant stakeholders.

By recognizing the huge potential and benefit in collaboration, IoF2020 consulted the FarmDemo training kit to continuously improve its on-farm demonstrations. Following and applying the well-tailored guidelines from FarmDemo kits, the IoF2020 demonstration procedure involved all significant milestones in demo event organization and made easier to UCs to follow the guidelines. UCs were allowed to use the kit up to extend they think will bring most benefit to the promotion of their product.

AIOTI

The Alliance for Internet of Things Innovation (AIOTI) was initiated by the European Commission in 2015, with the aim to strengthen the dialogue and interaction among Internet of Things (IoT) players in

Europe, and to contribute to the creation of a dynamic European IoT ecosystem to speed up the take up of IoT.

Other objectives of the Alliance include fostering experimentation, replication, and deployment of IoT and supporting convergence and interoperability of IoT standards; gathering evidence on market obstacles for IoT deployment; and mapping and bridging global, EU, and member states' IoT innovation activities.

Several IoF2020 partners are part of the Alliance, like representatives from WP2 and WP5, that are actively participating in the AIOTI Working Group 6 on smart farming and food security. Working Group 6 has a monthly meeting where IoF2020 participating partners have the opportunity to share important IoF2020 updates related to scale up activities, relevant for the AIOTI network.

3. RESULTS

3.1. USE CASE DEMONSTRATION ACTIVITIES PLANS

This section brings all demonstration activities plans from all IoF2020 UCs.

TRIAL 1	
Topic: **UC:**	*Potato Europe* **1.1**
Event overview	• *Potato Europe* • *4-5 sep 2019* • *Doornik* • *Scanning, Planting, Harvesting*
Constraints	*Most key players have/provide tickets*
Planned stakeholders' groups	*Industry and potato farmers visit the event, annually*
What do you want to achieve with this particular demonstration	*Inform the potato industry, represent partners in potato UCs, attract customers for high tech tools of suppliers.*
Dissemination channels envisioned	*Newsletters/media of the partners in potato UCs, agri magazines. Booths of the partners, with banners of IoF trial and explanation*
Potential collaboration with other H2020 projects	*Machines will be demonstrated in field demos. Checklists etc of Farmdemo will be used.*
Roles and responsibilities	*Peter Rakers UC 1.5 is central contact point* *Communication is shared responsibility of partners*
Feedback from participants	*No questionnaire foreseen*
Topic: **UC:**	*Agritechnica tour* **1.1**
Event overview	• *Agritechnica* • *10-16/11/2019* • *Hannover* • *Tour for visitors of IoF partners*
Constraints	*Most key players have/provide tickets; they notify their visitors on*

	forehand and receive them in the tour.
Planned stakeholders' groups	*Farmers groups, students, other interested*
What do you want to achieve with this particular demonstration	*Give an overview of the special position of partners in IoF in the huge agri network*
Dissemination channels envisioned	*Newsletters/media of the partners in potato UCs, agri magazines* *Booths of the partners, with banners of IoF trial and explanation*
Potential collaboration other H2020	*Not foreseen (yet)*
Roles and responsibilities	*Djessie Donkers UC 1.1 is central contact point* *Communication is shared responsibility of partners*
Feedback from participants	*questionnaire will be developed.*

Topic: **UC**	*Training – Sensors for farming* **1.2**
Event overview	• *New farming: sensors and new technologies for agriculture* • *14/05/2019* • *Boigneville, France* • *General information on sensors, IoTs, satellite, tractor borne sensors* • *Visit of the demonstration farm*
Constraints	*Less than 20 people, in French*
Planned stakeholders' groups	*Farmer's associations, cooperatives, agro-industry, advisors*
What do you want to achieve with this particular demonstration	*Inform the professionals (farmers, advisors, …) about new opportunities made possible with sensors. Show the ongoing projects managed by ARVALIS.*
Dissemination channels envisioned	*This training is included in the yearly Training program of ARVALIS. It is widely disseminated to most of professional organizations active in the field of agriculture in France by targeted mailing*
Potential collaboration with other H2020 projects	*IOF2020 project activities are thoroughly presented. Results from SMARTAKIS and NEFERTITI projects are also presented.*

Roles and responsibilities	• *Benoit de Solan – UC coordinator – b.desolan@arvalis.fr* • *Delphine Bouttet - Local logistics - d.bouttet@arvalis.fr* • *Florence Leprince – Communication – f.leprince@arvalis.fr*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC**	*Agricultural fair - Les Culturales* **1.2**
Event overview	• *Les Culturales* • *5-6/06/2019* • *Futuroscope, France* • *In-field fair to demonstrate R&D activities, including sensors applications for agriculture*
Constraints	*No constraint. Free entrance and possible visit in English*
Planned stakeholders' groups	*Farmer's associations, cooperatives, agro-industry, advisors, farmers*
What do you want to achieve with this particular demonstration	*Inform the professionals (farmers, advisors, …) about new opportunities made possible with sensors. Show the ongoing projects managed by ARVALIS.*
Dissemination channels envisioned	*This fair is a regular event organized by ARVALIS with 10 to 15.000 visitors.* https://www.lesculturales.com/en/
Potential collaboration with other H2020 projects	*IOF2020 project activities are thoroughly presented. Results from SMARTAKIS and NEFERTITI projects are also presented.*
Roles and responsibilities	• *Benoit de Solan – UC coordinator – b.desolan@arvalis.fr* • *Thibault Deschamps - Local logistics - t.deschanps@arvalis.fr* • *Xavier Gautier – Communication – x.gautier@arvalis.fr*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

Topic: **UC:**	*Demonstration Activity on Deployment site near Padua* **1.3: Soya Protein Management**

Event overview	• *Field day organized by Sipcam and Soia Italia around Padua* • *23-29/09/2019* • *Trial Farm (one of our deployment sites, which exactly under definition, depending on course of the planting season)* • *DSS and its features will be presented*
Constraints	*No permission from any institution will be necessary.* *Possible constraints due to the course of the planting season (weather, pests, diseases)*
Planned stakeholders' groups	*Contractors and Farmers.*
What do you want to achieve with this particular demonstration	*As in this field day, the results of the soya growing season are discussed in the field and particular emphasize is placed on maximizing the protein content (influencing factors, how to manage them) the soya protein management Use Case of the IoF project fits perfectly in.* *Present the Soya-DSS and its features.* *Show benefits of IoT Technologies in agriculture.* *Inform about Soia Italias and Donau Sojas path in the IoF project and about the IoF project itself.*
Dissemination channels envisioned	*LinkedIn, Facebook, Company websites, newsletter*
Potential collaboration with other H2020 projects	*Joint event with sysman (part of the UC 3.1 and the IT- developers of the DSS in our UC 1.3) under discussion*
Roles and responsibilities	• *Demonstration Activity planning: Filippo Lazzari and Georg Spreitzer* • *Local logistics: Filippo Lazzari flazzari@sipcam.it* • *Communication responsible* *–for local stakeholders: Filippo Lazzari flazzari@sipcam.it* *–for EU/H2020 stakeholders: Georg Spreitzer spreitzer@donausoja.org*
Feedback from participants	– *Practical applicability* – *Usefulness of presented technologies* – *Is the DSS easy to understand?* – *Interest in smart farming technologies?*
Topic: **UC:**	*Demonstration Activity on Deployment site near Venice* **1.3: Soya Protein Management**
Event overview	• *Field day organized by Sipcam and Soia Italia around Padua* • *30/09 – 06/10/2019* • *Trial Farm (one of our deployment sites, which exactly under definition, depending on course of the planting season)*

	• *DSS and its features will be presented*
Constraints	*No permission from any institution will be necessary.* *Possible constraints due to the course of the planting season (weather, pests, diseases)*
Planned stakeholders' groups	*Contractors and Farmers.*
What do you want to achieve with this particular demonstration	*As in this field day, the results of the soya growing season are discussed in the field and particular emphasize is placed on maximizing the protein content (influencing factors, how to manage them) the soya protein management Use Case of the IoF project fits perfectly in.* *Present the Soya-DSS and its features.* *Show benefits of IoT Technologies in agriculture.* *Inform about Soia Italias and Donau Sojas path in the IoF project and about the IoF project itself.*
Dissemination channels envisioned	*LinkedIn, Facebook, Company websites, newsletter*
Potential collaboration with other H2020 projects	*Joint event with sysman (part of the UC 3.1 and the IT- developers of the DSS in our UC 1.3) under discussion*
Roles and responsibilities	• *Demonstration Activity planning: Filippo Lazzari and Georg Spreitzer* • *Local logistics: Filippo Lazzari flazzari@sipcam.it* • *Communication responsible* *–for local stakeholders: Filippo Lazzari flazzari@sipcam.it* *–for EU/H2020 stakeholders: Georg Spreitzer spreitzer@donausoja.org*
Feedback from participants	– *Practical applicability* – *Usefulness of presented technologies* – *Is the DSS easy to understand?* – *Interest in smart farming technologies?*
Topic: **UC:**	*Demonstration Activity in the Ukraine* **1.3: Soya Protein Management**
Event overview	• *Field day organized by Donau Soja* • *12/09/2019* • *Production/processing Site within the Europe Soya network* • *DSS and its features will be presented*
Constraints	*Legal situation regarding installation of IoT weather sensors (Sigfox network) from Italian company and non-EU country* *Translation to Ukrainian (maybe only partly possible)* *Achievement of data privacy agreement between IT developers /*

	hoster of system (EU) and Donau Soja office in non-EU country *Possible constraints due to the course of the planting season (weather, pests, diseases, force majeure)*
Planned stakeholders' groups	*Soya Producers and Processors*
What do you want to achieve with this particular demonstration	*This field day emphasizes best practices for environmentally responsible and profitable soya production and marketing. Quality criteria and certified value chains are highlighted. In that combination UC 1.3 - optimizing protein content of soya will be shown as a best practice example.* *Present the Soya-DSS and its features.* *Show benefits of IoT Technologies in agriculture.* *Inform about Soia Italias and Donau Sojas path in the IoF project; about the IoF project itself; as well as on EU-markets.* *Raise awareness towards quality criteria and proof of quality through certification*
Dissemination channels envisioned	*LinkedIn, Facebook, Company websites, newsletter*
Potential collaboration with other H2020 projects	*None*
Roles and responsibilities	• *Demonstration Activity planning: Georg Spreitzer* • *Local logistics: Donau Soja employee from the office in Kiev* • *Communication responsible* • *–for local stakeholders: Donau Soja employee from the office in Kiev* *–for EU/H2020 stakeholders: Georg Spreitzer*
Feedback from participants	– *Practical applicability* – *Is the DSS easy to understand?* – *Interest in smart farming technologies?*

Topic:	*Communication standards for programmers*
UC:	**1.4 Machine Interoperability**
Event overview (3)	• *ADAPT demo* ○ *Timing: Q1 2020* ○ *Channel: Webinar in collaboration with AgGateway* ○ *Topic: ADAPT toolbox* • *EFDI demo* ○ *Timing: Q2 2020* ○ *Channel: Webinar in collaboration with AEF* ○ *Topic: AEF EFDI Standards*

	• *Optional NGSI-LD demo* ○ *Timing: November 2020* ○ *Conference by FI-WARE or ETSI* ○ *Topic: NGSI experimental APIs*
Constraints	*Public events* *Meetings to be scheduled with standardization organisations*
Planned stakeholders' groups	*Programmers from agricultural software companies and equipment manufacturers*
What do you want to achieve with this particular demonstration	*Demonstrate applicability and usability of existing standards*
Dissemination channels envisioned	*Newsletters and distribution lists from standardization organisations*
Potential collaboration with other H2020 projects	
Roles and responsibilities	*Work to be divided by team members*
Feedback from participants	– *Usability of standards* – *Expected implementation*
Topic: **UC:**	*Lessons learned for SDOs* **1.4 Machine Interoperability**
Event overview (3)	• *AEF* ○ *Timing: Q1 2020* ○ *Channel: Webinar in collaboration with AgGateway* ○ *Topic: ADAPT toolbox* • *AgGateway* ○ *Timing: Q2 2020* ○ *Channel: Webinar in collaboration with AEF* ○ *Topic: AEF EFDI Standards* • *FIWARE / ETSI* ○ *Timing: November 2020* ○ *Conference by FI-WARE or ETSI* ○ *Topic: NGSI experimental APIs*
Constraints	*Private events* *Meetings to be scheduled with standardization organisations and project teams*
Planned stakeholders' groups	*Programmers from agricultural software companies and equipment manufacturers*
What do you want to achieve with this particular	*Disseminate lessons learned from proof of concepts with existing*

demonstration	*and experimental standards, for further development of standards.*
Dissemination channels envisioned	*Newsletters and distribution lists from standardization organisations*
Potential collaboration with other H2020 projects	
Roles and responsibilities	*Work to be divided by team members*
Feedback from participants	– *Lessons learned* – *Future extension to be worked on*
Topic: **UC:**	*Lessons learned for SDOs* **1.4 Machine Interoperability**
Event overview (7)	• *Timing: October 2019* • *F2F meeting in Aachen* • *Topic: standards worked in in IoF2020*
Constraints	*Private events* *Meetings to be scheduled with standardization organisations and project teams*
Planned stakeholders' groups	*Participants of the H2020 project "ATLAS"*
What do you want to achieve with this particular demonstration	*Hand over work done for further elaboration by other H2020 project*
Dissemination channels envisioned	*Personal invitation*
Potential collaboration with other H2020 projects	*ATLAS project*
Roles and responsibilities	*Work to be divided by team members*
Feedback from participants	– *Initial idea of standards to be adopted* –
Topic: **UC:**	*Harvest Logistics optimisation* **1.4 Machine Interoperability**
Event overview (8)	• *Timing: Harvest 2019 or 2020* • *On-farm demo* • *Real life demo of real-time harvest logistics optimisation*
Constraints	*Public event*

	Availability of farmer and equipment
Planned stakeholders' groups	*Farmers, contractors and influencers*
What do you want to achieve with this particular demonstration	*Increase willingness to adopt harvest logistics solution with real-life demonstration of benefits and user-friendliness.*
Dissemination channels envisioned	*Personal invitation and newsletters*
Potential collaboration with other H2020 projects	
Roles and responsibilities	*Work to be divided by team members*
Feedback from participants	– *Would you be using this solution?* – *What do you want to pay for it?* – *User-friendliness of the interface*

Topic:	**Field day FFPdwa**
UC:	**1.5**
Event overview	• *FFPdwa field day* • *July* • *Bobrowniki* • *Trial field*
Constraints	*Not applicable*
Planned stakeholders' groups	*80 contract growers producing potatoes for our factory*
What do you want to achieve with this particular demonstration	*Inform the growers about the IoF2020 program and U.C. 1.5 (objectives and impact)*
Dissemination channels envisioned	*All growers will be personally invited*
Potential collaboration with other H2020 projects	*U.C. 1.6*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – FFPdwa* • *Local logistics - FFPdwa* • *Communication responsible – UC coordinator* *Please, have in mind that one person can be in charge for more*

	than one topic
Feedback from participants	*To be discussed*
Topic: **UC:**	**Potato Days Poland** **1.5**
Event overview	• *Potato Days Poland* • *6 – 7 September 2019* • *Kamień Śląski (near Opole)* • *Main technologies – potato production acc. current quality standards, Innovative potato cultivation, use of precision farming*
Constraints	*Open to general public*
Planned stakeholders' groups	*6.000 visitors expected – mainly focus on the potato growers*
What do you want to achieve with this particular demonstration	*Inform the general public about IoF2020 and specifically U.C. 1.5 (objectives and impact)*
Dissemination channels envisioned	*DLG Agro Food is advertising the event*
Potential collaboration with other H2020 projects	*U.C. 1.6*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – UC coordinator* • *Local logistics - FFPdwa* • *Communication responsible – UC coordinator* *Please, have in mind that one person can be in charge for more than one topic*
Feedback from participants	*To be discussed*

Topic: **UC:**	*IoT stations and Smart Farming* **1.6 Data-driven Potato Production**
Event overview	• *Event title: Iot4Potato IoT stations installation demonstration event* • *Date and time: Mid-May* • *Place: AgroLV pilot site in Lviv, Ukraine* • *Main technologies that will be presented:*

Constraints	*It will take place in the farm, so permission from AgroLV is needed to participate.*
Planned stakeholders' groups	*Farmers, agronomists and other stakeholders that can benefit from watching the installation of the Gaiatron IoT stations and ask questions about how they work and about Smart Farming in general.*
What do you want to achieve with this particular demonstration	*This activity will help engage the local actors, inspire confidence and to attract the interest of potential customers*
Dissemination channels envisioned	*Direct communication of AgroLV with their producers, agronomists and other linked stakeholders.*
Potential collaboration with other H2020 projects	*N/A*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Nikolaos Marianos, n_marianos@neuropublic.gr* • *Local logistics: Giel Niusselder, Giel.Nusselder@cfg.com.ua* • *Communication responsible – for local stakeholders: Giel Niusselder, Giel.Nusselder@cfg.com.ua* • *Communication responsible – for EU/H2020 stakeholders: Nikolaos Marianos, n_marianos@neuropublic.gr*
Feedback from participants	*The following topics could be also covered by the feedback questionnaire:* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC:**	*IoT stations and Smart Farming* **1.6 Data-driven Potato Production**
Event overview	• *Event title: Iot4Potato IoT stations installation demonstration event* • *Date and time: End of May* • *Place: FFP2 pilot site in Damnica, Poland* • *Main technologies that will be presented:*
Constraints	*It will take place in the farm, so permission from FFP2 is needed to participate.*
Planned stakeholders' groups	*Farmers, agronomists and other stakeholders that can benefit from watching the installation of the Gaiatron IoT stations and ask questions about how they work and about Smart Farming in general.*
What do you want to achieve with this particular demonstration	*This activity will help engage the local actors, inspire confidence and to attract the interest of potential customers*

Dissemination channels envisioned	*Direct communication of FFP2 with their producers, agronomists and other linked stakeholders.*
Potential collaboration with other H2020 projects	*N/A*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Nikolaos Marianos, n_marianos@neuropublic.gr* • *Local logistics: Gerhard Meiborg, gerhard.meiborg@ffp.com.pl* • *Communication responsible – for local stakeholders: Gerhard Meiborg, gerhard.meiborg@ffp.com.pl* • *Communication responsible – for EU/H2020 stakeholders: Nikolaos Marianos, n_marianos@neuropublic.gr*
Feedback from participants	*The following topics could be also covered by the feedback questionnaire:* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC:**	*IoT stations and Smart Farming* **1.6 Data-driven Potato Production**
Event overview	• *Event title: Iot4Potato IoT stations installation demonstration event* • *Date and time: September 2019* • *Place: Pilot site in Cyprus – Specific field to be selected* • *Main technologies that will be presented:*
Constraints	*It will take place in the farm, so permission from the respective farmer is needed to participate.*
Planned stakeholders' groups	*Farmers, agronomists and other stakeholders that can benefit from watching the installation of the Gaiatron IoT stations and ask questions about how they work and about Smart Farming in general.*
What do you want to achieve with this particular demonstration	*This activity will help engage the local actors, inspire confidence and to attract the interest of potential customers*
Dissemination channels envisioned	*Direct communication of ARI with their producers, agronomists and other linked stakeholders.*
Potential collaboration with other H2020 projects	*N/A*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Nikolaos Marianos, n_marianos@neuropublic.gr* • *Local logistics: Andreas Stylianou, a.stylianou@ari.gov.cy* • *Communication responsible – for local stakeholders: Andreas Stylianou, a.stylianou@ari.gov.cy* • *Communication responsible – for EU/H2020 stakeholders: Nikolaos Marianos, n_marianos@neuropublic.gr*

Feedback from participants	*The following topics could be also covered by the feedback questionnaire:* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC:**	*Data-driven Smart Farming solution for potato production and IoT stations* **1.6 Data-driven Potato Production**
Event overview	• *IoT4Potato demo during the IoT week 2019* • *19/06/2019* • *IoF2020 Booth, IoT Week, Aarhus, Denmark* • *IoT stations, IoT4Potato Smart Farming solution*
Constraints	*The demo will take place at the IoF2020 Booth, during the IoT week 2019 in Aarhus, so it will have the respective constrains.*
Planned stakeholders' groups	*Farmers associations, farmers, agronomists, advisory service providers, researchers, technology providers, IoT enthusiasts, etc*
What do you want to achieve with this particular demonstration	*This activity will help engage the local actors, inspire confidence and to attract the interest of potential customers. In addition, it will increase the visibility of IoT4Potato and the related technological components and attract the interest of potential collaborators.*
Dissemination channels envisioned	*We plan to promote this through facebook, twitter and linkedin, using the accoutns of Neuropublic, IoT4Potato and also connect to the IoF2020 accounts with the help of the IoF2020 consortium.*
Potential collaboration with other H2020 projects	*The Smart Farming solution for potato production and IoT stations that will be demonstrated, are interesting for numerous other related H2020 projects.*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Nikos Kalatzis, n_kalatzis@neuropublic.gr* • *Local logistics: Nikos Kalatzis, n_kalatzis@neuropublic.gr* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders : Nikos Kalatzis, n_kalatzis@neuropublic.gr*
Feedback from participants	*The following topics could be also covered by the feedback questionnaire:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

Topic:	***Automatic identification of a silo and the wireless communication of this identity***
UC:	**1.7 IoTrailer** **Traceability for feed and food logistics**

Event overview	• *Inhuldiging labo logistieke technologie* • *06 june 2019* • *Technologiecampus Gent* *3.30 pm: welcome* *4.00 pm: start of* • *"Cost-efficient logistics" workshops* ○ *Hardware for indoor logistics - Marc Juwet* ○ *Advanced logistics planning - Greet Vanden Berghe* ○ *IoT in logistics - Lieven De Strycker* *4.30 pm:* • *Plenary sessions* ○ *Sequenced logistics flows in automotive manufacturing - Stefan Fesser, CEO Volvo Cars Ghent* ○ *Already in logistics: perspectives and regulatory framework - Olivier Janin, CEO European Materials Handling Federation* ○ *Smart logistics at the crossroads of disciplines: challenges in research and education - Piet Desmet, Vice Rector KU Leuven* *5.25 pm: Inauguration new lab* *5.30 pm: Meet the inventor + reception + lab tour* *6.30 pm: reception + laboratory tour* *8:00 pm: end*
Constraints	This demonstration will be shown at the occasion of the opening of a lab. No tickets are needed. For practical reasons the number of registrations is limited.
Planned stakeholders' groups	Logistic companies, academia
What do you want to achieve with this particular demonstration	Presenting our innovative solution. Showing in general how IoT can help logistic applications.
Dissemination channels envisioned	KU Leuven and VOKA
Potential collaboration with other H2020 projects	*This is an early demo in the context of this UC which probably limits collaboration with other H2020 projects. Generic technologies (e.g. LoRa point2point connectivity) may be of interest*
Roles and responsibilities	• *Organizational team: Liesbet Van der Perre – KU Leuven Dramco* • *Local logistics: Lab for logistics technology KU Leuven* • *Communication responsible Liesbet Van der Perre – for local stakeholders and EU/H2020 stakeholders*
Feedback from participants	*Topics that could be covered by feedback questionnaire:* – *Value of presented technologies in for logistic applications* – *Clarity of demonstration*

Topic:	***Demonstration***
UC:	**1.8 SOLAR-POWERED FIELD SENSORS**
Event overview	*Tittle: Demonstration SolarVibes #1* • *Date and time: August 26, 2019 – September 3, 2019- different farmer groups* *Place: Romania (Cluj-Napoca) - University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca* *Technology: Agrisensor and mobile application*
Constraints	*The demonstration will take place in the University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, which is a SolarVibes partner. The aim is to have a free event to have a demonstration of the SolarVibes product and services, tickets will not be required. The session will be held on USAVM Cluj campus and surrounding farms in the county allowing the participation of upto 50 people Exact time and duration of each demo is not available. We will conduct the demo in small sessions, owing to availability of different farmers, associations and partners.*
Planned stakeholders' groups	*The main stakeholders for this event are the following:* - *Farmers (30-50)* - *Famers associations* - *Partners* - *Academic researchers*
What do you want to achieve with this particular demonstration	*The aims of this event are grouped in three groups, presenting the product, learning from the use and experience, and establishing commercial relations.* *The aim of presenting the product to potential customers, is to create consciousness about the world needs in the agriculture industry, explain the products and how they will fight the world needs and help them to achieve better results and finally explain the different prices.* *The aim of learning through letting the farmers to use the products is to analyze the difficulties in the interaction and navigation. Asking farmers for feedback and expectations about these technologies and additional needs.* *The aim of establishing commercial relations goes in two ways, one with famers directly offering promotional prices and plans. In the second way, to attract potential partners for the commercial and distribution services in the region.*
Dissemination channels envisioned	*The channels that will be used to inform this event will mainly online with the use of social media with Solarvibes accounts in different platforms, as well as the IoF2020 and the University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca accounts.*

	In the same line there will be used an email marketing camping to invite directly the farmers, partners, communities, government and researchers. *Using the blogs and newsletter from our partners some articles will be created to invite and give hints about the event.* *With the use of offline channels, the university will contact the farmer communities and farmers that are located in the area with the use of phone calls and banners.*
Potential collaboration with other H2020 projects	- *CIHEAM IAM (Mediterranean Agronomic Institute of Bari) (training, cooperation and research in the Mediterranean area including Romania and Hungary, two of our target markets) PARTNER* - *Flanders State of the Art (research in the agriculture industry including crops, crop protection, plant breeding and soil, and other topics) PARTNER* - *Promodis (potential partner for commercial and distribution in Europe) PARTNER* - *Precision Crop Management (sensor data, networking infrastructure and computer modelling improve the use of nitrogen and water) (could be a competitor) PROJECT* - *Data-driven Potato Production (telemetric IoT stations) (a competitor only for potato farmers) PROJECT* - *Within-field management zoning (sensors to measure soil moisture, soil organic matter, climate, etc) (a competitor only for potato farm) PROJECT* - *Digital Ecosystem Utilization (pest and insect detector using data stemming from IoT devices in the field) PROJECT*
Roles and responsibilities	
Feedback from participants	– *Awareness of the agriculture problems* – *Product feedback* – *Farmers problems/need with the agriculture processes and the supply chain* – *Digitization use and knowledge* – *Farming network and community (share(?) activities, resources, people)* – *Communication channels* – *Use of technologies, interested(?), which, how much and for what?* – *What, how, when measures the soil* – *Income and expenses (ranges)*
Topic:	***Demonstration***

UC:	1.8 SOLAR-POWERED FIELD SENSORS
Event overview	- *Tittle: Demonstration SolarVibes #2* - *Date and time: September 05, 2019 – September 12, 2019* - *Place: Romania (Timisoara) - Banat University of Agricultural Sciences and Veterinary Medicine of Timisoara (USAMVBT)* - *Technology: Agrisensor and mobile application.*
Constraints	*The demonstration will take place in the Banat University of Agricultural Sciences and Veterinary Medicine of Timisoara (USAMVBT), which is a SolarVibes partner. The aim is to have a free event to have a demonstration of the SolarVibes product and services, tickets will not be required. The session will be held on campus and surrounding farms allowing the participation of upto 30 people. Exact time and duration of each demo is not available. We will conduct the demo in small sessions, owing to availability of different farmers, associations and partners.*
Planned stakeholders' groups	*The main stakeholders for this event are the following:* - *Farmers* - *Famers associations* - *Partners* - *Academic researchers* - *Government*
What do you want to achieve with this particular demonstration	*The aims of this event are grouped in three groups, presenting the product, learning from the use and experience, and establishing commercial relations.* *The aim of presenting the product to potential customers, is to create consciousness about the world needs in the agriculture industry, explain the products and how they will fight the world needs and help them to achieve better results and finally explain the different prices.* *The aim of learning through letting the farmers to use the products is to analyze the difficulties in the interaction and navigation. Asking farmers for feedback and expectations about these technologies and additional needs.* *The aim of establishing commercial relations goes in two ways, one with famers directly offering special prices and plans. In the second way, to attract potential partners for the commercial and distribution services in the region.*
Dissemination channels envisioned	*The channels that will be used to inform this event will mainly online with the use of social media with SolarVibes accounts in different platforms, as well as the IoF2020 and the Banat University of Agricultural Sciences and Veterinary Medicine of Timisoara (USAMVBT)* *In the same line there will be used an email marketing camping to invite directly the farmers, partners, communities,*

	government and researchers. *Using the blogs and newsletter from our partners some articles will be created to invite and give hints about the event.* *With the use of offline channels, the university will contact the farmer communities and farmers that are located in the area with the use of phone calls and banners.*
Potential collaboration with other H2020 projects	- *CIHEAM IAM (Mediterranean Agronomic Institute of Bari) (training, cooperation and research in the Mediterranean area including Romania and Hungary, two of our target markets) PARTNER* - *Flanders State of the Art (research in the agriculture industry including crops, crop protection, plant breeding and soil, and other topics) PARTNER* - *Promodis (potential partner for commercial and distribution in Europe) PARTNER* - *Precision Crop Management (sensor data, networking infrastructure and computer modelling improve the use of nitrogen and water) (could be a competitor) PROJECT* - *Data-driven Potato Production (telemetric IoT stations) (a competitor only for potato farmers) PROJECT* - *Within-field management zoning (sensors to measure soil moisture, soil organic matter, climate, etc) (a competitor only for potato farm) PROJECT* - *Digital Ecosystem Utilization (pest and insect detector using data stemming from IoT devices in the field) PROJECT*
Roles and responsibilities	*Technology demonstration by Solarvibes, demonstration event organized by USAMVT.*
Feedback from participants	– *Awareness of the agriculture problems* – *Product feedback* – *Farmers problems/need with the agriculture processes and the supply chain* – *Digitization use and knowledge* – *Farming network and community (share(?) activities, resources, people)* – *Communication channels* – *Use of technologies, interested(?), which, how much and for what?* – *What, how, when measures the soil* – *Income and expenses (ranges)*
Topic: **UC:**	***Demonstration*** **1.8 SOLAR-POWERED FIELD SENSORS**
Event overview	- *Tittle: Demonstration SolarVibes #3* - *Date and time: September 18, 2019 to September 24, 2019*

	- *Place: Hungary – HRIOA, farmer network* - *Technology: Agrisensor and Mobile application*
Constraints	*The demonstration will take place in HRIOA campus, open fields and events. The aim is to have a free event to have a demonstration of the Solarvibes product and services, tickets will not be required. Exact time and duration of each demo is not available. We will conduct the demo in small sessions, owing to availability of different farmers, associations and partners. Sessions will be help in closed and open space.*
Planned stakeholders' groups	*The main stakeholders for this event are the following:* - *Farmers* - *Famers associations* - *Partners* - *Academic researchers* - *Government*
What do you want to achieve with this particular demonstration	*The aims of this event are grouped in three groups, presenting the product, learning from the use and experience, and establishing commercial relations.* *The aim of presenting the product to potential customers, is to create consciousness about the world needs in the agriculture industry, explain the products and how they will fight the world needs and help them to achieve better results and finally explain the different prices.* *The aim of learning through letting the farmers to use the products is to analyze the difficulties in the interaction and navigation. Asking farmers for feedback and expectations about these technologies and additional needs.* *The aim of establishing commercial relations goes in two ways, one with famers directly offering special prices and plans. In the second way, to attract potential partners for the commercial and distribution services in the region.*
Dissemination channels envisioned	*The channels that will be used to inform this event will mainly online with the use of social media with Solarvibes accounts in different platforms, as well as the IoF2020 accounts.* *In the same line there will be used an email marketing camping to invite directly the farmers, partners, communities, government and researchers.* *Using the blogs and newsletter from our partners some articles will be created to invite and give hints about the event.* *With the use of offline channels, the university will contact the farmer communities and farmers that are located in the area with the use of phone calls and banners.*
Potential collaboration with other	- *CIHEAM IAM (Mediterranean Agronomic Institute of Bari)*

H2020 projects	*(training, cooperation and research in the Mediterranean area including Romania and Hungary, two of our target markets) PARTNER* - *Flanders State of the Art (research in the agriculture industry including crops, crop protection, plant breeding and soil, and other topics) PARTNER* - *Promodis (potential partner for commercial and distribution in Europe) PARTNER* - *Precision Crop Management (sensor data, networking infrastructure and computer modelling improve the use of nitrogen and water) (could be a competitor) PROJECT* - *Data-driven Potato Production (telemetric IoT stations) (a competitor only for potato farmers) PROJECT* - *Within-field management zoning (sensors to measure soil moisture, soil organic matter, climate, etc) (a competitor only for potato farm) PROJECT* - *Digital Ecosystem Utilization (pest and insect detector using data stemming from IoT devices in the field) PROJECT*
Roles and responsibilities	*Technology demonstration by Solarvibes, demonstration event organised by USAMVC.*
Feedback from participants	– *Awareness of the agriculture problems* – *Product feedback* – *Farmers problems/need with the agriculture processes and the supply chain* – *Digitization use and knowledge* – *Farming network and community (share(?) activities, resources, people)* – *Communication channels* – *Use of technologies, interested(?), which, how much and for what?* – *What, how, when measures the soil* – *Income and expenses (ranges)*

Topic:	Data acquisition with sensors, hyperspectral cameras and wireless transmission to the network
UC:	**UC1.9 – WFMZ-Baltic**
Event overview	Event title: Hyperspectral data analysis for agriculture: technologies and data Date and time: 23rd September 2019, 10:00 am EET. Place: Visoriai Information Technology Park, Mokslininku 2A, 08412, Vilnius, Lithuania Main technologies that will be presented: data acquisition platform (drone), hyperspectral imagers, software for hyperspectral data pre-processing and data cube generation.

Constraints	Demonstration will be open to general public, but premises are limited for up to 50 persons so there will be a mandatory registration for participants.
Planned stakeholders' groups	Policy makers: Ministry of agriculture in Lithuania. Farmers: Farmers from Baltic States and other European countries willing to adopt such technologies in their farms. Corporate bodies: from IoT and AI/machine learning sectors
What do you want to achieve with this particular demonstration	Inform the general public about the project and possibilities provided by technologies used, attract customers for solution in development, demonstrate the process of hyperspectral data acquisition. During this demonstration we are going to show how hyperspectral data can be collected by using commercially available drones, how to tweak and calibrate cameras in order to get quality data, how the data should be prepared and processed for later reuse. Demo will include data acquisition, image extraction, image stitching, data processing, data cube generation and primary data analysis. Data gathered from all trial farms (10 farms) in Lithuania and Latvia will be used for the purposes of this demonstration.
Dissemination channels envisioned	• Main website: www.agrosmart.eu • Partner website: www.zur.lt (Chamber of Agriculture) • Newsletters for ART21 clients and contact database, members of chamber of Agriculture • Visoriai Information Technology Park communication channels (website, newsletter) • Invitations sent to Agricultural institutions across Lithuania, Latvia. • Lithuanian business confederation (largest business organization uniting service, trading and high-tech companies; national committee of the International Chamber of Commerce in Lithuania)
Potential collaboration with other H2020 projects	Place: Visoriai Information Technology Park (knowledge economy center in the field of information and communication technologies. Part provides infrastructure for the establishment of new businesses and growth of existing ones) Audience: Technology customers (farmers from arable sector)
Roles and responsibilities	• Demonstration Activity Main responsible – Kristina Sermuksnyte-Alesiuniene, kristina@art21.lt • Local logistics - Tomas Žeimys, tomas@tomaszeimys.lt • Communication responsible – Kristina Sermuksnyte-Alesiuniene, kristina@art21.lt • Event administrator - Mindaugas Kelpša,

	mindaugas@art21.lt • Event program, presentations – Laurynas Jukna, laurynas@art21.lt; Augustas Alesiunas, augustas@art21.lt
Feedback from participants	– Usefulness of presented technologies – The functionalities and data acquisition model are easy to understand. – Intent to implement such technologies by event participant – Technology application constrains
Topic: **UC:**	Yield prediction and mapping with available data and models (winter wheat and potato) **UC1.9 – WFMZ-Baltic**
Event overview	Event title: Agrobusiness Forum 2019 Date and time: 17/10/2019 Place: Expected to be held at Vytautas Magnus University Agriculture Academy (Lithuania), but may change. Main technologies that will be presented: machine learning technologies for hyperspectral data analysis and field property mapping.
Constraints	Demo is linked to Agrobusiness Forum 2019 and will be presented as part of program. There will be no tickets, but registration for the event will be mandatory.
Planned stakeholders' groups	• Farmers willing to exploit new technologies and scientific knowledge • Policy makers from EU interested in agrotechnology revolution • Researchers interested in data processing and hyperspectral imaging applications • Corporate bodies (from IoT and AI/machine learning sectors)
What do you want to achieve with this particular demonstration	• Inform the general public about the project and current results • Come in the local press as the event will be covered by local media (based on experience on previous forums) • Present new technologies and capabilities to policy makers • Attract customers for solution in development
Dissemination channels envisioned	• AgroSmart website (www.agrosmart.eu) • General media (the forum will be covered by local media) • IoF2020 channels (including website, blog and social media) • Newsletters for agricultural institutions in EU

	• Personal invitations for key policy makers in EU (including participants and key persons of IoF2020/H2020) • Lithuanian business confederation (largest business organization uniting service, trading and high-tech companies; national committee of the International Chamber of Commerce in Lithuania) • The Ministry of Agriculture of the Republic of Lithuania (one of organizers of the Forum)
Potential collaboration with other H2020 projects	Demonstration will be a part of Agrobusiness Forum in Lithuania, which is one of the biggest events in the agricultural sector in Lithuania. Event is focusing on review of evolution of agrotechnology and discussions on whether agribusiness is ready for new challenges of the future.
Roles and responsibilities	• Demonstration Activity Main responsible – Kristina Sermuksnyte-Alesiuniene, kristina@art21.lt • Local logistics - Tomas Žeimys, tomas@tomaszeimys.lt • Communication responsible – Kristina Sermuksnyte-Alesiuniene, kristina@art21.lt • Event administrator - Mindaugas Kelpša, mindaugas@art21.lt • Presentations – Laurynas Jukna, laurynas@art21.lt; Augustas Alesiunas, augustas@art21.lt
Feedback from participants	– Usefulness of presented technologies – Intent to implement such technologies by event participant – Technology application constrains / readiness

TRIAL 2	
Topic:	*Demonstration of Grazing cow monitor at Open Bedrijvendag October 6th 2019*
UC:	**UC2.1 (Grazing Cow Monitor)**
Event overview	• *Open Bedrijvendag* • *October 6th* • *Ilvo, Melle* • *Demonstration of Sensolus tracking sensor*
Constraints	*No*
Planned stakeholders' groups	Consumers / general public
What do you want to achieve with this particular demonstration	Inform the general public about the technology to track location of cows in a free grazing environment
Dissemination channels envisioned	*Twitter / Facebook of Ilvo, Sensolus and Inagro accounts*

Potential collaboration with other H2020 projects	*None*
Roles and responsibilities	• *Demonstration Activity Main responsible : Olivier Guiot* • *Local logistics : Ilvo* • *Communication responsible : Olivier Guiot – Nele Jacobs*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. E.g.:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC:**	*Demonstration of Grazing cow monitor at "Contactdag Vleeswaren en groenten en fruit* **UC2.1 (Grazing Cow Monitor)**
Event overview	• *Contactdag Vleeswaren* • *September 12th* • *Ilvo, Melle* • *Demonstration of Sensolus tracking sensor*
Constraints	*No*
Planned stakeholders' groups	Processing industry
What do you want to achieve with this particular demonstration	Inform the processing industry about the technology to track location of cows in a free grazing environment
Dissemination channels envisioned	*Twitter / facebook of Ilvo, Sensolus and Inagro accounts*
Potential collaboration with other H2020 projects	*None*
Roles and responsibilities	• *Demonstration Activity Main responsible : Olivier Guiot* • *Local logistics : Ilvo* • *Communication responsible : Olivier Guiot – Nele Jacobs*
Feedback from participants	
Topic: **UC:**	*Demonstration of Grazing cow monitor to farmers* **UC2.1 (Grazing Cow Monitor)**
Event overview	• *Special demo to be organized – date not confirmed yet – plan to schedule this beginning of November 2019*
Constraints	*No*
Planned stakeholders' groups	Dairy and meat farmers

What do you want to achieve with this particular demonstration	Inform farmers about the technology to track location of cows in a free grazing environment
Dissemination channels envisioned	*Twitter / facebook of Ilvo and Sensolus accounts and website Saeftingherhof*
Potential collaboration with other H2020 projects	*None*
Roles and responsibilities	• *Demonstration Activity Main responsible : Olivier Guiot* • *Local logistics : TBC* • *Communication responsible : Olivier Guiot*
Feedback from participants	• Usefulness of presented technologies • The functionalities are easy to understand. • Suggest solution adjustments to address your needs

Topic:	*On farm demo at Andy van Rossem*
UC:	**2.2 Happy cow**
Event overview	• *IDA demo event* • *1 March 11:00-15:00* • *van Rossem dairy farms* • *IDA*
Constraints	*Nothing*
Planned stakeholders' groups	*Midsized dairy farmers in Flanders and the Southern part of the Netherlands*
What do you want to achieve with this particular demonstration	*Attract customers and potential partners.*
Dissemination channels envisioned	*Targeted mailing*
Potential collaboration with other H2020 projects	
Roles and responsibilities	• *Demonstration Activity Main responsible – Jan- Jaap Kuijpers (janjaapk@connecterra.io)* • *Local logistics – Jan-Jaap Kuijpers* • *(janjaapk@connecterra.io)* • *Communication responsible – Robyn Lee Bonnin (robynlb@connecterra.io)*

Feedback from participants	- *Why do you or don't you see merit in IDA?* - *What information would convince you to buy IDA?* - *What feature would you like to see added to IDA?* - *How would you compare IDA to the solutions of competitors?*

Topic:	*Live Demonstrations at PARK and KING of UC2.3 and Wider IoF Activities to UK Farmers*
UC:	**UC2.3 Herdsmen+**
Event overview	*The intention is to host multiple events at 2 of our test case farms that currently serve as a test bed for technology development (site Parkend in Cowdenbeath, Scotland and site Kingshay in Somerset, England).* *The target stakeholders are UK farmers and cooperative representatives who have been targeted as the end-user of the developed technologies. By demonstrating live the technology and presenting the improvements (with input from farmers from the 2 sites), it is envisioned that the impact of the UC and the wider IoF project will be increased.* *The events will consist of a mix of site tours showing the implantation of the technologies (collars, milking robots and other sensors) and the aggregation and visualization of these in a central location or remote device to show the flexibility of the solutions. The tours will then be followed by presentations at the conferencing facilities on site where more detailed explanation will be provided on the technologies, services and improvements achieved for the dairy sector.* *The events scheduled has been arrange tentatively as follows:* - *PARK – last 2 weeks October 2019* - *KING – first 2 weeks February 2020* *Depending on the success of these events, additional events may be scheduled during 2020.* *As UK farmers tend to be reluctant to travel more than 2 hours from their farms, the development of a webinar or other online presentation using the Universities online learning resources to create short online demos of the UC and IoF. The aim is to reach a greater audience than would be achieved solely by live demo's on site.* *The content of these webinars has not been finalized but will likely consist of a mix of site footage, explanation of the technologies and the impact in a condensed form, with further information linked and hosted online (such as at the IoF UC summary pages)*
Constraints	*Permission to use PARK and KING is required from Agri-EPI (public), permission has been granted and discussions have*

	moved onto format, timing and audience. *Permission to create webinars is required from University of Strathclyde (public). Permission will be gained subject to approval and quality of webinar production.* *Site visit numbers will be restricted depending on staffing available and size of conference facilities but rolling tours and conferences can be arranged to host larger numbers within the same event day. Ticketing is not envisioned to ensure numbers and interest are high.* *Online content will be freely available to the public and disseminated through agri networks to reach target audience.*
Planned stakeholders' groups	
What do you want to achieve with this particular demonstration	*Raise awareness amongst the rural sector (in particular dairy but also the wider body in terms of the entire IoF project) to ensure that the benefits and impact of the developed technologies can be understood and adopted by stakeholders within this sector.*
Dissemination channels envisioned	*Primarily through the Universities marketing team, Agri-EPI's extensive rural network using targeted mailing.* *Online content will be marketed through University social media (University and Dept. EEE Twitter accounts and YouTube channel) and potentially Agri-EPI social media.*
Potential collaboration with other H2020 projects	*Implementation of an Internet of Things in a remote location for an industrial setting will be of interest to other H2020 projects related to industrial IoT (for example manufacturing). The audience would likely be a mix of industrial, governmental and academic representatives.*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – Ivan Andonovic (USTRATH)* • *Local logistics – Craig Michie (USTRATH) and Andrew Hamilton (USTRATH)* • *Communication responsible – Ivan Andonovic (USTRATH) and Craig Michie (USTRATH)* *Contact emails:* i.andonovic@strath.ac.uk c.michie@strath.ac.uk andrew.w.hamilton@strath.ac.uk
Feedback from participants	*Feedback from farmers:* - *Usefulness of technology and if perceived benefit is evident* - *Likelihood of adoption*

	- *Improvement to technologies or additional services that are desirable* - *Issues on implementation on site differing to existing test locations* *Feedback from public:* - *Benefit to wider environment evident (through reduced waste and improved animal health)* - *Changes in perception of agriculture (in particular dairy)*

Topic: **UC:**	*Workshop IR analyses* **UC 2.4. Remote Dairy Quality**
Event overview	• *Workshop Understanding IR Analyses* • *Fall 2019* • *Qlip, location Pakhuis Noorderhaven*
Constraints	*Max. 20 persons*
Planned stakeholders' groups	*Dairyprocessors, Quality Assurance managers, Quality Control Managers, Procesoperators*
What do you want to achieve with this particular demonstration	*Inform customers / dairy processors on the features of RDQ-tool and show the benefits.*
Dissemination channels envisioned	*Direct newsletter*
Potential collaboration with other H2020 projects	
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Responsible and organized by A. Bom, Qlip* *Please, have in mind that one person can be in charge for more than one topic*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. E.g.:* – *Interest in RDQ-tool* – *Usefulness of presented technologies* – *The functionalities are easy to understand* – *Area for improvemnet*

Topic:	***Demonstrate early lameness detection technology***

UC:	**UC2.5 - MELD**
Event overview	• *2019 National Ploughing Championships, Ireland* • *17-19 September 2019* • *Balintrane, Co. Carlow Ireland* • *Main technologies that will be presented*
Constraints	*UC2.5 will provide a demonstration of its technology in the Enterprise Ireland sponsored Innovation Area*
Planned stakeholders' groups	*Agri-tech providers, policy makers, farmers, general public*
What do you want to achieve with this particular demonstration	*Inform the general public, farmers, agri-tech providers and government agencies about the use case and its deployment. Demonstrate the technology used in the use case.*
Dissemination channels envisioned	*Social media, local and national media, local radio*
Potential collaboration with other H2020 projects	*Collaboration with SmartAgriHubs UK & Ireland*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – Paul Malone* • *Local logistics – Paul Malone* • *Communication responsible – WIT communication team*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. E.g.:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.*
Topic:	*Stakeholder meetings*
UC:	**UC2.6 Precision Mineral Supplementation**
Event overview	*27 February 2019 10:00, Ozolnieki Latvia* *20 March 2019 10:00, Kaunas, Lithuania* *22 March 2019 10:00, Futterkamp, Germany* *All three stakeholder meetings included a general presentation of IoF2020, of the UC2.6 and of related issues concerning precision feeding, use of electronic ear tags, challenges of the transition period for dairy cows.*
Constraints	*No*
Planned stakeholders' groups	*Dairy farmers, mineral feed suppliers, authorities holding registers for dairy cattle, researchers, farm advisors, farmer organisations.*

What do you want to achieve with this particular demonstration	*Create awareness of perspectives in precision mineral supplementation and planned testbed and UC activities, and encourage stakeholder's involvement. Confirmation / final selection of testbed hosts, understanding the local situation and coordinating activities with regional partners.*
Dissemination channels envisioned	*Dialogue meetings with stakeholders, meaning seminars where stakeholder groups were invited to present their interest and perspectives. In most cases followed by SoMe notifications.*
Potential collaboration with other H2020 projects	*NA*
Roles and responsibilities	*Henning Foged, general coordination* Inga Berzina and Raimonds Jakovickis, LV coordination and meeting planning and follow up Rimatas Stakauskas, LT coordination and meeting planning and follow up Ole Lamp, DE coordination and meeting planning and follow up
Feedback from participants	*A questionnaire was used for collecting perceptions and feedback from participants. Results in Basecamp.*

Topic:	*Presentation of the system in field and share the result about the pilots*
UC:	**2.7 Smart Precision Cow and Cattle monitoring**
Event overview	• *Presentation of the Moonsyst Smart Monitoring System* • *2019.09.05. (September)* • *Tasko farm, Mezőcsát, Hungary* • *Moonsyst Smart Monitoring System*
Constraints	*The event is not in connection with any other event. It is a closed demonstration for the invited and registrated persons.*
Planned stakeholders' groups	*Farmers, Farmers associations, Vets, Distributors, Advisor, Researchers, Experts*
What do you want to achieve with this particular demonstration	*Inform the farmers and attract customers for Moonsyst products and find partners, customers.*
Dissemination channels envisioned	*We are planning to use targeted e-mail to farmers, social media, with the help of the Hungarian National Chamber of Agricultural Economics contacts*
Potential collaboration with	*Charolais farm in Hungary; Specific audience: Farmers, Farmers*

other H2020 projects	*associations, Vets, Distributors, Advisor, Researchers, Experts*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator peter.gesler@moonsyst.com, marton.rajnai@moonsyst.com* • *Local logistics- UC coordinator peter.gesler@moonsyst.com, Use Case Co-coordinator marton.rajnai@moonsyst.com* • *Communication responsible – Use Case Co-coordinator, Communication marton.rajnai@moonsyst.com, martin.czirok@moonsyst.com*
Feedback from participants	– *Usefulness of the presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

TRIAL 3	
Topic:	**Smart Irrigation in small table grape vineyards**
UC:	**3.1**
Event overview	• *Event title: Smart Irrigation in small table grape vineyards* • *Date and time: after September* • *Place: Kiato, Greece* • *Main technologies that will be presented: Weather Monitoring, Soil moisture, Water flow, Solenoid valves control, Web Based platform*
Constraints	*Do you need a permission from any institution (both private and public)? If yes, which one?* ***No*** *If the demo event will be linked to some other event (e.g. fair), are tickets envisioned?* ***The event will not be linked with other event*** *Are there any restrictions in the number of people that can/might be invited (if it's a closed demonstration, open to the general public, members of some organizations, etc.)?* ***No.***
Planned stakeholders' groups	***Farmers, Farmers associations, Agricultural Consultants***
What do you want to achieve with this particular demonstration	***AUA:* inform the public, arouse the interest of private capital bodies, come in the local press** ***Synelixis:* Inform the general public, come in the local press, represent my organization, arouse the interest of private capital bodies, attract customers for my products** ***Pegasus:* Inform the general public, come in the local press, represent my organization, arouse the interest of private**

	capital bodies, attract customers for my products
Dissemination channels envisioned	***local media, targeted mailing, personal invitation***
Potential collaboration with other H2020 projects	***Place:*** ***Table grape vineyards in Northern Peloponnese*** ***Specific audience:*** ***farmers, agricultural consultants***
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* ***AUA: Spyros Fountas, Vangelis Anastasiou*** • *Local logistics* ***Pegasus: Markos Leggas, Fouli Douka*** • *Communication responsible – for local stakeholders and EU/H2020 stakeholders* ***Fouli Douka (Pegasus), Vangelis Anastasiou (AUA)***
Feedback from participants	– ***Usefulness of presented technologies*** – ***The functionalities are easy to understand.*** – ***Suggest solution adjustments to address your needs***

Topic:	*Demo of Remote Wine Quality Control System in an important winery*
UC:	**UC 3.2 Big Wine Optimization**
Event overview	• *Demo of Remote Wine Quality Control System in an important winery* • *Autumn by November* • *TBD, Tuscany* • *Main technologies that will be presented*
Constraints	*No particulars constraints*
Planned stakeholders' groups	*Industry stakeholders: wine producers/enologists*
What do you want to achieve with this particular demonstration	*Show the benefices of the technology in a real winery*
Dissemination channels envisioned	*Targeted mailing (enologists mailing list from the ISVEA analytical lab)*
Potential collaboration with other H2020 projects	*The plaid project (Horizon2020) is about peer to peer learning and how to access innovation through demonstration.*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Stefano Ferrari (s.ferrari@isvea.it)* • *Local logistics: Stefano Ferrari (s.ferrari@isvea.it)* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders :* *Stefano Ferrari (s.ferrari@isvea.it)*

Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

Topic: **UC:**	*DATAGRI* **3.3**
Event overview	• *Event title: DATAGRI* • *Date and time:* January - February 2020 • *Place: Zaragoza - Spain* • *Main technologies that will be presented: IoT sensors and DSS built.*
Constraints	
Planned stakeholders' groups	*FARMERS AND OLIVE OIL COOPERATIVES*
What do you want to achieve with this particular demonstration	*It is a Fair, so the stakeholders will be there, however we will do some dissemination activities.*
Dissemination channels envisioned	*Social Networks.*
Potential collaboration with other H2020 projects	
Roles and responsibilities	All the actions will be coordinated by the UC 3.3 coordinator.
Feedback from participants	*We will gather the feedback using a form.*
Topic: **UC:**	*FRUIT ATTRACTION* **3.3**
Event overview	• *Event title: FRUIT ATTRACTION* • *Date and time: October 2019* • *Place: Madrid - Spain* • *Main technologies that will be presented: IoT sensors and DSS built.*
Constraints	
Planned stakeholders' groups	*FARMERS AND OLIVE OIL COOPERATIVES*
What do you want to achieve with this particular	*It is a Fair, so the stakeholders will be there, however we will do some dissemination activities.*

demonstration	
Dissemination channels envisioned	*Social Networks.*
Potential collaboration with other H2020 projects	
Roles and responsibilities	All the actions will be coordinated by the UC 3.3 coordinator.
Feedback from participants	*We will gather the feedback using a form.*
Topic: **UC:**	**Smart Irrigation in small olive orchards** **3.3**
Event overview	• *Event title: Smart Irrigation in small olive groves* • *Date and time: January – February 2020* • *Place: Chora Messinias, Greece* • *Main technologies that will be presented: Weather Monitoring, Soil moisture, Water flow, Solenoid valves control, Web Based platform*
Constraints	*Do you need a permission from any institution (both private and public)? If yes, which one?* ***No*** *If the demo event will be linked to some other event (e.g. fair), are tickets envisioned?* ***The event will not be linked with other event*** *Are there any restrictions in the number of people that can/might be invited (if it's a closed demonstration, open to the general public, members of some organizations, etc.)* ***No. Farmers and Agricultural Consultants will be the main stakeholder groups of this event***
Planned stakeholders' groups	***Farmers, Farmers associations, Agricultural Consultants***
What do you want to achieve with this particular demonstration	***AUA:* inform the public, arouse the interest of private capital bodies, come in the local press** ***Synelixis:* Inform the general public, come in the local press, represent my organization, arouse the interest of private capital bodies, attract customers for my products** ***Nileas:* Inform the general public, come in the local press, represent my organization, arouse the interest of private capital bodies, attract customers for my products**
Dissemination channels	***local media, targeted mailing, personal invitation***

envisioned	
Potential collaboration with other H2020 projects	***Place:* Olive orchards in Peloponnese** ***Specific audience:* farmers, agricultural consultants**
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* ***AUA: Spyros Fountas, Vangelis Anastasiou*** • *Local logistics* ***Nileas: Giorgos Kokkinos*** • *Communication responsible – for local stakeholders and EU/H2020 stakeholders* ***Giorgos Kokkinos (Nileas), Vangelis Anastasiou (AUA)***
Feedback from participants	– ***Usefulness of presented technologies*** – ***The functionalities are easy to understand.*** – ***Suggest solution adjustments to address your needs***

Topic: **UC:**	*Internal IoT Fair* **3.4**
Event overview	*Internal IoT Fair* *13.06.2019 (planned)* *Bornheim, Germany* *Hardware and Software component of the Smart RTI solution*
Constraints	*No permission needed.* *No tickets envisioned* *For all colleagues in Germany. Video documentation for all European colleagues from Euro Pool Group (Euro Pool System & La palette rouge)*
Planned stakeholders' groups	*All EPG Members* *Euro Pool System* *La Palette Rouge*
What do you want to achieve with this particular demonstration	*To inform other departments about the work of the IoT department* *Get feedback to the solution to find more business cases*
Dissemination channels envisioned	*Internal Mailing lists* *EPG Newsletter*
Potential collaboration with other H2020 projects	*Not for this event*
Roles and responsibilities	*Organizational Team: Christian Schmidt, Stephan Wahlen, Niklas Vosberg*

	• *UC Coordinators Robert Reiche, Christian Schmidt* • *Local logistics Christian Schmidt* • *Communication responsible – Christian Schmidt*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs* – *Find more business cases*

Topic: **UC:**	*Demonstration* **3.5**
Event overview	• *Demoagro Specialty* • *1-3 October, 2019* • *Valencia, Spain.* • *Smartomizer Fede*
Constraints	*None*
Planned stakeholders' groups	*Farmers, Farmers associations, Agricultural technicians, researchers, Manufacturers of agricultural machinery, Politicians.*
What do you want to achieve with this particular demonstration	*Show Smartomizer technology to the audience and media.*
Dissemination channels envisioned	*Fede communication channels (Whatsapp, mailing, web, social networks, personalized invitations).* *Communication channels of the event.*
Potential collaboration with other H2020 projects	
Roles and responsibilities	*Pending to define. For any question you can contact Iván López, Chief Marketing Officer: ilopez@fedepulverizadores.com*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.*

Topic: **UC:**	*Demo "how to track the wine integrity during transportation" at Enoforum Congress* **UC 3.2 Monitoring wine shipping conditions and UC3.6 Beverage Integrity Tracking**
Event overview	*Please, indicate:*

	• *IOT TECNOLOGIES FOR WINE TRASPORT MONITORING* *Session devoted to IoF2020 project* *Interventions:* *Metabolites markers of a bad wine storage,* *A test to assess the tolerance of a wine to exposure to high storage,* *How to track the wine integrity during transport* • *Vincenza, Italy* • *23 of May 2019*
Constraints	*No particular constraints. The congress can host 1000 peoples.*
Planned stakeholders' groups	*Industry stakeholders: The wine producers are the potential users of the product once it will be developed and the wine makers and enologists can advise the wine makers in buying the product as they can explain the potential damage on beverage due to transportation.* *Enoforum Italy's participants are 60% industry stakeholders (wine producers, wine makers, enologists).*
What do you want to achieve with this particular demonstration	*WHY do wine makers need our product to avoid the wine to be damaged during transportation?*
Dissemination channels envisioned	*Promotion of Enoforum congress through:* - Dedicated web site (www.enoforum.eu) - 5 dedicated mailing through Vinidea mailing list - Mailing thanks to peer to peer association - Article on on-line Journal Infowine (www.infowine.com) - Publication on dedicated press + on line version - Dedicated article made on Enoforum intervention: (http://a2d8x8.emailsp.com/f/rnl.aspx/?fef=u_3:0gl=w3-e0=/335&x=pv&4af=d9e4&x=pp&x4n9.:&&x=pv&8/0h3c&d=qqwNCLM) - *Social media*
Potential collaboration with other H2020 projects	*The Agrilink project (horizon2020) aims to enhance the role of agricultural advice and associated advisory services.*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Gianni Trioli (*gianni.trioli@vinidea.it*) and Mattia Nanetti (mattia@wenda-it.com)* • *Local logistics and communication responsible – for local stakeholders and EU/H2020 stakeholders: Gianni Trioli (*gianni.trioli@vinidea.it

Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs.*
Topic: **UC:**	*Demo of Beverage Integrity Tracking System in wineries* **UC 3.6 Beverage Integrity Tracking**
Event overview	• *Tests of alpha and beta versions beverage Integrity Tracking System* • *June - November 2019 and June - November 2020* • *20 wineries/breweries and distillate producers around Europe* • *Alpha and beta versions beverage Integrity Tracking System*
Constraints	*No particulars constraints*
Planned stakeholders' groups	*Industry stakeholders: wine producers/enologists, supply chain actors and final retailers (wine bars, restaurants…)*
What do you want to achieve with this particular demonstration	*Show the benefices of the technology and the easiness to use in real wineries*
Dissemination channels envisioned	*Selected 20 producers as planned in the project work plan*
Potential collaboration with other H2020 projects	-.
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Mattia Nanetti (mattia@wenda-it.com)* • *Local logistics: Céline Caffot (celine.caffot@vinidea.it)* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders : Mattia Nanetti (mattia@wenda-it.com)*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

TRIAL 4	
Topic: **UC:**	*IoTWeek 2019* **4.2**
Event overview	*Please, indicate:* • *IoTWeek* • *17-19 June 2019*

	• *Aarhus, Denmark* • *UC results*
Constraints	*No*
Planned stakeholders' groups	*Participants specialized in the IoT domain*
What do you want to achieve with this particular demonstration	*Show the results of the UC 4.2. and attract customers for UC DSS*
Dissemination channels envisioned	*General newsletter, social media (Twitter, Instagram and Facebook, Jorge Antonio Sánchez Molina) and local radio.*
Potential collaboration with other H2020 projects	*SmartAgriHubs*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Jorge Antonio Sánchez Molina (jorgesanchez@ual.es)* • *Local logistics - Manuel Muñoz Rodríguez (mmr411€ual.es)* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders: Jorge Antonio Sánchez Molina (jorgesanchez@ual.es)*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs* – *Suggest new features*
Topic: **UC:**	*European researchers' night* **4.2**
Event overview	• *European researchers' night* • *27 September 2019* • *Almería, Spain (also celebrated in many cities)* • *UC results*
Constraints	*No*
Planned stakeholders' groups	*General public*
What do you want to achieve with this particular demonstration	*Show the results of the UC 4.2.*
Dissemination channels envisioned	*General newsletter, social media (Twitter, Instagram and Facebook, Jorge Antonio Sánchez Molina) and local radio.*
Potential collaboration with other H2020 projects	*SmartAgriHubs and Nefertiti*

Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Jorge Antonio Sánchez Molina (jorgesanchez@ual.es)* • *Local logistics - Manuel Muñoz Rodríguez (mmr411€ual.es)* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders: Jorge Antonio Sánchez Molina (jorgesanchez@ual.es)*
Feedback from participants	– *No feedback expected in this events because the public affluence is huge.*
Topic: **UC:**	*Growers demonstration links to Nefertiti project-Farm Demo* **4.2**
Event overview	*Please, indicate:* • *Growers demonstration* • *October-November 2019* • *Almería, Spain* • *IoF2020 UC and Nerfertiti methodology*
Constraints	*No*
Planned stakeholders' groups	*Growers and agricultural technicians*
What do you want to achieve with this particular demonstration	*Show the results of the UC 4.2. and the new technologies applied to the greenhouse production, testing Nefertiti tools*
Dissemination channels envisioned	*General newsletter, social media (Twitter, Instagram and Facebook, Jorge Antonio Sánchez Molina) and local radio.*
Potential collaboration with other H2020 projects	*Nefertiti*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator: Jorge Antonio Sánchez Molina (jorgesanchez@ual.es)* • *Local logistics – Miguel Gimenez Moolhuyzen (miguel.gimenez@ual.es)* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders: Cynthia Giagnocavo (cgiagnocavo@ual.es)*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs* – *New technologies applied to the greenhouse production* – *Suggest new features*

Topic:	*Knowledge and experience exchange*

UC:	**4.3**
Event overview	• *Event title* *NPPL Kennisdagen* • *Date and time* *4/5/6 june* • *Place* *Agri Innovation Centre, Drongen* • *Main technologies that will be presented* *IC-weeder machine with crop and weed logging on the field, with iot functionality (and online Akkerweb demo).*
Constraints	*Registration is required but free of charge. The demo is hosted on the NPPL Kennisdagen (knowledge days).*
Planned stakeholders' groups	*The three-day event is focused on Students (agricultural studies), Teachers and Farmers. Each day has its own focus group.*
What do you want to achieve with this particular demonstration	*Inform participants on the new developments for crop and weed detection and logging. For students and teachers to inform and keep up with the new developments. For farmers to inform and make them aware of possibilities for their farms.*
Dissemination channels envisioned	*Via the website of the NPPL, newsletter of farmers and via the communication channels for the students.*
Potential collaboration with other H2020 projects	*Team-up with UC1.1 could be possible (contact with UC is started).*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*
Topic: **UC:**	*Demonstration* **4.3**
Event overview	• *Event title* *NPPL on Tour* • *Date and time* *20/08/2019* • *Place* • *Main technologies that will be presented* *IC-weeder running in a demo-setup where the machine will operate to show the audience how the technology is functioning.*
Constraints	*Permission of NPPL is required and granted. The event is open for farmers.*

Planned stakeholders' groups	*Farmers and farmers associations.*
What do you want to achieve with this particular demonstration	*Inform farmers of latest developments and arise interest in putting these techniques in practice.*
Dissemination channels envisioned	*Magazine (website) for farmers (like www.boerderij.nl)*
Potential collaboration with other H2020 projects	*Team-up with UC1.1 could be possible (contact with UC is started).*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

Topic:	***Enhanced certification systems***
UC:	**4.4**
Event overview	• *Tuttofood, food exhibition* • *6-9 May 2019* • *Milan* • *AR and project overview*
Constraints	*The demo is linked to the Tuttofood fair participants*
Planned stakeholders' groups	*B2B event related to the food chain players*
What do you want to achieve with this particular demonstration	*attract food industries and get them interested in this improved auditing system. Besides food industries could be attracted for side-uses of AR*
Dissemination channels envisioned	*Valoritalia targeted mailing and the exposition dissemnation tools (social media, etc)*
Potential collaboration with other H2020 projects	*none*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics: Alessandro Barbieri, Francesca Romero* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders : Francesca Romero*
Feedback from participants	*Raise curiosity and request to understand more, especially on side-uses (marketing) for the data gathered with the audit*

Topic:	***Enhanced certification systems***
UC:	**4.4**
Event overview	• *Enoforum* • *21-23 May 2019* • *Vicenza* • *VR, AR, IoT sensors*
Constraints	*The participant must be registered to the enoforum conference*
Planned stakeholders' groups	*Professionals in the field of vine and wine*
What do you want to achieve with this particular demonstration	*Arouse the interest of professionals on the use of sensors for improved wine-making and AR/VR for auditing and other implemnetations of gathered data*
Dissemination channels envisioned	*Enoforum channel*
Potential collaboration with other H2020 projects	*Not with H2020 projects but with OGs, as the last Enoforum day is dedicated to European OGs interaction*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics Matteo Balderacchi* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders Matteo Balderacchi*
Feedback from participants	*Suggest solution adjustments to address your needs*
Topic:	***Enhanced certification systems***
UC:	**4.4**
Event overview	• *Improved udit: tools and systems* • *to be defined, in November 2019* • *Cantine Ferrari, Trento* • *AR and VR for improved certification*
Constraints	*It will be open, just limitation for room size.*
Planned stakeholders' groups	*Wien-makers and certification bodies*
What do you want to achieve with this particular demonstration	*Inform certification bodies on the potentials of IOT and our product to improve the process; share experiences; propose common actions*
Dissemination channels envisioned	*Valoritalia dissemination tools and certification bodies association*

Potential collaboration with other H2020 projects	*no*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics_ Flavio Serina* • *Communication responsible – Matteo Balderacchi and Cristina Micheloni*
Feedback from participants	*Similar experiences by other certification bodies* *opinion on use and potential improvement* *assessment of market potentials*
Topic: **UC:**	***Enhanced certification systems*** **4.4**
Event overview	• *Event to be defined, in October 2019* • *IoT sensors in cellar*
Constraints	*It is open to everyone*
Planned stakeholders' groups	*Farmers, professionals, certification bodies*
What do you want to achieve with this particular demonstration	*attract customers for my products, harvesting suggestions*
Dissemination channels envisioned	*Valoritalia targeted mailing and mailing f local associations*
Potential collaboration with other H2020 projects	*Collaboration within IOF2020, Different Ucs and Regional OGs*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator* • *Local logistics Matteo Balderacchi, Cristina Micheloni* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders Francesca Romero*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.*

Topic: **UC:**	(Fruits and) Vegetables **4.5 Digital Ecosystem Utilisation (CYSLOP)**
Event overview	• *Researchers Night* • *September 27, 2019* • *Philoxenia Conference Center, Nicosia, Cyprus* • *CYSLOP poster*
Constraints	*We need permission from the Director of ARI. This event is open to*

	the general public
Planned stakeholders' groups	*General public*
What do you want to achieve with this particular demonstration	*Inform the general public about IoT in agriculture, connect with the local press, represent the Agricultural Research Institute(ARI) as a CYSLOP orchestrator, arouse the interest of private capital bodies, and to attract potential customers*
Dissemination channels envisioned	*ARI website (http://www.ari.gov.cy), ARI e-newsletter; social media – https://www.facebook.com/ARICyprus,* https://twitter.com/ari_rd, https://www.instagram.com/ari_cyprus/
Potential collaboration with other H2020 projects	*Exhibition of IoT devices that are deployed in Cyprus and demonstration of the IoT platform that supports it.*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – Harris Moysiadis, tmoysiadis@f-in.gr* • *Local logistics FINT/ ARI* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders, George Adamides, gadamides@ari.gov.cy*
Feedback from participants	*Topics we would like to be covered by feedback questionnaire.* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *(Net promoter score: this is a measure of customer loyalty and is based on a single question: How likely is it that you'll recommend this product to a friend or colleague? The response options range from 0 (Not at all likely) to 10 (Extremely likely). Responses are then bucketed into the following segments. Promoters: Responses from 9-10 Passives: Responses from 7-8 Detractors: Responses from 0 to 6)*
Topic: **UC:**	Fruits and Vegetables **4.5 Digital Ecosystem Utilisation (CYSLOP)**
Event overview	• *AgroExpo* • *October 4-6, 2019* • *State Fair, Nicosia, Cyprus* • *CYSLOP poster*
Constraints	*This event is open to the general public. We need permission for the Director of ARI and from the Ministry of Agriculture, Rural Development and Environment.*
Planned stakeholders'	*Farmers, Agronomists, Agriculture Suppliers, General public*

groups	
What do you want to achieve with this particular demonstration	*Inform the general public about IoT in agriculture, connect with the local press, represent the Agricultural Research Institute(ARI) as a CYSLOP orchestrator, arouse the interest of private capital bodies, and to attract potential customers*
Dissemination channels envisioned	*ARI website (http://www.ari.gov.cy), ARI e-newsletter; social media – https://www.facebook.com/ARICyprus,* https://twitter.com/ari_rd, https://www.instagram.com/ari_cyprus/
Potential collaboration with other H2020 projects	*Exhibition of IoT devices that are similar to the ones deployed in Cyprus and demonstration of the IoT platform that supports it.*
Roles and responsibilities	• *Harris Moysiadis, tmoysiadis@f-in.gr* • *Local logistics FINT/ ARI* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders George Adamides, gadamides@ari.gov.cy*
Feedback from participants	*Topics we would like to be covered by feedback questionnaire.* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs* – *(Net promoter score: this is a measure of customer loyalty and is based on a single question: How likely is it that you'll recommend this product to a friend or colleague? The response options range from 0 (Not at all likely) to 10 (Extremely likely). Responses are then bucketed into the following segments. Promoters: Responses from 9-10 Passives: Responses from 7-8 Detractors: Responses from 0 to 6)*
Topic: **UC:**	*Fruits and Vegetables* **4.5 Digital Ecosystem Utilisation (CYSLOP)**
Event overview	• *CAMAD 2019* • *11-13 September 2019* • *Limassol, Cyprus* • *Field visit, IoT sensors, IoT services*
Constraints	*The plan is to include 4.5 UC demonstration activity in CAMAD conference programme as a field visit so we need permission of its organization committee. Attendees need to pre-register so logistics operations are smoothly organized.*
Planned stakeholders' groups	*ICT Researchers, technology providers, farmers, agronomists,*
What do you want to achieve with this particular demonstration	*Inform 5G people about IoF2020 project and specifically about 4.5 trial, bring together ICT experts with Agrifood community, raise awareness on FINT's, ARI's and UNRF's activities in the domain, discuss on the demo case, issues that arised, current users'*

	attitude and first results, if any.
Dissemination channels envisioned	*Organisations' websites (FINT, UNRF, ARI), 4.5 UC social media accounts (LinkedIn, twitter, FB), FINT's newsletter, CAMAD website, (local press? TV?)*
Potential collaboration with other H2020 projects	*Demonstration will take place in berries' farm(s) so colleagues from Fruit trial may also be invited.*
Roles and responsibilities	*the organizational team (Harris Moysiadis tmoysiadis@f-in.gr , Constandinos Mavromoustakis mavromoustakis.c@unic.ac.cy, George Adamides gadamides@ari.gov.cy , Nikos Zotos nzotos@f-in.gr) – contact points for following topics:* • *Demonstration Activity Main responsible – Harris Moysiadis, tmoysiadis@f-in.gr* • *Local logistics- Constandinos Mavromoustakis mavromoustakis.c@unic.ac.cy* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders- George Adamides gadamides@ari.gov.cy*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. E.g.:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Converging 5G with IoT for digitally enhanced Agrifood: ideas for the road ahead.*

TRIAL 5	
Topic:	*Meeting with farmer stakeholder group*
UC:	**UC5.1 Pig farm management**
Event overview	*Farmers meet UC5.1* *17 May 2019, 15:30, ZLTO* *Group level dashboard interactive discussion, technical challenges and boar taint and production data plans*
Constraints	*Closed private meeting*
Planned stakeholders' groups	*Test farmers*
What do you want to achieve with this particular demonstration	*Bring farmers up to speed and collect feedback from the product*

Dissemination channels envisioned	*Only targeted mailing*
Potential collaboration with other H2020 projects	*/*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator Jarissa Maselyne – jarissa.maselyne@ilvo.vlaanderen.be* • *Local logistics Danïelle Aarts-van de Loo danielle.aarts@zlto.nl* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders – 2 persons above*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs* – *Data to collect and how to collect them*
Topic: **UC:**	*IoT Week Aarhus exhibition* **UC5.1 Pig farm management**
Event overview	*IoT Week Aarhus exhibition* *18 – 19 /6 /2019* *Aarhus expo* *Demo's of the hardware, dahsboards, banners, posters and Q&A*
Constraints	*Open to the general public and IoT Week participants*
Planned stakeholders' groups	*Tech and agri, general public, schools*
What do you want to achieve with this particular demonstration	*Inform them about IOF2020 and the developments*
Dissemination channels envisioned	*IoT Week, IOF2020 channels*
Potential collaboration with other H2020 projects	*/*
Roles and responsibilities	• *Demonstration Activity Main responsible – Chari Vandenbussche – chari.vandenbussche@ilvo.vlaanderen.be* • *Local logistics - same* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders – same*
Feedback from participants	– *Usefulness of presented technologies* – *If they see this incorporated in the future of farming* – *Potential collaborations or customers*

Topic:	*Flemish government visit*
UC:	**UC5.1 Pig farm management**
Event overview	*Digitization unit of Flemish agricultural government meets IoF2020 & UC5.1* *10th September 2019* *ILVO* *Use case presentations and demo's*
Constraints	*Private meeting*
Planned stakeholders' groups	*Policy*
What do you want to achieve with this particular demonstration	*Inform them of IOF2020 and the developments*
Dissemination channels envisioned	*Only direct contact with representatives*
Potential collaboration with other H2020 projects	*Dependent on the rest of the visit, which other projects are shown* *SmartAgriHubs, NEFERTITI, etc.*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator Jarissa Maselyne – jarissa.maselyne@ilvo.vlaanderen.be* • *Local logistics - same* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders – same*
Feedback from participants	– *Usefulness of presented technologies* – *If they see this incorporated in the future of farming*
Topic:	*Open company day*
UC:	**UC5.1 Pig farm management / UC2.1 Grazing cow monitor**
Event overview	*Open company day Flanders* *6th October 2019* *ILVO* *Use case demo's, posters and games*
Constraints	*/*
Planned stakeholders' groups	*General public, all stakeholders*

What do you want to achieve with this particular demonstration	*Inform them of IOF2020 and the developments (which UC and under which form TBD)*
Dissemination channels envisioned	*Social media, website, banners along the road, etc.*
Potential collaboration with other H2020 projects	*Dependent on the rest of the visit, which other projects are shown* *SmartAgriHubs, NEFERTITI, etc.*
Roles and responsibilities	• *Demonstration Activity Main responsible – UC coordinator Jarissa Maselyne – jarissa.maselyne@ilvo.vlaanderen.be* • *Local logistics – ILVO communication unit* • *Communication responsible – for local stakeholders and EU/H2020 stakeholders – ILVO communication unit*
Feedback from participants	– *Usefulness of presented technologies* – *If they see this incorporated in the future of farming*

Topic: **UC:**	*SADA November 2019 – Farmers and Integrators* **UC 5.2**
Event overview	• *Event title: IoT Based Poutry Chain Management* • *Date and time: November 2019* • *Place: SADA facilities* • *Main technologies that will be presented:* ○ *Environmental wireless devices for farms and transport* ○ *Dynamic scales for farms* ○ *Smart Farm Assistant* ○ *Farms environmental conditions assistant* ○ *Value chain data visual representation*
Constraints	*Do you need a permission from any institution (both private and public)? No* *If the demo event will be linked to some other event (e.g. fair), are tickets envisioned? No* *Are there any restrictions in the number of people that can/might be invited: it's a closed demonstration for members and collaborators of SADA*
Planned stakeholders' groups	*Farmers and Poultry Integrators*
What do you want to achieve with this particular demonstration	*Inform to the farmers and integrators about the potential of the IoT for their sector.*
Dissemination channels	*Mainly emails.*

envisioned	
Potential collaboration with other H2020 projects	*N/A*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – IK4-Tekniker* • *Local logistics: SADA* • *Communication responsible – SADA + Ik4-Tekniker* *Please, have in mind that one person can be in charge for more than one topic*
Feedback from participants	*Please, indicate topics you would like to be covered by feedback questionnaire. E.g.:* – *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs*

Topic:	*IoT Week 2019 in Aarhus, June 2019*
UC:	**UC5.3: Meat Transparency and Traceability**
Event overview	• *IoF2020 Exhibition at IoT Week 2019* • *18 or 19 June, timeslot to be determined* • *Ridehuset, Aarhus, DenMark* • *Dashboard for auditors of meat certification*
Constraints	*The demonstration is part of IoT Week exhibition. Permission for attendance are determined by the organizers (https://iotweek.org/exhibition-area/).*
Planned stakeholders' groups	*All attendees of the IoT week are welcome*
What do you want to achieve	*Inform the general public; arouse the interest of brand/hallmark pork meat to considers our product*
Dissemination channels envisioned	*Flyers, and social media accounts of GS1 Germany and EECC.*
Potential collaboration with other H2020 projects	*Any H2020 project that focusses on food (particularly meat) quality, safety and transparency is a potential collaboration partner.*
Roles and responsibilities	*Ayalew Kassahun (Wageningen University, UC coordinator) is responsible for demonstration, communication and local logistics (a laptop for the demonstration)*
Feedback from participants	– *The functionalities and features of the presented technology* – *The information content of the technology including solution adjustments to address your needs*

Topic:	***SPACE 2019***
UC:	**UC 5.4. DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN (SHAREBEEF)**
Event overview	• SPACE 2019 • 10-13 SEPTEMBER 2019 • Rennes exhibition centre – France SPACE 2019, the International livestock exhibition for all animal production. SPACE is a professional agricultural show for all livestock industry players: bovine (dairy and beef), poultry, pig, rabbits, sheep, goat and fish farming sector. A complete offer in animal feed and nutrition, farm buildings, genetics, animal health, milking energy, livestock effluent treatment. Innov'Space brings you the latest technological innovations. A high-level quality of competitions and presentations in animal genetics. eSpace for the future focus on the future issues and challenges for the livestock sector. VIP reception for international visitors and B-to-B meetings
Constraints	• There is no need of a permission from any institution • Ticket costs is 17€ • There is no restriction in the number of people
Planned stakeholders' groups	• Beef cattle farmer associations and cooperatives • Beef cattle farmers • Stores, supermarkets and other distributors of beef products • Consumer associations • Governments, local administrations and policy makers
What do you want to achieve with this particular demonstration	• Attract customers for the services generated in the project • Inform the general public about the main topics of the project including an improved traceability of beef products • Generate awareness of the use of technology in the livestock sector • Attract new partners and stakeholders to the project
Dissemination channels envisioned	• Social media using the channels and accounts described in the communication and dissemination plan. • Web and blog entries • Targeted mailing to the relevant stakeholders that could be identified

Potential collaboration with other H2020 projects	• Place: Europe • Specific audience: livestock farmers, farmer associations, IoT and blockchain technological partners
Roles and responsibilities	• Demonstration Activity Main responsible – Ignacio Gomez (SensoWave, UC Coordinator) • Local logistics – Frederic Le Bris (Applifarm) • Communication responsible – Frederic Le Bris (Applifarm)
Feedback from participants	• Features of the developed solutions and services • Degree of maturity of the solution • Feedback about selling strategy • Further functionalities needed (integrations, etc.) • Possible collaborations
Topic: **UC:**	***LFDay 2019*** **UC 5.4. DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN (SHAREBEEF)**
Event overview	• LFDay 2019 • 7 June 2019 • PARIS – France • **First AgTech show in France**: Agricultural and Food industries will be gathered to discuss about innovations and challenges, drawing agricultural future ecosystem! Meet 140 start-up, from France and abroad, attend conferences, keynotes, pitches, and network.
Constraints	• There is no need of a permission from any institution • Ticket costs is 55€ • There is no restriction in the number of people
Planned stakeholders' groups	AgTech enterprises, startups and companies
What do you want to achieve with this particular demonstration	• Attract customers for the services generated in the project • Inform the general public about the main topics of the project including traceability of meat products. • Generate awareness of the use of technology in the livestock sector

	• Attract new partners and stakeholders to the project
Dissemination channels envisioned	• Social media using the channels and accounts described in the communication and dissemination plan. • Web and blog entries • Targeted mailing to the relevant stakeholders identified.
Potential collaboration with other H2020 projects	• Place: France • Specific audience: farmer associations, IoT and blockchain technological partners
Roles and responsibilities	• Demonstration Activity Main responsible – Carole Doche Lemoine (Applifarm) • Local logistics – Carole Doche Lemoine (Applifarm) • Communication responsible – Carole Doche Lemoine (Applifarm)
Feedback from participants	• Features of the developed solutions and services • Degree of maturity of the solution • Feedback about selling strategy • Further functionalities needed (integrations, etc.) • Possible collaborations
Topic: **UC:**	***DATAGRI 2019*** **UC 5.4. DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN (SHAREBEEF)**
Event overview	• DATAGRI 2019 • 14 – 15 November 2019 • Zaragoza, Spain • The goals of Datagri event are: 1) To boost the digital transformation in the agrifood value chain. 2) To sensitize on successful cases of digital transformation technologies and innovation. 3) To contribute to reduce the barriers of implementation of digital transformation, to create standards of good practice and opportunities for collaboration.
Constraints	• There is no need of a permission from any institution • Free admission with previous registration • There is no restriction in the number of people (until completing the capacity)

Planned stakeholders' groups	• Beef cattle farmer associations and cooperatives • Stores, supermarkets and other distributors of beef products • Consumer associations • Governments, local administrations and policy makers
What do you want to achieve with this particular demonstration	• Attract customers for the services generated in the project • Inform the general public about the main topics of the project including an improved traceability of beef products • Generate awareness of the use of technology in the livestock sector • Attract new partners and stakeholders to the project
Dissemination channels envisioned	• Social media using the channels and accounts described in the communication and dissemination plan. • Web and blog entries • Targeted mailing to the relevant stakeholders identified. • Datagri communication channels.
Potential collaboration with other H2020 projects	• Place: Europe • Specific audience: livestock farmers, farmer associations, IoT and blockchain technological partners
Roles and responsibilities	• Demonstration Activity Main responsible – Ignacio Gomez (SensoWave, UC Coordinator) • Local logistics – Dolores Perez & Francisco Maroto (UCO) • Communication responsible – Dolores Perez & Francisco Maroto (UCO)
Feedback from participants	• Degree of maturity of the solution perceived by stakeholders • Potential improvements of the technological solution and the services that have been developed • Potential improvements of the selling strategy • Further functionalities needed (sensor integration, etc.) • Potential collaborations

Topic:	***NATRUS 2020***
UC:	**UC 5.4. DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN (SHAREBEEF)**
Event overview	• ShareBeef final demonstrator • June 2020 • Vall de Bas, Girona, Spain • During the event all the solutions and services created during the project will be showcased: 1) solution for livestock grazing farmers, 2) solution for fatteners, 3) cropping services 4) data sharing services for farmers and other stakeholders 5) traceability platform
Constraints	There is no constraint. The event is organized by the partners of the project.
Planned stakeholders' groups	• Beef cattle farmers • Beef cattle farmer associations and cooperatives • Other partners of the IoF2020 project • Consumer associations • Press media
What do you want to achieve with this particular demonstration	• Attract customers for the services generated in the project • Inform the general public about the main topics of the project including traceability of meat products. • Generate awareness of the use of technology in the livestock sector • Explore market opportunities and arise the interest of private capital bodies
Dissemination channels envisioned	• Social media using the channels and accounts described in the communication and dissemination plan. • Press media • Web and blog entries • Targeted mailing to the relevant stakeholders that could be identified
Potential collaboration with other H2020 projects	• Place: Europe • Specific audience: livestock farmers, farmer associations, IoT and blockchain technological partners

Roles and responsibilities	• Demonstration Activity Main responsible – Ignacio Gomez (SensoWave, UC Coordinator) • Local logistics – Sergi Pujolriu (Natrus) • Communication responsible – Ignacio Gomez (SensoWave), Sergi Pujolriu (Natrus) and Frederic Le Bris (Applifarm)
Feedback from participants	• Degree of maturity of the solution perceived by stakeholders • Potential improvements of the technological solution and the services that have been developed • Potential improvements of the selling strategy

Topic:	***Demonstration of IoFeed system to UK feed supplier companies and livestock farmers***
UC:	**5.5 IoFeed: Animal Feed Supply Chain Management**
Event overview	• *Demonstration of IoFeed system to **UK feed supplier companies and livestock farmers*** *(Private event, open to invited companies and participants)* • *Fall 2019* • *Address:* Rivington House Drumhead Road, Chorley Lancashire PR6 7BX UK • ***Main technologies that will be presented: IoFeed system*** *Insylo volumetric sensor, web and mobile apps for remote data monitoring*
Constraints	*Permissions needed:* *Permissions to use facilities and confirmations of schedule of participants* *Farmers and business managers "informed consent" to be participants and have their feedback and responses recorded*
Planned stakeholders' groups	*Main stakeholders:* *1. Animal Feed Supply firms: Upto 2 Feed supplier businesses from UK* 2. Livestock Farmers: Upto 5 farmers based in UK 3. Legal, supply chain and IT functional experts representing the sector, including staff of Primetics UK
What do you want to	*This is a demonstration focused on 2 outcomes* *1. To convert interest from farmers into willingness and action to adopt*

achieve with this particular demonstration	*the technology via limited trials* *To elicit feedback on installation process, remote data monitoring system and its features, and to discuss operational and legal issues of potentially deploying the IoFeed system in the UK*
Dissemination channels envisioned	*Targeted emailing, co-ordinated by feed supplier companies who would be participating*
Potential collaboration with other H2020 projects	*Once we have more information on farmers attending (e.g meat, poultry, etc), we are open to discuss potential collaborations with other UC leaders*
Roles and responsibilities	*Please, indicate the organizational team (name and email) – contact points for following topics:* • *Demonstration Activity Main responsible – UC coordinator Jaume Gelada* • *Local logistics: Innovation Manager Myshkin Ingawale* • *Communication responsible – for local stakeholders – representative of feed supplier companies, coordinated by Myshkin Ingawale and EU/H2020 stakeholders – Myshkin Ingawale* *Please, have in mind that one person can be in charge for more than one topic*
Feedback from participants	– *Usefulness of presented technologies* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address needs specific to UK / specific to their business*

Topic: **UC:**	*FITPig Demonstration* **5.6 Farm Internet Tracking of Pigs**
Event overview	• *Event title: "FITPigs" Demo* • *Date: October 2019* • Location/Place: Murcia, Spain • Technology that will present: ears tags, gateways and application for the final users.
Constraints	*The first pilot we made is on a farm in Sweden. Access to the Vindfälle farm is restricted, a limited number of people can attend.* *The Demo will be realized in Spain.*
Planned stakeholders' groups	*The main thing is to identify end users of the product, IoT technology provider, Interest organizations and the scientific community.* *For this reason the idea is to invite stakeholders from the meat industry, for example: Important Meat Company of Murcia: El pozo https://www.elpozo.com/, to give them a virtual demonstration and have a meeting with them.*
What do you want to	*We want to show with the demonstration that the main objective of*

achieve with this particular demonstration	*the use case is fulfilled (livestock health monitoring). The idea for the demo is to show and inform the public about how the technology works and the advantages of using the product on farms.* *The main objective in the DEMO is to present to the public the advantages of monitoring the health, farrowing and behavior of pigs and this data can be used to create an alarm based on the context and also to assist in decision support.* *The idea is to prepare an agenda for several days for meeting with stakeholders to present the product to them. And show them a virtual demo of how it work, show how we collect the data, the application and a dashboard.*
Dissemination channels envisioned	*The interaction with the stakeholders will be carry out through a live chat with email, social media, etc. For this aim, the communication materials utilized will be:* ● *Photos of the previous visits and events.* ● *Links to other publications and resources related to FITPig (third parties and other IoF2020 projects).* ● *Links to new reports and content about FITPig progress published on blogs and IoF2020 website.* ● *Audiovisual contents (animations, interviews and other promotional videos).* ● *Posts.* ● *Brochures, data sheets and posters.*
Potential collaboration with other H2020 projects	*To perform the demonstration, several physical components will be used, in this case we use **ears tags** to obtain the activity of the pigs, we use bluetooth technology to collect information from the ears tags through a **gateway** (this gateway sends data to the cloud through GPRS connection and has the functionality of monitoring environmental conditions and air quality through a LoRa network) and we have a **livestock management platform** (application for farmers and veterinarians).* - *Physical components:* ● *Ear tag* ● *Gateway (LoRa, WiFi and GPRS connectivity)* - *Place: Pig farm in Sweden.* - *Audience: first-time users of the products*
Roles and responsibilities	*Demo Participants:* *HOPU. - **Antonio Jara**, email: jara@hopu.eu. Provider of technology (gateways) and use case coordinators.* *CSEM. - **Stephan Dasen**, email: stephan.dasen@csem.ch. Provider of technology for the demonstration (ear tag).* *Digitanimal. - **Ignacio Gomez**, email: imaqueda@digitanimal.com. Design of the application to be presented in the demonstration.* *SLU. - **Anders Herlin**, email: anders.herlin@slu.se. In charge of executing animal studies*

	Contact points for following topics: ● *Demonstration Activity Main responsible – The company HOPU and as coordinator of the use case Antonio Jara Valera will be in charge of organizing the demonstration activity.* ● *Local logistics. - SLU is the company that will perform the studies on the pigs. As a local contact person: Anders Herlin* ● *Communication responsible – The company responsible for the communication is DigitAnimal. contact person: Ignacio Gómez.*
Feedback from participants	*The topics that we would like to be covered by the questionnaire would be:* – *The functionalities are easy to understand.* – *Suggest solution adjustments to address your needs.* – *Replicability potential.* – *Usefulness of presented technologies.* – *Objective achieved.* – *Product Design.* – *Organization of the event.*

3.2. CONDUCTED DEMONSTRATION ACTIVITIES

Lessons Learnt report		
UC 1.2 - New farming: sensors and new technologies for agriculture, 14-May-19, Boigneville, France		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	Showing the physical devices in the field was a key aspect. This is a differentiation with satellite for instance which does not allow to control the measurement device. Choosing the place where to position the device is also positive: a farmer knows which place can be considered as representative of his field.	Each individual device has a limited spatial sampling. If the measured area has a specific problem, the measurements hare biased
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	The IoT service was presented as part of a training session on new technologies for farming. The demonstration consisted in showing the IoT devices in the field, which data are accessible and which services have been developed in the case of the wheat crop.	The presentation of technical aspects is not the principal interest of the attendees.
Communication with stakeholders	Attendees were from different structures (cooperatives, extension agencies, agro-industries). The need is to have ready to use services.	The presentation of the technologies used is not the priority for the stakeholder. Few of them have the capability to develop new services from a new technology made available.
Open field for suggestions		

ARVALIS Institut du végétal

NEW FARMING : Les capteurs et nouvelles technologies au service de l'agriculture (AG0012)

Stage INTER

Date(s) : le mardi 14 mai 2019
Durée : 1.00 Jour - 7.00 Heures
Lieu : ARVALIS - BOIGNEVILLE
Station Expérimentale
91720 BOIGNEVILLE
Tél : 01 64 99 22 00

Responsable :
Assistant(e) : Catherine DAMAS
Animateur(s) : Benoît DE SOLAN-Caroline DESBOURDES

N°	Stagiaire	Entreprise
1	AMAT Rémy (Technicien)	SYNGENTA FRANCE SAS - ST SAUVEUR
2	BLAIS Florent (Technicien)	CHAMBRE D' AGRICULTURE DE LA VIENNE - MIGNALOUX BEAUVOIR
3	BONNET Romaric (Responsable Commercial)	COMPAGNIE COMMERCIALE RIBOULEAU - PARIS
4	CREANGE Pierre (Ingénieur Développement)	BAYER SAS - LYON CEDEX 09
5	EVENO William (Technicien)	INRA-GEVES - LE RHEU CEDEX
6	LEPENVEN Pauline (Technicien)	CHAMBRE D'AGRICULTURE DE L'ORNE - SIEGE - ALENCON CEDEX
7	MARTIN Gérard (Technicien)	ACOLYANCE - REIMS CEDEX 2
8	ROUX Emmanuel (Ingénieur Commercial)	COMPAGNIE COMMERCIALE RIBOULEAU - PARIS

Lessons Learnt report		
UC 1.2 - Les Culturales, 5-6 June 19, Futuroscope, France		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	The IOT device presentation received a positive feedback. It provides new information and services.	The cost of the device and the fact that it could be robbed were the first concerns of potential users.
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	The IOT was presented as part of a connected farm. The complementarity between different technologies was interesting to show the full vision of a connected farm.	The presentation of technical aspects is not the principal interest of the attendees.
Communication with stakeholders	Attendees were from different structures (cooperatives, extension agencies, agro-industries). Agro-industries were interested in developing their own services, based on the FieldSensor technology. This is the case for instance for the disease monitoring.	Few of the stakeholders have the capability to develop new services from a new technology made available. Most of them are waiting for ready-to-use services

Open field for suggestions		

To meet the challenges of agro-ecology and multi-performance technical, economic and environmental, the Culturales® 2019 in-field fair is structured in 3 large spaces. The first deals with agronomic innovations in the cereals sector (fertility, nutrition, genetics, plant health), the second is concerned with oilseed and diversification, conventional and organic cross-section of farm economics, production quality and digital technologies.

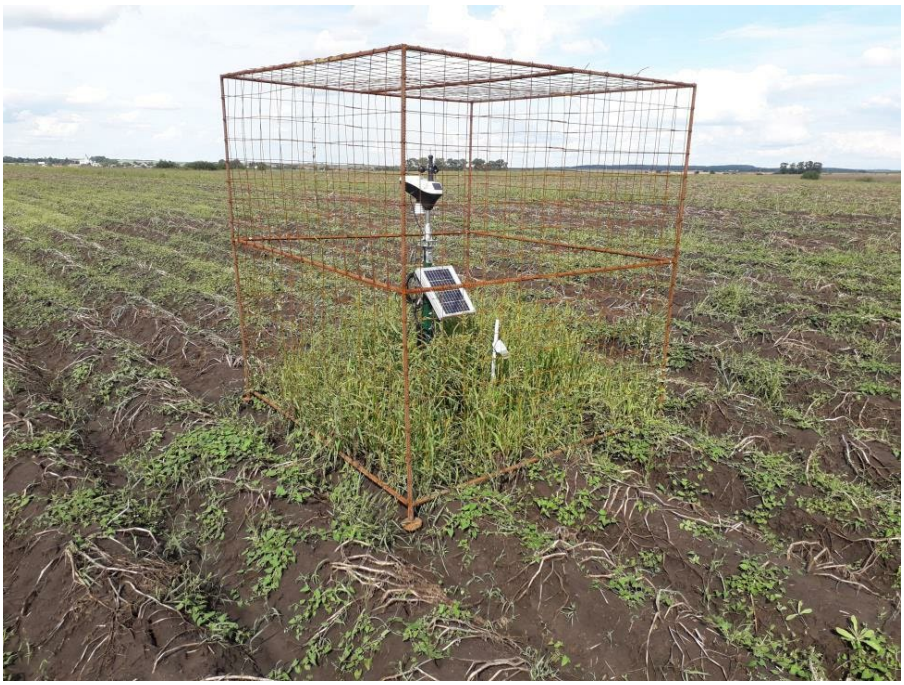
On 20 hectares, more than 45 different crops are set up and presented by 150 experts from the 40 partner organizations plus 330 exhibitors. The remarkable dynamics of local actors, communities and the complementarity of all partners offer an extraordinary showcase.

A stand is dedicated to the digital revolution of agriculture. Connected sensors, decision support services, robots, GPS, autoguiding, intelligent spraying… agriculture is an active field for applications of technologies. Arvalis participates in the evaluation and development of tools and services helping farmers in their daily activities. The IOF2020 project has been presented in 2019, showing the IOT device (BOSCH FieldSensor) and explaining the developed services and the results.

The 2019 Culturales show has attracted 15.000 people on June 5th and 6th 2019.

Lessons Learnt report		
UC 1.6- Iot4Potato IoT stations installation demonstration event, Mid-May, AgroLV pilot site in Lviv, Ukraine		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	-	The participants were not convinced about the value of the stations.
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	The practical approach of the field visit worked well.	The participants would like to have more material about usage outcomes, with costs, cost savings and/or yield increases.

Communication with stakeholders	-	More information was needed to prepare them for the event.
Open field for suggestions	The value of the demonstration would increase if it was combined with data from “independent” trial usage outcomes, with costs, cost savings and/or yield increases.	-



Questionnaire for attendees

General questions:

1. How did you learn about this demonstration event?
   - ☐ Personal invitation **x**
   - ☐ Farming press

- ☐ Website
- ☐ Social media
- ☐ Other (indicate which): …

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good
   - ☐ Good **x**
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event? **Field visit, look a different potato crops, varieties aside each other, new applications in the field.**

4. What did you dislike about the event? **Short rainy interval.**

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☐ Some of the information
   - ☐ A little of the information
   - ☐ None of the information **x**

6. How do you think this event could have been improved? **Provide umbrellas**

7. How likely are you to attend one of our future events?
   - ☐ Not Likely at all
   - ☐ Not likely
   - ☐ Neutral
   - ☐ Likely **x**
   - ☐ Very likely

8. What are the two most useful things you got out of the event? M**eet colleagues, learn about potential changes in farming practices.**

9. Please identify any specific priority areas for you that could be the focus at future events. **Actualities, new useful suitable developments.**

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event

	Very useful	Useful	Neutral	Not useful
Installation demonstration			**X**	
Technologies – IoT Telemetric Stations			**X**	

2. Are functionalities easy to understand?
   - ☐ Yes
   - ☐ No **X**

3. Replicability potential – can the suggested solution be adjusted to address your needs?

- ☐ Yes
- ☐ No **X**

4. Open suggestions
   We need to have independent trial usage outcomes, with costs, cost savings and/or yield increases to see if this technology is appropriate for us. Common view of also our partners.

General questions:

1. How did you learn about this demonstration event?
   - ☐ Personal invitation **x**
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good
   - ☐ Good ..**X**
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event? **Field visit, have a chat with growers, colleague suppliers, see their proposed chemicals and the grower thoughts about this.**

4. What did you dislike about the event? **All ok no problems**

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☐ Some of the information
   - ☐ A little of the information
   - ☐ None of the information **x**

6. How do you think this event could have been improved? **It's informal that's what I like.**

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ☐ Likely
   - ☐ Very likely **x**

8. What are the two most useful things you got out of the event? **Talk to farmers. Hear what new with applications in the field.**

9. Please identify any specific priority areas for you that could be the focus at future events. **Actualities, how will the UA potato market develop? How profitable is it for an average grower 25ha and what equipment can he afford? How Smart Farming can help?**

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the

demo event

	Very useful	Useful	Neutral	Not useful
Installation demonstration			**X**	
Technologies – IoT Telemetric Stations			**X**	

2. Are functionalities easy to understand?
   - ☐ Yes
   - ☐ No **X**

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ☐ Yes
   - ☐ No **X**

4. Open suggestions

To hear or see what other grower had use of it how many time and money it took and what the net benefits have been.

General questions:

1. How did you learn about this demonstration event?
   - ☐ Personal invitation **x**
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good
   - ☐ Good
   - ☐ Fair **x**
   - ☐ Poor

3. What did you like about the event? **Field visit, have a chat with colleague growers, See how potato development look like over here and what new is used.**

4. What did you dislike about the event? **Distance travel all in own cars, huge traffic jam in the field road.**

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☐ Some of the information
   - ☐ A little of the information
   - ☐ None of the information **x**

6. How do you think this event could have been improved? **Go from meeting point with bus**

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral

- ☐ Likely **x**
- ☐ Very likely

8. What are the two most useful things you got out of the event? **Hear new ideas and how we can deal with this year challenges.**

9. Please identify any specific priority areas for you that could be the focus at future events. **Actualities, which new variety shows best potential. How to reduce cost in the growing?**

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event

	Very useful	Useful	Neutral	Not useful
Installation demonstration			**X**	
Technologies – IoT Telemetric Stations			**X**	

2. Are functionalities easy to understand?
   - ☐ Yes
   - ☐ No **X**

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ☐ Yes
   - ☐ No **X**

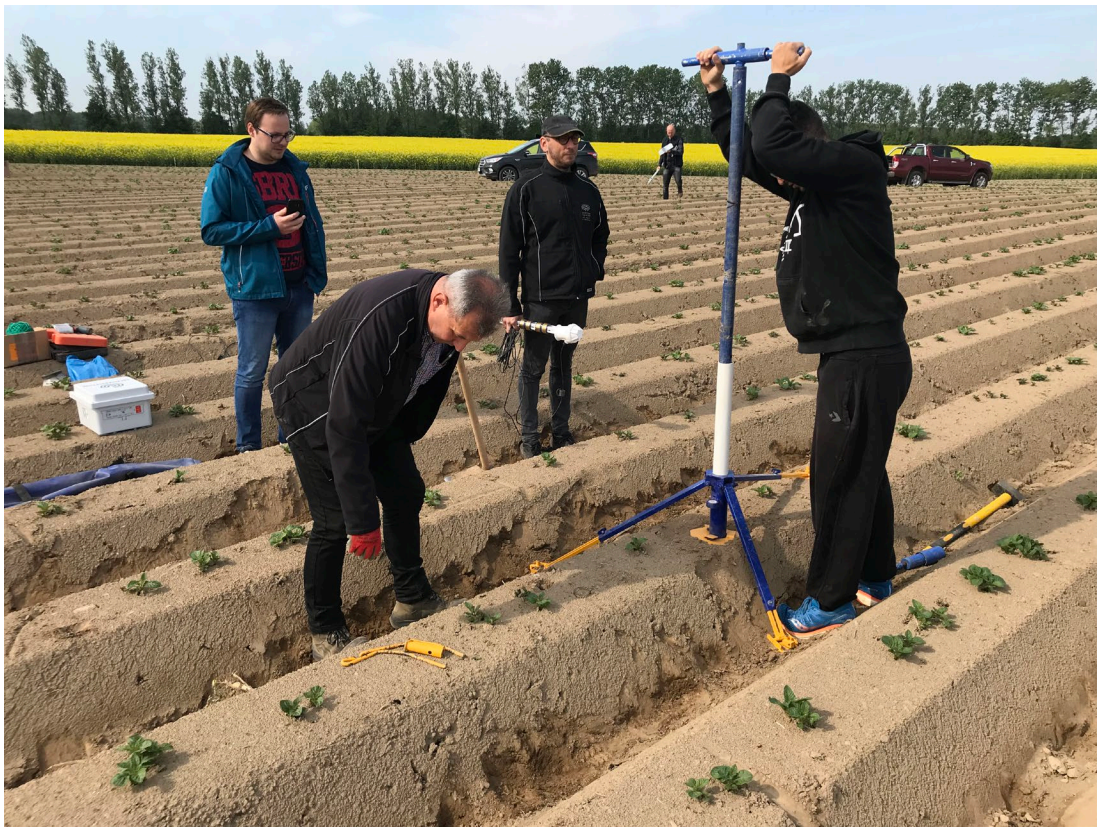
4. Open suggestions
   We need to have independent trial usage outcomes, with costs, cost savings and/or yield increases.

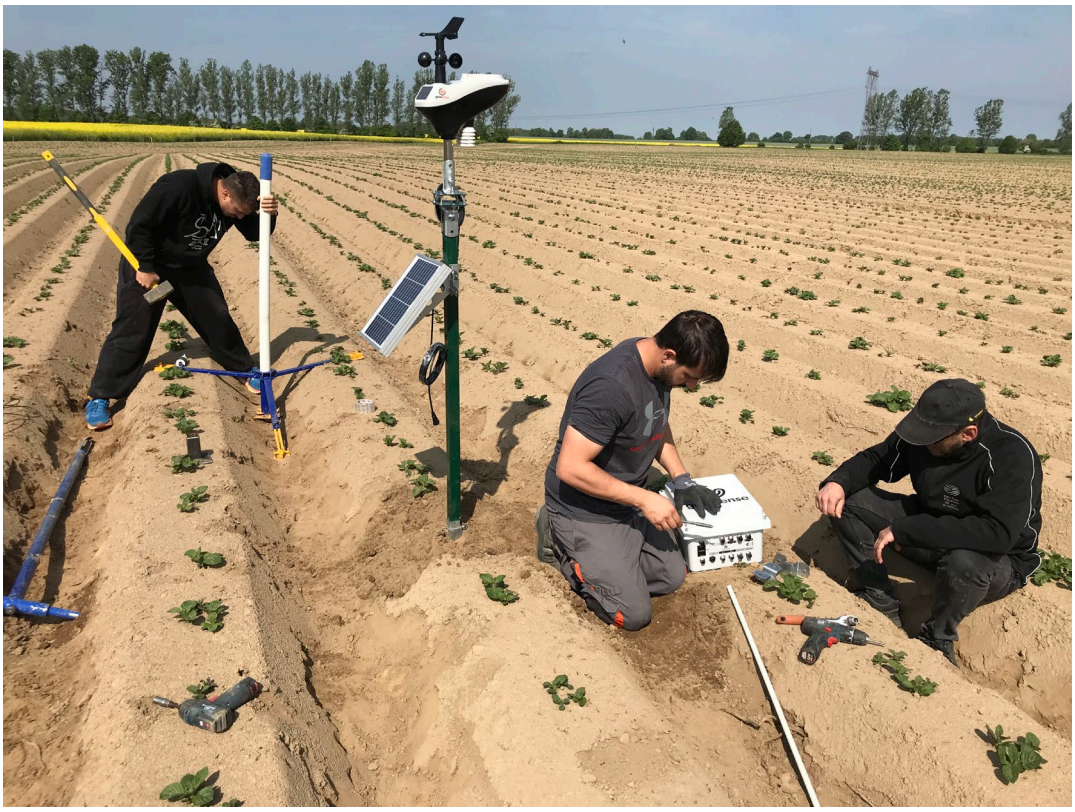
Lessons Learnt report

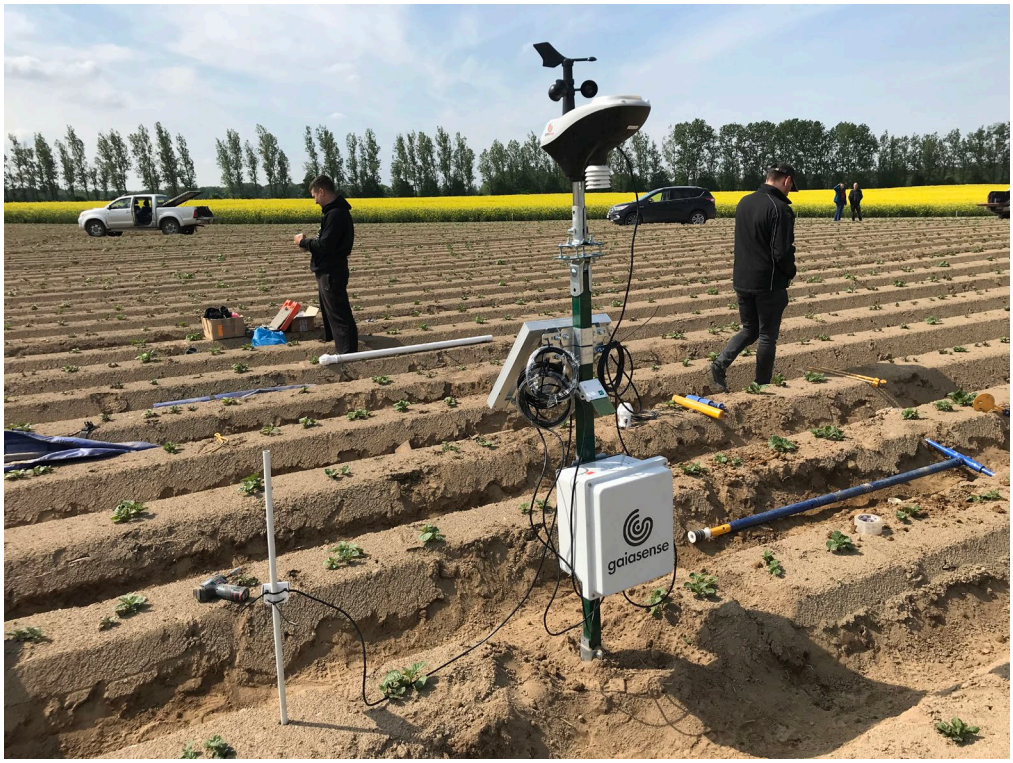
UC 1.6- Iot4Potato IoT stations installation demonstration event, Mid-May, FFP2 pilot site in Damnica, Poland

DA field	Highlights	Lowlights
IoT solution features – observation (based on interaction with attendees)	The attendees liked the IoT stations and showed interest in the technology.	The fact that we were using the actual installation of the station in the testbed was an advantage but a disadvantage as well, because it didn't allow the people installing the stations to focus enough on the participants and their questions.
Solution presentation (how, what additional material was used, structure of	The practical approach of going to the field and installing the stations worked well.	The attendees could have been more involved. A quick start manual with points to take care of could improve the

demonstration, etc.)		demonstration as well. The installation of the station should be combined with training of reading the data in the computer.
Communication with stakeholders	-	-
Open field for suggestions	The value of the demonstration would increase if it was combined with viewing and explaining the readings of the sensors in the computer after the installation.	-






gaiasense

Questionnaire for attendees

General questions:

1. How did you learn about this demonstration event (tick box)?
   - ☐ X Personal invitation
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ X Very Good
   - ☐ Good
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event?

Professional experience of people installing the stations, good quality and design of the tools to install the stations in the soil.

4. What did you dislike about the event?

Nothing

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information

- ☐ Some of the information
- ☐ A little of the information
- X None of the information

6. How do you think this event could have been improved?

Nothing needed to be improved

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ☐ X Likely
   - ☐ Very likely

8. What are the two most useful things you got out of the event?

That stations can be durable and the installation is quite easy with proper tools.

9. Please identify any specific priority areas for you that could be the focus at future events.

I'm interested in practical side of using any telemetric equipment used in farming, with remote connection and sending data via the SIM card to the internet where they can be processed in many various ways.

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event (tick boxes)

	Very useful	Useful	Neutral	Not useful
Installation demonstration	X			
Technologies – IoT Telemetric Stations	X			

2. Are functionalities easy to understand?
   - ☐ X Yes
   - ☐ No

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ☐ X Yes
   - ☐ No

4. Open suggestions

General questions:

1. How did you learn about this demonstration event (tick box)?
   - X Personal invitation
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good

X Good
□ Fair
□ Poor

3. What did you like about the event?
   Presentation in the field.

4. What did you dislike about the event?
   Introduction step by step – explanation

5. Prior the event, how much information that you need did you get?
   □ All of the information
   □ Most of the information
   X Some of the information
   □ A little of the information
   □ None of the information

6. How do you think this event could have been improved?
   Yes, first you should present, after that presentation in the field.

7. How likely are you to attend one of our future events?
   □ Not likely at all
   □ Not Likely
   X Neutral
   □ Likely
   □ Very likely

8. What are the two most useful things you got out of the event?
   Field presentation.

9. Please identify any specific priority areas for you that could be the focus at future events.

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event (tick boxes)

	Very useful	Useful	Neutral	Not useful
Installation demonstration	X			
Technologies – IoT Telemetric Stations		X		

2. Are functionalities easy to understand?
   X Yes
   □ No

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   X Yes
   □ No

4. Open suggestions
   The outcome from online web site, should be presented like graphs

General questions:

1. How did you learn about this demonstration event (tick box)?
   - ✓ Personal invitation
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ✓ Very Good
   - ☐ Good
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event?
- *Small group of people, good localization (in my neighborhood), interesting topic*

4. What did you dislike about the event?

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ✓ Most of the information
   - ☐ Some of the information
   - ☐ A little of the information
   - ☐ None of the information

6. How do you think this event could have been improved?
   - *I missed explanation about all parameters registered by the sensors – what are they for?*

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ✓ Likely
   - ☐ Very likely

8. What are the two most useful things you got out of the event?
- *Demonstration of soil sensor installation process*
- *Presentation of sensors not familiar to me*

9. Please identify any specific priority areas for you that could be the focus at future events.
   - *Monitoring of soil moisture with easy to install sensors*

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event (tick boxes)

	Very useful	Useful	Neutral	Not useful
Installation demonstration		✓		
Technologies – IoT Telemetric Stations		✓		

2. Are functionalities easy to understand?
   - ✓ Yes
   - ☐ No

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ✓ Yes
   - ☐ No

4. Open suggestions

General questions:

1. How did you learn about this demonstration event (tick box)?
   xPersonal invitation
   - ☐ Farming press
   - ☐ Website
   - ☐ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☐ Very Good

   xGood
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event?

It was very practical

4. What did you dislike about the event?

Little info upfront the event and no explanation how to view the data in the computer

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☐ Some of the information
   - X A little of the information
   - ☐ None of the information

6. How do you think this event could have been improved?

Upfront more info given

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - X Likely

☐ Very likely

8. What are the two most useful things you got out of the event?

How to install the stations in the field and were to take care of.

9. Please identify any specific priority areas for you that could be the focus at future events.

If there was more time it would be good that one station was installed by the demonstration team and the second one by the farmer (employee of FFP).

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event (tick boxes)

	Very useful	Useful	Neutral	Not useful
Installation demonstration		X		
Technologies – IoT Telemetric Stations	X			

2. Are functionalities easy to understand?
   X Yes
   ☐ No

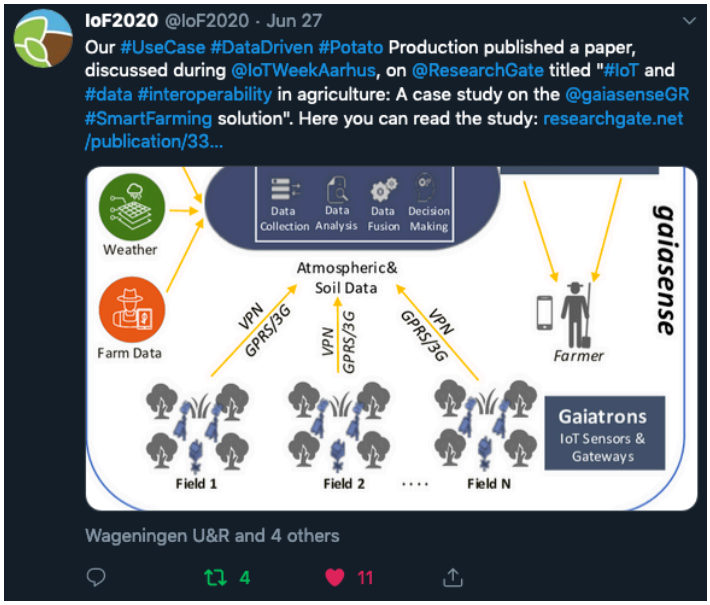
3. Replicability potential – can the suggested solution be adjusted to address your needs?
   X Yes
   ☐ No

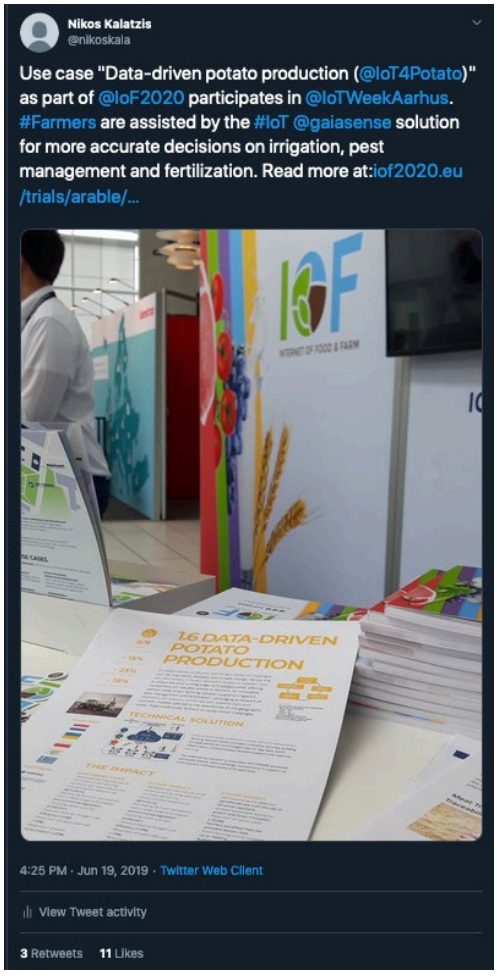
4. Open suggestions

It would good to combine the field demo with viewing data of station in computer (how to make graphs etc.)

Lessons Learnt report		
UC 1.6- IoT4Potato demo during the IoT week 2019, 19-Jun-19, Aarhus, Denmark		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	The attendees found interesting the “gaiasense” smart farming solution, both the technological approach but especially the business model. Based on their comments, offering “smart farming as a service” is an approach that is still under discussion in many countries. Attendees had many questions on the financial viability of the approach and asked for more details.	From a technical perspective, there were no significant negative comments.
Solution presentation	The “gaiasense” smart farming solution along	Visitors of IoTWeek

(how, what additional material was used, structure of demonstration, etc.)	with the functional extensions for the needs of IoF2020 UC1.6 pilot were presented during the IoTWeek in two main ways: 1. Scientific paper presentation at the Global IoT Summit 2019 that took place along with the IoTWeek. The paper entitled “IoT and data interoperability in agriculture: A case study on the gaiasense smart farming solution” is now available at the IEEE digital library: https://ieeexplore.ieee.org/document/8766423 2. Participation at IoF2020 booth with hands-on demonstrations of the software solution along with sharing of dissemination material. The hands-on demo was realised through a laptop where current and historic data collected from the IoT stations deployed at the pilot fields in Poland and Ukraine were presented. Leaflets presenting the UC1.6 and the gaiasense smart farming solution where given to booth visitors. These actions were recorded and disseminated through websites and social media that are still generating significant interactions. A short report on the UC1.6 participation in IOT-Week 2019 was posted on Neuropublic’s gaiasense solution website: http://www.gaiasense.gr/en/gaiasense-and-smart-farming-at-iot-week-2019	seemed overwhelmed of information during their visits on various stands. Hence, there were only a few minutes available to show them the smart farming solution.
Communication with stakeholders	The IoTWeek visitors where well aware of the IoT technologies, hence there was a good understanding on the presented approaches.	
Open field for suggestions	Participating at IoTWeek event was a good opportunity to visit other booths and get informed about.	It seems that the IoTWeek didn’t attract significant numbers of visitors.


IoF2020 @IoF2020 · Jun 27
Our #UseCase #DataDriven #Potato Production published a paper, discussed during @IoTWeekAarhus, on @ResearchGate titled "#IoT and #data #interoperability in agriculture: A case study on the @gaiasenseGR #SmartFarming solution". Here you can read the study: researchgate.net /publication/33...
Data Collection
Data Analysis
Data Fusion
Decision Making
Weather
Farm Data
Atmospheric& Soil Data
VPN GPRS/3G
VPN GPRS/3G
VPN GPRS/3G
Farmer
gaiasense
Gaiatrons
IoT Sensors & Gateways
Field 1
Field 2
Field N
Wageningen U&R and 4 others
4
11


Nikos Kalatzis
@nikoskala
Use case "Data-driven potato production (@IoT4Potato)" as part of @IoF2020 participates in @IoTWeekAarhus. #Farmers are assisted by the #IoT @gaiasense solution for more accurate decisions on irrigation, pest management and fertilization. Read more at:iof2020.eu /trials/arable/...
16 DATA-DRIVEN POTATO PRODUCTION
4:25 PM · Jun 19, 2019 · Twitter Web Client
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Nikos Kalatzis @nikoskala
Use case "Data-driven potato production (**@IoT4Potato**)" as part of **@IoF2020** participates in **@IoTWeekAarhus**. **#Farmers** are assisted by the **#IoT** **@gaiasense** solution for more accurate decisions on irrigation, pest management and fertilization. Read more at:https://www.iof2020.eu/trials/arable/data-driven-potato-farming … pic.twitter.com/mWyHaPGFw2

Impressions times people saw this Tweet on Twitter	1,033
Total engagements times people interacted with this Tweet	43

Questionnaire for attendees

General questions:

1. How did you learn about this demonstration event?

- ☐ Personal invitation
- ☐ Farming press
- ☒ Website
- ☐ Social media
- ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☒ Very Good
   - ☐ Good
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event?
   State of the art technology presented all in one place.

4. What did you dislike about the event?
   High registration fees.

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☒ Some of the information
   - ☐ A little of the information
   - ☐ None of the information

6. How do you think this event could have been improved?
   The event could take place at an easier to travel place.

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ☒ Likely
   - ☐ Very likely

8. What are the two most useful things you got out of the event?

   I was informed about the latest developments on sensing technologies and communication protocols.
   I had the opportunity to establish new contacts with experts in the area of smart farming.

9. Please identify any specific priority areas for you that could be the focus at future events.
   Smart Farming, open data, system interoperability, blockchain technologies.

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event

	Very useful	Useful	Neutral	Not useful
Technologies – IoT Telemetric Stations		X		
Software solution		X		

2. Are functionalities easy to understand?
   - ☒ Yes
   - ☐ No

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ☒ Yes
   - ☐ No

4. Open suggestions

General questions:

1. How did you learn about this demonstration event?
   - ☐ Personal invitation
   - ☐ Farming press
   - ☐ Website
   - ☒ Social media
   - ☐ Other (indicate which): ……

2. Overall, how would you rate the event?
   - ☐ Excellent
   - ☒ Very Good
   - ☐ Good
   - ☐ Fair
   - ☐ Poor

3. What did you like about the event?
   I had the opportunity to learn about new technologies and current trends for agriculture.

4. What did you dislike about the event?
   The place that the demo event took place (IoF2020 booth) didn't allow to see the hardware solutions deployed at a natural setting (e.g. field).

5. Prior the event, how much information that you need did you get?
   - ☐ All of the information
   - ☐ Most of the information
   - ☒ Some of the information
   - ☐ A little of the information
   - ☐ None of the information

6. How do you think this event could have been improved?
With the joint participation of persons with technical expertise (IoT experts) along with actual farmers operating at the fields.

7. How likely are you to attend one of our future events?
   - ☐ Not likely at all
   - ☐ Not Likely
   - ☐ Neutral
   - ☒ Likely
   - ☐ Very likely

8. What are the two most useful things you got out of the event?
   I learnt about real solutions, ready to be deployed at the fields along with the appropriate contacts with the respective experts.

9. Please identify any specific priority areas for you that could be the focus at future events. *Measured benefits from the implementation of such solutions*

Feedback to UC

1. Usefulness of presented technologies - How do you appreciate the various aspects of the demo event

	Very useful	Useful	Neutral	Not useful
Technologies – IoT Telemetric Stations		X		
Software solution	X			

2. Are functionalities easy to understand?
   - ☒ Yes
   - ☐ No

3. Replicability potential – can the suggested solution be adjusted to address your needs?
   - ☒ Yes
   - ☐ No

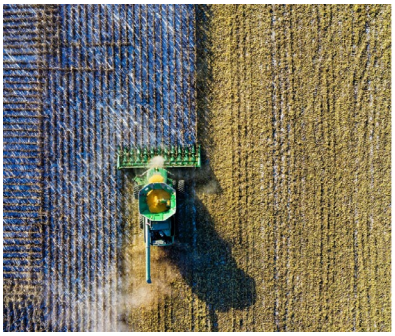
4. Open suggestions

Lessons Learnt report

UC 1.7 - Inhuldiging labo logistieke technologie, 6-Jun-19, Technologiecampus Gent

DA field	Highlights	Lowlights
IoT solution features – observation (based on interaction with attendees)	The demo attracts a lot of attention from attendees. The demo is capable of clearly demonstrating all features of the developed IoT device due to clear visual indicatior and attendees are able to test it out themselves.	
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	A presentation was given in parallel sessions and a demo was setup during the reception. Our conceptual prototype was used to illustrate the usecase. It consists out of a tube simulating a feedpipe of a silo, an IoT device showcasing all the required functionality of the usecase and a dummy node emulating the trailer.	Due to the nature of the parallel sessions, not everyone was given the full talk and because of that, the demo by itself doesn't illustrate the use case enough.

Communication with stakeholders	Attendees found the idea interesting and were not able to find flaws in the conceptual implementation.	
Open field for suggestions		

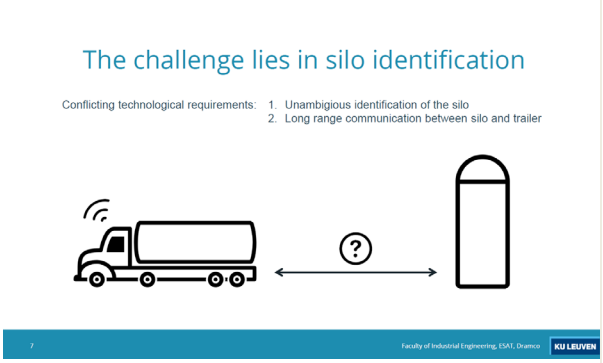


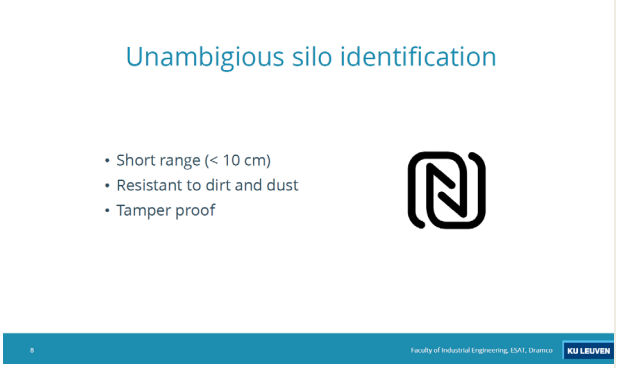
Wheat gets harvested by the farmer

Factory produces feed or food

Bulk trailer transport from production site to farmer

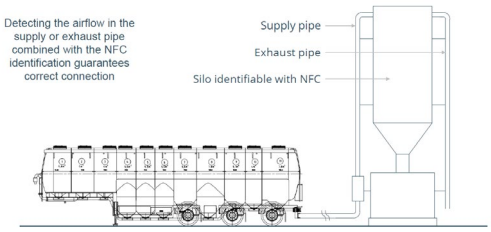
Trailer driver discharges bulk into multiple silo





What about the supply tube?

Detecting the airflow in the supply or exhaust pipe combined with the NFC identification guarantees correct connection



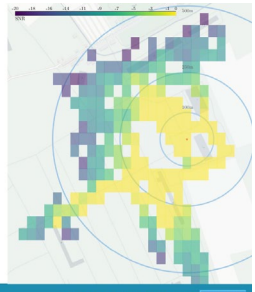
Getting the ID to the trailer

- Long range (upto 100 m)
- Line of Sight may be obstructed
- Remote locations

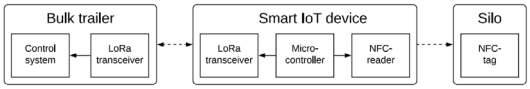
LoRa

LoRa has distinctive advantages

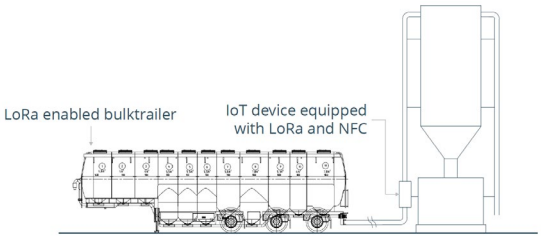
- Long Range
- Use of just the physical layer
- Robust and no need for coverage



An IoT-bridge covering contradicting requirements



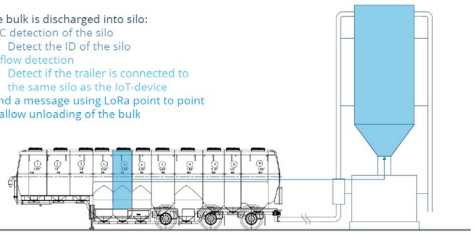
A typical setup looks like this



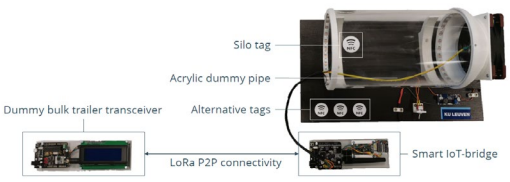
The IoT-bridge will perform multiple steps

Before bulk is discharged into silo:

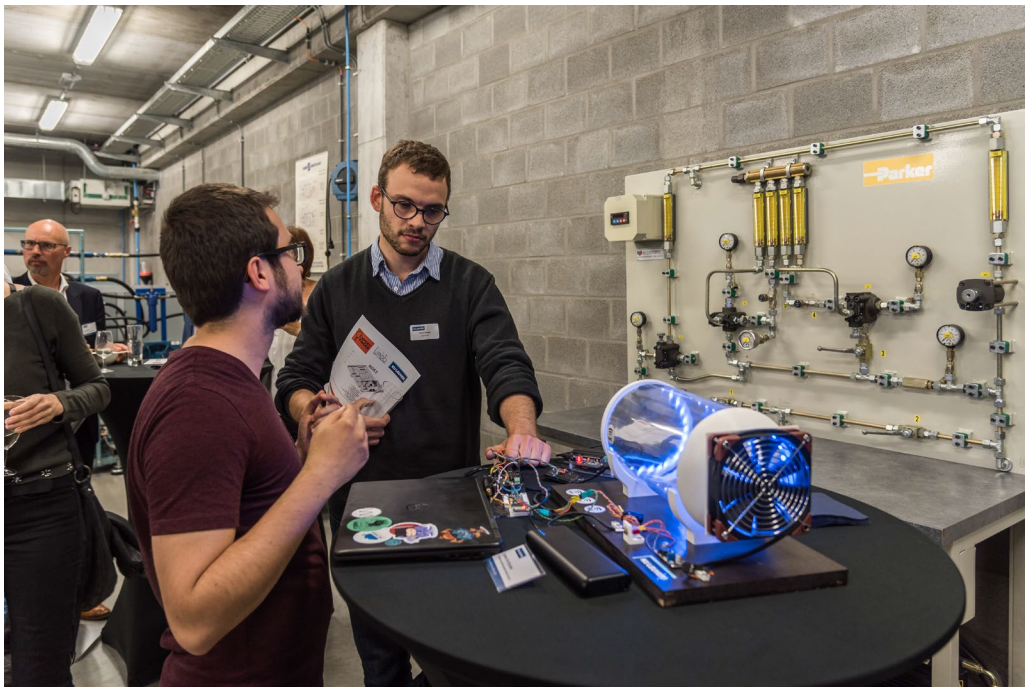
1. NFC detection of the silo
   - Detect the ID of the silo
2. Airflow detection
   - Detect if the trailer is connected to the same silo as the IoT-device
3. Send a message using LoRa point to point to allow unloading of the bulk

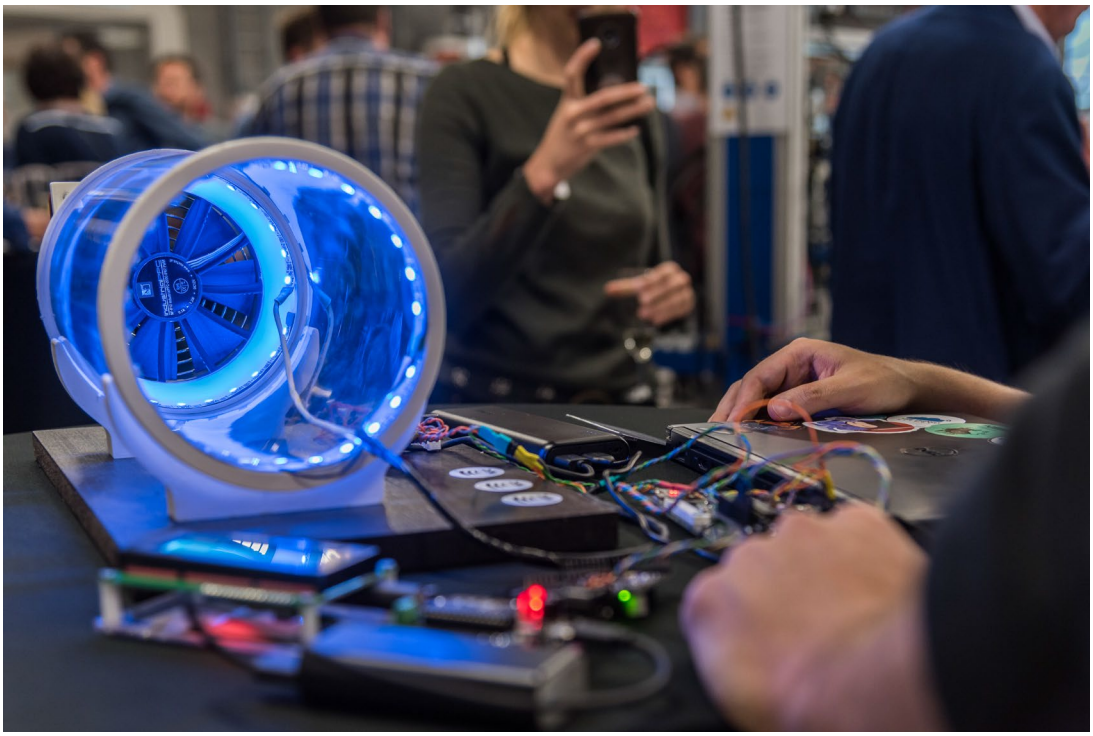


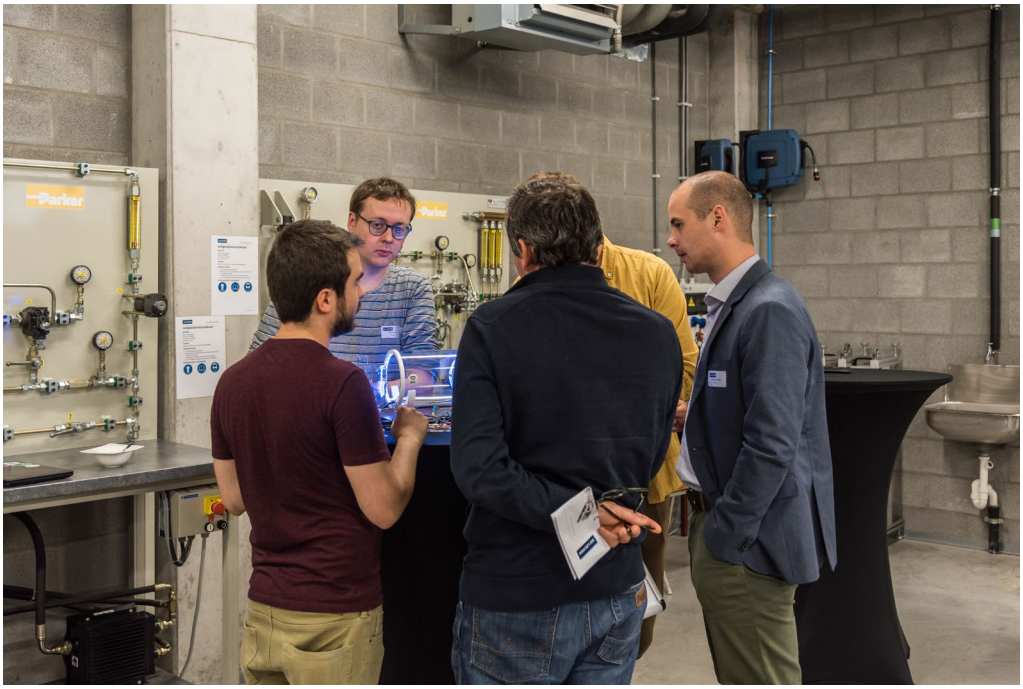
Proof of concept demonstration



Thank you!
Question time


Parker




Parker

Lessons Learnt report	
UC 2.6 - Stakeholder event 28/02/2019 – Latvia **Stakeholder event 20/03/2019 – Lithuania** **Stakeholder event 22/03/2019 – Germany**	
DA field	**Highlights**
IoT solution features – observation (based on interaction with attendees)	Attendees came because they were interested to hear about IoT solutions for dairy farming and especially precision mineral supplementation. We learned that electronic ear tags are actually available in all three countries, and that they normally place them in the right ear, not the left ear as we had anticipated. We learned that a premix factory in LV produce granulated minerals, which is something special, and has a better physical structure than mineral mixtures when used in Pitstop+ with its small dosing aggregates.
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	All three stakeholder meetings included a general presentation of IoF2020, of the UC2.6 and of related issues concerning precision feeding, use of electronic ear tags, challenges of the transition period for dairy cows.
Communication with stakeholders	Yes, directly via discussion, questions and comments. Participants expressed concerns as to whether cow are willing to eat extra mineral feed supplements, and some did not understand why Pitstop+ is based on electronic ear tags and not using transponders. It is important we address these concerns. A survey among the participants was made, see Table 2.
Open field for suggestions	Although the UC had 3 demo activities, reaching over 80 stakeholders in 3 different countries, the demos/meetings, were organized in a similar way. All of them were very well organised by our national partners, and all presentations were good and relevant and well perceived.

UC2.6 Stakeholder meetings participation

Country	Number of participants	Dairy farmers	Researchers	Mineral feed suppliers	Farm advisors	Registers for cattle data	Electronic ear tag suppliers	NGO's
LV	40	X	X	X	X	X	X	X
LT	15	X	X	X		X	X	X
DE	25	X	X	X	X	X	X	X

Result of survey among stakeholders at mobilisation.

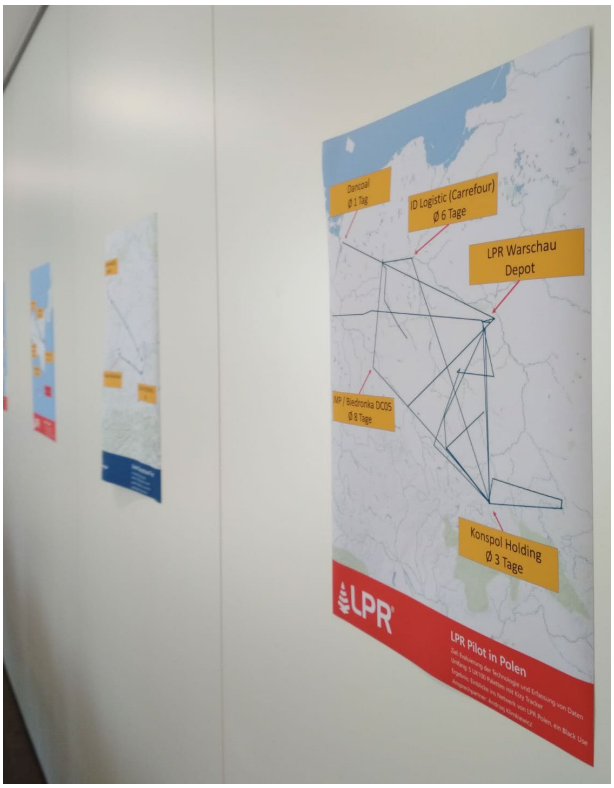
#	Question	Please score: 5 = Yes, certainly (target) 4 = yes 3 = Maybe 2 = I am not convinced 1 = No, not at all		
		LV – 21 resp.	LT – 11 resp.	DE – 17 resp.
1	Dairy cows in the critical period from 2-3 weeks before calving and until around 100 days after calving are often getting less minerals with their feed ration than they need?	4.2	4.2	4.4
2	Are dairy cows' immune status influenced by their intake of minerals?	3.9	4.7	4.7
3	Is the risk for diseases among dairy cows higher if their immune status is low?	4.8	4.6	4.7
4	Are consumers in your country concerned about animal welfare and the environmental and climatic footprint of dairy products?	3.5	3.4	3.4
5	Are dairy cows' mineral supplementation connected to their welfare?	4.0	4.5	4.4
6	Is it profitable to give dairy cows enough mineral feed supplements?	4.3	4.5	4.6
	Average score	4.11	4.32	4.37
	Overall weighed score (baseline)	4.25		

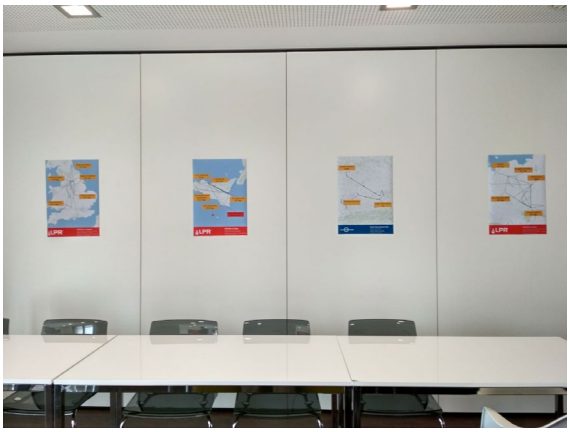
It is seen that the six questions we asked are all centred around the issue of the role of mineral supplementation of dairy cows for their welfare, with question no. 5 as the most direct question.

Based on the responses to question no. 5, it could be claimed that we already reached the goal (see section 1) that "Majority of respondents consider extra mineral supplementation of dairy cows having positive impact on the ethical quality of dairy product."

Lessons Learnt report		
UC 3.4 - Internal IoT Fair, 13th June, Bornheim, Germany		
DA field	**Highlights**	**Lowlights**

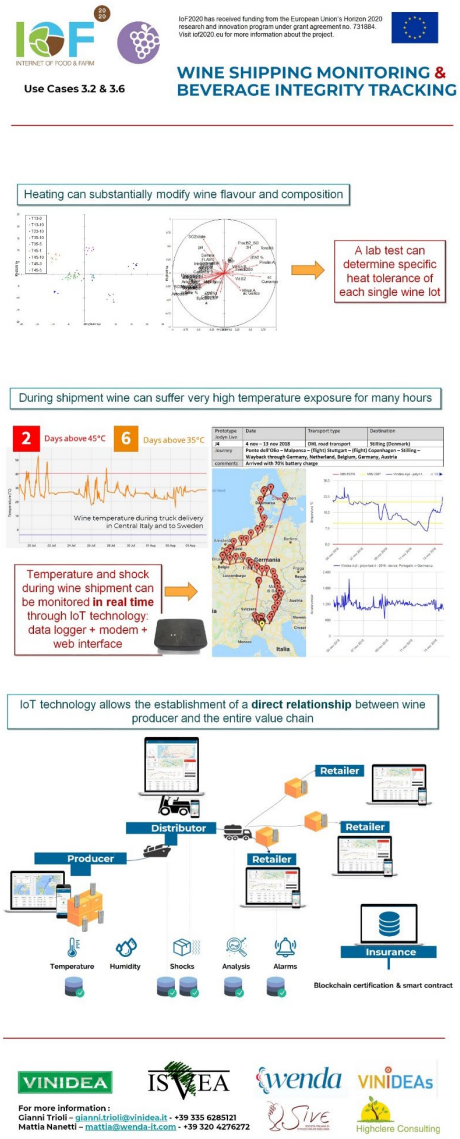
IoT solution features – observation (based on interaction with attendees)		
Solution presentation (how, what additional material was used, structure of demonstration, etc.)		
Communication with stakeholders		
Open field for suggestions		





Lessons Learnt report

UC 3.6 - IoT technologies for wine transport monitoring, Enoforum Congress, 23rd of May 2019, Vincenza, Italy (together with UC 3.2)



Roll-up of UC 3.2 and UC 3.6

DA field	Highlights	Lowlights
IoT solution features – observation (based on interaction with attendees)	All the presented technologies were found very useful. The more interesting characteristics were the following: continuous registration of temperature and shocks for 69% of the people, real time transmission of the data to the beverage producer (60%), availability of certified data to improve the relationship with carriers and distributors (52%), direct communication between	-

	beverage producer and final retailer (46%) and information on transport conditions to the final consumer (29%).	
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	Good combination to have oral presentations plus a desk/poster corner to directly interact and questioning. The Sli.do system also gives another way to interact. This combination suits the different personalities of the stakeholders.	Visit to the desk were not as frequents before the presentations than after. It is probably due to the fact that IoT systems are new to the stakeholders (other desks were about oenological equipment and products). We could in addition to the roll-up and project title and an explanatory claim to explain what the project is about.
Communication with stakeholders	It is important to have a place in a well know recognized congress where stakeholders search for suitable/practical innovations	See precedent point
Open field for suggestions	Slido is a good system used for interaction because the questions are registered through an App in each participant smartphone (many questions were raised: 16 for 45min of presentations)	-

Poster on the wine remote quality control

Stefano Ferrari from ISVEA

ATTENDEES FEEDBACK ON ENOFORUM CONGRESS ORGANISATION

How did you learn about this demonstration event? Number of answers received: 169

Personal invitation	36%
Specialized press	12%
Website	13%
Social media	2%
News letter	18%
Other	19%

Overall, how would you rate the event? Number of answers received: 169

Excellent	36%
Very Good	50%
Good	12%
Fair	1%
Poor	1%

What did you like about the event? Number of answers received: 62

Quality of information (quality, quantity and variousness of the talk)	47%
Organization	21%
Easiness to exchange with lecturers, researchers, exhibitors or peers	8%
Presentation of suitable/practical innovation for enologists/wineries	8%
Interaction with the slido system (used for questions and feedback)	6%
Everything	5%
Lots of information in a short time	3%
Presentation of public projects	2%

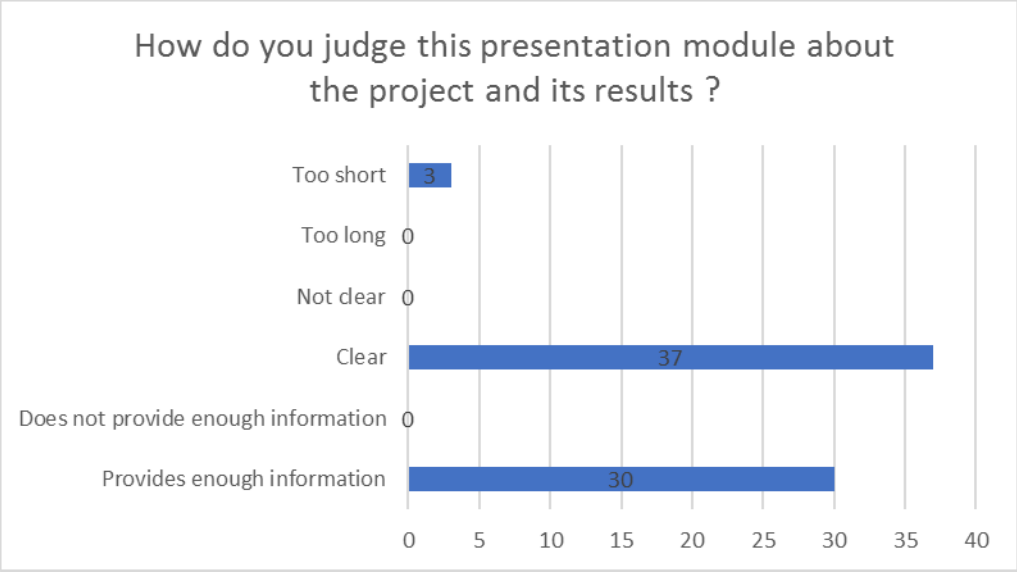
What did you dislike about the event? Number of answers received: 14

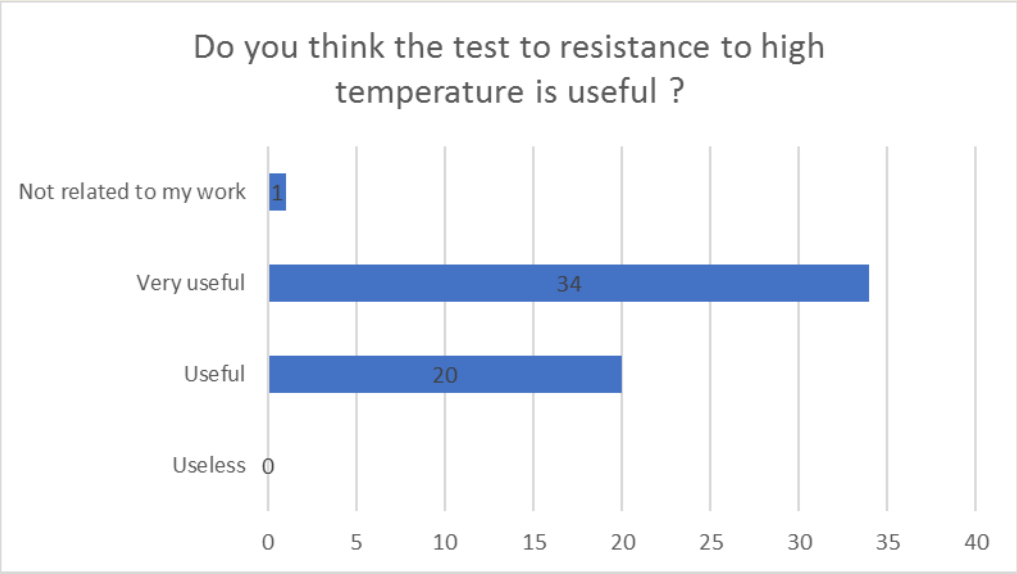
Distance between rooms	21,5%
Lack of breaks	21,5%
Food quality	15%
Small amount of time for questions	7%
Filtering of questions	7%
Poster area lay outs	7%
Quality of translation	7%
Repetitive themes	7%
Organization	7%

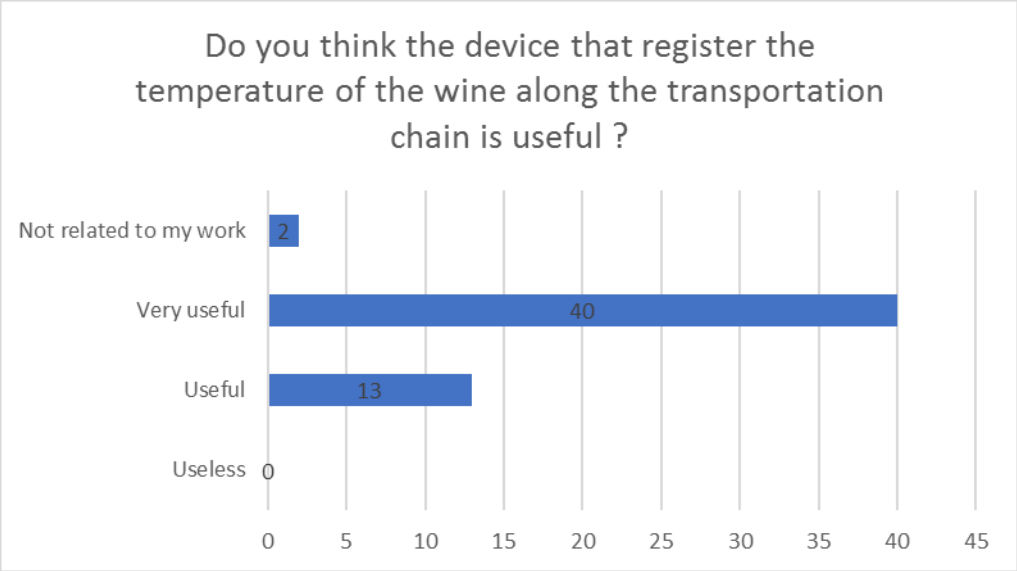
How do you think this event could have been improved? Number of answers received: 13

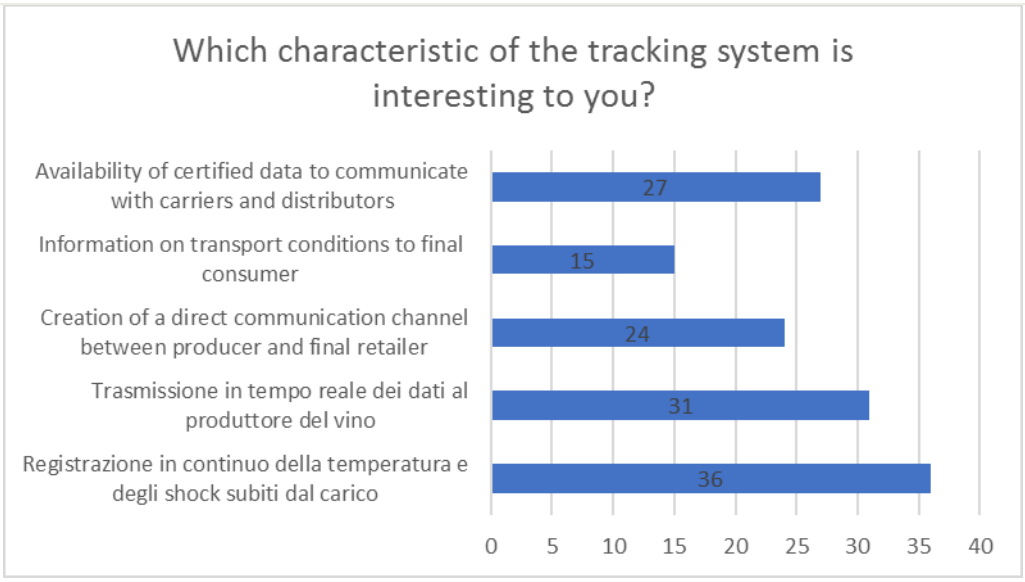
Synchronize program of the two rooms	19%
Hang up the program of the day in front of every room	9%
Ask the translators to be more prepared on technical words	9%
Concentrate the program in 2 days instead of 3	9%
Improve the catering	9%
Ask the congressists about research themes to develop in the next 2/4 years	9%
Increase the time dedicated to questions/answers	9%
Start the event at 10 instead of 9	9%
Organize a dinner to allow networking	9%
Organize a wardrobe service	9%

ATTENDEES FEEDBACK ON PRESENTATION OF THE TECHNOLOGIES AT ENOFORUM CONGRESS



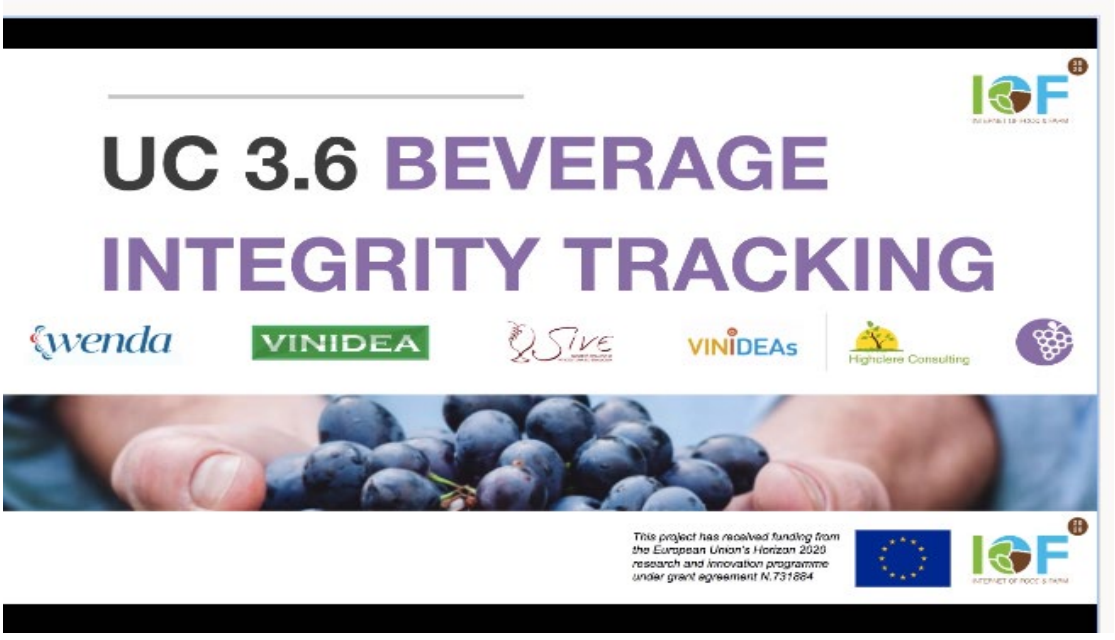

Do you think the test to resistance to high temperature is useful ?
Not related to my work
Very useful
Useful
Useless
1
34
20
0
0
5
10
15
20
25
30
35
40


Do you think the device that register the temperature of the wine along the transportation chain is useful ?
Not related to my work
Very useful
Useful
Useless
2
40
13
0
0
5
10
15
20
25
30
35
40
45



Feedback

UC 3.6 - Demo of Beverage Integrity Tracking System in wineries, June 2019



Questionnaire for attendees

General questions:

1. Overall, how would you rate the information you had on the projects during engagement phase and training on the platform?

   Excellent
   Very Good
   Good
   Fair
   Poor

2. Check what you fond more useful about the training?

   The conference call is comfortable with respect to on-site training
   The live demonstration of the platform
   The customised demonstration allowing me to easily ask questions

3. What did you dislike about the training?

4. Prior the training how much information that you need did you get?

   All of the information
   Most of the information
   Some of the information
   A little of the information
   None of the information

5. How do you think this training could have been improved?

Feedback on technologies to track the wine integrity during transport:

1.Are presented technologies usefull ? (from 1 to 5)

2. Which part of the system is the most interesting?

   Continuous registration of temperature

   Continuous registration of shocks (still to be developped)

   Creation of a direct communication channel between producer and final retailer (still to be developed)

   Information on transport conditions to final consumer (still to be developed)

   Availability of certified data to communicate with carriers and distributors (still to be developed)

2.Are functionalities easy to understand? (from 1 to 5)

3. If needed, can the suggested solution be adjusted to address your needs? How?

4. Do you think the platform is easy to be used? (from 1 to 5)
5. Do you think the device is easy to be used? (from 1 to 5)
6. Through which communication channel would you like to receive integrity info of your shipment?
   Email
   dashboard in the platform

both

7. would you be able to use the integrity data to claim with insurances about heating?
   yes
   no
   maybe
8. Do you have an insurance that covers damages on heating while transportation?
   yes
   no
   i have to check, please contact me later
9. Do you think our system can be useful to reduce complaints due to heating or bad handling? (from 1 to 5)
10. Do you think our system can be useful to give you more information on the distribution of your products (guarantee that your product is distributed in good conditions) (from 1 to 5)
11. Does this tool help you to have a stronger relationship with the client? (from 1 to 5)
12. Does this tool help you to have a stronger relationship with the client? (from 1 to 5)

BEVERAGE INTEGRITY TRACKING
TEST INSTRUCTIONS FOR BEVERAGE PRODUCERS

GENERAL INFO ABOUT THE PROJECT
What is B.I.T. (Beverage Integrity Tracking)?

Tracking wines and other beverages along the transportation chain is the main goal of B.I.T. project.
Increasing economic and strategic relevance of export markets impose to producers to gain control on transportation conditions of their goods and to establish direct contacts with final clients.
B.I.T. uses Internet of Things technologies to obtain data on **shipping conditions** and on final **client satisfaction**, allowing beverage producers to exactly know if, when and where accidents occur during transportation (excess heating, shock with ruptures), and to receive feedbacks from final retailers (comments and/or complaints from wine shops & restaurant clients).
The device code is coupled with a web page corresponding to the wine in the box, reporting all information and marketing arguments the producer wants to communicate to retailers.

Who is developing the system?

The B.I.T. consortium is composed by:

- Wenda, an Italian innovative start-up specialized in IoT solution for wine and beverages, that is developing the device and the internet platform
- Vinidea, an Italian innovation broker for the wine industry in the center of a wide and international network of producers, researchers and technology providers
- SIVE, Vinideas and HighClere Consulting, partners with multiple contacts in the European beverage sector, who will support producers hosting field test in different EU countries

B.I.T. partners know that ensuring a full commitment through the chain is hard, so the following **Incentives for the retailers**:

- 25% of the box value (topped at 45 €) refunded to final retailers who complete the above procedure of his concern. (Example: 12 bottle box @ 15 US$/bottle = 180 US$. Refunded 45 US$ by bank transfer. The refund opportunity will be explicited in the informative label.

Instructions for testing:

A wine or beverage producer hosting a field test will be asked to run 2 set of trials: the first starting in July 2019 and completed by October 2019, the second in June – September 2020.

First test period
The field test host producers will receive (for free):

- n. 4 IoT devices, completed of temperature sensor & Bluetooth, autonomously powered by a 90-days lasting battery
- n 4 informative labels in English (with information on incentive to participate for retailers, operative procedure on how the system works and what is expected for each step of the product travel) to put in the beverage boxes (one per box)
- The Wenda App to manage the devices
- Instructions by Wenda to manage the system

The **producer** will:

- identify n.2 shipments, one directed to a foreign but European client, and one to overseas destination.

IMPORTANT: the producer shall receive reasonable assurance of collaboration by importers/distributors involved in these shipments

- choose n 2 wine cases for shipment. The wine cases should be placed externally on the pallet so that the label can be seen the supply chain actors
- open each box and insert the data logger.
- close the box and put the instructions inside and apply the identification label so that it can be seen.
- upload on a specific page of the system web platform (according to instructions given by Wenda) the information on its product to be used by the final retailer to promote the wine(s) chosen for the test
- the day before shipment, in the Wenda Web Platform: couple each lot of product with the specific information web page, adding to the Journey record delivery date, name of the carrier, type of transportation chosen, destination client name, city and email, while activating the device. It will start monitoring and recording of environmental conditions
- activate the device (by pressing the button) when the shipment will start
- inform the **recipient** (es. importer, distributor,..) of the ongoing test, and will ask him - once received the labelled boxes – to contact Wenda in order to make data available for producer. Data will stay property of the producer. Inform the next-step retailer of the ongoing test, and provide the above instructions inviting him to do the same,

Every time someone connects by Bluetooth the device with the APP, all recorded data are uploaded on the web platform in the specific Journey record, and become fully available to the producer.

Second test period

During summer 2020, a second set of field tests will be organized.

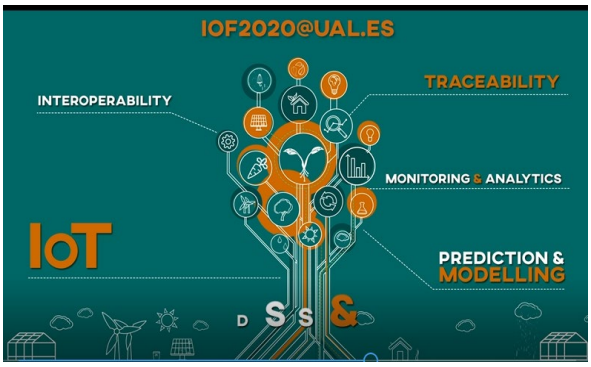
Details of the procedure may re-adapted according to the experience of the first period.

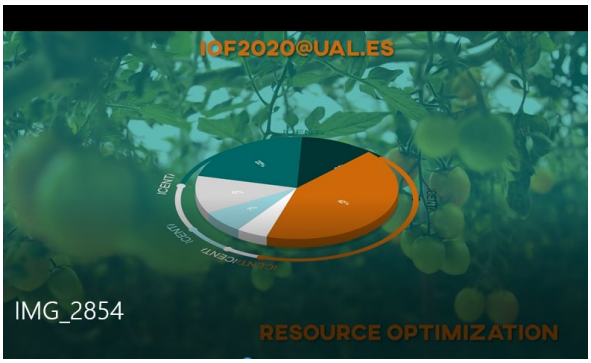
An improved version of the device (including accelerometer and humidity sensor, and geo-localization), and of the web platform will probably be ready for testing.

The version will also allow a both way communication between producer and final retailer.

Lessons Learnt report

UC 4.2 - "IoTWeek", 17-19 June 2019, Aarhus, Denmark





Lessons Learnt report

UC 4.3 - NPPL Kennisdagen, 4,5,6 June 2019, Agri Innovation Centre, Dronten and and *NPPL on Tour* 20. August 2019

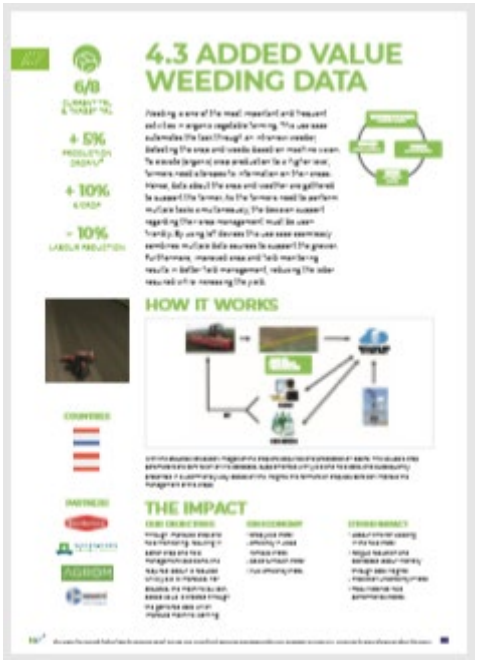
The NPPL Kennisdagen days are focussed on knowledge transfer to farmers and students/lecturers. Both days on the two day event had a specific focus group, day one farmers (~100 attendees) and day two students and lecturers (~80 attendees).

Used material, IoF poster, IoF pull-up banner, tv screen with live-demo of application on Akkerweb.

The poster was printed on A4 as hand-out.

https://www.proeftuinprecisielandbouw.nl/

https://www.aereshogeschool.nl/agenda/evenementen/190604-kennisdagen-nppl

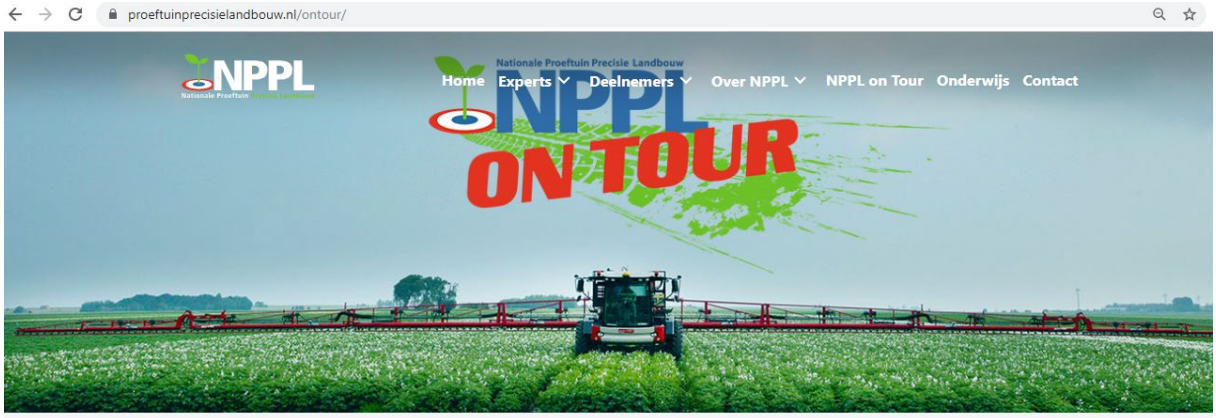


NPPL on tour

The NPPL on tour is a showcase of activities within NPPL. Showed solution to interested farmers (~120 attendees). Location was at a farm where the Steketee IC-weeder with tv screen with

demo was shown. IoF poster and pull-up banner were used as promo material. Poster on A4 was printed as hand-out.

https://www.proeftuinprecisielandbouw.nl/ontour/



NPPL on Tour

Lessons Learnt report		
UC 4.4 - Tuttofood, food exhibition, 6 - 9 May 2019, Milan, Italy		
DA field	**Highlights**	**Lowlights**

IoT solution features – observation (based on interaction with attendees)		
Solution presentation (how, what additional material was used, structure of demonstration, etc.)		
Communication with stakeholders		
Open field for suggestions	The device attracts users, during attendance for the experience is possible to talk with attendees. It is a perfect took for making contacts	The VR device requires 2-3 support people. running after the user is an intensive gym exercise. The software is unstable because VR requires too many software that are not fully integrated (steam, MS Windows, Steam for MR, Lenovo explorer drivers, etc. A person with good skills in IT and problem solving is required

Lessons Learnt report		
UC 4.4 - Enoforum, 21 - 23 May 2019, Vicenza, Italy		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)		
Solution presentation (how, what additional material was used, structure of demonstration, etc.)		
Communication with stakeholders		
Open field for suggestions		

Connettere cose per migliorare tracciabilità, qualità e mercato del vino

Matteo Balderacchi

Valoritalia srl

IOF2020

"fare diventare reali precision farming e precision food"

- Connettere Internet delle Cose al settore agroalimentare per renderlo più competitivo e sostenibile

Grazie alla

- Costruzione e connessione di un ecosistema

per

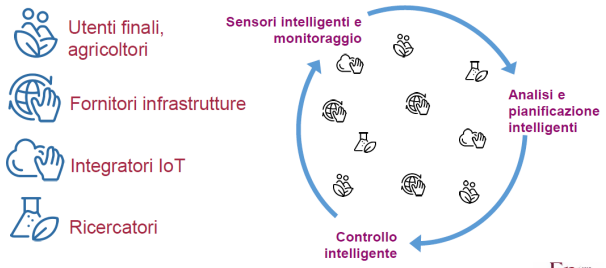
- Rispondere a sfide globali: sicurezza alimentare, biodiversità, salute e nutrizione

Cose.....materiali

Cose.....immateriali

- **Registro dematerializzato SIAN**
- **Registro Valoritalia**
- **Quaderno di campagna**
- **Registro dei trattamenti,**
- **Dati spazializzati (suoli, vigoria, catasto e schedario viticolo, percorso del trattore, e dell'operatore, etc.)**
- **Rilievi piani monitoraggio**
- **....**

Creare un ecosistema tecnologico



Fare business insieme

- La certificazione si semplifica
- Il vino migliora grazie ai sensori
- L'uva migliore grazie all'IoT
- Il marketing si innova

PER MAGGIORI INFORMAZIONI

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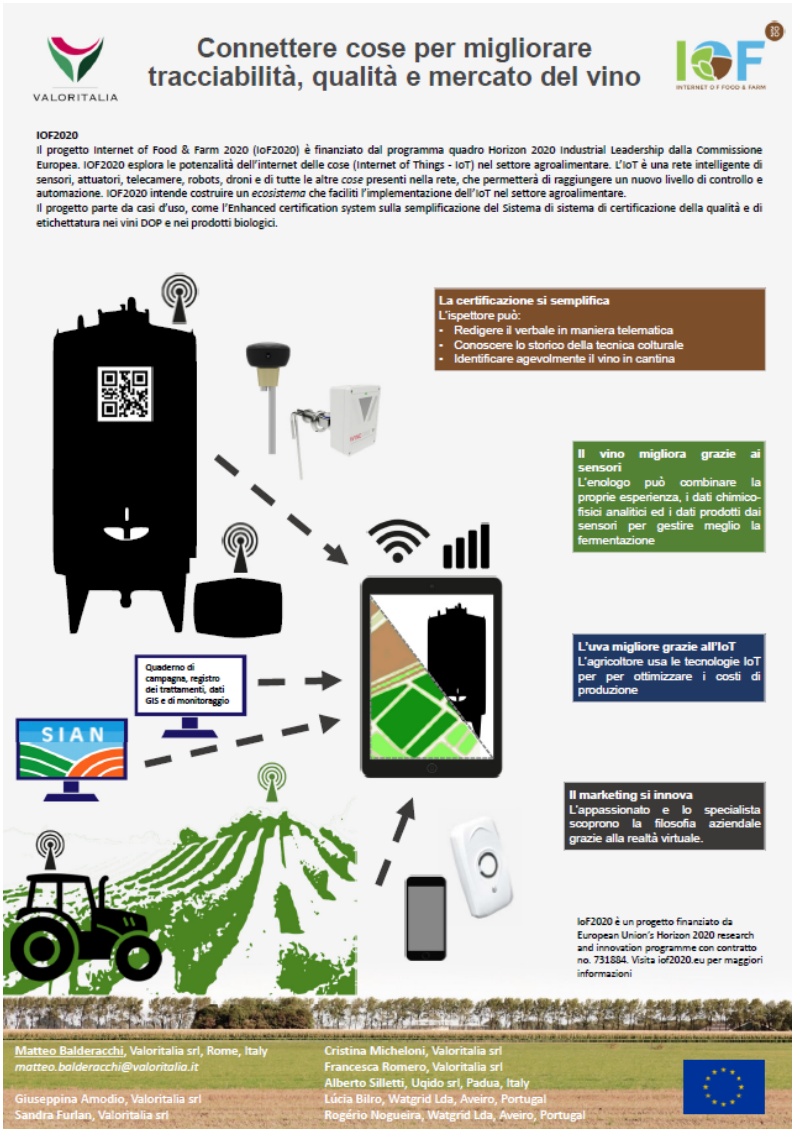
IoF2020 is funded by the Horizon 2020 Framework Programme of the European Union. Grant Agreement no. 731884. Visit IoF2020.eu for more information about the project.



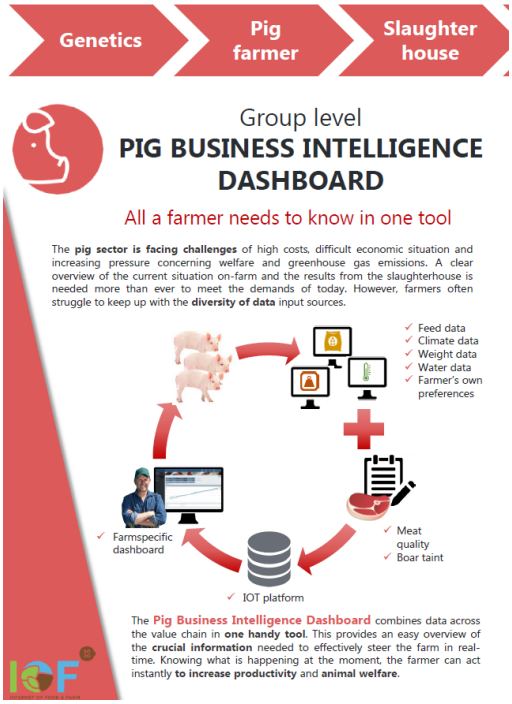
Lessons Learnt report		
UC 5.1 - Meeting with farmer stakeholder group – 17/05/2019		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	Dashboard is perceived as useful for the farmer's management, scores 4/5 on average.	The dashboard needs to be made easier to use and clear, scores are 2.5/5 on average.
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	We had the following agenda: • Welcome + get to know each other • Repeat project goals • Technical steps to get data in real-time + status • Coffee break • Interactive insight into the dashboard • Dinner break • Boar taint influence and how to go towards advice Presentations were scored as 4/5 on average	Long presentations are not beneficial, need more time for discussion and dashboard.
Communication with stakeholders	Small group conversation with open discussions are crucial to keep farmers involved.	Need more time for discussion. Frequent communication is beneficial.
Open field for suggestions	Suggestions were made to add an overview of departments in the interface -> this will make the dashboard a lot more structured and easier to use. Also, the need for automatic start-up of pens was expressed. Both improvements are currently being implemented in the next MVP	

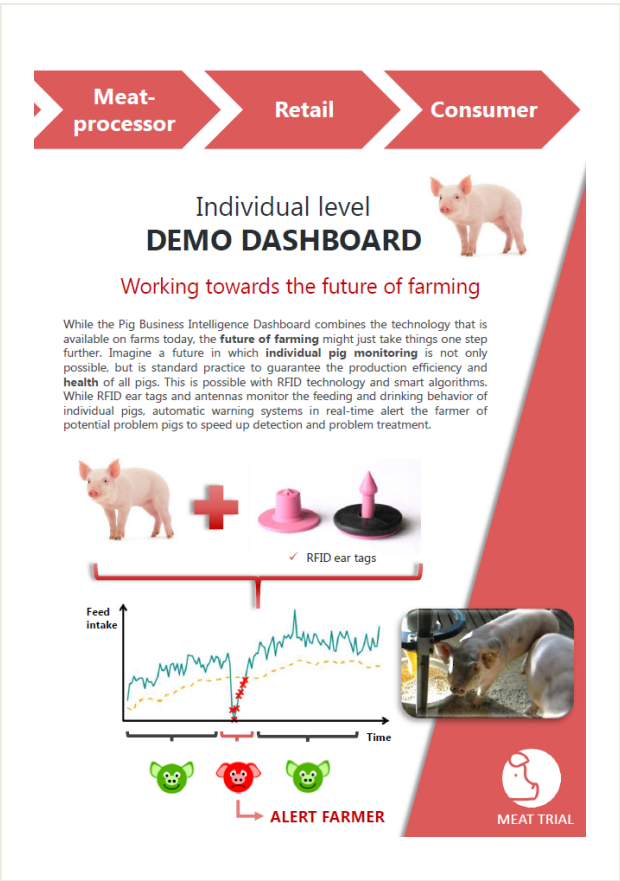
Lessons Learnt report		
UC 5.1 - Event: IoT week Aarhus exhibition – 18-19/06/2019		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	Group level demo: The content of the dashboard was perceived to be clear and easy Individual level demo: the general public perceived the individual tracking of pig health to be a good thing and were interested in how it was done.	Group level demo: The layout of the dashboard needs some adjustments to have a better data overview Individual level demo: individual monitoring of pigs was not considered new in Denmark, mostly cost-benefit ratio was questioned
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	Group level demo (presentation): The use of Mentimeter increased the interaction with the public and gave valuable feedback. It is also possible to reach a higher amount of people than by just posing questions at the audience, certainly if there is a large group. Individual level demo (booth): The demo with miniature pigs and RFID tags attracted a lot of attention. Also, the small video with pigs helped to clarify the whole and lured people to the booth.	Group level demo: the number of features of the dashboard to show should be reduced, as it makes it difficult to follow Individual level demo (booth): the survey we made to get feedback from the people was not filled in very often (the sign indicating that there was a survey possibly got lost between the other parts of the booth). The people who did fill it in found it difficult (different language than native language) or thought there were too many questions.

Communication with stakeholders	Group level demo: The use of Mentimeter increased the interaction with the stakeholders. Individual level demo: while the general public was more interested in the small demo, the stakeholders were more interested in a conversation and the leaflet with (contact) information.	Group level demo: there were little stakeholders at the event, as it was mainly an IoT event Individual level demo: there were little stakeholders at the event, as it was mainly an IoT event
Open field for suggestions	Group level demo: • Reduce number of features of the dashboard • Make product more user-adjustable Individual level demo: people suggested combining the RFID tag with other sensors, e.g. temperature sensors	
		


IOF 2020
DEMO
PIG FARM MANAGEMENT


IOF 2020
DEMO
PIG FARM MANAGEMENT


Genetics
Pig farmer
Slaughter house
Group level
PIG BUSINESS INTELLIGENCE DASHBOARD
All a farmer needs to know in one tool
The pig sector is facing challenges of high costs, difficult economic situation and increasing pressure concerning welfare and greenhouse gas emissions. A clear overview of the current situation on-farm and the results from the slaughterhouse is needed more than ever to meet the demands of today. However, farmers often struggle to keep up with the diversity of data input sources.
Feed data
Climate data
Weight data
Water data
Farmer's own preferences
Farmspecific dashboard
Meat quality
Boar taint
IOT platform
The Pig Business Intelligence Dashboard combines data across the value chain in one handy tool. This provides an easy overview of the crucial information needed to effectively steer the farm in real-time. Knowing what is happening at the moment, the farmer can act instantly to increase productivity and animal welfare.



Lessons Learnt report		
UC5.3 - IoT Week – Aarhus – 18-19/06/2019		
DA field	**Highlights**	**Lowlights**
IoT solution features – observation (based on interaction with attendees)	Plenty of IoT solutions, particularly sensors, were demonstrated; many could potentially be applied in the agri-food sector	
Solution presentation (how, what additional material was used, structure of demonstration, etc.)	I discussed and demonstrated the IoT software solution of UC5.3 to potential end users, but mainly potential collaboration partners.	Most attendees were interested on devices; if they were interested in software solutions, they often went to major developers such as Microsoft. IoF2020 stand was not visited as often as we wished
Communication with stakeholders	Our solution was new and innovative to the participants that we interacted with. We brought awareness of IoT application pig	

	farming	
Open field for suggestions / related info	In comparison to other sectors (e.g. smart living or smart city), in which people have already seen IoT devices or know what to expect, the application of IoT devices in our sector is relatively new for the kind of participants in such a conference. It seemed to me that coming with devices (model farms, devices, etc.) is key in such an IoT event, even if the main item of exhibition is a software system. Most participants expect to see devices in action (seeing is believing).	
Presentation of UC5.1		
The gala dinner was a wonderful opportunity to network		

3.3. PLANS FOR THE UPCOMING PERIOD

SEPTEMBER 2019[1]	
UC 1.1	1. Potato Europe, 4-5 September 2019, Doornik
UC 1.3	1. Field day organized by Sipcam and Soia Italia around Padua, week 39 2019, Padua, Italy 2. Field day organized by Donau Soja, September 12
UC 1.5	1. Potato Days Poland, 6-7 september 2019, Kamień Śląski (near Opole), Poland
UC1.6	1. Iot4Potato IoT stations installation demonstration event, September, 2019, Pilot site in Cyprus – Specific field to be selected
UC 1.8	1. Demonstration SolarVibes #1, August 26 2019 – September-3rd 2019, Romania (Cluj-Napoca) - University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca 2. Demonstration SolarVibes #2, September 05 2019 – September 12 2019, Romania (Timisoara) - Banat University of Agricultural Sciences and Veterinary Medicine of Timisoara (USAMVBT) 3. Demonstration SolarVibes #3, September 18 2019 to September 24 2019, Hungary – HRIOA, farmer network
UC 1.9	1. Hyperspectral data analysis for agriculture: technologies and data, 23rd September, 2019, 10:00 am EET, Visoriai Information Technology Park, Mokslininku 2A, 08412, Vilnius, Lithuania
UC 2.1	1. Contactdag Vleeswaren, September 12th, Ilvo, Melle
UC 2.5	1. 2019 National Ploughing Championships, Ireland, 17-19 September 2019, Balintrane, Co. Carlow Ireland
UC 2.7	1. Presentation of the Moonsyst Smart Monitoring System, October 10th 2019, Hungary
UC 4.2	1. European researchers' night, 27 September 2019, Almeria, Spain

[1] Due to considerable amount of seasonal activities and needed time to finalize and analyse reports, activites scheduled for September are being presented in the deliverable section on activities for the upcoming period.

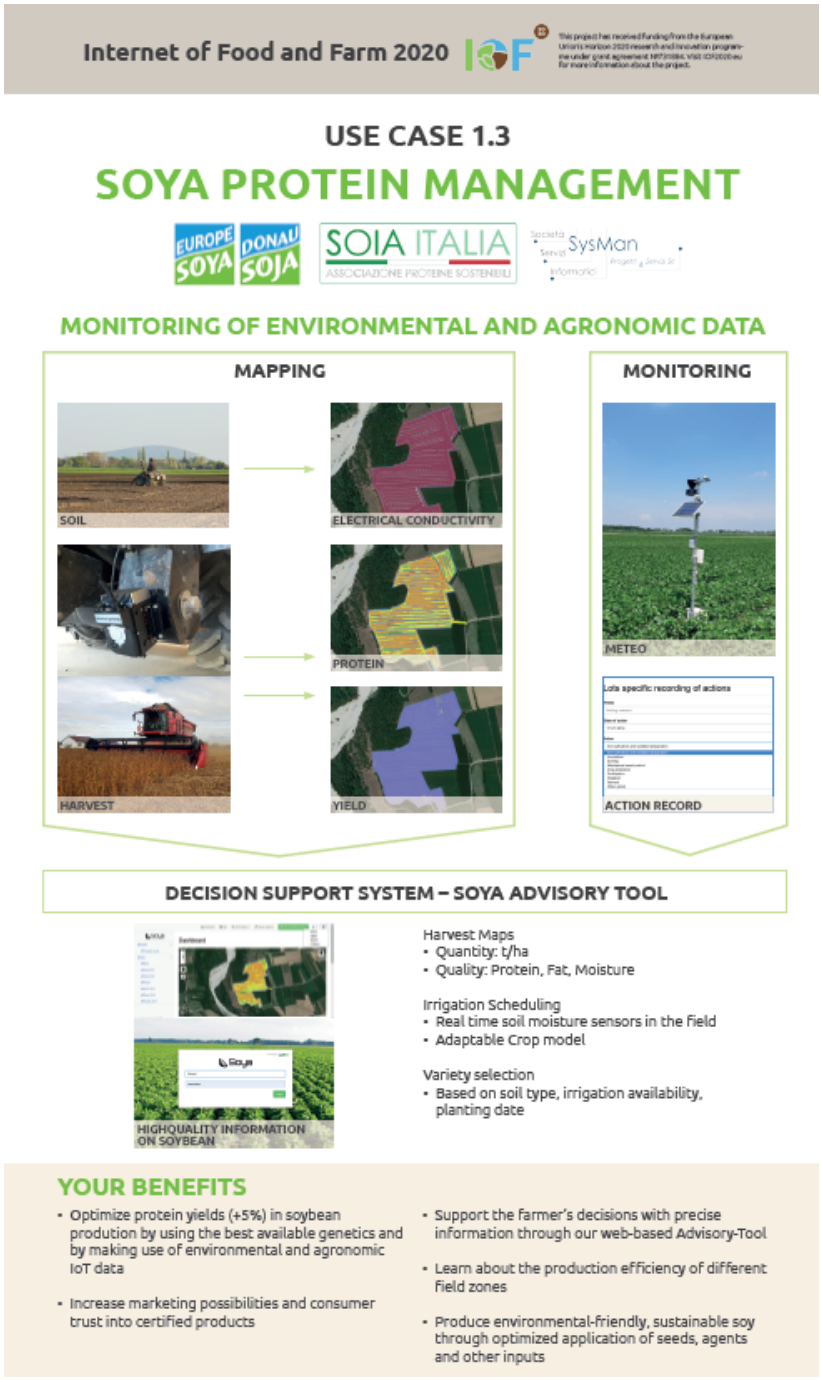
UC 4.5	1. Researchers Night, September 27, 2019, Philoxenia Conference Center, Nicosia, Cyprus 2. CAMAD 2019, 11-13 September 2019, Limassol, Cyprus, Field visit, IoT sensors, IoT services
UC 5.1	1. Digitization unit of Flemish agricultural government meets IoF2020 & UC5.1, 10th September 2019, ILVO
UC 5.4	1. SPACE 2019, 10-13 SEPTEMBER 2019, Rennes exhibition centre – France
OCTOBER 2019	
UC 1.3	1. Field day organized by Sipcam and Soia Italia around Padua, week 40 2019, Padua, Italy
UC 1.4	1. Lessons learned for SDOs, Oct-19, Aachen
UC 1.9	1. Agrobusiness Forum 2019, 17/10/2019, Lithuania
UC 2.1	1. Open Bedrijvendag, October 6th 2019, Ilvo, Melle
UC 2.3	1. PARK, last 2 weeks October 2019
UC 2.4	1. Workshop Understanding IR Analyses, Fall 2019, Qlip, location Pakhuis Noorderhaven
UC3.1	1. Smart Irrigation in small table grape vineyards, after September, Kiato, Greece
UC 3.3	1. FRUIT ATTRACTION, October 2019, Madrid, Spain
UC 3.5	1. Demoagro Specialty, 1-3 October, 2019, Valencia, Spain
UC 4.4	1. Event to be defined, October 2019, IoT sensors in cellar
UC 4.5	1. AgroExpo, October 4-6, 2019, State Fair, Nicosia, Cyprus
UC 5.1	1. Open company day Flanders, 6th October 2019, ILVO
UC 5.5	1. Demonstration of IoFeed system to UK feed supplier companies and livestock farmers, Fall 2019, UK
UC 5.6	1. FITPigs Demo, October 2019, Murcia, Spain
NOVEMBER 2019	

UC 1.1	1. Agritechnica, 10-16 November 2019, Hanover
UC 2.1	1. Special demo to be organized, Nov-19
UC 3.2	1. Demo of Remote Wine Quality Control System in an important winery, Autumn by november, TBD, Tuscany
UC 3.3	1. DATAGRI, November 2019, Zaragoza, Spain
UC 3.6	1. Demo of Beverage Integrity Tracking System in wineries, June - November 2019, 20 wineries/breweries and distillate producers around Europe
UC 4.2	1. Growers demonstration, October – November, Almeria, Spain
UC 4.4	1. Improved udit: tools and systems, to be defined, in November 2019, Cantine Ferrari, Trento
UC 5.2	1. IoT Based Poutry Chain Management, November 2019, SADA facilities
UC 5.4	1. DATAGRI, November 2019, Zaragoza, Spain
2020	
UC 1.4	1. ADAPT demo, Q1 2020 2. AE, Q1 2020 3. EFDI demo, Q2 2020 4. AgGateway, Q2 2020 5. Optional NGSI-LD demo, Novembar 2020 6. FIWARE/ETSI, Novembar 2020 7. Harvest Logistics optimisation, harvest 2019 or 2020, On-farm demo
UC 2.3	1. KING, first 2 weeks February 2020
UC3.3	1. Smart Irrigation in small olive groves, January - February 2020, Chora Messinias, Greece
UC 3.6	1. Demo of Beverage Integrity Tracking System in wineries, June - November 2020, 20 wineries/breweries and distillate producers around Europe

Invitation posters

Invitation poster

UC 1.3 - Field day organized by Sipcam and Soia Italia around Padua



Invitation poster

UC 1.3 - Field day organized by Donau Soja

ASTARTA-KYIV agri-industrial holding

ASTARTA select

Ukraine, Poltava region, Myrhorod district, Harkushyntsi village
Research fields of ASTARTA Select
GPS coordinates: T1719
49.917807, 33.574729

September 12, 2019
SOYA FIELD DAY

organized by Donau Soja Association and agroindustrial holding "Astarta-Kyiv"

Soya Field Day 2019 will become a great opportunity for all the participants to evaluate the potential of the main commercial local and foreign soya bean varieties on one independent platform as well as to learn more about the effective technologies of non-GM soya bean cultivation and personally talk to the experts from the soya industry.

Within the framework of the preparation to the Soya Field Day, more than 60 non-GM soya bean varieties of different ripeness group were sown as well as the inoculant trials were established on the fields of the research center "Astarta Select" in Myrhorod district, Poltava region.

The main goals of the Soya Field Day are to demonstrate the main commercial varieties of high-quality non-GM soya beans which are available in the local market, the growing and harvesting technologies, and also to make an objective assessment of all the soya bean varieties.

Soya Field Day 2019 will include:

- presentation of ASTARTA Select by the executives and key experts of ASTARTA and representatives of the Donau Soja Association;
- excursions to experimental sites;
- special lecture zone from the Donau Soja representatives;
- exchange of unique experiences and the opportunity to win valuable prizes from ASTARTA Select and the partners of the event in the lottery draw.

The partners of the Soya Field Day will be able to present their products and services at the tent zone.

Dear friends and partners,
We are happy to invite you to participate in the Soya Field Day 2019!

Kind regards,

Oksana Prosolenko
Regional Director in Ukraine
Donau Soja

Zeljko Erceg
Production Director
agroindustrial holding "Astarta-Kyiv"

Why to join us?

300+	Number of farmers/ agricultural producers we expect to participate
6 ha	Demo soya field at the independent research center
60	Soya bean varieties from the leading international and local seed producers and distributors
7	Inoculant products

Sowing and harvesting equipment demonstration

Harrow and cultivator demonstration

Possibility to demonstrate your products and services at the tent zone of the Soya Field Day

DONAU SOJA ASSOCIATION

Donau Soja Association is a non-profit, independent association, which unites civil society, politics and essential commercial enterprises all along the value chain, ranging from non-GM seed production to food of animal and plant origin. Donau Soja and Europe Soya, the two standards of Donau Soja, stand for non-GM soya from the Danube region and Europe, quality and origin assured. The consistent quality and origin assurance system of Donau Soja guarantees transparency and safety for plant and animal products.

The association comprises more than 280 members from all over Europe and is competently represented locally with a total of four branches (Austria, Serbia, Ukraine, Moldova) and one representative (Romania).

The main task of the association is to improve the conditions for sustainable and independent soya cultivation in Europe. In this regard, for six consecutive years, Donau Soja has been organizing demo fields and demonstration of best practices in sustainable soybean production within the field days.

The Donau Soja activities is supported by the Austrian Development Agency.

Agroindustrial holding Astarta-Kyiv is one of the largest vertically integrated agro-industrial holdings in Ukraine with a 26-year history of development. Among the main areas of the company's activity: plant growing, sugar refining, dairy cattle breeding, soybean processing, bioenergy. Astarta is the national leader in sugar production and one of the largest producers of agricultural products.

Astarta Select is a subsidiary of the Astarta-Kyiv agroindustrial holding, which combines research, seeding (wheat and soya) and soil science in its activities.

AGROINDUSTRIAL HOLDING ASTARTA–KYIV

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4. CONCLUSION

The demonstration activity procedure was introduced to both initial UCs and UCs that joined the project via the open call. The procedure had a goal to make a framework for UCs to initiate the scaling up of their solutions and presenting it in front of potential end users.

According to the Demonstration Activities Plans, a total of 72 events was planned. During the period from May to August 2019, IoF2020 UCs organized 22, while more is planned for Q3 and Q4 2019 and Q1 2020.

The most often received feedback is that the topic of the presentations needs to be in line with the attendees' background. Many UCs reported that although the demo event was highly visited, just a few farmers were interested in the solution if the presentation was mainly focused on technical aspects. At the same time, when presenting on a machinery fair, many UCs reported that the catchy and visually appealing presentation is a must in order to attract the visitors. For example, during the IoT week, several UCs had a presentation at the IoF2020 stand, which was very successful, since visual representation of the project attracts attention. Nevertheless, UCs reported that they needed to be better prepared and able to present the solution in one or two minutes. The reason for this is the high number of different companies, all attracting visitors, which do not have so much time to dedicate to every solution. The main conclusion of attendance at large fairs – exceptional visuals and short teaser that will provoke visitor's attention to stay and listen to entire presentation.

When it comes to smaller events, the main conclusion and recommendation for the upcoming demonstrations is that the value of the demonstration would be increased if it was combined with prototype presentation in real life conditions (on field, in barn, etc.) and explaining the readings of the instrument in the computer. The most common question was regarding the security of the device – in terms of potential for stealing if it is installed in the open filed or potential impact on animal in the lifetime of the device.

The next step is to monitor further implementation of the plan. More demo events are expected in Q4 2019 and Q1 2020 – out of the agricultural season. Accordingly, it is planned to assist UCs with preparations of those demonstration events by sharing lessons learned and sharing best practices. In addition, collaboration between similar UCs will be highly encouraged.

5. ANNEX 1 – BOOKLET

IoF2020 has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 731884. Visit iof2020.eu for more information about the project.


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20
INTERNET OF FOOD & FARM
IoF2020
IOF2020.EU

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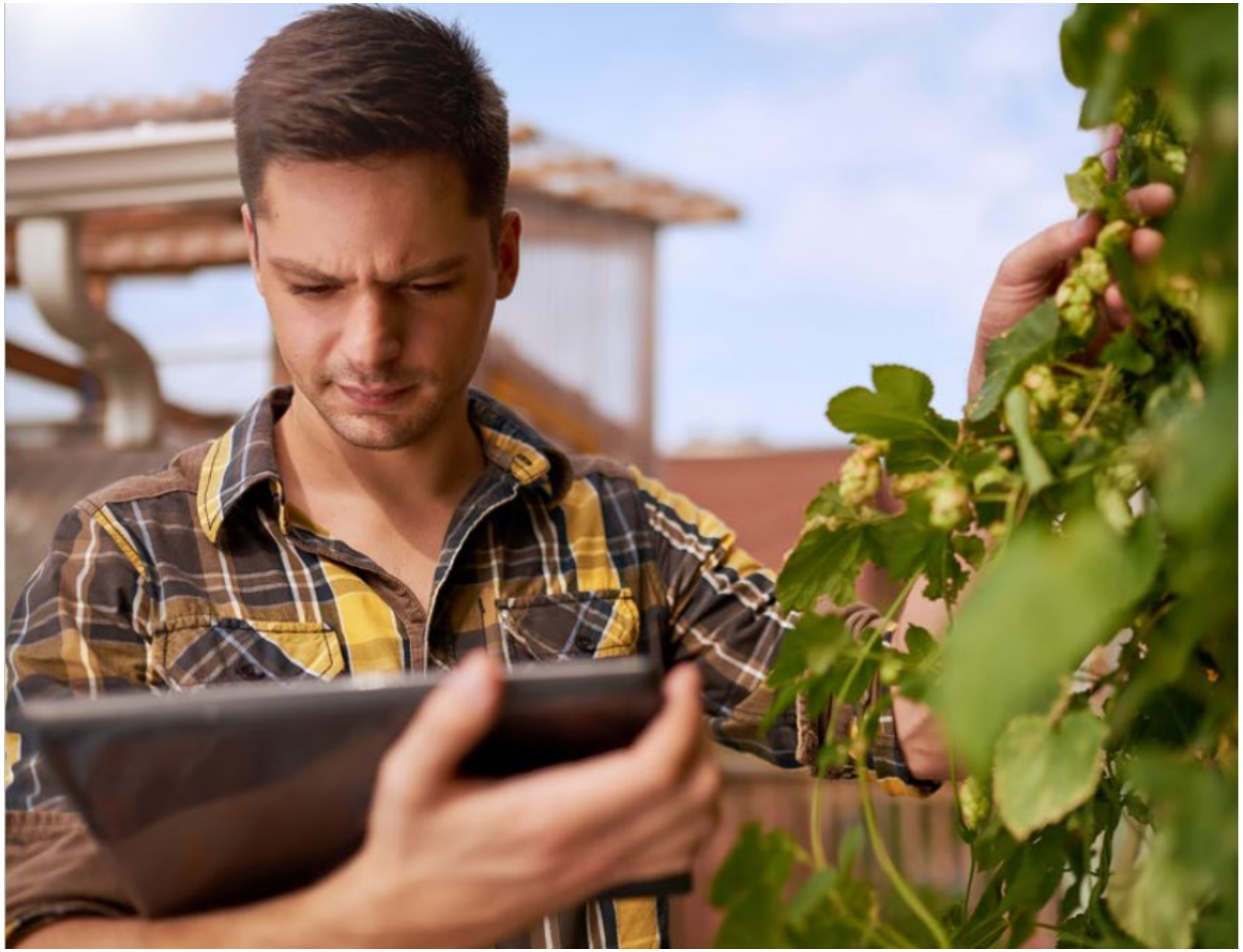
* **NEW USE CASES**



IoF 2020 IN A NUTSHELL

The Internet of Food and Farm 2020 (IoF2020) project aims to consolidate Europe's leading position in the Internet of Things (IoT) technology applied to the agri-food sector. We develop an ecosystem consisting of farmers, food companies, policy-makers, technology providers, research institutes and end-users. The project aims to solve the European food and farming sectors' social challenges, maintain their competitiveness and increase their sustainability.

FOR MORE INFO:
IOF2020.EU

5

LEAN MULTI-ACTOR APPROACH

IoF2020 uses a lean multi-actor approach focusing on user acceptability, stakeholder engagement and the development of sustainable business models. IoF2020 aims to increase the economic viability and market share of developed technologies, while bringing end-users' and farmers' adoption of these technological solutions to the next stage.

THE STANDARDS

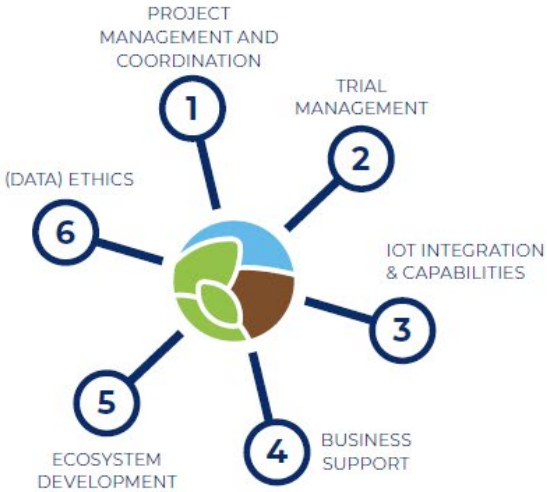
With an open ecosystem and collaboration space, the project relies on existing standards, as well as security and privacy platforms, applying these to the food production chains.

TOWARDS AN ECOSYSTEM

Led by the Wageningen University and Research (WUR), the 120+ members consortium includes partners from agriculture as well as ICT sectors and uses open source technology provided by other initiatives (e.g. FIWARE). Together we build an innovation ecosystem in which technology is validated, knowledge is shared and innovative solutions are brought to market

GOVERNANCE & STRUCTURE

IoF2020 is structured in 6 Work Packages, developed to help IoF2020 deliver its results.



THE FACES BEHIND THE WORK PACKAGES
AND THEIR OBJECTIVES

GEORGE BEERS
LEADER WP 1
PROJECT MANAGEMENT

Our Work Package is in charge of the overall organisation of the project. We coordinate all activities and monitor their progress. We handle the finances and are the contact point for the European Commission. Furthermore, we ensure a smooth and well-organised project, so all Work Packages and use cases can perform optimally. Basically, we try to keep everybody happy: a challenging task!

GRIGORIS CHATZIKOSTAS
LEADER WP 2
TRIAL MANAGEMENT

We monitor and support use cases and trials (sectors). We connect the teams that work in the field with the large pool of experts within the IoF2020 ecosystem. By constantly observing all use cases from a birds-eye view, we identify common challenges, opportunities for collaboration and replicable best practices. These best practices will boost the IoF2020 impact for European farmers and consumers.

HARALD SUNDMAEKER
LEADER WP 3
IOT INTEGRATION & CAPABILITIES

We aim at identifying IoT technologies that offer solutions for the agri-food domain. We support our teams to validate these promising technologies since components used throughout all IoF2020 use cases might be reusable in other situations. Hence, we are working on technological synergies that make the development of IoT based solutions more efficient and effective.

ALEXANDER BERLIN
LEADER WP 4
BUSINESS SUPPORT

Our expert team of consultants and researchers offers individual advice to all use cases on how to monetise their products and services with innovative data-driven business models. The core objective for the business support team is to make all IoF2020 products and services commercially viable in the market and whilst also showing their economic, environmental and social value.

EDWIN HECKER
LEADER WP 5
ECOSYSTEM DEVELOPMENT

We work on a self-sustaining ecosystem that doesn't end up in a drawer but lives on after the project. Dissemination (one-way) and communication (two-way) are a major part of our work. An example is the magazine you're reading right now! Sometimes people are hard to reach and busy with daily things, hence there is a need for experts to develop creative communication materials to connect all IoF2020 partners.

SIMONE VAN DER BURG
LEADER WP 6
(DATA) ETHICS

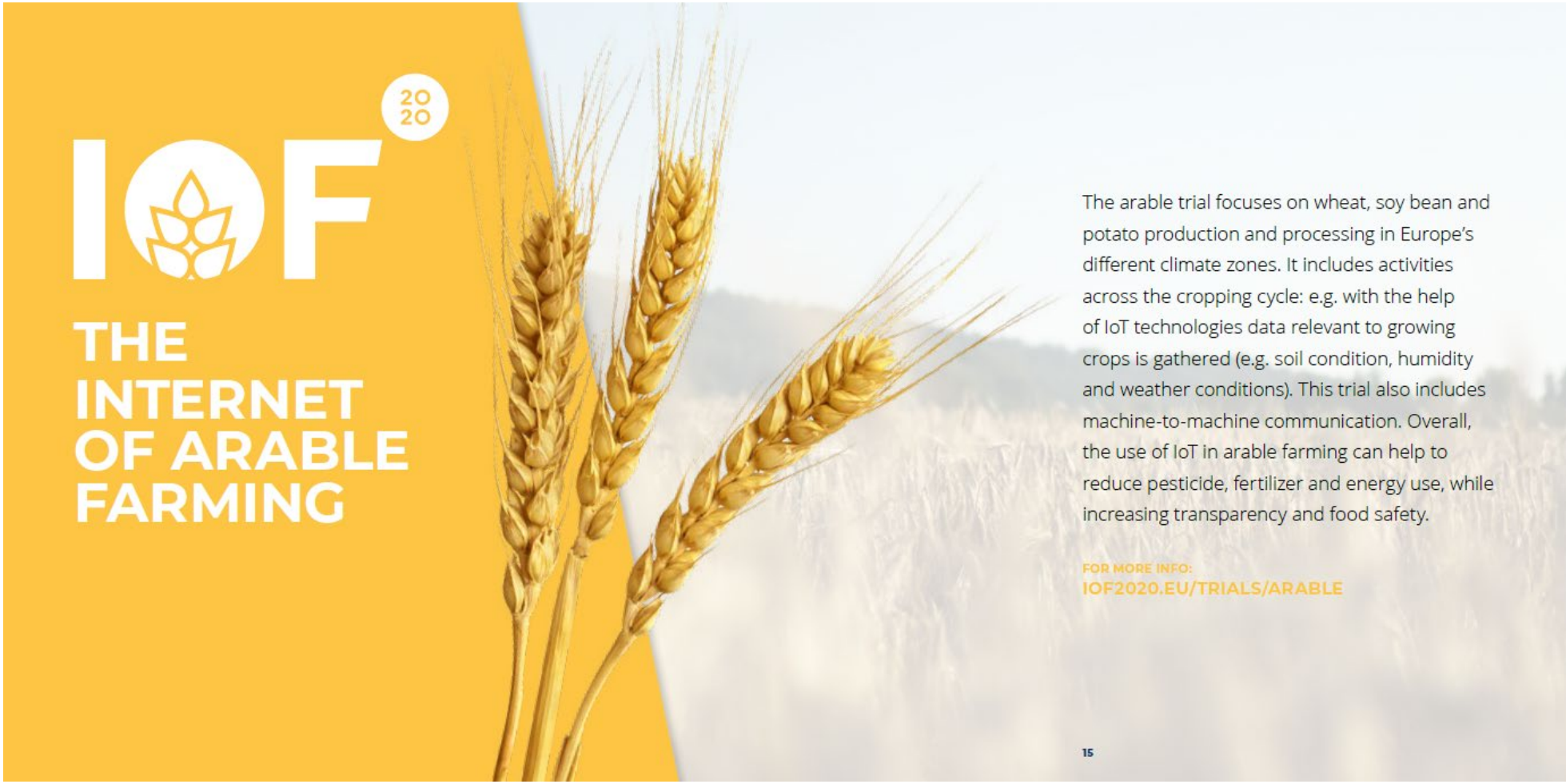
It is our objective to support use cases in dealing with ethical questions. Moreover, we develop a perspective on responsible data sharing together with stakeholders (policy-makers, farmers, tech service providers, NGOs, researchers). The public goals of IoF2020 may not always coincide with the goals of businesses or other stakeholders. What 'success' means therefore depends on the perspective of the stakeholder that you speak to. Thus, we aim for a well-argued match.

KEY FACTS

- Funding Scheme: Horizon 2020, Industrial Leadership, IOT-01-2016
- Contribution of the European Union: €30 million
- Total costs: €35 million
- Duration: 4 years, 2017-2020
- Consortium: 120+ partners
- 5 trials: arable crops, dairy, fruits, vegetables and meat
- 33 use cases in 22 EU countries

FOR MORE INFO:
IOF2020.EU


A FLOURISHING ECOSYSTEM
5 TRIALS, 33 USE CASES
The IoF2020 project is organised around 5 agriculture sectors: arable crops, dairy, fruits, vegetables and meat. Within each trial several use cases demonstrate the value of IoT solutions for the European food and farming sectors.
FOR INTERACTIVE MAP:
IOF2020.EU/TRIALS
ARABLE
DAIRY
FRUITS
VEGETABLES
MEAT
12
13


IOF 2020
THE INTERNET OF ARABLE FARMING
The arable trial focuses on wheat, soy bean and potato production and processing in Europe's different climate zones. It includes activities across the cropping cycle: e.g. with the help of IoT technologies data relevant to growing crops is gathered (e.g. soil condition, humidity and weather conditions). This trial also includes machine-to-machine communication. Overall, the use of IoT in arable farming can help to reduce pesticide, fertilizer and energy use, while increasing transparency and food safety.
FOR MORE INFO:
IOF2020.EU/TRIALS/ARABLE
15

- 20%
SOIL FERTILITY LOSS

+ 5%
CROP YIELD

- 70%
FIELD ANALYSIS TIME AND COST

LOCATION

SCAN

FOR MORE

1.1 WITHIN-FIELD MANAGEMENT ZONING

Arable farming faces increasing requirements and challenges when it comes to resource efficiency, environmental protection, transparency and chain optimisation.
To address this challenge, this use case seeks to:
- Develop specific IoT devices for acquisition of soil, crop and climate data in production and storage of key arable and vegetable crops;
- Showcase the benefits of the broad IoT implementation at the farm level.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
APR 2018	MAY/SEPT 2018	NOV 2018	MAY 2019
Flow prepared automatically in Apps, handwork where necessary • Planting • Soil herbicide	Feed trails • Planting • Soil herbicide • Test nitrogen module	Flow includes ordering and results platform on all producs.	Flow ready for broad use • Planting • Soil herbicide • Nitrogen application

PARTNERS

ZLTO · kwerneland group · kpn · BAYER · van den borne aardappelen · GRIMME · WAGENINGEN UNIVERSITY & RESEARCH

16

1.2 PRECISION CROP MANAGEMENT

The development of decision-making tools and services is a priority to help farmers adopt better practices and optimise input management for their fields. The elaboration of precise advice relies on accurate observations of crop status and the growing environment. Existing services use climatic data and satellite imagery that provide valuable information but have their limitations. The improvement of these services requires the highest spatial and temporal resolutions accessible, using ground- based sensors which measure nitrogen and water, the two main limiting factors impacting wheat production. In 2019, 35 systems are deployed in Ile de France and Provence regions to assess the technical and economic value of the IoT technology.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
APR 2018	OCT 2018	FEB 2019	JUN 2019
• First version of crop dashboard (growth stage) • First of decision support based on localized data	• Combination between IOT and satellite • Second version of crop dashboard	• Real time nitrogen dicision support tool • Real time irrigation dicision support tool	• final version of decision support tool

PARTNERS

ARVALIS Institut du végétal · orange · hi-phen · BOSCH

17

50
MILLION EURO MARKET POTENTIAL

14
MILLION HA POTENTIAL AREA COVERED

30
STEMS DEPLOYED IN FRANCE

LOCATION

SCAN

FOR MORE

+15%
PREDICTED INCREASE IN FARMERS' REVENUE

PROFIT
IMPROVING

+5%
HIGHER PROTEIN YIELDS

LOCATION

SCAN
FOR MORE

1.3 SOYA PROTEIN MANAGEMENT

Soybeans are a major source of high-protein food and feed for livestock. Currently, the EU is highly dependent on imports from soya producing countries. Since an increasing number of farmers start to produce soybeans as protein crop in Europe, this use case addresses the lack of technological innovation in their cultivation and processing of protein plants in order to tap the huge potential in terms of improving the quantitative and qualitative outcome per hectare. IoT technology connects data and information on soil, weather, cultivation and harvest to support producers and to enable better traceability for certified value chains, thereby improving the transparency of plant and animal food products.

USE CASE TIME PLAN

DEMO	1ST MVP	2ND MVP	4TH MVP
MAY 2018	APR 2019	DEC 2019	OCT 2020
• Webbased demo with visualization of soil and meteo sensor data • Irrigation alert	• Irrigation feature • Field management • Wireless connection of meteo, soil and NIR sensors • Documentation	• API to CNHi • Variety selection feature • Improved protein maximization approach through statistically verified correlation	• Tested and improved DSS with connection to all relevant IOT devices • Documentation for quality standard: Connection of field data and quality assurance software

PARTNERS

DONAU SOJA · SOIA ITALIA

1.4 FARM MACHINE INTEROPERABILITY

Every farmer wants his equipment to work seamlessly together, designed as one integrated system that is interoperable regardless of vendor. Interoperability of IoT devices and machinery today is in its infancy. For the farmer it is a challenge to make all devices work together in the digital space, as there are different platforms using vendor specific communication.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
DEC 2017	DEC 2018	JUN 2019	JUN 2020
Off-line interoperability • First version Proprietary ADAPT Plugin • First version Proprietary ISOXML ADAPT plugin	• Interoperability in real time communication • EFDI standard being developed by AEF	• Interopable file transfers • task data in ADAPT using EFDI	• Bi-directional interopable communication

PARTNERS

CNH INDUSTRIAL · AARHUS UNIVERSITY · kverneland group · AGROINTELLI · 365FarmNet · AGCO · WAGENINGEN UNIVERSITY & RESEARCH

+ 5%
INCREASE IN GROSS MARGIN

+ 20%
PREDICTED INCREASE YIELD

- 10%
IN FUEL CONSUMPTION

LOCATION

SCAN
FOR MORE

+ 10%
INCREASED YIELD

- 10%
FOOD WASTE

- 10%
IN FUEL CONSUMPTION

LOCATION

SCAN
FOR MORE

1.5 POTATO DATA PROCESSING EXCHANGE

Being able to track produce back to the field regarding food security and quality, does not only support buyers and processors, it also helps farmers to identify problems and improve their yields in the following years.

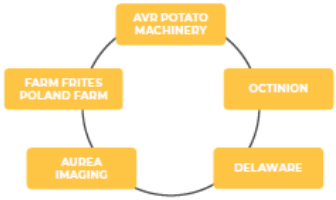
As an important step towards smart digital farming, this use case:

- Collects information and opens data flows between stakeholders in the supply chain;
- Measures potato crop growth, yield prediction, caliber yield measurements on the harvester and traceability data from field location to location in the shed;
- Mounts IoT devices on the harvesting machines to gather precise location-based information;
- Facilitates data exchange with the processing industry according to the current state of the art in standardisation.

PARTNERS

HOW IT WORKS

Different data points will be collected in real time on the different machines and will be analysed, stored and exchanged with other partners in this project. The IoT platforms of Aurea & AVR will be used as gateway.



In this use case farmers (Farm Frites Poland DWA) and the processing industry are present (Farm Frites Poland). AVR (potato machine manufacturer), Aurea Imaging (drone image analysis) and Octinion (caliber yield measurement) are developing the sensors and measurement principles supported by the IoT company Delaware.

THE IMPACT

OUR OBJECTIVES

- Cover three test fields in three countries: Sweden, Poland and Belgium;
- Exchange the collected data with Farm Frites Poland, as processing industry partner in this use case;
- Focus on the standardisation of this data exchange.

ECONOMIC IMPACT

- Increase in yield (+10%);
- Reduction in fuel consumption (-10%);
- Gross margin (+5%);
- Reduce costs in processing industry;
- Give fast digital access to important information.

OTHER IMPACT

- Food waste through alignment of supply and demand (-10%);
- Improve harvested potato yield;
- Give farmers more insight in data elements for business optimisation.

STARTED 2019 NEW

- 15%
PESTICIDE USE

- 25%
WATER CONSUMPTION

- 19%
TOTAL INPUT COSTS

LOCATION

SCAN
FOR MORE

1.6 DATA-DRIVEN POTATO PRODUCTION

European potato producers are facing a series of challenges such as crop pests, diseases and climate change. Hence, this use case adopts a holistic approach based on research and a unique blend of cutting-edge technologies while offering inexpensive yet valuable advice to farmers. An innovative, market-ready smart farming solution supports irrigation, pest management and fertilisation. Leveraging a network of telemetric IoT stations combined with satellite data and scientific models tailored to the specificities of the geographic areas, helps small-scale farmers to tackle those challenges.

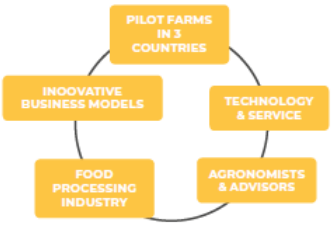
PARTNERS

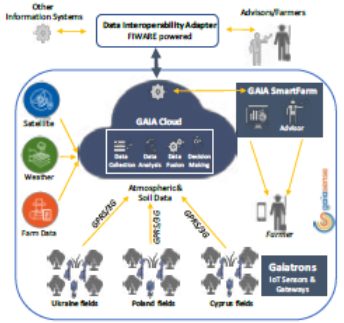
NEUROPUBLIC · WAGENINGEN UNIVERSITY & RESEARCH · Delphy · Farm Frites Poland Ows

HOW IT WORKS

Data-driven potato prediction utilises the GAIA sense smart farming solution which provides innovative services, building on state-of-the-art technologies like IoT, Big Data, Earth Observation, Context-based decision support and machine learning.

The GAIA sense solution is extended with FIWARE-powered, standards based, data exchange mechanisms in support of cross-system interoperability and openness.





THE IMPACT

OUR OBJECTIVES

- Demonstrate how the use of IoT-driven smart farming solutions can help reduce the environmental footprint of agriculture;
- Facilitating farmers' compliance with a wide range of European environmental legislation, including water and soil protection;
- Improvement of nitrogen use efficiency (+15%);
- Reduction of pesticides use (-15%);
- Reduction of water consumption (-25%).

OTHER IMPACT

- Demonstrating the potential benefits derived from the use of IoT-driven solutions;
- Achieve sustainable economic growth and foster innovation;
- Reduction of inputs costs (-18,6%);
- Farmers benefited from the provided advice >500;
- Smart farming advice available up to 1500ha;
- Building on extensive business network in >50 countries.

STARTED 2019 NEW

> 95%
ROBUSTNESS

> 95%
SUCCESSFUL DETECTION

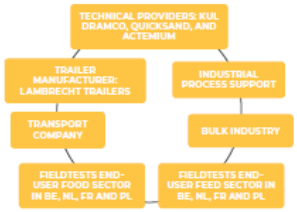
0%
CONTAMINATION RATE

LOCATION

SCAN
FOR MORE

1.7 TRACEABILITY FOR FOOD AND FEED LOGISTICS

This use case deploys an innovative approach that secures and authenticates the transport of bulk-goods in the agri-food chain, both for feed and food with zero risk of contamination. There is a need to guarantee the traceability of bulk food and feed deliveries from the moment it leaves the loading station right up to when it is delivered to a farm's silo. A fully automated silo detection system, using IoT solutions, guarantees that the right bulk contents are correctly delivered, and that the specifics of that delivery are registered. This solution thus helps to prevent feed and food wastage caused by wrong deliveries.

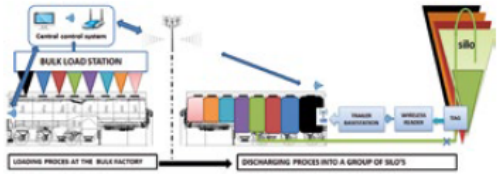


PARTNERS

Lambrecht · KU LEUVEN · QUICKSAND · DRAMCC

HOW IT WORKS

The detection system requires the establishment of communication between the loading station and the trailer, using Wi-Fi routers. The transferred data lists which kinds of animal feed are loaded in the different compartments of the trailer.
A base station device, controller and TAG wireless reader are all installed on the bulk trailer. The moment this reader confirms the connection with the right silo, the matching compartment of the trailer can be released and unloaded.
A unique TAG identification is installed on each silo for all delivery addresses.



THE IMPACT

OUR OBJECTIVES
- Real time data delivery and localisation of all trailers;
- Secured delivery procedures;
- Establish complete traceability from factory to client;
- Detailed monitoring of the discharging procedure;
- Direct alarm in case of deviations during the deliveries;
- Data concerning preventive maintenance of the end-user's transport fleet.

ON ECONOMY
- Reduce the recovery cost due to wrong deliveries of feed or food (-90%);
- Compatibility due to system interoperability (99%);
- Increase transport efficiency through data analysis;
- Reduce the destruction cost of contaminated silo content (-90%).

OTHER IMPACT
- Reduce the waste of contaminated silo contents (-90%);
- Lower the need for additional transport (less CO_2 emissions), for silo cleaning and re-delivery of new feed by (-90 %);
- Provide guidance and support for truck drivers during the delivery process;
- Increase farmers' trust in the delivery and quality of their feed;
- Improve food safety by securing the supply chain both for animal feed and human food.

STARTED 2019 NEW

2000
SMART SENSORS

- 30%
ENERGY USE

- 35%
FERTILISER INPUT

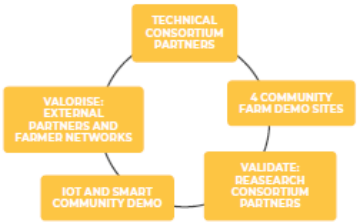
LOCATION

SCAN
FOR MORE

1.8 SOLAR-POWERED FIELD SENSORS

The lack of access to affordable and scalable on-field diagnostics for small farmers is addressed through:

- Reduced design complexity to facilitate ease of use without the need for additional training;
- Integration of all farm information and devices in one farm manager;
- Development of sustainable marketing strategies to incentivise farmers to implement modern technology;
- Demonstration of sensor-based predictive analytics for diseases;
- Application of the solution on different crops.

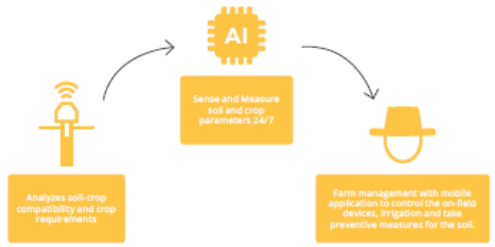


PARTNERS

Fraunhofer SOLARVIBES ÖMKi

HOW IT WORKS

Solar-powered field sensors offers plug and play IoT devices and AI-based precision farming solutions. The software analyses the soil-crop compatibility, crop requirements and nutrient deficiencies. The solution brings a soil laboratory to the fields and allows end-users to monitor and treat their crops in real time. This directly benefits farmers as it allows them to save water, minimise operating costs and reduce the risk of crop failures.



THE IMPACT

OUR OBJECTIVES

- Calibrate and certify the devices to demonstrate the product among farmer networks of 4 institutions across 3 countries;
- Conduct micro-level market research;
- Develop a smart network of 2000 sensors to help farmers adopt sustainable farm practices;
- Improve overall agricultural efficiency;
- Build self-sustainable communities.

ECONOMIC IMPACT

- Decreased farm operation and inputs costs (-30%);
- Cost saving on energy and water consumption (-35%);
- Crop productivity increase for potato, wheat, maize (+15-30%).

OTHER IMPACT

- CO2 Emissions reduction (-20%);
- Water conservation (-35% vs previous year);
- Cut down on fertilisers Ammonium Nitrate, Superphosphate, Potassium sulphate, Dolomite, and Magnesium sulphate;
- Soil health restoration;
- Reduction of pesticides usage.

STARTED 2019 NEW

+ 5%
INCREASE IN CROP YIELD

- 20%
USE OF PESTICIDES

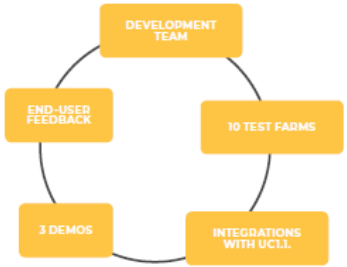
+ 15%
IN DROP QUALITY

LOCATION

SCAN
FOR MORE

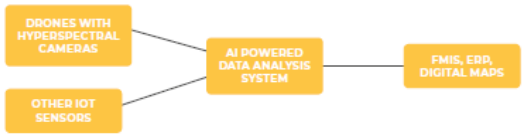
1.9 WITHIN-FIELD MANAGEMENT ZONING BALTICS

Spending on fertilisers and agrochemicals represents a considerable part of farmers' overall expenditure. By developing a remote sensing solution to determine which nutritional elements and how much of them a plant is lacking at different stages of its growth, such costs can be reduced. This use case demonstrates the added value of spectral data analysis and IoT technology for precise decision-making and optimised crop management in potato and winter wheat.



PARTNERS

HOW IT WORKS



Integration of advanced hyperspectral imaging and data analysis technologies to deliver a truly innovative solution to some of the most pressing issues for farmers. It uses Artificial Intelligence technologies (Machine Learning/Neural Networks) to perform complex analyses of crop field hyperspectral images. By analysing big amounts of spectral data the system learns to recognise various indicators or patterns, and identifies the composition of nutrients in crops. The solution integrates with FMIS for mapping of micro- and macronutrients in potato and winter wheat plants.

THE IMPACT

OUR OBJECTIVES

- Fast and cost-efficient way to detect the amounts of micro- and macro-nutritional elements needed in plants;
- Automatic recommendations for agrochemical application through non-invasive, remote sensing technology;
- Display the benefits of soil, crop and yield sensors for yield prediction, arable field management and chain optimisation;
- Demonstrate the added value of hyperspectral imaging and spectral data analysis at the farm level.

ECONOMIC IMPACT

- Yield increase (+5%);
- Field analysis time and cost (-70%);
- Early detection of plant stress and its causes;
- Soil fertility increase (+20%).

OTHER IMPACT

- Fertiliser use reduction (-30%);
- Classified data increase (x8);
- Stress reduction (+20%);
- Fertiliser cost reduction 40€ / ha
- User satisfaction (+33%).

STARTED 2019 NEW


IOF 2020
THE INTERNET OF DAIRY FARMING
The dairy trial explores the usefulness of collecting real-time sensor and GPS location data throughout the whole dairy chain–'from grass to glass', using neck collars or movement sensors for livestock. Use cases range from monitoring the outdoor grazing of cows (from 'grass') to the application of machine learning technologies and cloud-based services (to 'glass'), making it possible to ensure the quality of the dairy chain remotely.
FOR MORE INFO:
IOF2020.EU/TRIALS/DAIRY
31

104
WEEK LONG PROJECT

25
STAKEHOLDERS EVALUATED

> 1,500
FARMERS ACROSS THE EU REACHED

LOCATION

SCAN
FOR MORE

2.1 GRAZING COW MONITOR

The Grazing cow monitor digitally monitors cows' grazing time and grazing location providing an easy way to generate digital reports for farmers, legal controllers and dairy processors. This is important to verify the state and location of cattle, pasturing for ammonia emission reduction and labels of 'milk from pasture'. The system uses the STICKNTRACK low-power indoor-outdoor tracking service that combines the LPWAN SIGFOX network with BLE technology to track individual cows and measure their pasturing time. The system can also track extensively grazed livestock such as dairy cows, beef cattle, horses, sheep, and reindeer, but can also track wildlife.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
SEPT 2017	MAR 2018	JUL 2018	MAY 2019
• Cow grazing monitor of dairy cows on pasture • Application v1 available to researchers • indoor/outdoor algorithm v1	• Cow grazing monitor of dairy cows on pasture • Track some farm equipment • Webapp v2 available to farmer • indoor/outdoor algorithm v2	• .xls based reports available • dedicated cow alerts and profiles • Mobile app available to farmer	• Dedicated dashboard • Optimized collar system • Find my cow feature • Webapp v3 available to farmer

PARTNERS

ILVO sensolus inagro

2.2 HAPPY COW

Farmers do not need more data, in fact, farmers require deeper insight into their farm activity. Hence, this use case bridges the existing technology gap for farmers who seek advice on how to increase productivity, improve efficiencies, reduce health incidents and how to better care for a more fertile and happier herd. Through a combination of advanced sensor hardware technology and state of the art deep-learning algorithms, this use case takes the next step in the advancement of farming for the future.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
COMPANY FOUNDATION	EXPANSION	IoF2020 PARTNERSHIP	DATE
• MVP • Ida on first farms • Pitching and various awards	• Product development • Use case progress • Team growth	• Happy cow • Farmer use cases • Product development	• Feature development: partner dashboard & calving insights • Team growth • International expansion

PARTNERS

Connecterra WAGENINGEN UNIVERSITY & RESEARCH ZLTO veteffect

CALVING TIME
IN BETWEEN CALVING TIME IS DECREASED

FEED INTAKE
OPTIMISED

WORK-LIFE BALANCE
OF FARMERS IMPROVED

LOCATION

SCAN
FOR MORE

WELFARE
ANIMAL WELFARE IMPROVED

FEED
BETTER FEED OPTIMISATION

GROWTH
GROWTH OF YOUNG FARMER ENGAGEMENT

LOCATION

SCAN
FOR MORE

2.3 HERDSMAN

This use case implements, validates and showcases the use of real time data primarily derived from a neck mounted collar together with other relevant data (milk constituent and feed sensors) to create information of value to the dairy supply chain from 'grass to glass'. The impact is a more efficient use of resources and production of quality foods, combined with an enhanced animal health and environmental implementation. Through early intervention strategies stemming from warning systems and quality data that can be used for remote calibration and validation of sensors, this use case's focus is on the welfare of cows. Ultimately, it also optimises the reproduction rate through increasing herd fertility.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	FEATURE ENHANCEMENT 1
JUL 2018	JAN 2019	JUL 2019	JUL 2020
• Initial prediction of Mastitis only • Interrogation of disparate databases • Preliminary user presentation • Housed dairy farming • PC on-farm • Internet access preferred	• Accurate prediction of the onset of Mastitis • Interrogation of disparate databases • Alerts generated • Housed dairy farming • PC on-farm and cloud storage • Internet access	• Accurate prediction of the onset of Mastitis • Integrated database • Alerts generated • Housed dairy farming • PC on-farm and cloud storage • Internet access	• Accurate prediction of Ketosis • Addition of location • Housed/free-grazing farm systems • PC on-farm and cloud storage • Internet access

PARTNERS University of Strathclyde Glasgow

2.4 REMOTE MILK QUALITY

This use case provides a quality assurance service of locally obtained milk and remote dairy composition analyses by using sensor appliances. Analytical instruments are monitored remotely and validated through the use of reference samples, calibration sets and software applications. This use case thus ensures:

- High safety, quality, sustainability and profitability in the dairy chain;
- Reliable results from instrumental analyses (IR) for dairy processors and local testing laboratories;
- Calibration and harmonisation expertise within an organization.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
Q3 2019	JAN 2020	Q3 2020	2021
• Plan for data communication platform to exchange data with testing device on milk collection truck • Identification of aplicable IOT, communication protocols and datamodels	• First beta version of platform and datamodel available	• First MVP available of integrated communication platform with IoT elements	• Total integration of communication platform with testing devices and info platform for dairy processors

PARTNERS Qlip

10-15
REMOTELY MONITORED INSTRUMENTS

> 200
CALIBRATION SETS FOR INSTRUMENTS

> 1,200
REFERENCE SAMPLES

LOCATION

SCAN
FOR MORE

87%
DETECTION ACCURACY

- 15%
REQUIRED TREATMENT TIME

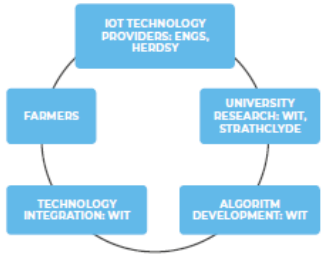
- 7%
MILK YIELD LOSS

LOCATION

SCAN
FOR MORE

2.5 EARLY LAMENESS DETECTION THROUGH MACHINE LEARNING

Lameness is a substantial issue in the dairy industry – it entails pain and discomfort for the cow, and results in decreasing fertility and milk yield for the farmer. Current solutions are cost-intensive and involve complex equipment. Lameness can be addressed without having to spend a high amount of resources. By employing leg mounted sensors and machine learning algorithms lame cattle can be identified at an early stage, and the data acquired can be sent directly to the farmer so that treatment of lameness can start immediately.

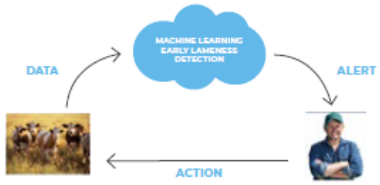


PARTNERS

ENGS
Herdsy
University of Strathclyde Glasgow

HOW IT WORKS

The use case will build upon an existing trial for early lameness detection deployed on a farm in South East Ireland and extend as well as integrate this deployment into other IoF2020 use cases. The current deployment on a farm with 150 cattle utilises leg mounted sensors and uses Machine Learning for early lameness detection. The team will attach sensors from two separate vendors on cattle in dairy and beef herds in three further countries. The approach will thus be validated in different environments and scenarios.



THE IMPACT

OUR OBJECTIVES

- Integrate existing Lame Detection as a Service (LDaaS) into IoF2020 architecture;
- Extend the use case to integrate with existing third-party services;
- Expand the use case to new regions;
- Commercially validate the solution with multiple vendors.

ON ECONOMY

- Reduced animal mortality (-5%);
- Decreased milk yield loss due to lameness (-7%);
- Increased beef production (+10%).

OTHER IMPACT

- Lameness detection rate (+7%);
- Detection accuracy (87%);
- Improved reproduction efficiency index (+5%);
- Reduced usage of antibiotics (-5%).

STARTED 2019 NEW

4%
PRODUCTIVITY INCREASE

1500
COWS TRIALLED

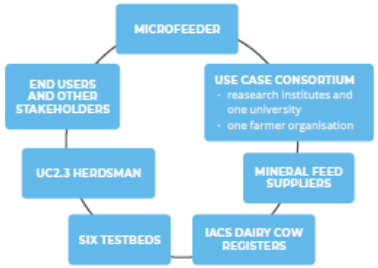
- 10%
HEALTH-RELATED LOSSES

LOCATION

SCAN
FOR MORE

2.6 PRECISION MINERAL SUPPLEMENTATION

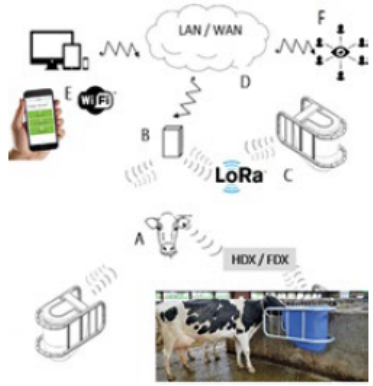
Most economic losses in dairy cows happen during the critical transition period from 2-3 weeks before calving and 100 days after, due to health-related issues. To counter this, there is a need for correct and adequate mineral supplementation during the calving period. By deploying an advanced mineral feeder, cloud-based services, electronic ear tags and data-integration, this problem can be addressed through precision supplementation of dairy cows.



PARTNERS

HOW IT WORKS

Precision Mineral Supplementation is a mineral feeder for dairy cows, to be mounted in the stable or in an outside motion area. The feeder is equipped with electronic components for the identification of the cows via their electronic ear tags which can be delivered with the feeders in case such ear tags are not already used in the herd. The herd manager decides via the user interface which cows shall have dosed mineral supplements in the feeders. Moreover, the user interface also allows for the monitoring of individual cow's eating behaviour, making it easier to check on cows in the calving phase and response appropriately. It is expected to prove a connection between those parameters and the cow's performance as well as health.



THE IMPACT

OUR OBJECTIVES

The use case demonstrates precision mineral supplementation over twelve months in six dairy farms in Latvia, Germany and Lithuania, involving a total of 1.500 cows. Furthermore, it aims to showcase trial interoperability, replicability and the reusability of IoF2020 results or innovations, IoT layers and data flows via the cloud.

ON ECONOMY

Precision Mineral Supplementation is an easy, safe and efficient method:

- Costs for the feeder €4;
- Mineral costs per cow per year €27;
- Increase in milk per cow per day 1.2 kg;
- Reduction of health-related losses (-10%);
- Total savings per cow per year €146.

OTHER IMPACT

- Lameness detection rate (+7%);
- Detection accuracy (87%);
- Improved reproduction efficiency index (+5%);
- Reduced usage of antibiotics (-5%).

STARTED 2019 NEW

> 10%
INSEMINATION RATE INCREASE

- 15%
VISUAL MONITORING TIME

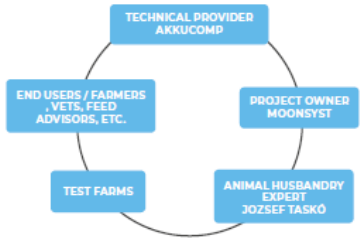
- 10%
MEDICATION/ TREATMENT COSTS

LOCATION

SCAN
FOR MORE

2.7 MULTI-SENSOR COW MONITORING

This use case aims to further develop and promulgate a precise and reliable cattle monitoring ecosystem utilising the needs of multi-country dairy and beef farmers, stemming from previous user feedback analysis. By harmonising their different breeding methods and setting novel as well as customised software features accordingly, a mobile device solution for daily operations on all farm levels is developed. The system is made up of a small rumen bolus and collar, monitoring various physiological data, and a cloud-based server application to provide accurate information for daily operations. It helps farmers to guard, track and monitor all assets with the help of reliable, affordable, low-power, wide-range network technologies and smart sensors.



PARTNERS

moonsyst · GeoZen · YOUR CHAROLAIS

STARTED 2019 **NEW**

HOW IT WORKS

The development of the Moonsyst smart rumen bolus for cattle enables the following key functions and features:

- Accurate heat detection and calving alert
- Indoor and outdoor positioning through the latest technologies (NB-IoT or LoRa Geolocation)
- Monitoring of drinking behaviour
- Harsh environment operation (intraruminal)
- Easy deployment – no additional system devices needed (plug'n'play)
- Theft and roam protection of animals with localisation service
- Cloud-based platform
- Easy, user-friendly data visualization and interpretation
- Machine learning algorithms and Big Data solutions
- Cross platform/system data utilisation

MOONSYST SMART RUMEN BOLUS & COLLAR → MOONSYST CLOUD-BASED DATABASE → MACHINE LEARNING AND BIG DATA PROCESSING → MOONSYST APP → TO DO LISTS, ALERTS AND NOTIFICATIONS

THE IMPACT

OUR OBJECTIVES

- Improve livestock production processes, yield and quality;
- Increase reproduction rates;
- Decrease the occurrence of animal health problems (heat, stress, rumen acidosis, milk fever, etc.);
- Improve animal welfare through reduced number of veterinary interventions and antibiotics or hormone treatments.

ON ECONOMY

- Insemination rate increase >10%;
- Working time decrease >10%;
- Medication/treatment costs -10%;
- Visual monitoring time -15%.

ON ENVIRONMENT

- Enable better human resource management;
- Improve farmers' work-life balance;
- Optimise breeding selections and methods;
- Improved understanding of cattle behavior


IOF 2020
THE INTERNET OF FRUITS
The fruit trial aims to improve the use of IoT-technologies in the fruit supply chain, from growing to harvesting and processing. This trial will gather data on pre- and post-harvest losses to increase the yield and quality of fruits. In addition, IoT-technologies is used to ensure better traceability of fruit products in relation to the protected designation of origin. The use cases include, among others, fresh table grapes, wine and olives, while addressing the challenges of automation in the fresh logistics.
FOR MORE INFO:
IOF2020.EU/TRIALS/FRUITS
43

WATER
IMPROVED WATER USE EFFICIENCY

+ 15%
INCREASED YIELD

QUALITY
HIGHER QUALITY OF FRUIT

LOCATION

SCAN
FOR MORE

3.1 FRESH TABLE GRAPES CHAIN

This use case integrates IoT technologies into the – conventional as well as organic - table grapes value chain and deploys them on farms of all scales. The farmers can therefore monitor their crop growth easily, allowing them to take better field operation decisions (e.g. spraying, irrigation, harvest). At field level, the implementation of IoT sensors produces not only economic benefits, it also yields positive environmental impacts due to improved resource management in terms of water, fuel and pesticide inputs. In the transportation process, technology helps to prolong shelf life, thus reducing spoilage.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
JUL 2017	OCT 2018	JUN 2019	MAR 2020
• First divice installation • First DSS application • First blow trial	• Adaptive DSS (Blue Leaf) • Kc estimation • Blow application improvement	• Improvement of DSS • Kc estimation and calibration • Large scale development of Blow	• DSS data adapted to the whole farm • Kc automatic determination • Blow application on Apofruit products (market diffusion)

PARTNERS

CIHEAM, APOFRUIT, SysMan, Tegasus, SYNELIXIS

3.2 BIG WINE OPTIMIZATION

Precision viticulture and remote vineyard monitoring are two promising new cultivation methods, allowing to monitor accurate weather data in real time, vine conditions (grape detection, phenological stage determination, and disease status characterisation) and key winery conditions with IoT technology. This use case therefore optimises the application of plant protection products through precise treatment identification and positioning, reducing the environmental impact and resource consumption while efficiently protecting grapes. Furthermore, selective harvesting and data analysis help facilitate decision-making to improve production, accelerate and automate the inspection time while delivering accurate results. In addition, winery monitoring avoids temperature and humidity issues causing wine evaporation especially during summer time.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
DEC 2017	DEC 2018	APR 2019	DEC 2019
• Specified applications • Database of IR spectra • Jodyn specifications	• End of application software development • FTIR spectra validation in real conditions • Jodyn prototype tested in real shipments	• Alpha Release and validation in one domain • FTIR Software developed • Jodn software developed • NET test ready	• Beta release with larger validation in the five domains • FTIR commercial product available • Jodyn/NET product on the market

PARTNERS

VINIDEA, cea, ISVEA

3.4L
TARGET PORTABLE WATER CONSUMPTION PER LITER PRODUCED

- 20%
REDUCTION IN PESTICIDES & FERTILISER COST

€ 400
PRODUCTIVITY GAINS / HA

LOCATION

SCAN
FOR MORE

CROP YIELD
INCREASED CROP PRODUCTION

COST
REDUCE CROP COST

QUALITY
INCREASED PRODUCTION QUALITY

LOCATION

SCAN
FOR MORE

3.3 AUTOMATED OLIVE CHAIN

The EU is the largest producer and consumer of olive oil in the world. However, increasing competition from other countries and the rapid decline in olive plantations caused by plant pathogens puts the olive sector under pressure. This use case thus overhauls the olive chain by realising automated field control, product segmentation, processing and commercialisation of olives and olive oil. IoT technologies allow to:

- Automatically take data from crops and postharvest machines, in order to provide inputs for DSS (Decision Support Systems) models;
- Optimise efficiency of resource consumption through monitoring and controlling of agricultural machinery as well as irrigation systems based on agronomic models;
- Measure the fat content and monitor quality during milling process to improve food safety.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
APR 2018	MAR 2019	DEC 2019	APR 2020
• Fields and crops management with IoT devices connected • IoT devices in olive mills connected	• ERP solution with IoT devices connected along the whole value chain	• Agronomic models integrated in the IT platform. • Advisory Board in fertirrigation running	• Final version

PARTNERS

hispatec · DCOOP · tecnova · SYNELIXIS · NAMEGS

3.4 INTELLIGENT FRUIT LOGISTICS

Food companies are challenged by public and private demands from different points of the supply network. However, a lot of data is collected at different stages and not well-communicated along the chain. A basic traceability is implemented, to ensure better communication. New mechanisms are required for production and transport of information to improve efficiency of the supply network.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
OCT 2017	JUN 2018	DEC 2019	2020
• Feature 1: Positioning • Feature 2: Network selection • Data intefacing • Data presentation	• Chip integrated in Tray, 100 Tracker • Rule based Event Management • Location Management Application	• Tracker: Going large scale, 1.000 Tracker • Feature 3: Temperature sensor • Temerature monitoring application	• Collecting data interpreatation

PARTNERS

AIB · EUROPOOLSYSTEM · GS1 · MELCO ALEXANDER · NXP

> 10.000
MEASURED RENTAL TRIPS

> 1.000
TRANSPONDERS

LOCATION

SCAN
FOR MORE

EFFICIENT
RESOURCE USE

- 25%
PLANT PROTECTION PRODUCTS

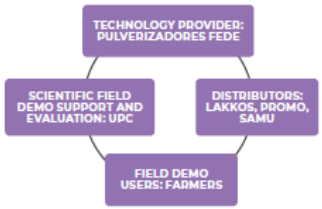
MITIGATED
ENVIRONMENTAL IMPACT

LOCATION

SCAN
FOR MORE

3.5 SMART ORCHARD SPRAY APPLICATION

Agriculture focused on speciality crops faces the challenge of improving the profitability whilst also reducing negative environmental impacts. This use case demonstrates that plant protection products can be significantly reduced through IoT enabled airblast atomising sprayers, adapting automatically to specific field zones as well as individual plant conditions. The integration of the Smart Orchard Spray Application cloud into farmers' existing processes and software solutions further increases operating efficiency.

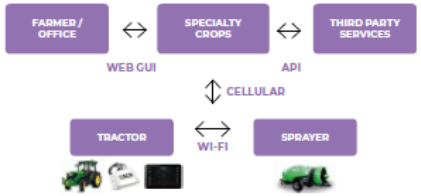


PARTNERS

HOW IT WORKS

The Smart Orchard Spray Application enables the development of a new integrated market of specialty crops management systems:

- Connection of physical IoT devices to the SCP;
- Configuration of work orders from the SCP;
- Farmer's work based on the use of IoT enabled devices to carry out precise actions;
- Wireless connection of the tractor and the sprayer to the SCP;
- Tracking of all data gathered by the IoT devices;
- Total control of costs and work issues registered from the IoT devices connected to the SCP.



THE IMPACT

OUR OBJECTIVES

- Perform highly efficient, effective and environmentally friendly specialty crops protection in cherry, apple and almond production;
- Increase sustainability and profitability of food production;
- Monitor operations and get instant information on treatment quality;
- Provide traceability to improve the food security standards;
- Monitor costs and bridge the gap between agronomics and company accounting to increase business revenue;
- Assist in documentation tasks related to adherence to farm certification schemes like GLOBALG.A.P.

ON ECONOMY

- Fuel savings of 517€ per hectare/year;
- Savings in pesticides costs (25%);
- Efficient field tasks organisation and supervision;
- Improve revenue through better decision-making.

OTHER IMPACT

- Drift reduction (-48%);
- Reduce fuel consumption (-55%);
- Plant protection product reduction (-25%);
- Improve food-security due to pesticide treatment traceability;
- Establish cellular coverage and IoT functionalities in European rural areas.

STARTED 2019 **NEW**

< 80%
PRODUCTS DELIVERED IN GOOD CONDITION

- 60%
PRODUCTS RETURNED DUE TO DAMAGE

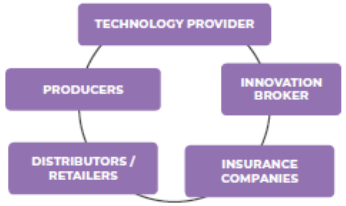
+ 50%
RECOVERED VALUE

LOCATION

SCAN
FOR MORE

3.6 BEVERAGE INTEGRITY TRACKING

The journey from producer to consumer is a process that can negatively affect the quality of the wine. In response to this risk, this use case has created an integrated system that monitors the whole wine and beverage distribution channel to prevent damages caused by integrity-related issues and stress factors such as humidity or shocks during shipping and storage. As a result, a direct relationship between producers and final retailers is established while a large database is created to plan safe shipments thereby allowing new and customised IoT-based insurance policies.



PARTNERS

HOW IT WORKS

DATA LOGGERS monitor and record temperature, humidity, box breaching and shocks. Data are stored on an internal memory device, and wirelessly transmitted to the platform via the mobile App.

The **CLOUD-BASED PLATFORM** stores data coming from the devices, conducts elaborate analyses, aggregates trends and delivers information for decision making on customisable interfaces.

The **MOBILE APP** is the command interface of the devices: It turns them on and off, while assigning them to a specific transportation. At any time, with the data logger near, it can read every data and spot alerts.

THE IMPACT

OUR OBJECTIVES
- Reduce product damages during distribution.
- Deliver products to consumers in the best possible condition.
- Establish a direct connection between producers and final retailers.
- Build a valuable database on worldwide beverage logistics.
- Test the IoT system in collaboration with a network of about 100 stakeholders.

ON ECONOMY
- Tracking beverage conditions during distribution allows retailers and end-users to gain knowledge on the journey which in turn facilitates:
- Reduction of shipping costs for beverages.
- Decrease of client complaints and commercial disputes.
- Insurance coverage possibilities.

OTHER IMPACT
- Creation of a direct relationship between producer and final retailer.
- Ensure the quality of wine during transport.
- Make the wine distribution process more transparent.
- Increase consumer satisfaction.
- Reduction of GHG emission related to beverage transport.


THE INTERNET OF VEGETABLES
The cultivation of vegetables can be done in different climate conditions, such as (fully) controlled indoor greenhouses with an artificial lighting system, semi-controlled greenhouses or non-regulated open-air cultivation. IoT-technologies can help to increase the efficiency of these production processes, e.g. water and nutrients consumption or the supply of artificial light. The vegetables trial aims to improve the quality and the productivity of lettuce and tomatoes in the controlled cultivation and weeding of the vegetables in organic production.
FOR MORE INFO:
IOF2020.EU/TRIALS/VEGETABLES
53

SHELF LIFE

EXCELLENT SHELF LIFE AT AN ACCEPTABLE COST

LIGHTING

PROVIDE AN OPTIMAL SOLUTION

SENSORS

TO PROVIDE PROCESS FEEDBACK

LOCATION

SCAN

FOR MORE

4.1 CITY FARMING LEAFY VEGETABLES

Consumers are increasingly critical about the quality, sustainability and traceability of their food. This is especially true for leafy vegetables used in convenience products such as cut lettuce and ready-to-eat salads where tolerance for dirt, insects or other unwanted ingredients is almost zero. This use case thus employs a commercial city farm to demonstrate the smooth integration of IoT technologies into the production of high-quality vegetables in a predictable and reliable manner, leveraging advantages in the production approach such as independence from seasonal influences, absence of plant diseases as well as pesticides.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
JAN 2018	JUL 2018	JAN 2019	JUL 2019
• 1st implementation of IoT data platform • Architecture of IoT sensing platform • Architecture of lighting control system • 1st implementation of growth data dashboard	• 1st implementation of sensor platform • 1st implementation lighting control system • Growh data dashboard augmented with setpoint and sensor data dashboard	• IoT sensor platform deployed in test facility • Improved version of lighting control system • Growth data dashboard augmented with camera images dashboard • Improved growth recipies	• Lighting control system functionality augmented with light recipe editor • Lighting control system ready for integration with climate control computers via agreed protocol

PARTNERS

PHILIPS Lighting · SteadyFoodGroup

4.2 CHAIN-INTEGRATED GREENHOUSE PRODUCTION

The chain-integrated greenhouse production use case aims to develop a web-based Decision Support System (DSS) for the greenhouse tomato supply chain based on IoT technology. The use case helps end-users with the challenges created by climate change and arable land scarcity, and the needs for productivity growth, increasing, fresh water and resource use efficiency. Standardised information alongside the integration of diverse data sources in different time scales increases interoperability throughout the production chain, and allows for easier quality and safety management, improves product and process traceability and reduces the environmental impact.

USE CASE TIME PLAN

2ND MVP	3RD MVP	4TH MVP
FEB 2019	DEC 2019	DEC 2020
• Test in commercial greenhouses • Include data of cooperatives level • Include data of transport • 1st version of meteorological station adapted for greenhouses • 1st version of solution for transport industries	• final version of the FIWARE-based system • 1st test of the meteorological station • 1st test of the transport solution	• Final test of the meteorological station • Final test of the transport solution • Commercial version of the FIWARE-based system

PARTNERS

COEXPHAL · UNIVERSIDAD DE ALMERÍA · CÁTEDRA COEXPHAL · VALORITALIA

10-50

REMOTELY MONITORED INSTRUMENTS

> 200

CALIBRATION SETS FOR INSTRUMENT

> 12,000

REFERENCE SAMPLES

LOCATION

SCAN

FOR MORE

+ 5%
PRODUCTION CROP/M2

+ 10%
€/CROP

- 10%
LABOUR REDUCTION

LOCATION

SCAN
FOR MORE

4.3 ADDED VALUE WEEDING DATA

Weeding is one of the most important and frequent activities in organic vegetable farming. This use case automates the task through an intra-row weeder, detecting the crop and weeds based on machine vision. To elevate (organic) crop production to a higher level, farmers need site-specific information on their crops. Hence, data about the crop and weather are gathered to support the farmer. As the farmers need to perform multiple tasks simultaneously, the decision support regarding their crop management must be user-friendly. By using IoT devices this use case seamlessly combines multiple data sources to support the grower. Furthermore, improved crop and field monitoring results in better field management, reducing the labor required while increasing the yield.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
APR 2019	APR 2019	JUN 2019	SEP/OCT 2019
• Machine parameters and settings logged during operation	• Auto-uploaded data to FMIS (akkerweb)	• Improved algorithms for crop density, crop size and weed pressure	• Yield prediction using lettuce growth model, weather data and IC-weeder

PARTNERS

Steketee · Wageningen University & Research · AGROM · Neways Technologies

4.4 ENHANCED QUALITY CERTIFICATION SYSTEM

The EU quality certification system and protected designation of origin (PDO) is a powerful tool to protect the quality of EU products, especially in foreign markets. The current standardised approach, however, is subject to fraud and the bureaucratic burden hinders its implementation. This use case solves these issues with the help of IoT technology to improve quality certification systems by reducing redundancies (overlap among certification schemes) time and effort of inspections while at the same time increasing their reliability. Sensor data and online registration can further provide solutions for traceability from field to shelf, proof of origin as well as production methods.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP
FEB 2018	JUN 2018	NOV 2018
• sensor installation • Virtual Reality demo	• Augmented Reality, Virtual Reality and E-learning software released	• Vinifcation testing • Improved Virtual reality

PARTNERS

Valoritalia · COEXPHAL · Universidad de Almería · uqido

QUALITY
TRANSPARANCY IN FOOD QUALITY

- 10%
REDUCED CERTIFICATION TIME

- 50%
REDUCED USE OF PAPER

LOCATION

SCAN
FOR MORE

- 10%
IRRIGATION

+ 20%
EFFICIENCY

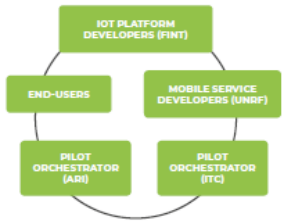
- 10%
PLANT PROTECTION PRODUCTS

LOCATION

SCAN
FOR MORE

4.5 DIGITAL ECOSYSTEM UTILISATION

Currently, only a fraction of the plant protection products applied successfully tackles pests or insects, while the rest unnecessarily pollutes the environment. By utilising data stemming from IoT devices in the field, cloud computing and analytics technologies, this use case timely notifies the farmer to proceed with such activities while addressing challenges related to irrigation. Synergised parameters result in a service which increases the total farm productivity, contributing to food security. By incorporating innovative traceability technology, this use case integrates information from the entire food value chain to a marketplace, offering elaborate value propositions to users. Hence, it enables stakeholders in the agri-food sector to participate in an innovative digital ecosystem.



PARTNERS

STARTED 2019 NEW

HOW IT WORKS

This use case delivers tailored information to farmers based on the data acquired by IoT devices (low-cost weather stations) regarding high farm input-costs (plant protection, irrigation water). As a result, IoT devices, cloud computing and analytics technologies translate data into services and increase the Total Farm Productivity (TFP) factor which consequently assures food security.

In addition, the use case involves track and trace services and queries incorporating the achievements within IoF2020, being the first solution that delivers on- and post-farm traceability features. Lastly, an innovative marketplace where on- and post-farm information can be published and shared with external business entities to validate food content.

THE IMPACT

OUR OBJECTIVES

- Engage agri-food partners form Cyprus, Slovenia and Greece;
- Deploy more than 25 IoT devices in regions where IoF2020 has not been present so far;
- Provide IoT-enabled irrigation and plant protection services to farmers;
- Expand and evaluate the objectives and results to other use cases in the fruits and vegetables sectors.

ON ENVIRONMENT

- Efficiency improvement – farm visits per farm (-20%);
- Reduction of pesticide use – ratio of initial kg product / kg input (-5-10%);
- Water use reduction – ratio of initial kg product / kg (m3) input (-5-10%);
- Cost reduction / kg input (10%);
- Increased total factor productivity of farms.

SOCIAL IMPACT

- Connected IoT devices (<60);
- Increased IoT uptake among end-users;
- Information provision to consumers on growth and farm supply chain conditions;
- Boosted farm sustainability;
- Strengthened data privacy and security;
- Improved consumer trust.


IOF 2020
THE INTERNET OF MEAT
The meat trial aims to improve the meat production chain's value through the application of IoT-technologies. The use cases include the management and optimization of pork production by on-farm sensors and slaughterhouse data. In addition, it will attest the role of IoT-technologies in poultry chain management, and communicate about meat transparency and traceability.
FOR MORE INFO:
IOF2020.EU/TRIALS/MEAT
61

> 2.000
PIG RECORDS

TAINT
REDUCE BOAR TAINT

5
FARMS

LOCATION

SCAN
FOR MORE

5.1 PIG FARM MANAGEMENT

The pork sector faces several challenges: high costs, a difficult market and increasing pressure concerning animal welfare and greenhouse gas emissions. Modern technology helps maximize work efficiency on farms, but only by combining the information gathered by individual controlling devices can precision livestock farming really be achieved. This use case's application thus combines on-farm data and slaughterhouse results in one easy tool, providing the current-day pig farmer with crucial information to effectively steer the farm management in real-time. In these regards, this use case contributes to a future where PLF and individual pig monitoring might just be standard practice to guarantee the production efficiency and health of all pigs.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
MAY 2018	MAR 2019	NOV 2019	MAY 2020
• IoT infrastructure • Individual level hardware and early warning system	• Release BI dashboard group level • Individual level dashboard	• Incl. chain level data • Incl. early warning group level data	• Full Pig Meat BI Dashboard, feat. group level, individual level & chain level data

PARTNERS

ZLTO · ILVO · Vion · Porphyrio · SMB

5.2 POULTRY CHAIN MANAGEMENT

Three critical points define the efficiency and product quality of the poultry production chain. This use case thus improves the performance through IoT driven technologies at each different stage, while facilitating linkages between all of them.

- Farm level: Monitor and optimise growing process to achieve a uniform and precisely measured slaughter weight;
- Logistics: Monitor and optimise broiler handling and transport to reduce impacts on the poultry and increase comfort levels;
- Processing plant: Optimise slaughtering and improve profitability and product-market fit, via traceability over all stages.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP	4TH MVP
MAR 2019	JUN 2019	FEB 2020	DEC 2020
• Multimagnitude wireless sensor nodes • Environmental condition Monitoring (farm) • Poultry growth & health manager (farm)	• Manual load monitoring (transport) • Environmental condition Monitoring (transport) • Dynamic scales for weighting (farm) • Poultry chain manager	• Improved models	• Certification of devices • Final models

PARTNERS

exafan · GRUPO SADA · IK4 TEKNIKER · Porphyrio

130
MULTIMAGNITUDE SENSORS

4
FARMS

20 %
INCREASE OF CLASS A BIRDS

LOCATION

SCAN
FOR MORE

SHARE DATA
OF PORK QUALITY WITH SUPPLY CHAIN

QUALITY
HIGHER QUALITY OF PRODUCT

REDUCE WASTE
REDUCE OVERALL WASTE

LOCATION

SCAN
FOR MORE

5.3 MEAT TRANSPARENCY AND TRACEABILITY

The pork market increasingly asks for high quality products, considering important aspects such as animal welfare, sustainability and meat free of antibiotics. Through pro-active auditing, quality criteria are checked regularly in order to give constructive feedback to the farmer. This use case supports the pro-active auditing process by offering a dashboard with crucial sustainability KPIs to auditors and advisors. The solution is based on well-established GS1 standards to ensure scalability, including the EPCIS solution for transparency. This leads to less auditing time and costs, shorter control intervals and faster actions in case quality issues occur.

USE CASE TIME PLAN

1ST MVP	2ND MVP	3RD MVP
FEB 2019	FEB 2020	DEC 2020
• Transparency between farms and slaughterhouses • Data entry interface for farmers • Supports importing Excel and CSV data • Data query interface for involved partners	• Transparency among all partners • Data entry interface for all partners • Integration with FMISs • Comply with FIWARE NGSI (integrate with FIWARE-Orion) • Transparency dashboard	• Final MITS release • Final SLA established • Use of MITS beyond the Iof2020 Project partners

PARTNERS

WAGENINGEN UNIVERSITY & RESEARCH · GS1 · ECCC · De Heus · WESTPORT

64

6
COUNTRIES

> 1000
CONNECTED ANIMALS

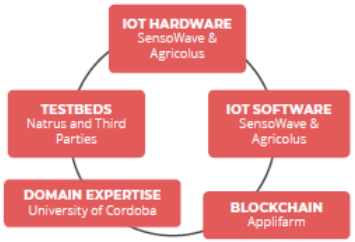
- 15%
TOTAL WORK EFFORT

LOCATION

SCAN
FOR MORE

5.4 DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN

The beef supply chain is a complex system, involving crop farms, livestock farms, feedlots, transporters, slaughterhouses, retailers and consumers. Current traceability systems collect few data from every segment of the supply chain, mainly to assure food safety to consumers. Shared value systems based on integrated data allow every segment of the supply chain to improve production efficiency and product quality.

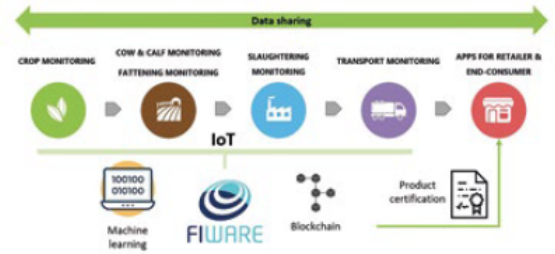


PARTNERS

STARTED 2019 NEW

HOW IT WORKS

- Data acquisition throughout the entire supply chain is carried out through:
  - IoT stations are used for environmental and soil conditions in crop fields;
  - Smart collars and IoT ear tags for beef cows' or calves' location, activity and temperature;
  - IoT scales to gather information about fattening calves' growth rate;
  - IoT multi-sensor stations for transport and slaughtering conditions - temperature, dust, noise, etc;
- A FIWARE-based platform is used for the integration of the collected supply chain data;
- Machine learning algorithms strengthen a decision support system focused on production efficiency and product quality;
- A Hyperledger Fabric blockchain service ensures data traceability and immutability.



THE IMPACT

OUR OBJECTIVES

- Bridge the gaps in data sharing across every segment of the supply chain through IoT;
- Foster a technological framework that facilitates data sharing to improve decision-making and consumer trust;
- Improve the reliability of data through blockchain technology.

ON ECONOMY

- Fertiliser and water consumption (-10%);
- Reproduction rate (>90%);
- Animal losses (<5%);
- Total work effort (-15 %);
- Selling price through certification (+10%).

OTHER IMPACT

- Resource efficiency improvement: fertiliser, water and feed;
- Average fattening days (-15%);
- Greenhouse gas reduction through optimisation;
- Certification of grass-fed beef;
- Animal welfare improvement.

325
SILO SENSORS

- 15%
CO2 EMISSIONS

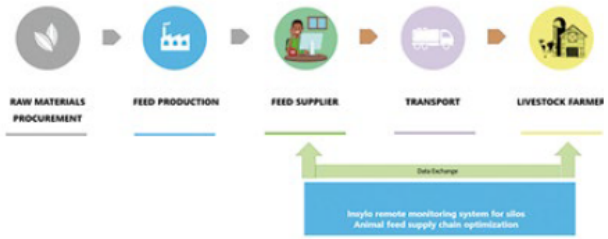
- 10%
COSTS

LOCATION

SCAN
FOR MORE

5.5 FEED SUPPLY CHAIN MANAGEMENT

The animal feed industry, mainly represented by feed suppliers and livestock farmers, currently faces great inefficiencies due to outdated supply chain management. Stakeholders struggle with the timing and quantity evaluation when restocking their feed silos, significantly affecting cost and labour efficiency. This use case thus develops an integral feedstock management system to optimise the entire supply chain.



PARTNERS

INSYLO · BATALLÉ · UOC

STARTED 2019 **NEW**

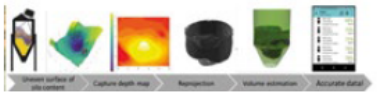
HOW IT WORKS

Feed Supply Chain Management makes use of an IoT enabled, smart volumetric sensor, to obtain an accurate measure of the silos' stock levels.

The INSYLO technology, consists of a 3D sensor with embedded algorithms that scans the inner silo and calculates the content's volume.

The device is fully independent of the resources available on the farm as it is powered by solar energy and has embedded cloud connectivity systems. The cloud platform collects data from the silos along with relevant production information from livestock farmers and feed suppliers. In combination with Big Data and AI, it enables the optimisation of refilling orders, production batches, shipping routes and raw materials purchases.

The app platform also provides web services to facilitate the transactions between feed suppliers and livestock farmers, allowing stakeholders easier data access. Ultimately, feed suppliers can automatically generate the refilling orders based on cost criteria and send them to the farmers who can accept or reject them with a simple click.



THE IMPACT

OUR OBJECTIVES

- Deploy and test three IoT-based Feed Supply Chain testbeds (2 small-scale + 1 large-scale);
- Demonstrate proposed solution's technological and economic viability;
- Validate exploitation and scalability of the project results.

ON ECONOMY

- By translating silo stock level information into management information, farm efficiency gains are made as farmers and feed suppliers can optimise the supply chain.
- Reduction of feed supplier's logistic costs (-10%);
- Annual savings per silo 250-500€;
- ROI per silo per year 150€;
- Farmer worktime efficiency savings -22 days per year.

OTHER IMPACT

- Reduction of CO2 Emissions (-10 to -15%);
- Logistics optimisation;
- Supplier inventory levels and production lots reduction;
- Decreased feed waste.

IMPROVED
ANIMAL WELFARE

- 20%
SICK PIGLETS

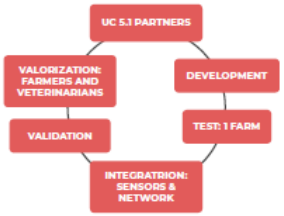
- 10%
PIG MORTALITY

LOCATION

SCAN
FOR MORE

5.6 INTEROPERABLE PIG HEALTH TRACKING

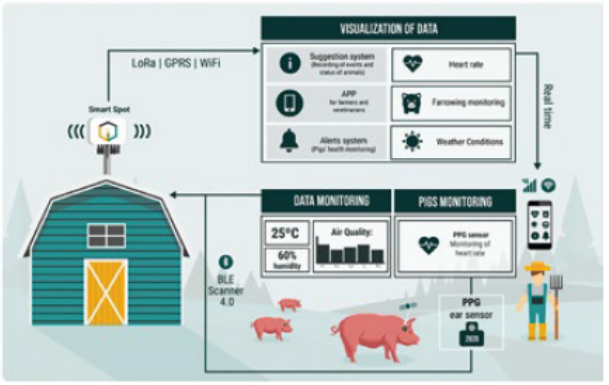
Pig production's substantial advancements over the last couple of decades has resulted in considerable improvements in productivity, allowing farms to be operated at a larger scale without losing efficiency. Changes in physiological parameters of pigs are good indicators for their state of health. This use case thus relies on intensive scrutiny of each animal through IoT sensors, enabling the farmer to swiftly intervene in case health risks or diseases occur. The advantage of sensors, measuring physiological parameters, is that the animals are monitored constantly, and the collected data can further be utilized to assess production management and support decision-making.



PARTNERS

hop · csem · digitanimal · SLU

HOW IT WORKS



THE IMPACT

OUR OBJECTIVES

- Reduce risks of virus herd contamination;
- Enhance and optimise meat production;
- Cost-effective monitoring through non-intrusive sensors;
- Provide a data management platform for farmers & veterinarians;
- Management of piglet mortality and reduction of economic risks;
- Periodical health monitoring of the herd & follow-up of diseases.

ON ECONOMY

- Optimise pig production;
- Scalability of IoT sensor deployment in mass production;
- Reduce sick piglets (-15%);
- Replicate the deployment at international level;
- Improve traceability of livestock;
- Reduce antibiotics costs.

OTHER IMPACT

- Improved animal welfare (+50%);
- Reduced piglet mortality (-50%);
- Avoid unnecessary use of preventive antibiotics;
- Earlier detection of health issues (+15%);
- Reduced piglet diseases (-60%);

STARTED 2019 **NEW**

CONTACT

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For the latest project updates. And use **#IoF2020** to share your thoughts.

IoF2020

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WWW.IOF2020.EU

6. ANNEX 2 – DEMO LEAFLETS AND AGENDA

DISCOVER INNOVATIONS BEHIND FRESH ARTISAN CHEESE

About this day and use case. Tell people what to expect during your demonstration. About the challenges, goals, and innovations within the use case. Also, something about the IOF 2020 project that you are part of. Do not forget to add a line like the one below when you have to apply via e-mail. The contact info below is a placeholder. Please use your own

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LOCATION

LOCATION IN ALL CAPS
ADDRESS LINE 1
ADDRESS LINE 2
REGION / CITY
WEBSITE
E-MAIL / PHONE

DATE & TIME

30 NOVEMBER
11:00 - 17:00

10 DECEMBER
11:00 - 17:00

AGENDA

What to see and do goes here. Enjoy fresh food from the smart-farm. And experience the use case activities hands-on.

11:00 - Discussion with stakeholders about the challenges within your use case.
12:00 - Workshop smart farming
Lorem ipsum amet dolor.
14:30 - Lecture from one of the experts.
drs. Lorem Ipsum - Agriculture Expert Wageningen University
15:00 - Workshop smart farming part two
16:00 - Lecture from one of the experts.
drs. Lorem Ipsum - Agriculture Expert Wageningen University

IOF2020.EU

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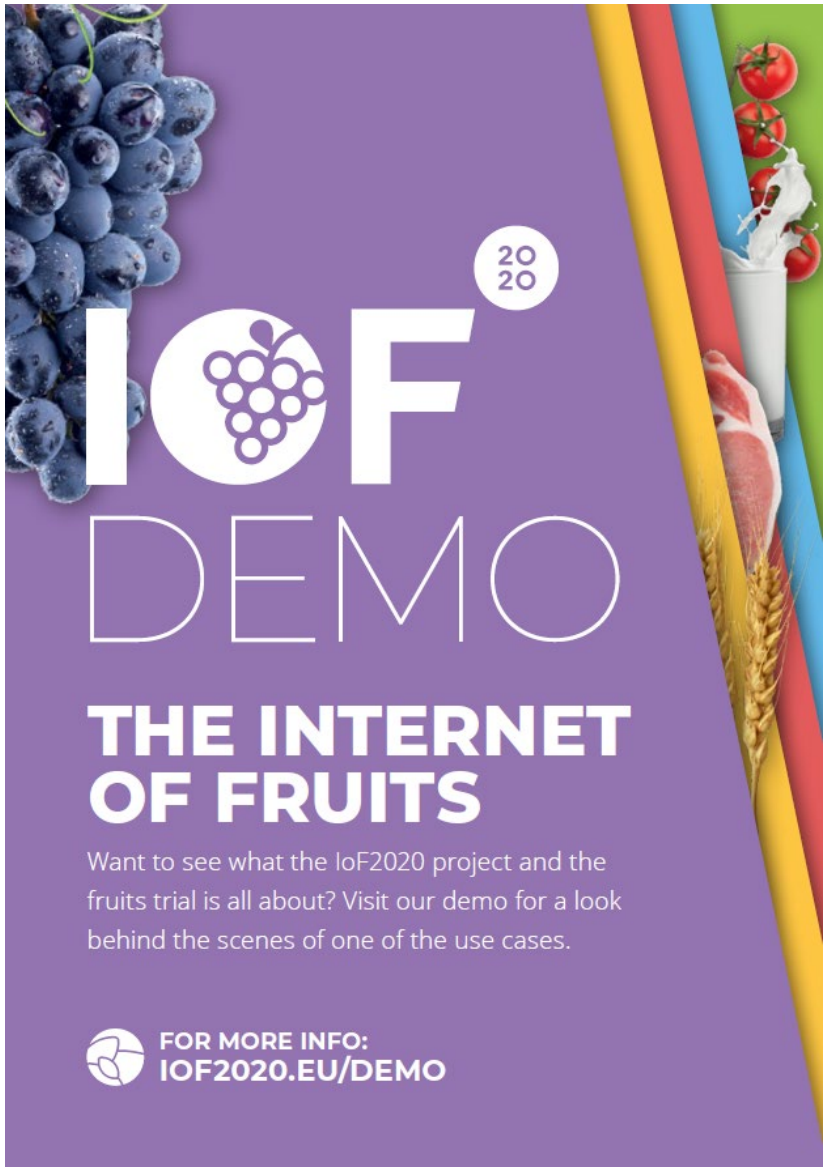

DISCOVER INNOVATIONS BEHIND FRESH TABLE GRAPES

About this day and use case. Tell people what to expect during your demonstration. About the challenges, goals, and innovations within the use case. Also, something about the IOF 2020 project that you are part of. Do not forget to add a line like the one below when you have to apply via e-mail. The contact info below is a placeholder. Please use your own

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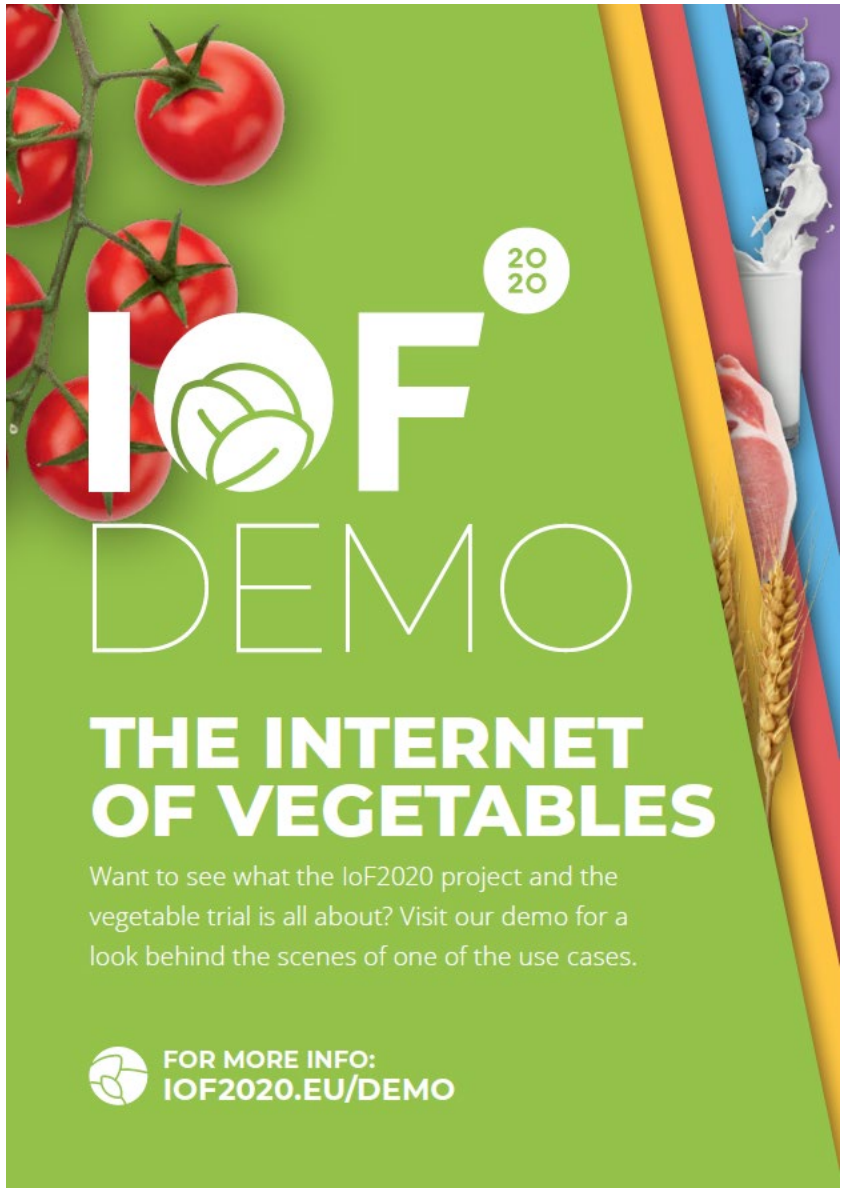

DISCOVER INNOVATIONS BEHIND FRESH TOMATOES

About this day and use case. Tell people what to expect during your demonstration. About the challenges, goals, and innovations within the use case. Also, something about the IOF 2020 project that you are part of. Do not forget to add a line like the one below when you have to apply via e-mail. The contact info below is a placeholder. Please use your own

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Wageningen University

IOF2020.EU

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DISCOVER INNOVATIONS BEHIND SUSTAINABLE PIG FARMING

About this day and use case. Tell people what to expect during your demonstration. About the challenges, goals, and innovations within the use case. Also, something about the IOF 2020 project that you are part of. Do not forget to add a line like the one below when you have to apply via e-mail. The contact info below is a placeholder. Please use your own

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7. ANNEX 3 – USE CASE POSTERS

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1.2 PRECISION CROP MANAGEMENT

5/7
CURRENT TRL & TARGET TRL

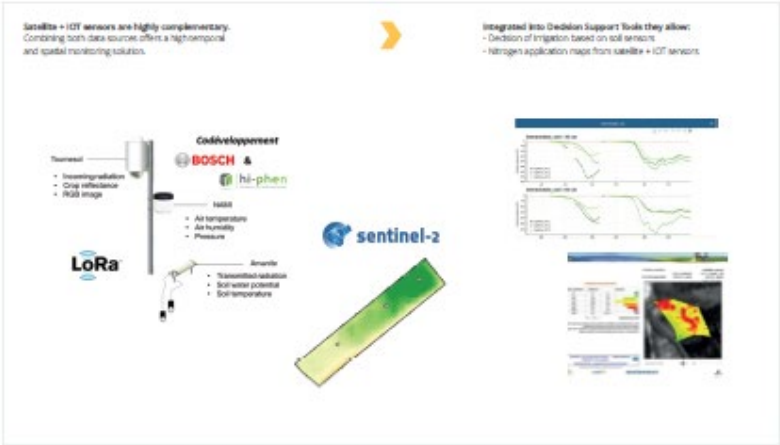
50
MILLION EURO MARKET POTENTIAL

14
MILLION HA POTENTIAL AREA COVERED

30
STEMS DEPLOYED IN FRANCE

The development of decision making tools and services is a priority to help farmers adopt better practices and optimize input management of their fields. Precise advice relies on accurate observations of crop status and growing environment. Existing services use climate data and satellite imagery that provide valuable information but has limitations. Improvement of these services requires a higher spatial and temporal resolutions that are now accessible by using ground based sensors.

HOW IT WORKS



The installed systems, provided by our subcontractors HIPHEN and BOSCH, are measuring simultaneously the vegetation growing status, main meteorological variables and the soil water potential. All data are transferred and made available on Orange data platform and combined with SENTINEL 2 satellite images. Data are integrated in ARVALIS agronomic models to provide accurate advices on crop management. Two topics are currently addressed: nitrogen and water management. Other applications are planned.

COUNTRIES

PARTNERS

ARVALIS Institut du végétal

orange

hi-phen

BOSCH

THE IMPACT

OUR OBJECTIVES

Nitrogen and irrigation for wheat, in a precision crop management approach. Nitrogen and Water are the two main limiting factors impacting wheat production. 30 systems will be deployed in Ile-de-France region to assess technical and economic values of the IoT technology.

ON ECONOMY

The potential of the French market for in-field nitrogen management is estimated at €50M, with 14 million ha potentially encompassed by the DST development. Such development could also apply to the European market. Regarding irrigation, acquiring a decision tool working in real time might lead to gains up to €20-€30 / ha.

OTHER IMPACT

IoT technologies will help farmers in their labour organization (time saving) and working environment. It will directly reduce the footprint of their activities through the optimization of their practices. It will also indirectly contribute to a better perception of agriculture by the society and consumers.

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1.3 SOYA PROTEIN MANAGEMENT

4/5
CURRENT TRL
& TARGET TRL

15%
PREDICTED INCREASE
IN FARMERS' REVENUE

PROFIT
IMPROVING

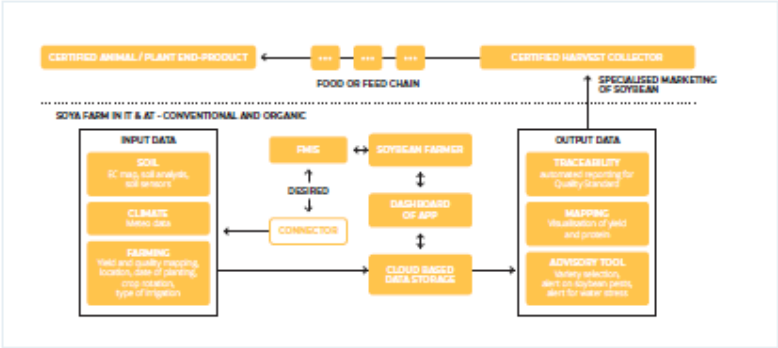
COUNTRIES

PARTNERS

Soybeans are a major source of high-protein food and feed for livestock. At the moment the EU is highly dependent on imports from foreign soya producing countries. This is now changing and an increasing number of farmers is starting to produce soybeans as protein crop.

IoT technology will connect various sources of data and information to advise producers and enable traceability for certified value-chain to improve the transparency of plant and animal food products.

HOW IT WORKS



An application which supports farmers to grow high-quality soybeans and market them. The application contains an advisory tool and a basic traceability tool. The advisory tool will combine soil, climate and farming information from sensors and from third parties, both private and public. Furthermore, we seek to explore opportunities to create a web-based platform for soybean crop where all actors of the supply chain can find information and share knowledge.

THE IMPACT

OUR OBJECTIVES

- Higher protein yields (+5%) in soybean production by using the best available genetics and by making use of environmental and agronomic IoT data,
- Increase marketing possibilities and consumer trust into certified products.

ON ECONOMY

- Improved soybeans yield and quality (+5%),
- Enhanced transparency along the value chain of plant and animal-based food products to enable farmers and industry to obtain premiums.

ON ENVIRONMENT

- Increase consumers trust in food products by improved transparency (+5%),
- Enhance irrigation water efficiency (+5%) by an integration of soil moisture sensors.

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1.4 FARM MACHINE INTEROPERABILITY

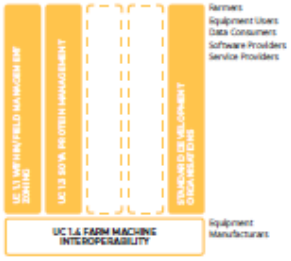
5/7
CURRENT TRL & TARGET TRL

+ 5%
INCREASE IN GROSS MARGIN

+ 20%
PREDICTED INCREASE YIELD

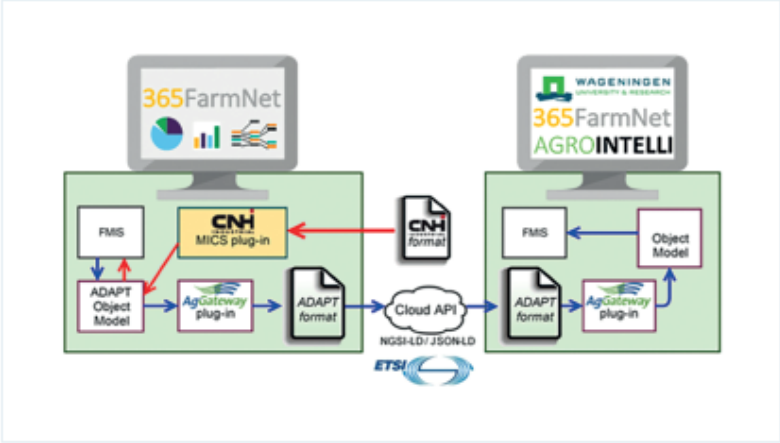
- 10%
IN FUEL CONSUMPTION

Every farmer wants his equipment to work seamlessly together, designed as one integrated system that is interoperable regardless of vendor. Interoperability of IoT devices and machinery today is in its infancy. For the farmer it is a challenge to make all devices work together in the digital space, as there are different platforms using vendor specific communication.



The horizontal use-case on interoperability overarching the vertical production management oriented use-cases and including Standard Development Organisations

HOW IT WORKS



Applying communication standards, such as ADAPT and NGSI-LD, for effective offline and cloud communication between farm and machine and vice versa. Unified data models for easy data transfer and conversion. Service providers can add value to data based on a single API.

THE IMPACT

OUR OBJECTIVES
- Implement real-time communication between FMIS cloud solutions and equipment manufacturers
- Demonstrate offline interoperability
- Test harvest logistics application complying with interoperability solutions
- Share technical solution with the Standard Development Organisations

ON ECONOMY
- Yield +10%;
- Crop produced/input resources ratio +15%;
- Gross margin +5%;
- Cost-benefit of IoMT (soil fertility) +10%;
- Yield in compaction sensitive areas +16%;
- Fuel consumption -10%;
- Machinery sale +15%;
- End-user costs of IoMT +5%.

OTHER IMPACT
- Improved farming efficiency +15-20%;
- Faster IoT uptake +15%;
- Farmer dependence on IoMT +25%.

COUNTRIES

PARTNERS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

1.5 POTATO DATA PROCESSING EXCHANGE

5/7
CURRENT TRL & TARGET TRL

+ 10%
INCREASED YIELD

- 10%
FOOD WASTE

- 10%
IN FUEL CONSUMPTION

Being able to track produce back to the field regarding food security and quality, does not only support buyers and processors, it also helps farmers to identify problems and improve their yields in the following years. As an important step towards smart digital farming, this use case:

- Collects information and opens data flows between stakeholders in the supply chain;
- Measures potato crop growth, yield prediction, caliber yield measurements on the harvester and traceability data from field location to location in the shed;
- Mounts IoT devices on the harvesting machines to gather precise location-based information;
- Facilitates data exchange with the processing industry according to the current state of the art in standardisation.

In this use case farmers (Farm Frites Poland (WA) and the processing industry are present (Farm Frites Poland). AVR (potato machine manufacturer), Aurea Imaging (drone image analysis) and Octinion (caliber yield measurement) are developing the sensors and measurement principles supported by the IoF company Delaware.

COUNTRIES

PARTNERS

AVR
Aurea Imaging
delaware

HOW IT WORKS

Different data points will be collected in real time on the different machines and will be analysed, stored and exchanged with other partners in this project. The IoT platforms of Aurea & AVR will be used as gateway.

THE IMPACT

OUR OBJECTIVES

- Cover three test fields in three countries: Sweden, Poland and Belgium;
- Exchange the collected data with Farm Frites Poland, as processing industry partner in this use case;
- Focus on the standardisation of this data exchange.

ECONOMIC IMPACT

- Increase in yield (+10%);
- Reduction in fuel consumption (-10%);
- Gross margin (+5%);
- Reduce costs in processing industry;
- Give fast digital access to important information.

OTHER IMPACT

- Food waste through alignment of supply and demand (-10%);
- Improve harvested potato yield;
- Give farmers more insight in data elements for business optimisation.

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1.6 DATA-DRIVEN POTATO PRODUCTION

6/8
CURRENT TRL
& TARGET TRL

- 15%
PESTICIDE USE

- 25%
WATER CONSUMPTION

- 19%
TOTAL INPUT COSTS

European potato producers are facing a series of challenges such as crop pests, diseases and climate change. Hence, this use case adopts a holistic approach based on research and a unique blend of cutting-edge technologies while offering inexpensive yet valuable advice to farmers. An innovative, market-ready smart farming solution supports irrigation, pest management and fertilisation. Leveraging a network of telemetric IoT stations combined with satellite data and scientific models tailored to the specificities of the geographic areas, helps small-scale farmers to tackle those challenges.

PARTNERS:
- IoT and smart farming services: NEUROPUBLIC
- Pilot farms and producers:
  Poland - FFP2,
  Cyprus - AKI,
  Ukraine - AgroLV
- Food producing company: FFP2
- Agronomists/Advisors: Delphy, AgroLV
- Expert in Earth Observation: WR

TECHNICAL SOLUTION

Data-driven potato prediction utilises the GAIA sense smart farming solution which provides innovative services, building on state-of-the-art technologies like IoT, Big Data, Earth Observation, Context-based decision support and machine learning.

The GAIA sense solution is extended with FIWARE-powered, standards based, data exchange mechanisms in support of cross-system interoperability and openness.

THE IMPACT

OUR OBJECTIVES
- Demonstrate how the use of IoT-driven smart farming solutions can help reduce the environmental footprint of agriculture;
- Facilitating farmers' compliance with a wide range of European environmental legislation, including water and soil protection;
- Improvement of nitrogen use efficiency (+15%);
- Reduction of pesticides use (-15%);
- Reduction of water consumption (-25%).

OTHER IMPACT
- Demonstrate how the use of IoT-driven smart farming solutions can help reduce the environmental footprint of agriculture;
- Facilitating farmers' compliance with a wide range of European environmental legislation, including water and soil protection;
- Improvement of nitrogen use efficiency (+15%);
- Reduction of pesticides use (-15%);
- Reduction of water consumption (-25%).

OTHER IMPACT
- Demonstrating the potential benefits derived from the use of IoT-driven solutions;
- Achieve sustainable economic growth and foster innovation;
- Reduction of inputs costs (-18,6%);
- Farmers benefited from the provided advice >500;
- Smart farming advice available up to 1500ha;
- Building on extensive business network in >50 countries.

COUNTRIES

PARTNERS

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1.7 TRACEABILITY FOR FOOD AND FEED LOGISTICS

6/8
CURRENT TRL & TARGET TRL

> 95%
ROBUSTNESS

> 95%
SUCCESSFUL DETECTION

0%
CONTAMINATION RATE

COUNTRIES

PARTNERS

Lambrecht

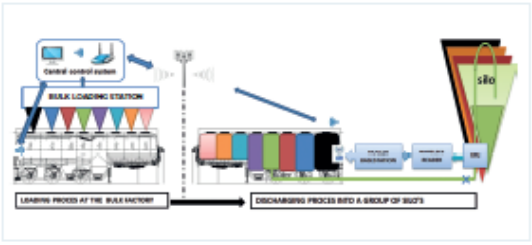
KU LEUVEN

QUICKSAND

DRAMCO

This use case deploys an innovative approach that secures and authenticates the transport of bulk-goods in the agri-food chain, both for feed and food with zero risk of contamination. There is a need to guarantee the traceability of bulk food and feed deliveries from the moment it leaves the loading station right up to when it is delivered to a farm's silo. A fully automated silo detection system, using IoT solutions, guarantees that the right bulk contents are correctly delivered, and that the specifics of that delivery are registered. This solution thus helps to prevent feed and food wastage caused by wrong deliveries.

HOW IT WORKS



The detection system requires the establishment of communication between the loading station and the trailer, using Wi-Fi routers. The transferred data lists which kinds of animal feed are loaded in the different compartments of the trailer.

A base station device, controller and TAG wireless reader are all installed on the bulk trailer. The moment this reader confirms the connection with the right silo, the matching compartment of the trailer can be released and unloaded.

A unique TAG identification is installed on each silo for all delivery addresses.

THE IMPACT

OUR OBJECTIVES

- Real time data delivery and localisation of all trailers;
- Secured delivery procedures;
- Establish complete traceability from factory to client;
- Detailed monitoring of the discharging procedure;
- Direct alarm in case of deviations during the deliveries;
- Data concerning preventive maintenance of the end-user's transport fleet.

ON ECONOMY

- Reduce the recovery cost due to wrong deliveries of feed or food (-90%);
- Compatibility due to system interoperability (99%);
- Increase transport efficiency through data analysis;
- Reduce the destruction cost of contaminated silo content (-90%).

OTHER IMPACT

- Reduce the waste of contaminated silo contents (-90%);
- Lower the need for additional transport (less CO2 emissions), for silo cleaning and re-delivery of new feed by (-90 %);
- Provide guidance and support for truck drivers during the delivery process;
- Increase farmers' trust in the delivery and quality of their feed;
- Improve food safety by securing the supply chain both for animal feed and human food.

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1.8 SOLAR-POWERED FIELD SENSORS

6/9
CURRENT TRL & TARGET TRL

2000
SMART SENSORS

- 30%
ENERGY USE

- 35%
FERTILISER INPUT

COUNTRIES

PARTNERS

Fraunhofer
SOLARVIBES
ÖMKi

The lack of access to affordable and scalable on-field diagnostics for small farmers is addressed through:

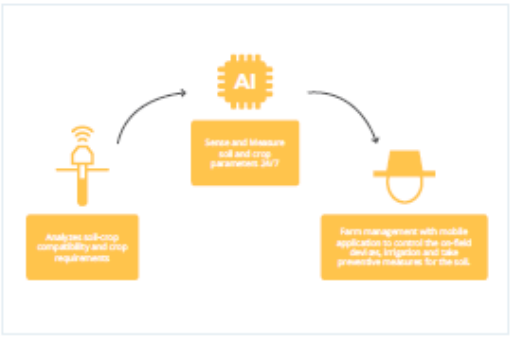
- Reduced design complexity to facilitate ease of use without the need for additional training;
- Integration of all farm information and devices in one farm manager;
- Development of sustainable marketing strategies to incentivise farmers to implement modern technology;
- Demonstration of sensor-based predictive analytics for diseases;
- Application of the solution on different crops.

TECHNICAL CONSORTIUM PARTNERS
- Solarvibes
- Fraunhofer IZM

RESEARCH CONSORTIUM PARTNERS
- University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca (USAMVNC)
- Hungarian Research Institute of Organic Agriculture (HROA)

ECOSYSTEM PARTNERS
- Farmers/ Farm community in Hungary, Romania and Germany
- BIOLAND, Germany
- Agricultural Sciences and Veterinary Medicine of Banat Timisoara, Romania
- GIZMA business school GmbH
- Mr. Friedrich Ditmar (Digital marketing)

HOW IT WORKS



Solar-powered field sensors offers plug and play IoT devices and AI-based precision farming solutions. The software analyses the soil-crop compatibility, crop requirements and nutrient deficiencies. The solution brings a soil laboratory to the fields and allows end-users to monitor and treat their crops in real time. This directly benefits farmers as it allows them to save water, minimise operating costs and reduce the risk of crop failures.

THE IMPACT

OUR OBJECTIVES

- Calibrate and certify the devices to demonstrate the product among farmer networks of 4 institutions across 3 countries;
- Conduct micro-level market research;
- Develop a smart network of 2000 sensors to help farmers adopt sustainable farm practices;
- Improve overall agricultural efficiency;
- Build self-sustainable communities.

ECONOMIC IMPACT

- Decreased farm operation and inputs costs (-30%);
- Cost saving on energy and water consumption (-35%);
- Crop productivity increase for potato, wheat, maize (+15-30%).

OTHER IMPACT

- CO2 Emissions reduction (-20%);
- Water conservation (-35% vs previous year);
- Cut down on fertilisers Ammonium Nitrate, Superphosphate, Potassium sulphate, Dolomite, and Magnesium sulphate;
- Soil health restoration;
- Reduction of pesticides usage.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

1.9 WITHIN-FIELD MANAGEMENT ZONING BALTICS

6/7
CURRENT TRL & TARGET TRL

+ 5%
INCREASE IN CROP YIELD

- 20%
USE OF PESTICIDES

+ 15%
IN DROP QUALITY

COUNTRIES

PARTNERS

Spending on fertilisers and agrochemicals represents a considerable part of farmers' overall expenditure. By developing a remote sensing solution to determine which nutritional elements and how much of them a plant is lacking at different stages of its growth, such costs can be reduced. This use case demonstrates the added value of spectral data analysis and IoT technology for precise decision-making and optimised crop management in potato and winter wheat.

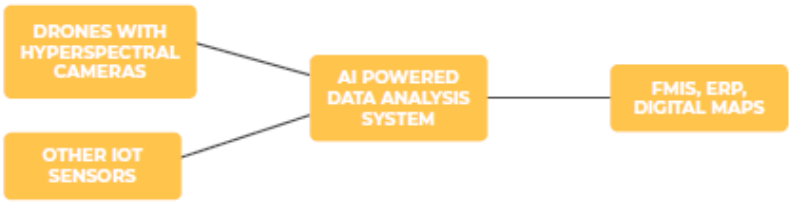
ART2I LTD, VILNIUS, LITHUANIA:
- Provide Hyperspectral imaging sensors
- Perform data processing
- Manage data storage
- Provide laboratory for reference plant/soil analysis

LITHUANIA, KAUNAS, LITHUANIA (ZEMS):
- Organise test trial deployments in Baltic States (also responsible for test area selection)
- Provide data processing, analysis services

NATURE RESEARCH CENTRE, VILNIUS, LITHUANIA:
- Provide plant and soil laboratory analysis services
- Data analysis model validation services

UC1.1 PARTNERS:
- Implementation of primary UC1.1 test trials in Baltic States

TECHNICAL SOLUTION



Integration of advanced hyperspectral imaging and data analysis technologies to deliver a truly innovative solution to some of the most pressing issues for farmers. It uses Artificial Intelligence technologies (Machine Learning/Neural Networks) to perform complex analyses of crop field hyperspectral images. By analysing big amounts of spectral data the system learns to recognise various indicators or patterns, and identifies the composition of nutrients in crops. The solution integrates with FMIS for mapping of micro- and macronutrients in potato and winter wheat plants.

THE IMPACT

OUR OBJECTIVES
- Fast and cost-efficient way to detect the amounts of micro- and macro-nutritional elements needed in plants;
- Automatic recommendations for agrochemical application through non-invasive, remote sensing technology;
- Display the benefits of soil, crop and yield sensors for yield prediction, arable field management and chain optimisation;
- Demonstrate the added value of hyperspectral imaging and spectral data analysis at the farm level.

ECONOMIC IMPACT
- Yield increase (+5%);
- Field analysis time and cost (-70%);
- Early detection of plant stress and its causes;
- Soil fertility increase (+20%).

OTHER IMPACT
- Fertiliser use reduction (-30%);
- Classified data increase (x8);
- Stress reduction (+20%);
- Fertiliser cost reduction 40€ / ha
- User satisfaction (+33%).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

2.1 GRAZING COW MONITOR

6/8
CURRENT TRL & TARGET TRL

104
WEEK LONG PROJECT

25
STAKEHOLDERS EVALUATED

> 1,500
FARMERS ACROSS THE EU REACHED

COUNTRIES

PARTNERS

ILVO

sensolus

inagro

The Grazing cow monitor digitally monitors cows' grazing time and provides an easy way to generate digital reports for legal controllers and dairy processors. This is important to verify pasturing for ammonia emission reduction and labels of 'milk from pasture'.

The system uses the STICKNTRACK low-power indoor-outdoor tracking service that combines the LPWAN SIGFOX network with BLE technology to track individual cows and measure their pasturing time. The system can also track extensively grazed livestock such as dairy cows, beef cattle, horses, sheep, and reindeer, but can also track wildlife.

HOW IT WORKS

- A STICKNTRACK GPS-tracker is attached to the collar of each tracked animal
- Bluetooth Low Energy beacons are placed inside the dairy barn
- Clear insights and digital reports on the location of every animal will be available in the management platform

THE IMPACT

OUR OBJECTIVES
The grazing monitor will be tested at two dairy farms (100 dairy cows each) and demonstrated at five dairy farms in Belgium and the Netherlands.

ON ECONOMY
Eliminating manual record keeping will reduce farmer labor time by at least 10 %. Dairy processors can rely on digital reports, eliminating costly on-farm audits.

OTHER IMPACT
The technology will have 85 % accurate classification of inside/outside animal presence. Trough dissemination activities over 1500 farmers and stakeholders will be reached EU-wide.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

2.2 HAPPY COW

6/8
CURRENT TRL & TARGET TRL

CALVING TIME
IN BETWEEN CALVING TIME IS DECREASED

FEED INTAKE
OPTIMISED

WORK-LIFE BALANCE
OF FARMERS IMPROVED

COUNTRIES

PARTNERS

Connecterra

WAGENINGEN UNIVERSITY & RESEARCH

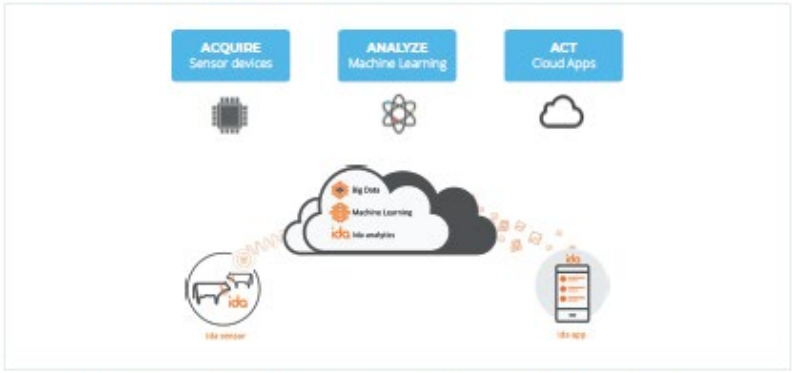
ZLTO

veteffect

A modern dairy farm is a dynamic and complex business. With increasing demands on animal health, environmental impact and margins being under pressure, improving farm management is vital for dairy farmers to stay in business.

Therefore, the Happy Cow project aims to use state-of-the-art technology and artificial intelligence to provide farmers with insights on the fertility and health of their cows. Besides these goals, IDA (the Intelligent Dairy Farmers Assistant) will also self-learn and give insights on calving and feed efficiency.

HOW IT WORKS



Cows wear a sensor that tracks their movements in 3 dimensions. From the data, a smart algorithm determines what behaviour the cow has expressed. All data is uploaded to "the cloud" where artificial intelligence is used to translate the data into insights. The insights are transmitted to the farmer via an app on his smartphone, offering suggestions on how to optimize the output of the farm.

THE IMPACT

OUR OBJECTIVES

To demonstrate that the approach of cloud computing and artificial intelligence works on farms.

IDA system is istalled on two farms where on each, 50 cows are equipped with sensors. Two additional farms are to follow in 2018.

ON ECONOMY

- A shorter calving interval; hence, higher milk production,
- Quicker treatment and severe disease prevention,
- Mitigation of milk yield losses and decrease of antibiotics use.

KPIs:

- Calving interval,
- 305-day milk production,
- Average number of days treated with antibiotics.

OTHER IMPACT

A lower usage of antibiotics reduces environmental impact and benefits the prevention of antimicrobial resistance.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

2.3 HERDSMAN

5/8
CURRENT TRL & TARGET TRL

ANIMAL WELFARE
IMPROVED

FEED
BETTER FEED OPTIMISATION

GROWTH
GROWTH OF YOUNG FARMER ENGAGEMENT

COUNTRY

PARTNERS

University of Strathclyde Glasgow

This Use Case aims to implement, validate and showcase the use of real-time data primarily derived from a neck mounted collar together with other relevant data to create information of value to the dairy supply chain from 'grass to glass'. The impact will be more efficient use of resources and production of quality foods, combined with an enhanced animal health, welfare and environment implementation. The focus is on welfare and reproduction of cows through early warning systems and quality data that can be used for remote calibration and validation of sensors.

The platform has the potential to bring impact throughout the value chain. Integrated measurements of activity, feeding and rumination combined with other e.g. milk analysis gives a clear welfare indication. Information can be disseminated through the most appropriate channels to stakeholders providing services from on-farm to consumer; farming + processing + logistics + consumers. The information can also be used to optimise on-farm operations and provides consumers with provenance data on the products being purchased.

HOW IT WORKS

- Multiple log-in capability so that members of the supply chain can remotely access to the information e.g. vets, fertility and health service,
- Visualisation of the key conditions of individual animals,
- Data accumulation either at an on-farm PC or the Cloud,
- Sensor fusion to enhance outputs,
- Low power wireless connectivity.

Clockwise from top left:
Milking robot providing production, quality and health indicators, feed monitoring, collar sensors for monitoring behavior and health, view main barn at test site FAVIK

THE IMPACT

OUR OBJECTIVES

The integration and analysis of data from a number of measurement sources such as neck mounted accelerometer sensors, milk constituent sensors and feed to monitor animals and the production environment in order to generate actionable information and feedback that optimises welfare/production.

ON ECONOMY

- Increased production efficiency (herd fertility),
- Improved animal welfare, early intervention on illness (automated intervention),
- Increased adoption of IoT in dairy,
- Growth of young farmer engagement.

OTHER IMPACT

- Environmental benefits through reduced production losses,
- Reduced greenhouse gas output per unit of product,
- Reduced use of veterinary intervention/medication.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

2.4 REMOTE MILK QUALITY

6/9
CURRENT TRL & TARGET TRL

10-15
REMOTELY MONITORED INSTRUMENTS

> 2000
CALIBRATION SETS FOR INSTRUMENTS

>1,200
REFERENCE SAMPLES

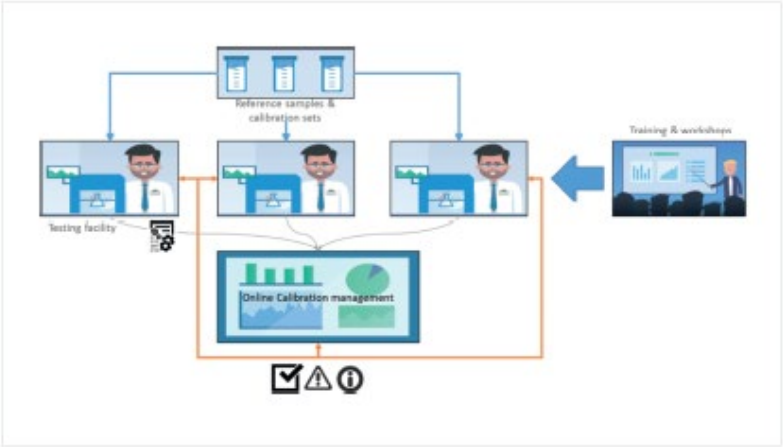
COUNTRIES

PARTNERS

This Use Case has the following challenges:

- Maintain high safety, quality, sustainability and profitability in the dairy chain,
- Maintain reliable results from instrumental analyses (IR) for dairy processors and local testing laboratories,
- Maintain calibration and harmonization expertise within an organisation.

HOW IT WORKS



- Training and workshops,
- Customized reference samples and calibration sets,
- Online Monitoring of calibration management, visualisation and alerts,
- Online and on-site maintenance services.

THE IMPACT

OUR OBJECTIVES

- High safety, quality and profitability in the dairy chain,
- Reliable instrumental analysis (IR) for dairy processors and local testing laboratories,
- Excellent maintenance, calibration and harmonization of test facilities within an organization,
- Qualified operators or QA/QC officers for maintenance and calibration tasks of advanced analytical instruments.

ON ECONOMY

Product quality, safety and processing efficiency. Financial gain is substantial when result of analysis are reliable and accurate. I.e. improvement of standardization of cheese milk can result in €100K profit per processing facility.

OTHER IMPACT

- Improved processing efficiency has direct positive impact on the environment,
- More product less waste,
- Higher quality dairy products at lower costs.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

2.5 EARLY LAMENESS DETECTION THROUGH MACHINE LEARNING

7/8
CURRENT TRL & TARGET TRL

87%
DETECTION ACCURACY

- 15%
REQUIRED TREATMENT TIME

- 7%
MILK YIELD LOSS

Lameness is a substantial issue in the dairy industry – it entails pain and discomfort for the cow, and results in decreasing fertility and milk yield for the farmer. Current solutions are cost-intensive and involve complex equipment. Lameness can be addressed without having to spend a high amount of resources. By employing leg mounted sensors and machine learning algorithms lame cattle can be identified at an early stage, and the data acquired can be sent directly to the farmer so that treatment of lameness can start immediately.

PARTNERS (DEVELOPING TEAM)
- Technology Providers: ENGS, Herdsy
- Research: WIT, Strathclyde
- Algorithm Development: WIT

THIRD PARTIES
- Farms: Ireland, Portugal, Israel, South Africa, United Kingdom

COUNTRIES

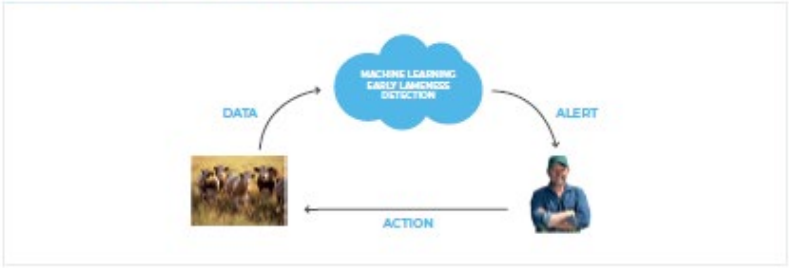
PARTNERS

ENGS

Herdsy

University of Strathclyde Glasgow

HOW IT WORKS



The use case will build upon an existing trial for early lameness detection deployed on a farm in South East Ireland and extend as well as integrate this deployment into other IoF2020 use cases. The current deployment on a farm with 150 cattle utilises leg mounted sensors and uses Machine Learning for early lameness detection. The team will attach sensors from two separate vendors on cattle in dairy and beef herds in three further countries. The approach will thus be validated in different environments and scenarios.

THE IMPACT

OUR OBJECTIVES
- Integrate existing Lame Detection as a Service (LDaaS) into IoF2020 architecture;
- Extend the use case to integrate with existing third-party services;
- Expand the use case to new regions;
- Commercially validate the solution with multiple vendors.

ON ECONOMY
- Reduced animal mortality (-5%);
- Decreased milk yield loss due to lameness (-7%);
- Increased beef production (+10%).

OTHER IMPACT
- Lameness detection rate (+7%);
- Detection accuracy (87%);
- Improved reproduction efficiency index (+5%);
- Reduced usage of antibiotics (-5%).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

2.6 PRECISION MINERAL SUPPLEMENTATION

7/9
CURRENT TRL & TARGET TRL

4%
PRODUCTIVITY INCREASE

1500
COWS TRIALLED

- 10%
HEALTH-RELATED LOSSES

Most economic losses in dairy cows happen during the critical transition period from 2-3 weeks before calving and 100 days after, due to health-related issues. To counter this, there is a need for correct and adequate mineral supplementation during the calving period. By deploying an advanced mineral feeder, cloud-based services, electronic ear tags and data-integration, this problem can be addressed through precision supplementation of dairy cows.

HOW IT WORKS

PRINCIPLE SKETCH OF THE PITSTOP+ SYSTEM IN A STABLE.

1. The cows have electronic ear tags in their left ear, based on HDX or FDX ISO standards.
2. A master unit handles the LoRa communication with the feeders and the cloud via a connection to a router, integrating information about the cows - their daily allowance of mineral supplements, the already eaten amount, etc. - as well as algorithms for observation of KPIs.
3. The feeders are equipped with RFID antennas to identify the cows and slave units that communicate with the master unit. It controls the function of the dosing aggregates - one or two per feeder.
4. Data reaches the user via LAN or WAN and is visualised through the Pitstop+ Manager web application user interface.
5. Monitoring, remote-controlled software updating, collection and analysis of data from one farm or a given number of herds or a particular geographical area.

Precision Mineral Supplementation is a mineral feeder for dairy cows, to be mounted in the stable or in an outside motion area. The feeder is equipped with electronic components for the identification of the cows via their electronic ear tags which can be delivered with the feeders in case such ear tags are not already used in the herd. The herd manager decides via the user interface which cows shall have dosed mineral supplements in the feeders. Moreover, the user interface also allows for the monitoring of individual cow's eating behaviour, making it easier to check on cows in the calving phase and response appropriately. It is expected to prove a connection between those parameters and the cow's performance as well as health.

COUNTRIES

PARTNERS

THE IMPACT

OUR OBJECTIVES

The use case demonstrates precision mineral supplementation over twelve months in six dairy farms in Latvia, Germany and Lithuania, involving a total of 1.500 cows. Furthermore, it aims to showcase trial interoperability, replicability and the reusability of IoF2020 results or innovations, IoT layers and data flows via the cloud.

ON ECONOMY

Precision Mineral Supplementation is an easy, safe and efficient method:

- Costs for the feeder €4;
- Mineral costs per cow per year €27;
- Increase in milk per cow per day 1.2 kg;
- Reduction of health-related losses (-10%);
- Total savings per cow per year €146.

OTHER IMPACT

- Lameness detection rate (+7%);
- Detection accuracy (87%);
- Improved reproduction efficiency index (+5%);
- Reduced usage of antibiotics (-5%).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

3.1 FRESH TABLE GRAPES CHAIN

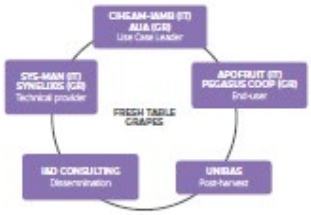
6/9
CURRENT TRL & TARGET TRL

WATER
IMPROVED WATER USE EFFICIENCY

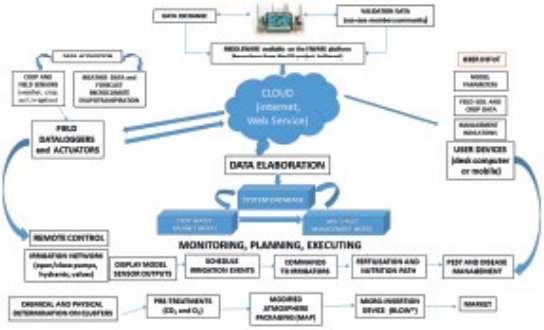
+ 15%
INCREASED YIELD

QUALITY
HIGHER QUALITY OF FRUIT

The challenge is to integrate existing technologies in table grapes (conventional and organic) value chain and deploy them from small scale to a larger scale. The implementation of IoT will produce economic benefits and positive environmental impacts due to better resource management (water, fuel and pesticide inputs).



HOW IT WORKS



The solution provides detailed information on the major critical points of fresh table grape production:

- Irrigation,
- Table grapes managing,
- Pest management,
- Post-harvest.

Installations are covering 10 ha in Italy and 5 ha in Greece, with more than 40 sensors installed in both countries and involving post-harvest techniques and two packing houses.

COUNTRIES

PARTNERS

CIHEAM
CIPOFRUIT
SysMan
Pegasus
SYNELIXIS

THE IMPACT

OUR OBJECTIVES

The goal of the Fresh Table Grapes is to test, develop and disseminate architectures, methodologies and strategies, for integrating heterogeneous IoT and Remote Sensing technologies on production and chain level into a coherent system, for a sustainable Fruit Sector.

ON ECONOMY

Developing innovative business models for IOT managing of fresh table grapes "from fark to fork", more in specific:

- Reduction in irrigation costs,
- Reduction labor costs,
- Increased perceived quality,
- Increased price per unit,
- Increased shelf life duration.

OTHER IMPACT

Creation of an innovative ecosystem able to link farm activities with post-harvest quality with positive impact on the environment and on consumer's trust.
Sensor introduction all along the value chain will improve the management and the quality of the finished product.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

3.2 BIG WINE OPTIMIZATION

6/9
CURRENT TRL & TARGET TRL

3.4L
TARGET PORTABLE WATER CONSUMPTION PER LITER PRODUCED

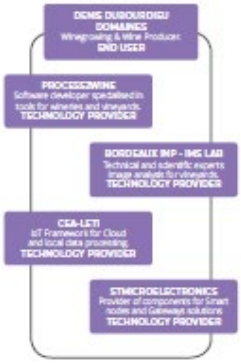
- 20%
REDUCTION IN PESTICIDES & FERTILISER COST

€ 400.-
PRODUCTIVITY GAINS / HA

COUNTRIES

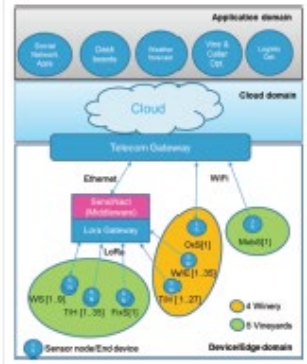
PARTNERS

- Optimize the use of chemicals for plant protection through a precise identification of the moment and the product, as well as the exact needs for treatment in order to reduce environmental impacts, resource use and efficiently protect grape,
- Perform selective harvesting to reduce the inspection time and have accurate results,
- Avoid temperature and humidity issues thanks to winery monitoring, as they cause wine evaporation during summer times,
- Handle huge amount of data coming from 5 domains.



IoT technology allows to monitor weather, vine and key winery conditions in real time.

HOW IT WORKS



IoT System based on a LoRa private network allowing:
- Data gathering in real time from both the vineyard (weather conditions, vine phenological stages) and the wineries (Temperature, Humidity, water and electricity consumption),
- Big data analysis,
- Decision-making at anytime and anywhere through specialized wine production applications running on mobile devices.

THE IMPACT

OUR OBJECTIVES
- Deploy 150 sensor nodes to gather data from 5 vineyards, covering 150 hectares and 4 cellars,
- Perform data analysis and facilitate decision making,
- Improve vine yield and wine production.

ON ECONOMY
- Reduced pesticides costs - 20%,
- Reduced fertilizers costs - 20%,
- Productivity gains (salaries and social charges),
- Increased annual savings due to accident prevention.

OTHER IMPACT
- Treatment frequency index,
- Cost reduction in phytosanitary measures and fertilizer use,
- Potable water use reduction in processing stage,
- Energy use reduction in processing stage,
- Reduction of GHG 600.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

3.3 AUTOMATED OLIVE CHAIN

7/9
CURRENT TRL
& TARGET TRL

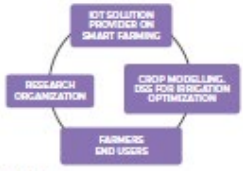
CROP YIELD
INCREASED CROP PRODUCTION

COST
REDUCE CROP COST

QUALITY
INCREASED PRODUCTION QUALITY

IoT technologies allow:

1. Automatically taking data from crops and post-harvest machines, in order to provide inputs for DSS (Decision Support Systems) models.
2. Optimizing resource consumption through the monitoring and controlling agricultural machinery.
3. Improving energy and water efficiency through the monitoring and controlling irrigation systems.
4. Calculating the water needs using agronomic models for optimized irrigation.
5. IoT-powered DSS that integrate crop monitoring, water needs calculation, automatic irrigation systems and agricultural machinery.



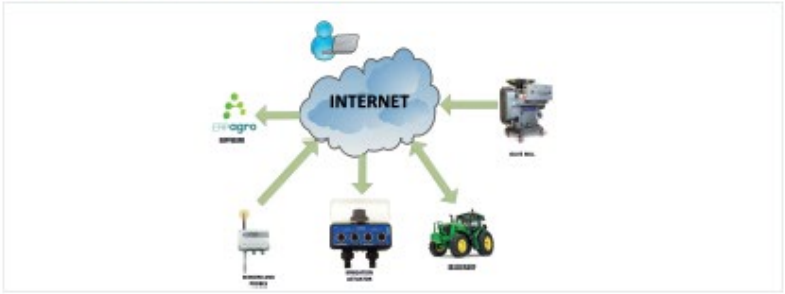
FARMERS
End-users managing their crops using the IoT based systems (Dcoop from Spain and Nileas from Greece)

IOT SOLUTION PROVIDERS:
Providers of technology which deploy IoT based systems allowing farmers to improve their management. (Hispatec from Spain and Synelixis from Greece)

RESEARCH ORGANIZATION:
Organizations that provide agricultural knowledge based on which the deployed systems support decisions and KPIs. These organizations will perform research activities in order to define those parameters. (Tecnova from Spain and AUA from Greece).

CROP MODELLING. DSS FOR IRRIGATION OPTIMIZATION
DSS experts with knowledge in agronomic labors and crop modelling in order to develop and deploy, in IT platform, the algorithms for calculating the water needs and the irrigation planning.

HOW IT WORKS



Deployment of:

- Sensors and probes/supporting agronomic decisions,
- Remote actuators/irrigation process,
- Agricultural machinery/monitoring and controlling,
- Sensors in oil mills/monitoring and controlling key data,
- ERP Agro/data management from IoT platform,
- Agronomic models and algorithms for water needs and irrigation planning calculation.

COUNTRIES

PARTNERS

THE IMPACT

OUR OBJECTIVES

- IoT boxes: soil sensors, probes, air and plants sensors (50 ha/ IoT box),
- Embedded ISOBUS data capture in harvesters and tractors,
- Fat and quality control using NIR sensors in olive mill,
- ERP solution for managing the process and the DSS,
- DSS modelling and algorithms for water needs and irrigation planning calculation.

ON ECONOMY

- Increase crop production,
- Reduce crop cost,
- Increase production quality,
- Crop per drop,
- Crop economic value per drop,
- Cost per drop.

OTHER IMPACT

- Lower residue levels in irrigation water,
- Lower residue levels in crop soil,
- Improved traceability.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

3.4 INTELLIGENT FRUIT LOGISTICS

5/9
CURRENT TRL & TARGET TRL

> 10.000
MEASURED RENTAL TRIPS

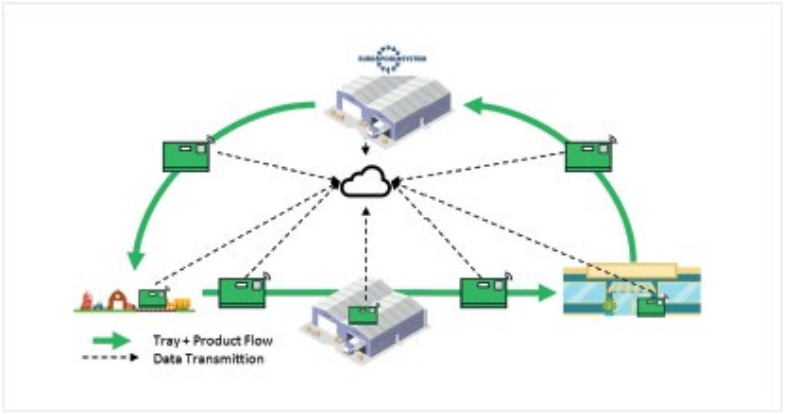
> 1.000
TRANSPONDERS

COUNTRIES

PARTNERS

Food companies are challenged by public and private demands from different points of the supply network. However, a lot of data is collected at different stages and not well-communicated along the chain. A basic traceability is implemented, to ensure better communication. New mechanisms are required for production and transport of information to improve efficiency of the supply network.

HOW IT WORKS



With this use case, we want to digitalize the tray by adding environmental sensors and communication technology to it. Data will be collected from the trays over the entire supply chain and stored on a cloud platform. With the help of a Smartphone Application, every member of the supply chain will have access to this cloud and data collected.

THE IMPACT

OUR OBJECTIVES

> 10.000 measured rental trips (with over) > 1.000 transponders including environmental sensors.

ON ECONOMY

- Optimized supply of pooling members with RTIs,
- Increased pool efficiency,
- Seamless tracking and tracing,
- Higher efficiency in quality management,
- Support in cases of theft or misuse.

OTHER IMPACT

- Reduction of food waste / better food quality,
- Reduction of CO_2 by better chain coordination,
- Possibilities for automation,
- Increased food safety,
- End-to-End visibility.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

3.5 SMART ORCHARD SPRAY APPLICATION

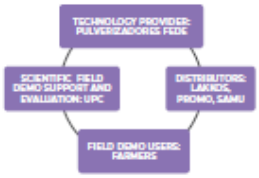
7/9
CURRENT TRL
& TARGET TRL

EFFICIENT
RESOURCE USE

- 25%
PLANT PROTECTION PRODUCTS

MITIGATED
ENVIRONMENTAL IMPACT

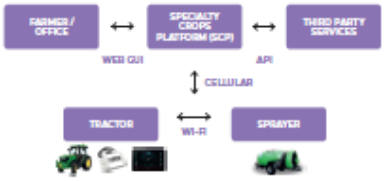
Agriculture focused on speciality crops faces the challenge of improving the profitability whilst also reducing negative environmental impacts. This use case demonstrates that plant protection products can be significantly reduced through IoT enabled airblast atomising sprayers, adapting automatically to specific field zones as well as individual plant conditions. The integration of the Smart Orchard Spray Application cloud into farmers' existing processes and software solutions further increases operating efficiency.



COUNTRIES

PARTNERS

HOW IT WORKS



The Smart Orchard Spray Application enables the development of a new integrated market of specialty crops management systems:

- Connection of physical IoT devices to the SCP;
- Configuration of work orders from the SCP;
- Farmer's work based on the use of IoT enabled devices to carry out precise actions;
- Wireless connection of the tractor and the sprayer to the SCP;
- Tracking of all data gathered by the IoT devices;
- Total control of costs and work issues registered from the IoT devices connected to the SCP.

THE IMPACT

OUR OBJECTIVES

- Perform highly efficient, effective and environmentally friendly specialty crops protection in cherry, apple and almond production;
- Increase sustainability and profitability of food production;
- Monitor operations and get instant information on treatment quality;
- Provide traceability to improve the food security standards;
- Monitor costs and bridge the gap between agronomics and company accounting to increase business revenue;
- Assist in documentation tasks related to adherence to farm certification schemes like GLOBALG.A.P.

ON ECONOMY

- Fuel savings of 517€ per hectare/year;
- Savings in pesticides costs (25%);
- Efficient field tasks organisation and supervision;
- Improve revenue through better decision-making.

OTHER IMPACT

- Drift reduction (-48%);
- Reduce fuel consumption (-55%);
- Plant protection product reduction (-25%);
- Improve food-security due to pesticide treatment traceability;
- Establish cellular coverage and IoT functionalities in European rural areas.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

3.6 BEVERAGE INTEGRITY TRACKING

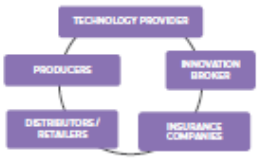
5/8
CURRENT TRL & TARGET TRL

< 80%
PRODUCTS DELIVERED IN GOOD CONDITION

- 60%
PRODUCTS RETURNED DUE TO DAMAGE

+ 50%
RECOVERED VALUE

The journey from producer to consumer is a process that can negatively affect the quality of the wine. In response to this risk, this use case has created an integrated system that monitors the whole wine and beverage distribution channel to prevent damages caused by integrity-related issues and stress factors such as humidity or shocks during shipping and storage. As a result, a direct relationship between producers and final retailers is established while a large database is created to plan safe shipments thereby allowing new and customised IoT-based insurance policies.



HOW IT WORKS

DATA LOGGERS monitor and record temperature, humidity, box breaching and shocks. Data are stored on an internal memory device, and wirelessly transmitted to the platform via the mobile App.

The **CLOUD-BASED PLATFORM** stores data coming from the devices, conducts elaborate analyses, aggregates trends and delivers information for decision making on customisable interfaces.

The **MOBILE APP** is the command interface of the devices: It turns them on and off, while assigning them to a specific transportation. At any time, with the data logger near, it can read every data and spot alerts.

THE IMPACT

OUR OBJECTIVES

- Reduce product damages during distribution.
- Deliver products to consumers in the best possible condition.
- Establish a direct connection between producers and final retailers.
- Build a valuable database on worldwide beverage logistics.
- Test the IoT system in collaboration with a network of about 100 stakeholders.

ON ECONOMY

Tracking beverage conditions during distribution allows retailers and end-users to gain knowledge on the journey which in turn facilitates:

- Reduction of shipping costs for beverages.
- Decrease of client complaints and commercial disputes.
- Insurance coverage possibilities.

OTHER IMPACT

- Creation of a direct relationship between producer and final retailer.
- Ensure the quality of wine during transport.
- Make the wine distribution process more transparent.
- Increase consumer satisfaction.
- Reduction of GHG emission related to beverage transport.

COUNTRIES

PARTNERS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

4.1 CITY FARMING LEAFY VEGETABLES

3/7
CURRENT TRL & TARGET TRL

SHELF LIFE
EXCELLENT SHELF LIFE AT AN ACCEPTABLE COST

LIGHTING
PROVIDE AN OPTIMAL SOLUTION

SENSORS
TO PROVIDE PROCESS FEEDBACK

COUNTRIES

PARTNERS

PHILIPS Lighting

StaayFoodGroup

Growing sufficient food of high quality for a growing population is becoming a challenge. There is a lack of arable land and a shortage of qualified growers. New and sustainable methods for producing food of high quality in a controlled environment with limited human intervention are required. City farming (a.k.a. vertical farming) is such a method that is gaining momentum.

City farming is an innovation in food production that benefits all actors in the value chain.

HOW IT WORKS

- A data platform that enables storage and retrieval of data via web APIs and a client library.
- Sensors that measure relevant plant properties.
- A system for dynamically controlling the lighting (level and spectrum) for optimum plant growth.
- Cloud applications such as dashboards and tools (e.g. for commissioning sensors)

THE IMPACT

OUR OBJECTIVES

It is an aim of this use-case to develop an IOT sensing and control solution for city farms to be able to continuously monitor, automate, and improve their operations. This solution includes:

- The development of a lighting control system,
- The deployment of suitable sensors to measure plant growth parameters (typically 100 sensors per 1000 m2 of growing area),
- The development of a data platform.

ON ECONOMY

The outcome of this use case will be an improvement of the city farms' efficiency, as well as its adoption rate. Relevant KPIs in this respect are the production yield (kg/m2/year) and shelf life and nitrate content of the produce (with lettuce as key crop).

OTHER IMPACT

Compared to crop growth in open field and in greenhouses, city farms use far less water and crop waste. Moreover, no pesticides are used.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

4.2 CHAIN-INTEGRATED GREENHOUSE PRODUCTION

6/9
CURRENT TRL & TARGET TRL

10-50
REMOTELY MONITORED INSTRUMENTS

> 200
CALIBRATION SETS FOR INSTRUMENT

> 12,000
REFERENCE SAMPLES

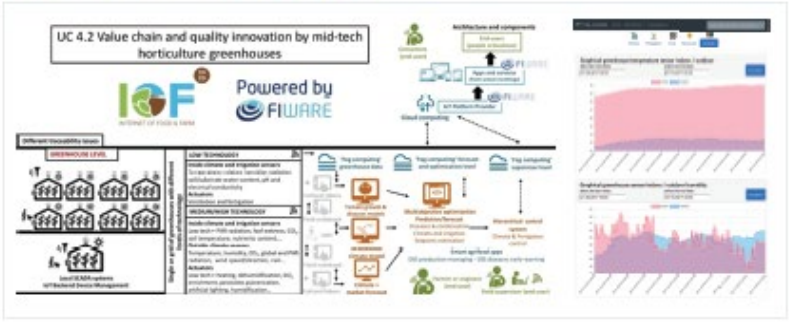
COUNTRIES

PARTNERS

The main challenge is to integrate an IoT solution for DSS in the value chain of greenhouse tomato-crops to ensure vegetable quality. That will happen through:

- Obtaining optimum ambient conditions during the whole chain, reducing inputs and increasing energy efficiency and avoiding/reducing the use of pesticides,
- Using technology and data sharing as essential tools in each of the phases based on transparency and process information.

HOW IT WORKS



This IoT web-based DSS, developed using FIWARE, integrates information from sensors, field notebook, lab analysis and models. Information on production and management in the whole supply chain is available to end-users to help them taking decisions and to provide value added information related to crop growth and climate and irrigation setpoints to fulfill quality, sustainability and traceability objectives.

THE IMPACT

OUR OBJECTIVES

An IoT web-based Decision Support System (DSS) platform for greenhouse tomato supply chain focusing on water, energy and other inputs to achieve efficiency, transparency and safety.

ON ECONOMY

Greenhouse vegetable economic efficiencies based on:

- Increased production,
- Reduced costs and inputs,
- Reduced volatility of market and
- Added value of the product.

OTHER IMPACT

- Increasing system sustainability through water and energy efficiency, and through reducing the use of pesticides and underground water contamination,
- Providing transparency about food quality and process information to consumers.

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4.3 ADDED VALUE WEEDING DATA

5/8
CURRENT TRL & TARGET TRL

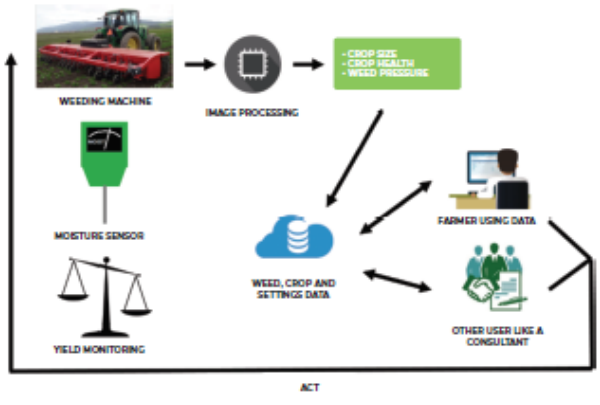
+ 5%
PRODUCTION CROP/M²

+ 10%
€/CROP

- 10%
LABOUR REDUCTION

Weeding is one of the most important and frequent activities in organic vegetable farming. Since a few years automated intra row weeding machines entered the market based on machine vision, to detect the crop and weeds. To get the (organic) production to a higher level, the farmer needs site specific information about his crop. Therefore, data on crop, field and weather need to be gathered. As the farmer needs to perform multiple tasks, the decision support for crop management needs to be user-friendly. By using IoT devices we can easily combine multiple data sources to support the grower.

HOW IT WORKS



The main component is the camera system in the Steketee machine, which will acquire the images that will be processed. The data gathered from the images will be supplemented with yield and field data.

COUNTRIES

PARTNERS

THE IMPACT

OUR OBJECTIVES
Through improved crop and field monitoring, resulting in better field management we aim to reduce the labor required for organic crop production, while improving the yield.

ON ECONOMY
- Crop yield +5%,
- Sales turnover +5%.

OTHER IMPACT
- Work time -5%,
- Prediction uncertainty -10%.

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4.4 ENHANCED QUALITY CERTIFICATION SYSTEM

5/9
CURRENT TRL & TARGET TRL

QUALITY
HUMAN ERROR

COST & INPUT
REDUCED

COUNTRIES

PARTNERS

VALORITALIA

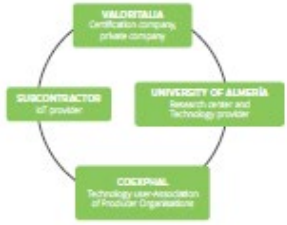
COEXPHAL

UNIVERSIDAD DE ALMERÍA

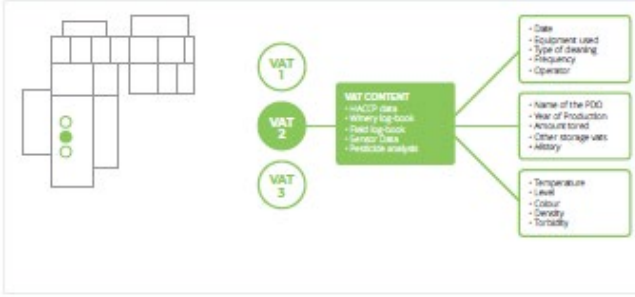
uqido

To offer quality certification system improvement that will:

- Lead to a reduction of inspection/ certification time/efforts and increased reliability,
- Limit redundancies (overlapping among certification schemes).



HOW IT WORKS



- The auditor reaches the winery location thanks to GPS data and knows where the wine is located in the cellar,
- The producer can couple his expertise in chemical data analysis with data from sensors for better control over the fermentation and aging processes,
- Wine enthusiasts and specialists can discover the production process and access real time data by using virtual reality.

THE IMPACT

OUR OBJECTIVES

Implement the enhanced certification system in at least 2 wineries using augmented reality and virtual reality.

ON ECONOMY

- Certification time (-5%),
- Certification cost (-5%),
- Travel and consumable cost (-10%),
- Brand value (+10%).

OTHER IMPACT

- Human error (-90%),
- Auditor satisfaction (+10%),
- Producer satisfaction (+10%),
- Use of paper (-50%),
- Trust in quality products (+50%),
- Auditor performance (+15%).

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4.5 DIGITAL ECOSYSTEM UTILISATION

5/8
CURRENT TRL & TARGET TRL

- 10%
IRRIGATION

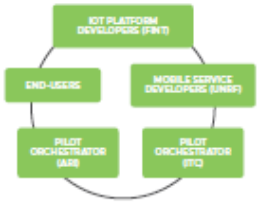
+ 20%
EFFICIENCY

- 10%
PLANT PROTECTION PRODUCTS

COUNTRIES

PARTNERS

Currently, only a fraction of the plant protection products applied successfully tackles pests or insects, while the rest unnecessarily pollutes the environment. By utilising data stemming from IoT devices in the field, cloud computing and analytics technologies, this use case timely notifies the farmer to proceed with such activities while addressing challenges related to irrigation. Synergised parameters result in a service which increases the total farm productivity, contributing to food security. By incorporating innovative traceability technology, this use case integrates information from the entire food value chain to a marketplace, offering elaborate value propositions to users. Hence, it enables stakeholders in the agri-food sector to participate in an innovative digital ecosystem.



PARTNERS
- Future Intelligence Ltd (FINT)
- ITC / Digital Innovation Hub Agrifood (administration of >10 pilots and Communication Leader)
- University of Nicosia Research Foundation (UNRF)
- Agriculture Research Institute (ARI), Republic of Cyprus (administration of >5 pilots and Agronomical Leader)

HOW IT WORKS

This use case delivers tailored information to farmers based on the data acquired by IoT devices (low-cost weather stations) regarding high farm input-costs (plant protection, irrigation water). As a result, IoT devices, cloud computing and analytics technologies translate data into services and increase the Total Farm Productivity (TFP) factor which consequently assures food security.

In addition, the use case involves track and trace services and queries incorporating the achievements within IoF2020, being the first solution that delivers on- and post-farm traceability features. Lastly, an innovative marketplace where on- and post-farm information can be published and shared with external business entities to validate food content.

THE IMPACT

OUR OBJECTIVES

Engage agri-food partners form Cyprus, Slovenia and Greece;
Deploy more than 25 IoT devices in regions where IoF2020 has not been present so far;
Provide IoT-enabled irrigation and plant protection services to farmers;
Expand and evaluate the objectives and results to other use cases in the fruits and vegetables sectors.

ON ENVIRONMENT

- Efficiency improvement – farm visits per farm (-20%);
- Reduction of pesticide use – ratio of initial kg product / kg input (-5-10%);
- Water use reduction – ratio of initial kg product / kg (m3) input (-5-10%);
- Cost reduction / kg input (10%);
- Increased total factor productivity of farms.

SOCIAL IMPACT

- Connected IoT devices (<60);
- Increased IoT uptake among end-users;
- Information provision to consumers on growth and farm supply chain conditions;
- Boosted farm sustainability;
- Strengthened data privacy and security;
- Improved consumer trust.

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5.1 PIG FARM MANAGEMENT

5/7
CURRENT TRL & TARGET TRL

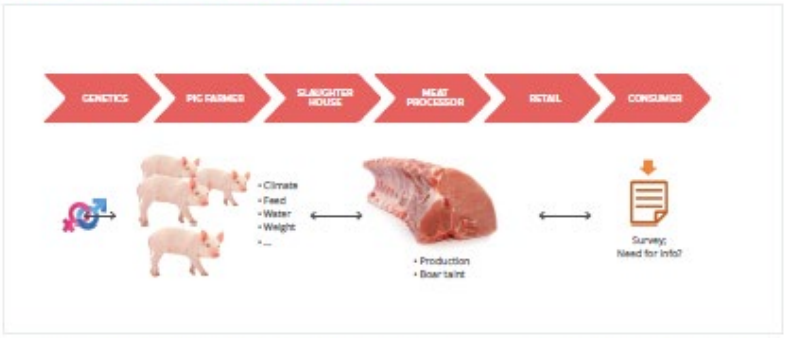
> 2.000
PIG RECORDS

TAINT
REDUCE BOAR TAINT

5
FARMS

The pig sector is facing challenges of high costs, difficult economic situation and increasing pressure concerning welfare and greenhouse gas emissions. This use-case will work on combining data across the value chain in order to provide the pig farmers with crucial information to effectively steer their management to reduce health problems and boar taint, increase productivity, etc. This information is currently lacking, fragmented or collected only post-hoc.

HOW IT WORKS



- Dashboard with analytics, early warnings and predictions based on on-farm sensors and chain level data,
- State-of-the-art sensors and warning systems for individual pig monitoring,
- IoT data platform and adaptors for several devices at the pilot sites,
- Compatibility with UC 5.3 Meat transparency and traceability.

COUNTRIES

PARTNERS

ZLTO
ILVO
Vion
Porphyrio
ISMB

THE IMPACT

OUR OBJECTIVES
- 5 farms (incl. 1 organic),
- heterogeneous data streams,
- over 2000 pig records,
- IoT data platform,
- early warning systems,
- boar taint presence reports,
- chain, group and individual level data.

ON ECONOMY
- Decrease health problems -10%,
- Reduce boar taint -20%,
- Increase average daily gain + 50g/day,
- Increased feed efficiency +10%.

OTHER IMPACT
- Reduce pig mortality -10%,
- 500 Consumers participating in survey,
- 5 Farmers attached to system,
- 5 Technology/data providers attached.

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5.2 POULTRY CHAIN MANAGEMENT

5/9
CURRENT TRL & TARGET TRL

130
MULTIMAGNITUDE SENSORS

4
FARMS

6 MILION
€ SAVINGS PER YEAR

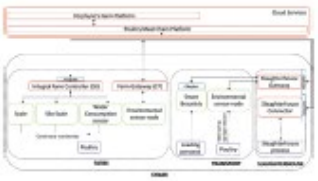
COUNTRIES

PARTNERS

Three critical points define the efficiency and product quality of the poultry meat, starting from the broiler farm to the processing plant. In each step, IoT technology brings value, and moreover, linkage between these steps adds a second level of value.

- Farm level: Monitor and optimize growing process to achieve a uniform and precisely measured slaughter weight,
- Logistics: Monitor and optimize broiler handling and transport to reduce impacts on the poultry and increase comfort levels,
- Processing plant: Optimize slaughtering and improve rendability and product-market fit, with information from all stages.

HOW IT WORKS



The data sources provide inputs for both Farm and Chain securized cloud-based Platforms (mainly in FIWARE components) leading to Early Warning System, Birds Manipulation Assistant, Environmental Assistant, Production Management DSS and Data Visualization to assist poultry meat production chain.

THE IMPACT

OUR OBJECTIVES

- 4 farms: 80 environmental and weight sensors,
- 5 environmental sensors for trucks,
- 5 smart watches: monitor bird manipulation on load and unload,
- Farm and Chain Platforms.

ON ECONOMY

- Flock´s average weight and uniformity improvement: +10%,
- Death reduction in production and transport: - 10%,
- Class A birds increase: 20%,
- Savings per year: 6 M€.

OTHER IMPACT

- Decrease feed waste: 10%,
- Decrease antibiotics use: 15%,
- Improve animal welfare (improve physical conditions and decrease birds' death): 15% less treatments.

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5.3 MEAT TRANSPARENCY AND TRACEABILITY

5/7
CURRENT TRL
& TARGET TRL

SHARE
DATA OF
PORK QUALITY WITH
SUPPLY CHAIN

HIGHER
QUALITY OF PRODUCT

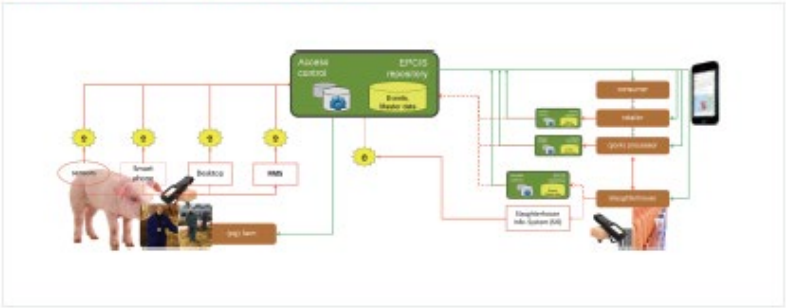
WASTE
REDUCE OVERALL
WASTE

COUNTRIES

PARTNERS

The production chain around meat is complex: data about the quality and provenance of meat products must be made available securely to different stakeholders, with different levels of granularity. The main challenge is how to enhance transparency and traceability of meat taking the diverse needs of stakeholders into account.

HOW IT WORKS



The EMTT infrastructure consists of several parts. First, one or more EPCIS repositories should be realized. On top of the EPCIS repositories, several apps, developed in FIspace's MIP trial, add functionality to the infrastructure. A connector will be developed to transform farm events into EPCIS. The other events will be captured directly from the ERP. Key aspects of the architecture for the EMTT infrastructure are the use of the global standard for event information exchange, i.e. EPCIS (EPC Information Services), the use of global identification standards such as GTIN, SGTIN and GLN and the use of the Core Business Vocabulary.

THE IMPACT

OUR OBJECTIVES

The use-case aims to demonstrate its value by:

- Supporting the antibiotics-free certification scheme of KDV,
- Enabling the use of real-time information for inspection, thereby increasing the quality of inspections, whilst reducing inspection costs and increasing transparency on animal welfare.

ON ECONOMY

Significantly reduce inspection costs by at least -50%.

OTHER IMPACT

Significantly increase inspection quality and transparency about animal welfare and the use of antibiotics.

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5.4 DECISION-MAKING OPTIMISATION IN BEEF SUPPLY CHAIN

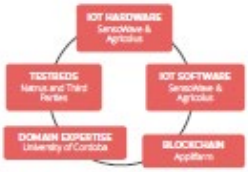
6/8
CURRENT TRL & TARGET TRL

6
COUNTRIES

> 1000
CONNECTED ANIMALS

- 15%
TOTAL WORK EFFORT

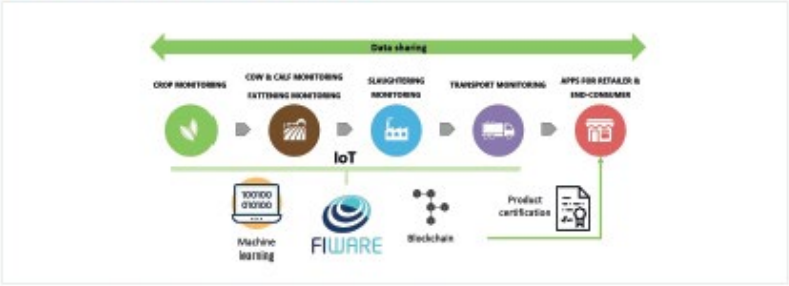
The beef supply chain is a complex system, involving crop farms, livestock farms, feedlots, transporters, slaughterhouses, retailers and consumers. Current traceability systems collect few data from every segment of the supply chain, mainly to assure food safety to consumers. Shared value systems based on integrated data allow every segment of the supply chain to improve production efficiency and product quality.



PARTNERS
SensoWave, Agricolus, AppliFarm, University of Cordoba and Natrus

THIRD PARTIES
FIWARE, COVAP, Azienda Agraria Luchetti Basilio & Claudio, and livestock farmers (from Bulgaria, Croatia, Ireland and Portugal)

HOW IT WORKS



- Data acquisition throughout the entire supply chain is carried out through:
  - IoT stations are used for environmental and soil conditions in crop fields;
  - Smart collars and IoT ear tags for beef cows' or calves' location, activity and temperature;
  - IoT scales to gather information about fattening calves' growth rate;
  - IoT multi-sensor stations for transport and slaughtering conditions - temperature, dust, noise, etc;
- A FIWARE-based platform is used for the integration of the collected supply chain data;
- Machine learning algorithms strengthen a decision support system focused on production efficiency and product quality;
- A Hyperledger Fabric blockchain service ensures data traceability and immutability.

THE IMPACT

OUR OBJECTIVES
- Bridge the gaps in data sharing across every segment of the supply chain through IoT;
- Foster a technological framework that facilitates data sharing to improve decision-making and consumer trust;
- Improve the reliability of data through blockchain technology.

ON ECONOMY
- Fertiliser and water consumption (-10%);
- Reproduction rate (>90%);
- Animal losses (<5%);
- Total work effort (-15 %);
- Selling price through certification (+10%).

OTHER IMPACT
- Resource efficiency improvement: fertiliser, water and feed;
- Average fattening days (-15%);
- Greenhouse gas reduction through optimisation;
- Certification of grass-fed beef;
- Animal welfare improvement.

COUNTRIES
PARTNERS

PARTNERS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

5.5 FEED SUPPLY CHAIN MANAGEMENT

7/9
CURRENT TRL & TARGET TRL

325
SILO SENSORS

- 15%
CO2 EMISSIONS

- 10%
COSTS

COUNTRIES

PARTNERS

The animal feed industry, mainly represented by feed suppliers and livestock farmers, currently faces great inefficiencies due to outdated supply chain management. Stakeholders struggle with the timing and quantity evaluation when restocking their feed silos, significantly affecting cost and labour efficiency. This use case thus develops an integral feedstock management system to optimise the entire supply chain.

HOW IT WORKS

Feed Supply Chain Management makes use of an IoT enabled, smart volumetric sensor, to obtain an accurate measure of the silos' stock levels.

The INSYLO technology, consists of a 3D sensor with embedded algorithms that scans the inner silo and calculates the content's volume.

The device is fully independent of the resources available on the farm as it is powered by solar energy and has embedded cloud connectivity systems. The cloud platform collects data from the silos along with relevant production information from livestock farmers and feed suppliers. In combination with Big Data and AI, it enables the optimisation of refilling orders, production batches, shipping routes and raw materials purchases.

The app platform also provides web services to facilitate the transactions between feed suppliers and livestock farmers, allowing stakeholders easier data access. Ultimately, feed suppliers can automatically generate the refilling orders based on cost criteria and send them to the farmers who can accept or reject them with a simple click.

THE IMPACT

OUR OBJECTIVES

- Deploy and test three IoT-based Feed Supply Chain testbeds (2 small-scale + 1 large-scale);
- Demonstrate proposed solution's technological and economic viability;
- Validate exploitation and scalability of the project results.

ON ECONOMY

By translating silo stock level information into management information, farm efficiency gains are made as farmers and feed suppliers can optimise the supply chain.

- Reduction of feed supplier's logistic costs (-10%);
- Annual savings per silo 250-500€;
- ROI per silo per year 150€;
- Farmer worktime efficiency savings -22 days per year.

OTHER IMPACT

- Reduction of CO2 Emissions (-10 to -15%);
- Logistics optimisation;
- Supplier inventory levels and production lots reduction;
- Decreased feed waste.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No731884. Visit IOF2020.eu for more information about the project.

5.6 INTEROPERABLE PIG HEALTH TRACKING

6/8
CURRENT TRL & TARGET TRL

IMPROVED
ANIMAL WELFARE

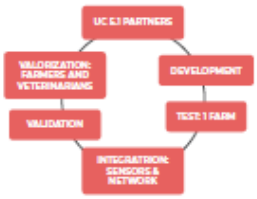
- 20%
SICK PIGLETS

- 10%
PIG MORTALITY

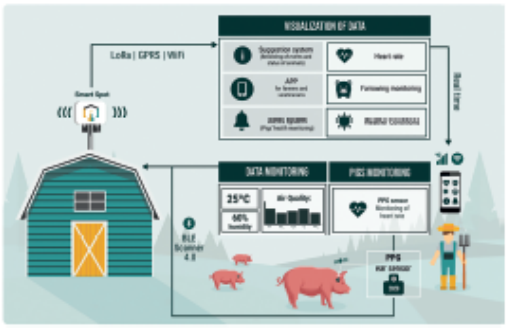
COUNTRIES

PARTNERS

Pig production's substantial advancements over the last couple of decades has resulted in considerable improvements in productivity, allowing farms to be operated at a larger scale without losing efficiency. Changes in physiological parameters of pigs are good indicators for their state of health. This use case thus relies on intensive scrutiny of each animal through IoT sensors, enabling the farmer to swiftly intervene in case health risks or diseases occur. The advantage of sensors, measuring physiological parameters, is that the animals are monitored constantly, and the collected data can further be utilized to assess production management and support decision-making.



HOW IT WORKS



THE IMPACT

OUR OBJECTIVES
- Reduce risks of virus herd contamination;
- Enhance and optimise meat production;
- Cost-effective monitoring through non-intrusive sensors;
- Provide a data management platform for farmers & veterinarians;
- Management of piglet mortality and reduction of economic risks;
- Periodical health monitoring of the herd & follow-up of diseases.

ON ECONOMY
- Optimise pig production;
- Scalability of IoT sensor deployment in mass production;
- Reduce sick piglets (-15%);
- Replicate the deployment at international level;
- Improve traceability of livestock;
- Reduce antibiotics costs.

OTHER IMPACT
- Improved animal welfare (+50%);
- Reduced piglet mortality (-50%);
- Avoid unnecessary use of preventive antibiotics;
- Earlier detection of health issues (+15%);
- Reduced piglet diseases (-60%);

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement №731884. Visit IOF2020.eu for more information about the project.

8. ANNEX 4 – DRAFT INVITATION E-MAIL

To Whom it May Concern or [*Insert name of recipient*],

We cordially invite you to our upcoming Internet of Food & Farm 2020 Use Case demonstration "[*Insert title of demonstration*]".

This demonstration is part of the IoF2020 project which aims to demonstrate the value of IoT solutions for the European food and farming sectors. The IoF2020 project is organized around 5 agriculture sectors: arable crops, dairy, fruits, vegetables and meat. This demonstration is part of the [*Insert sector*] sector.

Our use case mainly focuses on [*Insert short description of your work from IoF2020 website*]. The demonstration will inform you about lessons learned, the faced challenges and the applied technologies to overcome them. We are going to showcase [*Insert description of demonstration activity*].

The demonstration will take place on [*Insert date*] in [*Insert location*]. For further information please find the leaflet, including the full programme of the demonstration activity, enclosed.

If you would like to attend, we kindly ask you to reply to this email. We are looking forward to meeting you.

Kind regards,

[*Insert name*]

9. ANNEX 5 – ATTENDEE LIST

[Insert title of demonstration]					
	Name	E-mail	Occupation / Sector	GDPR Consent*	Signature
1				☐ Yes ☐ No	
2				☐ Yes ☐ No	
3				☐ Yes ☐ No	
4				☐ Yes ☐ No	
5				☐ Yes ☐ No	
6				☐ Yes ☐ No	
7				☐ Yes ☐ No	
8				☐ Yes ☐ No	
9				☐ Yes ☐ No	
10				☐ Yes ☐ No	

* To remain compliant with the General Data Protection Regulation 2016/679, we kindly ask you to express your consent to receive our updates and keep in touch.
You can withdraw your consent at any time by clicking the unsubscribe button in any e-mails we send to you.

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