D3.2. Smart-AKIS Regional Report

Spanish Innovation Hub

smartAKIS
Smart Farming Thematic Network

Document Summary

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Deliverable Title: Smart AKIS Regional Reports
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Version: Final
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Deliverable Lead: DTA
_____

Related Work package: Work package 3
_____

Author(s): INTIA
_____

Contributor(s): INI
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Reviewer(s): Thanos Balafoutis
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Communication level: Public
_____

Grant Agreement Number: 696294
_____

Project name: Smart- AKIS
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Start date of Project: March 2016
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Duration: 30 Months
_____

Project coordinator: Agricultural University of Athens

Abstract

This report presents the results of the Regional Innovation Workshops help in Spain for the Smart-AKIS Project

Table of Contents

1. Executive Summary

- Description of the partners involved in the process at regional innovation hub level.

INTIA is Smart-AKIS partner involved in regional innovation in Spain. INTIA is a research and extension public company linked with the regional government of Navarra. INTIA's activity areas are agriculture, livestock, irrigation systems, and food quality.

- Short description of the findings on the use of SFTs at regional level resulting from WP2 survey.

Farmers in arable crops showed a high interest in VRT technologies and GPS. But only GPS technology is nowadays really extended in the region. An interest in irrigation technologies for improvement of irrigation in difficult topographic areas was identified, as well as a high interest of cooperatives in remote control systems for irrigation of large land areas. Finally, viticulture was identified as a group with a high interest in SFTs and very diverse; use of images and indexes, use of plant monitoring tools, use of management platforms, etc..

- Short description of SFTs selected from WP1 inventory.

The selected SFTs were appropriate for Spanish agriculture

- Short description of the communication strategy followed to engage target groups.

A multi-channel strategy was followed in order to use all the tools available for communicate and promote Smart-AKIS activities:
  i.   Mailing
  ii. Direct contact trough phone or visits
  iii. Published material as periodic bulletins or magazine

- Summary of main findings from RIWs.

Uncertainty and lack of training are identified as two main barriers in the adoption of SFT's. Those aspects are related with the lack of economical information about SFT's, the lack of readiness of some SFTs already in the market and the lack of training in farmers, technicians and suppliers due to the fast development of the sector.
In arable crops systems interests are mainly related with the need of manage a broad amount of land which makes necessary the use of farm management technologies, mapping and VRT technologies in order to de efficient in inputs management.
In vineyards and vegetable sectors technological tools focused in improving crop knowledge as different sensors and indexes are also relevant.

- Summary of main recommendations.

Future strategy should reinforce multi-stakeholder collaboration approach to promote SFTs in the region. The development of hands-on demonstrations and the creation of small networks of stakeholders interested in thematic SFTs would be key aspects in this strategy. To acquire contrasted economic technical references and to design the role of public advisory services such as INTIA in supporting technological development will be as well key future aspects.

Dates and attendance of target groups to the three Regional Innovation Workshops:

Regional Innovation Workshops	Place and date	Nº of participants (and type)
1st RIW	March, 16, 2017, INTIA, Villava, Navarra, Spain	75 – 23 Users (farmers, agrarian cooperatives, wineries..), 23 industry, 6 research, 23 advisors and others),
2nd RIW	October 3, 2017 EVENA, Olite, Navarra, Spain	81 – 27 Users (farmers, agrarian cooperative, wineries…), 29 providers, 4 research, and 21 advisors and others
3rd RIW	March 7, 2018, INTIA, Villava, Navarra, 2018	67- 16 users (farmers, agrarian cooperative, wineries…), 19 providers, 6 research, and 26 advisors and others

Summary of the results of the Regional Innovation Workshops, following this table:

| KPI	Result
Nº of stakeholders participating in RIWs	223
Nº of SFT solutions presented in RIWs	24 SFT presented
Nº of SFT solutions adopted by practitioners	-
Nº of project ideas captured	8
Nº of INNOVATION project ideas	*4*
Nº of TECHNOLOGY TRANSFER project ideas	*3*
Nº of MARKET UPTAKE project ideas	*-*
Nº of multi-actor projects funded	2
Nº of multi-actor cross-border projects started	-

2. Innovation Process

Communication Strategy

- Description of communication channels mix used to disseminate call to Regional Innovation Workshops:

We used the following channels of communication to publicize the celebration of the Regional Workshops of the project:

- E-mail: Workshops were announced by e-mail to more than 230 contacts of the target groups. In the mail the program and the means to register (Google Form, INTIA telephone, email INTIA, contact person Isabel Gárriz) were attached. Working group choice was also demanded in the registration.

On December 23, 2016, the workshop was also publicized for mapping call in Navarre.
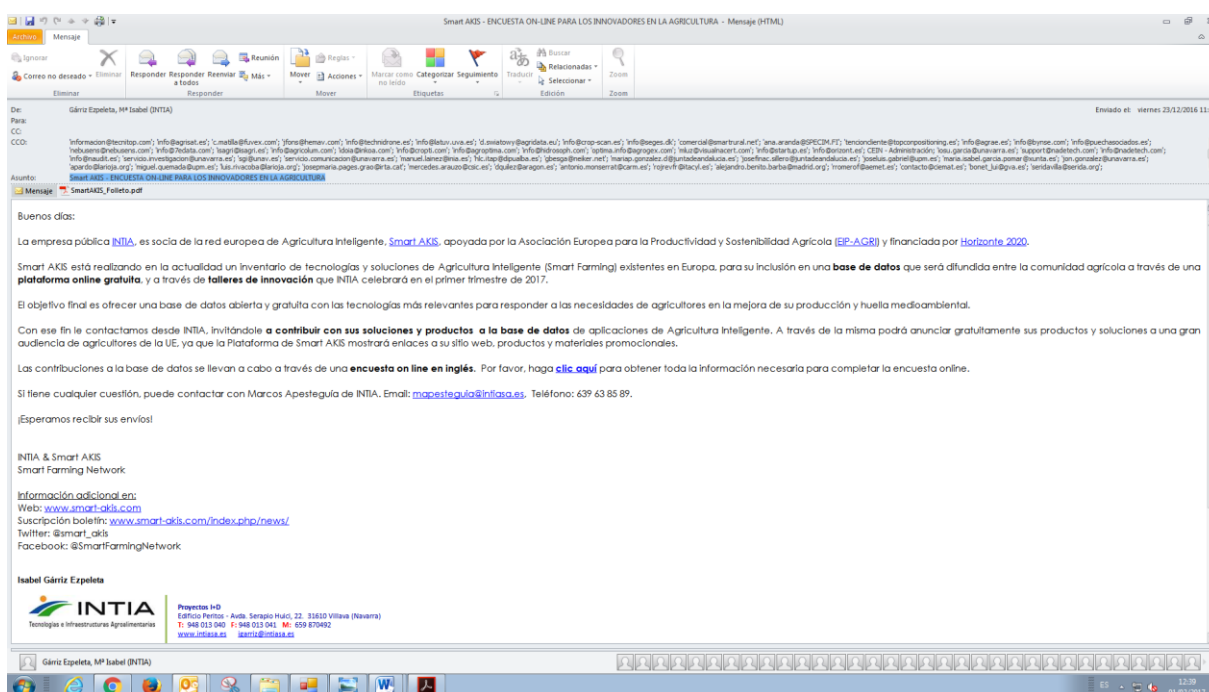
- Mail & letter: Agricultural machinery & equipment companies, Smart Farming solution providers, start-ups and spin-offs, were mailed with the letter proposed by ACTA, and the registration form.

- Telephone calls to target groups: Telephone calls to farmers who participated in the surveys, encouraging participating in the workshop was also performed. Companies and providers of intelligent agriculture solutions considered of interest were also encouraged to participate and expose their solutions in the workshop by phone, approximately 25 companies.

- Personal visits: During the month of December, a technician from INTIA visited companies supplying agricultural machinery, to carry out the inventory of technologies and personally invited to participate in the workshop, there are 18 companies from all over Navarre. They were also given the brochure explaining the project. Those who are interested in submitting SFTs were called back.

- SMS messages: SMS message for farmers not having email accounts were sent with the following text:

"1st Workshop on Innovation in Intelligent Agriculture. March 16, 2017. Headquarters of INTIA (Villava). Registration 948 013 040"

- INTIA's web: We published the program in news on our website www.intiasa.es, and on the project website https://www.smart-akis.com/. The INTIA website has an average of 4,000 visits per month. http://www.intiasa.es/es/component/content/article/27-comunicacion/920-intia-organiza-el-primer-taller-del-proyecto-smart-akis-innovacion-en-agricultura-inteligente.html

Jueves, 09 Febrero 2017 00:00

INTIA organiza el primer Taller del Proyecto Smart Akis: Innovación en agricultura inteligente

INTIA organiza el primer Taller del Proyecto Smart Akis: Innovación en agricultura inteligente

Más información>>

- Electronic bulletin: Workshops were also announced through our electronic bulletin sent to 4,000 email addresses: All INTIA workers, 230 media (press and electronic media), regional authorities, agronomists and agricultural consultants, agricultural organizations, agricultural cooperatives, wineries, environmental organizations, scientific societies, municipalities, public enterprises, financial institutions, agricultural organizations, etc .
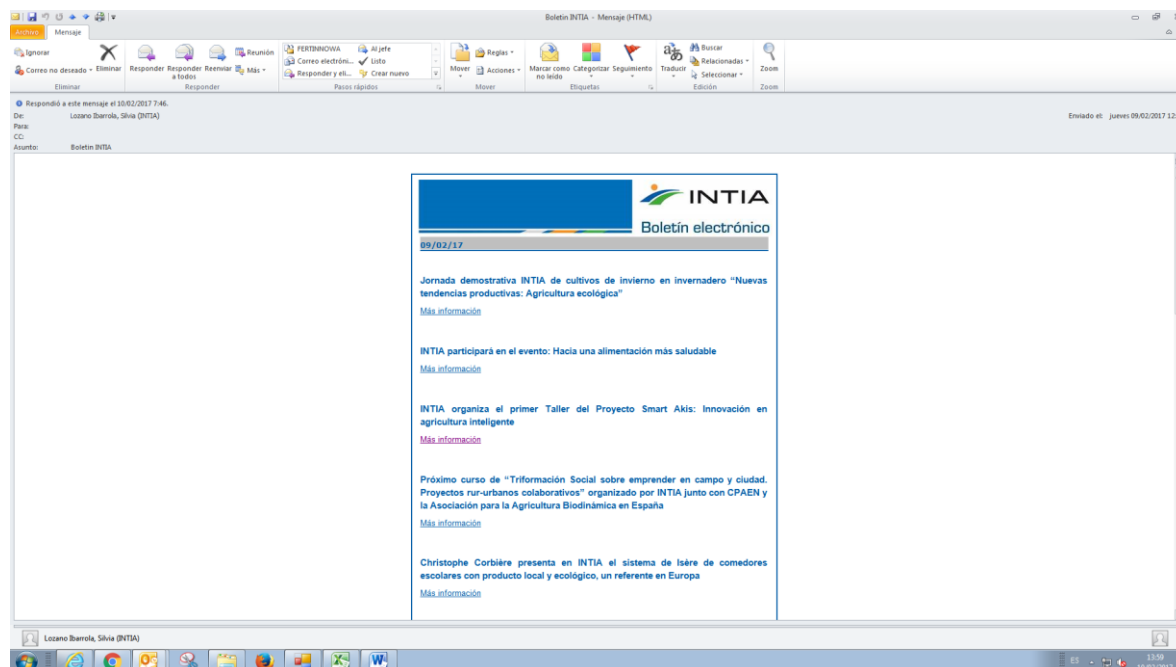
Announcement of the first workshop in January 19, 2017.

La red europea Smart-AKIS en la que participa INTIA está realizando un inventario de las mejores soluciones de Agricultura Inteligente en Europa

Ha lanzado una encuesta online para hacer un inventario de las soluciones más prometedoras que mejoren las prácticas de Agricultura Inteligente (Smart Farming) en Europa.

Más información>>

Press release: After the workshops press releases were prepared telling the main details of the workshop: number of participants, photos, results ... to be distributed through INTIA's electronic newsletter,

Navarra Agraria Magazine: In the issue of Navarra Agraria magazine nº 220 January-February 2017, on page 19, the first workshop was announced.

After the workshop an article about the first workshop and the FTS presented was published.

Summary table of communication channels

Target Groups	Communication channels					
	Email	**Email + letter**	**Phone call**	**Visits**	**INTIA's web**	**Electronic bulletin**
Farmers, agricultural cooperatives	X		X	x	X	X
Agricultural equipment companies, Smart Farming solution providers, start-ups and spin-offs	X	X	X		X	X
Investigators University and centres	X				X	X
Government of Navarre	X		X		X	X
General public	X				X	x

- Registration tools used to register in advance participants to workshops (email, telephone, Google Form, etc.).
    We will use the following tools to register participants in the workshop:
    - Google form
    - Telephone numbers of INTIA were available to those interested to attend the event, contact person Isabel Gárriz (INTIA)
    - Email from INTIA were available to interested parties to attend the event igarriz@intiasa.es

- Additional communication activities carried out in order to ensure a high level of participation.
    INTIA organized a team of 8 people:

- 3 coordinators of the RIWs: Alberto Lafarga (Project Manager), Marcos Apesteguía (Technical project Smart-AKIS), Isabel Gárriz (Technical communication projects R & D),
- 5 specialists in different areas: Alberto Alfaro (Technical adviser irrigation), Carlos San Martín (Technical specialist machinery), José Jesus Pérez de Ciriza (Technical specialist in machinery), Ana Pilar Armesto (GIS specialist) and Félix Cibriain (Head of the Viticulture Bureau of the Government of Navarra)

Each technician made the necessary communication to ensure participation in the workshop of main stakeholders in the region.

Photo of INTIA meeting in preparation for RIW1 of January 27, 2017.

- Calendar of RIWs:

Regional Innovation Workshops	Place and date
1st RIW	Villava (Navarra), Spain, March, 16, 2017
2nd RIW	Olite (Navarra), Spain, October, 3, 2017
3rd RIW	Villava (Navarra), Spain, March, 7, 2018

Target Groups needs and expectations
- Findings from regional farmers' needs surveyed in WP2 that have been taking into consideration for:
  - The selection of the SFTs to be showcased in the RIWs.
  - The definition of the target groups to address on RIWs.
  - The definition of the programme or agenda of RIWs.

From WP2 survey main interest and needs of farmers were identified and compared with INTIA's technicians' previous experience. Farmers in arable crops showed a high interest in VRT technologies and GPS. An interest in irrigation technologies for improvement of irrigation in difficult topographic areas was identified, as well as a high interest of cooperatives in remote control systems for irrigation of large land areas. Finally viticulture was identified as a group with different needs and technologies involves.

Selection of Smart Farming Technologies

- Description of the method followed to select Smart Farming Technologies (SFTs) of interest to the regional stakeholders.
  All interests and needs identified in the survey and from the technicians experience were represented in the workshop. The adaptation to regional conditions was ensured taking into account a great number of testimonies from farmers and producers already using SFTs in the area.
- Listing of SFTs presented at the workshops:

Nº	Name of SFT	SFT Category	Cropping system	Purpose
		• Product • Research result	• Arable • Tree • Vegetables • Vineyards • Grassland	• Mapping/recording • Reacting/Variable rate technology • Guidance/Controlled Traffic • Farm management information system • Robot or smart machine
1	NDVI use in nitrates measurement in spinach	Research result (producer testimony)	Vegetables	Reacting/Variable rate technology
2	GPS for grape harvesters management	Product (producer testimony)	vineyards	Farm management information system
3	GPS and section controlled sprayer	Product (producer testimony)	Arable & vegetables	Reacting/Variable rate technology
4	Fertilizers VRT trough harvest maps	Product (producer testimony)	Arable	Reacting/Variable rate technology
5	Fertilizers VRT trough drones and NDVI	Product (producer testimony)	Arable & vegetables	Reacting/Variable rate technology
6	Grapes quality zoning trough images and NDVI index	Research result (producer testimony)	vineyards	Farm management information system
7	Spider WebGis platform	Product	Arable & vegetables	Mapping/recording
8	Dron images and humidity sensors	Product	Arable & vegetables	Mapping/recording
9	E-Vineyard platform	Product	vineyards	Farm management information system
10	Robocrop Gardford	Product	Arable & vegetables	Robot or smart machine
11	Farmsight	Product	Arable & vegetables	Farm management information system
12	VRT fertilizer agronurb	Product	Arable & vegetables	Reacting/Variable rate technology
13	SIGAgroasesor	Product	Arable & vegetables	Farm management

				information system	11
14	VRT fertilizer VICON	Product	Arable & vegetables	Reacting/Variable rate technology	
15	Irrigation remote control	Product (producer testimony)	Arable & vegetables	Farm management information system	
16	Irrigation trough humidity sensors BRIOAGRO	Product	Arable & vegetables	Reacting/Variable rate technology	
17	Irrigation remote control KUNAK	Product	Arable & vegetables	Farm management information system	
18	Humidity sensors LabFerrer	Product	Arable & vegetables	Reacting/Variable rate technology	

Sources of funding for Project Ideas

Description of the sources of funding identified at regional and national level for the potential funding of multi-actor collaborative projects to be listed on the following tables:

Funding source – grants and open calls

№	Name of grant (and link)	Funding body	Geographical scope	Eligible projects*	Eligible beneficiaries	Eligible expenses	Aid intensity (%)	Coming deadlines	Other info
			National, regional, local			• %			

General individual and collaborative R&D&I projects, agri-food specific R&D&I grants programmes, Operational Groups Calls under RDPs, Innovation vouchers for the purchase of external expertise, Proof of concept support for research results, Investment grant for equipment modernisation, Public procurement process.

Funding source – financial instruments

№	Name of programme (and link)	Funding body	Geographical scope	Instrument category*	Eligible beneficiaries	Financial aid support	Coming deadlines	Other info
			National, regional, local					

Acceleration/incubation service for start-up, spin-off and entrepreneurs on agri-food sector, financial instruments: equity (seed capital), loans, warranties; crowdfunding platform, prize/challenge contest.

Funding source – other instruments and tools for supporting multi-actor collaboration

№	Name of programme (and link)	Promoter body	Geographical scope	Eligible collaborations *	Eligible beneficiaries	Eligible expenses (if any)	Aid intensity (%)	Coming deadlines (if any)	Other info
			National, regional, local			• %			

Own experimental programmes from advisory services, technical institutes, agricultural departments or farmers associations, coops or unions; agreements between advisors/technical institutes or farmers/coops and private companies to develop/demonstrate/test SFTs; peer-to-peer learning: early adopters support laggards in SFT uptake.

3. Findings

<Please, conduct a joint analysis of the outcomes of the three RIWs on the following points>.

3.1. Identification of barriers and incentives for adoption of SFTs

1- Plots typology, surface and topography.
2- Cost - benefit uncertainty.
3- Lack of public economic support.
4- Lack of training and technical support.
5- Lack of trained personnel within suppliers.
6- Too much commercial information and too fast evolution.
7- Reliability, readiness of SFTs to be used.
8- Devices and software connections. Interoperability.
9- Precision and working scale of implements.
10- Interpretation of images due to multiple factor influencing over crops.
11- Standardization of software language.

3.2. Interest on existing SFTs – most demanded SFTs

- Images from multiple devices (drones, satellites and on go sensors) for VRT nitrogen applications and weeds identification.
- VRT applications machinery
- The use of sensors for irrigation automation.
- Remote control systems for Irrigation
- WebGis platforms for collective irrigation management and vineyards management
- Images and artificial intelligence
- DST in nitrogen dosage for arable crops
- Vineyard nutrition status sensors

3.3. Research needs in Smart Farming

- Applied research in images interpretation and identification of weeds in arable crops.
- Artificial intelligence and auto learning in different devices and implements capturing information (data or images.)
- On go nitrogen crop needs determination in arable crops.
- Nutritional needs sensors in vineyards.
- Development of index to discriminate different grapes qualities.

3.4. Other relevant findings

3.5. Potential collaborations identified

<Please, fill in the table below with the potential collaborations identified in the workshops>.

No.	Category of collaboration	Related SFT	Cropping system	Short description of potential collaboration
1	Transfer, Demonstration Day, Innovative farm	VRT machinery, drones, satellite images	Arable crops	Demonstration of variable rate Nitrogen Fertilization technologies.
2	Development project	WebGis platforms	Vineyards	Development or adaptation of already existing platforms to collect information about the vineyards.
3	Research project	Use of images	Vineyards	Development of index to discriminate different grapes qualities.
4	Research project	Nutritional sensors	Vineyards	Development of an index to discriminate different nutritional needs in vineyards
5	Transfer, Demonstration farm	Use of images and VRT machinery	Arable crops	Herbicide variable rate application in cereals, rapeseed and legumes
6	Research project	Images and software development	Arable crops	Images interpretation and artificial intelligence. Improvement of weeds mapping and data interpretation in arable crops.
7	Development project	Remote control systems	Arable crops	Interoperability between different elements of remote control systems and a Smart platform of collective water management

4. Recommendations

4.1. Sustainability and mainstreaming of Smart-AKIS results

Implementation of a medium-term strategy that describes the role of INTIA in supporting technological innovation in Navarre, a strategy that should incorporate the fundamental elements learned in Smart-AKIS:
- multi-actor collaboration (multi-actor workshops focused on technologies of interest to solve specific problems, with regional or national scope, through demonstrations, networks and projects),
- the management and transfer of useful information for end users (platform, cards, DST, Itineraries, economic studies, etc.) and
- finally more institutional actions related to governance , also at the regional, national and European

level (PDR programs, Innovation, RIS3, EIP, etc.)

4.2. Adoption of Smart Farming Technologies

The steps to follow are now very clear:
- First identify the problems you are trying to solve
- Second collect existing information of a technical and economic nature
- Third, create a multi-stakeholder action group that agrees on the steps to be taken
- Fourth, develop the necessary actions: practical demonstrations, creation of user networks, innovation projects, etc.
- Fifth, transfer, disclose the results and the knowledge gathered
- Sixth, develop tools for decision support, DST, Itineraries, etc.

4.3. Strengthening Innovation in Agriculture

One of the best ways to approach multi-stakeholder collaboration to promote SFTs is to develop hands-on demonstrations and create small networks of users interested in SFT. These actions need different supports:
- Technical support in technology specialists. Normally companies supplying the SFT, but also public companies, technology centers and universities that can provide greater impartiality to the information.
- Institutional support in technological development programs that can help overcome the barriers identified.
- Financial support through public programs and private funds of institutions such as foundations.
- Support for investments in machinery and infrastructure, through public and private funds.

4.4. Smart Farming R&D agenda

It is necessary to acquire contrasted economic technical references, the result of real-scale practical demonstrations in the use of the proposed SFTs. This will be done through projects, demonstrations, multi-actor networks with a specific role of public companies such as INTIA.
It is necessary to design the role of public advisory services such as INTIA in supporting technological development.
It is very important the development of public-private platforms for the support of data and services derived from its use to generate practical and useful information.

5. Annexes

5.1. Minutes of the Regional Innovation Workshops

5.1.1. RIW1

SMART AKIS - 1st REGIONAL INNOVATION WORKSHOP
Villava (Navarra), March, 16, 2017

RIW1 Programme

The Programme is given in the following link:
https://www.smart-akis.com/wp-content/uploads/2017/03/SmartAKIS_RIW1_Programa_V4_mapa.pdf

Agenda Group 1:
https://www.smart-akis.com/wp-   content/uploads/2017/03/SmartAKIS_RIW_Agenda-_Grupo1-_TELEDETECCI%C3%93N- APLICADA-y-MAQUINARIA-INTELIGENTE.pdf

Agenda Group 2:
https://www.smart-akis.com/wp-content/uploads/2017/03/SmartAKIS_RIW_Agenda-_Grupo2-_CONTROL-Y-MANEJO-RIEGO.pdf

RIW1 Power Point presentations

Presentations: https://www.smart-akis.com/index.php/event/smart-akis-1st-innovation-workshop-in-spain/

RIW1 Attendance Sheets

The list of attendants is not available due to confidentiality reasons.

RIW1 Pictures

RIW1 Findings

Summary of main findings on the following fields, to be included on "Smart AKIS Report"

Findings from the discussion vis a vis the needs and ideas identified on WP2

During the development of the first workshop several farmer's needs and ideas were identified from farmer's testimonials and group conversation. Most of the ideas matched with the results obtained in WP2 survey analysis:

1- Compatibility between devices.

- Connection between different manufacturer devices (GPS/tractor and implements).
- Control of the system from a single screen.

2- Simplification of SFTs.

- Problems of use and big loss of time.

3- Data interpretation.

- Now, much information is captured but is needed to improve data interpretation.
- Experts with agronomical knowledge are needed for data interpretation.

4- Transformation of data to useful information.

- Irrigation automation, VRT, pest management...

5- Continuous training.

- Farmers are over helmed with the advance of SFTs.

6- Technical support.

7- Reduction of costs and financial support.

Relevance of SFTs regarding needs and ideas identified in WP2

- Using of satellite images and NDVI index for evaluation of nitrates in spinach. (Relevance: transform data into useful information) (frozen vegetables industry testimony)
- GPS location management system for harvest (Relevance: traceability) (testimony winemaker cooperative)
- GPS connected to sprayer with control of sections (Relevance: phytosanitary reduction) (farmer testimony)
- Use of harvest maps for fertilizer variable dosage (Relevance: N reduction) (farmer testimony)
- Use of drone images and NDVI index for variable application of fertilizers (Relevance: N reduction) (farmer testimony)
- Use of satellite images and NDVI index for vineyard zoning (relevance: transform data into useful information) (Winemaker testimony)
- Spider WebGIS Platform (relevance: water and N use efficiency) (AgriSAT presentation) 8- Use of temporal satellite image sequences to estimate water needs (efficiency use
- water) (AgriSat presentation)
- Use of temporal sequences of satellite imagery for mapping potential production and implementation of fertilization recommendation (Relevance: N efficiency) (AgriSat presentation)
- Use of drone images using a combination of sensors (thermal and multispectral) for modelling of nitrogen and moisture. (relevance: Water and N use efficiency) (Smartrural presentation)
- E-vineyard platform (AgerTechnology presentation)
- Use of satellite images to model diseases (relevance: reducing diseases) (AgerTechnology presentation)
- ISOBUS control tools and precision implements; plough self-guided, control sowing depth, and dose nozzle variable dosage (AAMS presentation)

- Onboard mapping culture sensors and variable N fertilization (Relevance: N efficiency) (AAMS presentation)

- Robocrop Gardford mechanical weeding machine (herbs handling and reducing herbicides) (AAMS presentation)

- Farmsight (improved information performance) (John Deere Video)

- Fertilizer spreader variable dosage (Relevance: VRT) (Presentación Agronurb)

- SIG Agroasesor platform (relevance: improves interpretation information and data) (INTIA presentation)

- Fertilizer spreader variable dosage VICON (Relevance: VRT) (Video)

- Irrigation telecontrol system (Relevance: efficiency in the use of water) (farmer testimony)

- Smart irrigation with sensors of moisture in soil, information in the cloud and Smart phone (Relevance: efficiency in the use of water) (BRIOAGRO presentation)

- Technologies for remote control of irrigation characteristics of available wireless networks efficiency (relevance: improvement in data capture and cost efficiency in the use of water) (KUNAK presentation)

- Probes to adjust the irrigation (relevance: capturing and interpretation of data, setting of the irrigation needs of the crop) (Francesc Ferrer presentation).

- Humidity sensors in soil (Relevance: efficiency in the use of water) (UPNA presentation).

Interest on adopting or transferring proposed SFTs with a ranking of the highest scored SFTs

From the evaluation done to the participants in the first workshop can be identified the SFTs with a higher interest.

- The use of sensors for irrigation automation.

- Improvement in images data interpretation.

- Zoning of vineyards following quality criteria.

Identification of barriers and incentives for adoption of SFTs.

- Plots typology, surface and topography.

- Cost - benefit uncertainty.

- Lack of public economic support.

- Lack of training and technical support.

- Lack of trained personnel within suppliers.

- Too much commercial information and too fast evolution.

- Reliability, readiness of SFTs to be used.

- Devices and software connections.

- Capacity of implements to work with the precision of information captured by sensors and images.

- Multiple factor influence over crops.

- Standardization of software language.

Potential new uses for existing SFTs.
No Comments

RIW1 Project Ideas
- Improve of irrigation management in hilly areas.
- Improve of irrigation tele-control systems.
- Use of fertigation variable dosage.
- Plot zoning trough satellite images in irrigation installation projects.
- Nitrogen VRT in arable crops.
- Weed mapping and differential plot management.
- Development of index for vineyard quality zoning.
- Development of index for spinach nitrates content evaluation.

RIW1 Evaluation
Information summing up the results from the Evaluation Form voluntarily filled in by participants.

Interest	Average score	4,46
	More interesting presentations	
Organization	Average score	4,67
	Improvement areas	
Methodology	Average score	4,35
	Improvement areas	
Smart Farming Technologies	Average score	4,41
	Top Smart Farming Technologies	
	Average rate of intended use of Smart AKIS database	49%
Project Ideas	Average score	4,29
	Top Project Ideas	
	Average rate of participants planning to take part on projects	38%
Open suggestions		

5.1.2. RIW2

SMART AKIS 2nd REGIONAL INNOVATION WORKSHOP
Olite (Navarra), October 3, 2017

RIW2 Programme

Insert image with programme elaborated following template.
https://www.smart-akis.com/wp-content/uploads/2017/09/SmartAKIS_RIW2_Programa_V4.pdf

RIW2 Power Point presentations

Smart AKIS Platform. Natalia Bellostas (INI).
https://www.smart-akis.com/wp- content/uploads/2017/10/1_Smart-AKIS-Platform_NBellostas.pdf

Results of 1st Innovation workshop. Marcos Apesteguia (INTIA).
https://www.smart-   akis.com/wp-content/uploads/2017/10/2_Resultados_1er-Taller_WP1_WP2_MApesteguia.pdf

Methodology Pararell work groups. Alberto Lafarga (INTIA).
https://www.smart-akis.com/wp-content/uploads/2017/10/3_Smart-AKIS-Intro_ALafarga.pdf

RIW2 Attendance Sheets

The total number of attendees was 81. Distribution of attendees by work group:

Group	Nº Attendees
1. Irrigation	19
2. Fertilization	16
3. Herbicides	24
4. Vineyard	22

Distribution of attendees by category (farmers / producers, enterprises, research and rest):

Category	Nº Attendances
Users (farmers, agrarian cooperative, wineries…)	27
Providers (enterprises..)	29
Research	4
Advisor and others	21

The list of attendants is not available due to confidentiality reasons.

RIW2 Pictures

Video:
https://www.facebook.com/SmartFarmingNetwork/videos/vb.111765365161929/1587078494669440/?type=2&theater

Work Group 1   Work Group 2   Work Group 3   Work Group 4

Demo 1

Demo2   Demo3

RIW2 Findings

On top of the multi-actor collaborations that are to emerge from the RIWs, other outputs are expected as a result of bringing together stakeholders into the RIWs. One of the overall objectives of Smart-AKIS is to capture these outputs in order to produce recommendations for fostering the penetration of SFTs in Europe.

This section of the "minutes" document provides a number of headlines, covering different aspects that could emerge in the discussion in the RIWs (both in plenary but also in the Work Groups). Hub partners are

encouraged to pay careful attention to the discussions taking place in the RIWs in order to identify these "findings". As suggested in the Guidelines, the Work Groups can be tape recorded in order to better grasp the discussion taking place. These "findings" will be included on the "Smart AKIS Report" to be produced by each Hub partner after RIWs 1 and 2 and presented at the 1st Transnational Innovation Workshop.

Findings regarding the needs and ideas identified in WP2

- Reduction of environmental impact of the use of phytosanitaries: Reduction of the use of phytosanitary products by variable rate application.

- Compatibility of different devices and software.

- Need for map validation. Zoning. Analysis of different dates indexes.

- Unification and compatibility of sampling, information and tools (software)

- Decrease herbicide use, reliability of mapping and financing. Promote a farmer expense savings

- Share data between different organizations

- Software for discriminating irrigation alarms

- Drone flight for mapping

- Irrigation efficiency. Remote control Irrigation Management. Analysis and filtering of incidents

- Reduction of inputs in herbicides and Fertilizers. Technology that identifies weeds and eliminates them

- Multiple data capture systems. Multiple calculation systems for recommendations. Applicable to multiple machines.

- Incorporation of UAV system for crop monitoring. Interpretation and collaboration of data with different types of sensors (ground, remote sensing with Drone)

- Adaptation the technology to each farm

- Development of application/utility in the cloud to share data from different sources

- Use of platforms to display information from multiple sources

- Phase demonstration of variable fertilization and analyze it in the same plot. Different technologies and equipment have an impact on the cost / benefit

- Search for new soil humidity sensor

Identification of barriers and incentives for adoption of SFTs.

- Compatibility of different systems

- Adaptation the technology to each farm

- Technology (drones) is more expensive than inputs (fertilizer, herbicide…)

- Difficulties in interpreting device data: Software for discriminating irrigation alarms

Relevance and interest on adoption and transfer of presented SFTs, ranking of the highest scored SFTs

- Drones. In the market…

- Variable dosing machinery. In the market…

- Humidity soil sensors. In the market..

Potential new uses for existing SFTs.

No comments

Potential inputs for research.

No comments

RIW2 Project Ideas

Project Idea 1: Demonstration of variable rate Nitrogen Fertilization technologies.

Category of project	Smart Farming Technology	Crop system
Technology transfer	*Nitrogen variable rate Technologies.*	*Arable*
Promoter/s name/s		
INTIA, Agrisat, Topcon, Smart rural, Aguirre, Agronurb, AAMS Iberia.		
Short description of project		
Development of 3-5 practical demonstrations in the field, on a real scale with the participation of all the necessary stakeholders. INTIA will propose a working protocol to carry out the demonstration; methodology preparation, open day organization, evaluation and dissemination. Demonstration, evaluation and dissemination of: 1. Systems and tools for mapping intraplot variability 2. Systems and HAD for fertilizer dose calculation, 3. Intelligent machinery for the management of the field application.		
Expected benefits		
Several benefits from the implementation of variable rate application of nitrogen are expected: Fertilizer costs reduction. Increased yields due to an improvement in crop nutrition. Reduction of water pollution risks.		
Multi-actor collaboration needed		
- Companies offering services of mapping the variability of plots or services that integrate this phase of the project. The final product is a thematized map. Hemav, Agrae, Agrisat, Topcon, AAMS, Agrisat - Companies offering fertilization advisory services, HAD. INTIA. The final product is a recommendation of fertilizer dose and application time for each thematized area of the map. - Companies of intelligent machinery capable of using thematized maps to perform the fertilization. Aguirre, Agronurb - Farmers with their own teams, Carlos Sánchez, Perico Echarte and Eduardo Luri.		

Project Idea 2: Viticulture_1. Variable dosage

Category of project	Smart Farming Technology	Crop system
Technology transfer	*Phytosanitary variable rate application*	*Vineyards*
Promoter/s name/s		
AGER Technology and Government of Navarra - Service of Viticulture		

Short description of project
- Demonstrate the applicability of equipment and technologies of variable dosage of pesticides in vineyard. - Demonstration in vineyards of the cooperatives concerned.

Expected benefits
More efficient use of plant protection products in vineyards resulting in less environmental impact and economic savings. Reduction of costs Reduction of environmental risks related with the use of phytosanitary products.

Multi-actor collaboration needed
Participants and roles • Industry AGER Technology (Juan García del Moral). • Possibility of involving cooperatives / wineries • Government of Navarra - Service of Viticulture

Project Idea 3: Viticulture_2. Platform

Category of project	Smart Farming Technology	Crop system
Innovation		*Vineyards*

Promoter/s name/s
Bodegas Inurrieta, Bodega Cooperativa Vega del Castillo

Short description of project
Development or adaptation of already existing platforms to collect information about the vineyards. Producers ask for several possible functionalities of the platform: location of plots and sampling areas; satellite images of plots; registration of treatments (field notebook), etc. Several actions are planned: - Study the applicability of different existing platforms (platform of AGER Technology, sigAGROASESOR of INTIA, platform used by UPNA …) for the functionalities that the wineries need. - Possibility to develop new functionalities on existing platforms (sigAGROASESOR or RECAP of INTIA) Identification of the platforms already used by the participants - Identification of the needs of the wineries - Study the possibility to develop new functionalities: possible project of R & D of Government of Navarre or Operative Group of the RDP.

Expected benefits
- Improve information management of the farm. - Support Decision making.

Multi-actor collaboration needed
- -AGER Technology (Juan García del Moral): they have a platform. - Bodega Cooperativa Vega del Castillo (Fernanda Martínez de Azagra). - Bodegas Inurrieta (Kepa Sagastizábal, Jesús Astráin). - UPNA (Gonzaga Santesteban) - INTIA (Ana Pilar Armesto): to confirm interest based on sigAGROASESOR.

Project Idea 4: Viticulture_3. Informative day: presentation of vegetation indexes.

Category of project	Smart Farming Technology	Crop system
Technology transfer	Vegetation indexes	*Vineyards*

Promoter/s name/s
Government of Navarra - Viticulture and enology section Smart Rural. Agriauto Remón Agrolab

Short description of project
Make a dissemination session to present the results of previous work. The Government of Navarra has developed a previous work with the Autonomous University of Madrid on the generation of specific vegetation indexes obtained from radiometric values in vineyard, for the detection of nutritional deficits, etc. Similarly, in the same plot, in the year 2017, work has been carried out in collaboration with the companies Smart Rural and Agrolab, aimed at establishing possible correlations between different factors. In the intended day the results of the progress achieved up to this moment will be presented for discussion.

Expected benefits
More efficient use of plant protection products in vineyards resulting in less environmental impact and economic savings. Reduction of costs Reduction of environmental risks related with the use of phytosanitary products.

Multi-actor collaboration needed
- Government of Navarra - Viticulture and enology section. EVENA (Félix Cibriain).   - Government of Navarra.-Laura Caminero.   - Autonomous University of Madrid (Felipe Yunta)   - Smart Rural. Agriauto Remón. (José Ramon Algarra)   - Agrolab (Roberto Ruilope).   - UPNA (Gonzaga Santesteban)

Project Idea 5: Herbicides_1. Mapping ballueca 2nd treatment in cereal.

Category of project	Smart Farming Technology	Crop system
Technology transfer	*Herbicide variable rate application*	*Arable*

Promoter/s name/s
INTIA (Anapilar Armesto and Irache Garnica) Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla). Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta)

Short description of project

Demonstrate the applicability of herbicide variable rate equipment and technologies in cereals. The tasks / activities planned for the achievement of the objectives:

- Selection of plots with problem of ballueca (problems of control in autumn treatments.
- Mapping of plots in February.
- Preparation of prescription maps in March-April.

Estimated duration and budget:

- Duration: annual (cereal campaign).
- Budget: Selection of the plots, dron flight - equipment displacement for mapping, delimitation of infestation stands, data processing, field verification of image classification, use of equipment and phytosanitary. And control of the effectiveness of the application.
- Collection of data: applied volumes, application map of the equipment.

Expected benefits
More efficient use of herbicides products in cereals resulting in less environmental impact and economic saving. The use of herbicides is an environmental problem. The European regulation of phytosanitaries of obligatory compliance makes necessary the use of technologies for a reduction in phytosanitary products used in agriculture.

Multi-actor collaboration needed

- Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla).
- Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta)
- INTIA (Anapilar Armesto and Irache Garnica)
- Smart Rural (José Ramón Algarra)
- Hemav (Joan Fons

Project Idea 6: Herbicides_2. Mapping ballueca 2nd treatment in cereal.

Category of project	Smart Farming Technology	Crop system
Technology transfer	*Herbicide variable rate application*	*Arable*

Promoter/s name/s
INTIA (Anapilar Armesto and Irache Garnica)
Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla).
Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta)

Short description of project
To demonstrate the applicability of herbicides variable rate equipment and technologies in rapeseed and legumes. Selection of plots with problems of narrow leaf, rapeseed and legumes. - Mapping of the plots in November-December. - Preparation of prescription maps in December. - Treatment in December. Estimated duration and budget - Duration: annual during a campaign. - Budget: Selection of plots, drone flight - equipment to perform mapping, delimitation of infestation stands, data processing, field verification of image classification, use of equipment and phytosanitary. And control of the effectiveness of the application. - Collection of data: applied volumes, application map of the equipment.

Expected benefits
More efficient use of plant protection products in cereals resulting in less environmental impact and economic savings.
The use of herbicides is an environmental problem. The European regulation of pesticides of obligatory compliance makes necessary the use of technologies a reduction in phytosanitary products used in agriculture.

Multi-actor collaboration needed
- Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla).
- Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta)
- INTIA (Anapilar Armesto and Irache Garnica)
- Smart Rural (José Ramón Algarra)
- Hemav (Joan Fons)

Project Idea 7: Irrigation 1- Data in the cloud for the improvement of the systems and management of telecontrol of irrigation.

Category of project	Smart Farming Technology	Crop system
Innovation	*Irrigation telecontrol*	*Tree Vegetables Vineyards Grasslands*

Promoter/s name/s
Cooperativa de Mendigorría (Carlos Beriain) Aguacanal (Iranzu Artiz)
INTIA (Alberto Alfaro and Joaquín Puig)

Short description of project
Platform - Bigdata server to share cloud flow and pressure data.
Share data to eliminate incidents: Simplified alert management system from 50 alerts to 5 alerts. For this it is essential to have the flow and pressure data (supplied by the concessionaire). Then it would be necessary a software for the interpretation of the data, interface for each client, for the recommendations of irrigation.
- Currently, irrigation telecontrol systems send a high number of incidents and alarms of difficult diagnosis.
- The user of these telecontrol systems receives a high number of incidents and in many cases does not know how to discriminate between them.
- Use of sensors as HAD (Decision Support Tool).

Expected benefits
- Reduction of the number of incidents in the management of alarms. (Improve farm information management)
- Greater precision in irrigation recommendations. (support decision making)

Multi-actor collaboration needed
- Cooperativa de Mendigorría (Carlos Beriain)
- Aguacanal (Iranzu Artiz)
- MIROKA (Miguel Oroz) ARATECK (Patxi Macua)
- INTIA (Alberto Alfaro and Joaquín Puig)

Project Idea 8: Irrigation 2- Data in the cloud for the improvement of the systems and management of telecontrol of irrigation.

Category of project	Smart Farming Technology	Crop system
Innovation	*Irrigation telecontrol*	*Tree Vegetables Vineyards Grasslands*

Promoter/s name/s
Cooperativa de Mendigorría (Carlos Beriain) Aguacanal (Iranzu Artiz) INTIA (Alberto Alfaro and Joaquín Puig)

Short description of project
Software for the interpretation of the data of the server, interface for each client, for the recommendations of irrigation, using data of the server (cloud).   - Define the structure of the cloud that then allows various software interpretations.   - Create a table of incidents, alarms and diagnosis.   - Possibility to include sensors to be correct in the diagnosis.   Difficulties may come from the data provider, competition between companies offering their services in this area. Economic difficulties to finance any server costs

Expected benefits
- Reduction of the number of incidents in the management of alarms.   - Greater precision in irrigation recommendations

Multi-actor collaboration needed
- Cooperativa de Mendigorría (Carlos Beriain)   - Aguacanal (Iranzu Artiz)   - MIROKA (Miguel Oroz) ARATECK (Patxi Macua)   - INTIA (Alberto Alfaro and Joaquín Puig)

RIW2 Evaluation

Results from the Evaluation Form voluntarily filled in by 39 participants.

	Average score	4,15
Interest	Point out what you consider most interesting from the workshop for your work Fostering collaboration between different organisms Knowing the needs of farmers and the availability of different technological solutions. Know the needs of some farmers Different points of view among the sector have been exposed. Knowledge transfering to the farmer. Possibility of giving some service to the farmer. Sharing knowledge between different stakeholders. Listen to others ideas.	
Organization	Average score	4,44

	Improvement areas Well organized and moderate To have more time to debate in group Generation of a more specific agenda for each line of action More discussion time More time is needed More dissemination and perhaps more detailed guides or agendas I found it perfect Time. I would make longer days	
Methodology	Average score	4,13
	Improvement areas Cannot attend to different workshop groups. Experiences with data Being able to act in more groups I believe that the objectives should be planned to meet project milestones To be able to rotate through the workshops Practical and business interaction Perhaps there could have been a more definite methodology to reach more concrete conclusions. In any case it has been very satisfactory Draw a guide to follow for the topics Structure points Have a more defined previous plan	
Project Ideas	Average score	4,28
	3 most interesting project ideas. * Need for map validation. * Compatibility of different systems * Zoning * Variable dosage of phytosanitary in plot. * Analysis of different indexes. * Take advantage of existing technologies. * Expand study area * Reduction of the use of phytosanitary products * Unification and compatibility of sampling, information and tools (software) * Practicity of indexes and / or incorporation of other fruits of the R & D & I studies of the use of the info according to the 2nd idea * Soils * Dosage of Vineyard Fitos * Biological? * Decreased herbicide use * Reliability of mapping * Financing * Share data between different organizations * Perform software for discriminating irrigation alarms * Variable dosing * Incorporation of aerial maps * Drone flight for mapping * Promote a farmer expense savings * Option to test different solutions * Identification of the prototype project * Commitment of farmers and Commitment of suppliers * Adaptation of irrigation solutions * Irrigation efficiency * Tailor-made monitoring * Irrigation remote control * Technology that identifies weeds and eliminates them *Analysis and filtering of incidents * Reduction of inputs in herbicides and Fertilizers * Irrigation management * Multiple data capture systems * Multiple calculation systems for recommendations * Applicable to multiple machines * Incorporation of UAV system for crop monitoring * Interpretation and collaboration of data with different types of sensors (ground, remote sensing with Dron) * All the ideas of the viticulture group would be applicable in our company * Interoperation between remote control irrigation systems * Intelligent problem diagnosis * Adapt the technology to each farm * Development of application / utility in the cloud to share data from different sources * Implement algorithms to aid decision * Search for new sensors * The advantage of grouping all information systems into one, to better know the information obtained and to better understand the information	

	* Development of new indexes * Use of platforms to display information from multiple sources * Phase demonstration of variable fertilization and analyze it in the same plot. Different technologies and equipment have an impact on the cost / benefit *Create a "cloud" in which you can share the different data that each agent has * Sharing * Define remote control irrigation protocol scope * Create a BASE standard in remote control irrigation * Share the information of the different systems * Treatment of weeds narrow leaf in colza * Treatment of Ballueca in cereal (review) * Mapping for later treatments * Farmers-sector sector relationship * Knowledge of the technical reality of the sector
Open suggestions	More workshops like this more regularly. Allowing the workshops to be broken down in parallel so as to assist all. . Improve knowledge in current technology functionalities to have more real use expectations. Working for farmers benefit.
Open suggestions	More workshops like this more regularly. Allowing the workshops to be broken down in parallel so as to assist all. . Improve knowledge in current technology functionalities to have more real use expectations. Working for farmers benefit.

5.1.3. RIW3

SMART AKIS
3rd REGIONAL INNOVATION WORKSHOP
Villava (Navarra), 7th March 8, 2018

RIW3 Programme

https://www.smart-akis.com/wp- content/uploads/2018/01/SmartAKIS_RIW3_Programa_V3.pdf

RIW3 Power Point presentations

Introduction: Presentation of the project, the objectives and the platform Smart-AKIS
Alberto Lafarga (INTIA)

Fuentes de financiación pública y privada para iniciativas de Agricultura Inteligente
Cecilia Bretal y Andrés Montero (MAPAMA)

María Arbeloa (Gobierno de Navarra-Diversificación Rural)

FUENTES DE FINANCIACIÓN

Nombre	Submedida 16.2 – PDR Navarra 2014-2020. Apoyo a proyectos piloto innovadores de cooperación en el sector agroalimentario. Desarrollo de proyectos demostrativos a pequeña escala por equipos multidisciplinares, unidos temporalmente, para dar solución a problemas concretos del sector agroalimentario.
Entidad financiadora (fondos)	65 % Fondo Europeo Agrícola de Desarrollo Rural (FEADER) 35 % Gobierno de Navarra
Ámbito geográfico	Regional

Sonia Fuentetaja (Gobierno de Navarra- Fomento de Explotaciones)

FUENTES DE FINANCIACIÓN

Nombre	Sección de fomento de explotaciones agrarias y asociacionismo agrario
Entidad financiadora (fondos)	Gobierno de Navarra y FEADER
Ámbito geográfico	Regional
Tipo de proyectos que financia	Planes de inversiones en explotaciones agrarias
Tipo de socios beneficiarios	Titulares de explotaciones agrarias
Gastos elegibles	Inversiones en explotaciones agrarias
% financiación	30-40%
Plazo de solicitud	Convocatorias anuales

FUENTES DE FINANCIACIÓN

Nombre	AYUDAS A PROYECTOS DE I+D 2018
Entidad financiadora (fondos)	GOBIERNO DE NAVARRA (Departamento de DESARROLLO ECONÓMICO)
Ámbito geográfico	Regional
Tipo de proyectos que financia	I+D: Investigación industrial y desarrollo experimental Individuales, en colaboración, de transferencia
Tipo de socios beneficiarios	Empresas, Organismos investigación, Centros tecnológicos
Gastos elegibles	Personal, materiales, amortización, colaboraciones externas, uso ICTS, otros.
% financiación	En función del tamaño de empresa, tipo de proyecto y su calificación [10% - 80%; 100%]
Plazo de solicitud	Cerrado

Amaia Arandía (Gobierno de Navarra- I+D+i Cadena Alimentaria)
Katy Labiano (SODENA)

Luis García (Caja Rural)

David Navarro (CAIXA Bank)

Casos de éxito: iniciativas y proyectos de Agricultura Inteligente con diferentes fuentes de financiación

Sandra Aguirre (Cluster Agroalimentario)

Eduardo Luri (Gelagri) – CDTI

Gonzaga Santesteban (UPNA) – GN I+D+i
Félix Cibriain (Gobierno Navarra)- PDR Navarra

RIW3 Attendance Sheets

The total number of attendees was 67. Distribution of attendees by work group:

Group	Nº Attendees
1. Irrigation	13
2. Fertilization	9
3. Herbicides	18
4. Vineyard	15
Financial	12

Distribution of attendees by category: Users (farmers / producers), enterprises, research and rest:

Category	Nº Attendances
Users (farmers, agrarian cooperative, wineries…)	16
Providers (enterprises..)	19
Research	6
Advisor and others (funders…)	26

The list of attendants is not available due to confidentiality reasons.

RIW3 Pictures

RIW3 Findings

On top of the multi-actor collaborations that are to emerge from the RIWs, other outputs are expected as a result of bringing together stakeholders into the RIWs. One of the overall objectives of Smart-AKIS is to capture these outputs in order to produce recommendations for fostering the penetration of SFT in Europe.

This section of the "minutes" document provides a number of headlines, covering different aspects that could emerge in the discussion in the RIWs (both in plenary but also in the Work Groups). Hub partners are encouraged to pay careful attention to the discussions taking place in the RIWs in order to identify these "findings". As suggested in the Guidelines, the Work Groups can be tape recorded in order to better grasp the discussion taking place. These "findings" will be included on the "Smart AKIS Report" to be produced by each Hub partner after all RIWs.

Identification of needs regarding SFTs

- Reduction of environmental impact of the use of pesticides: Reduction of the use of phytosanitary products by variable rate application.

- Compatibility of different devices and software.

- Need for map validation. Zoning. Analysis of different dates indexes.

- Unification and compatibility of sampling, information and tools (software)

- Decrease herbicide use, reliability of mapping and financing. Promote a farmer expense savings

- Share data between different organizations

- Software for discriminating irrigation alarms

- Drone flight for mapping

- Irrigation efficiency. Remote control Irrigation Management. Analysis and filtering of incidents

- Reduction of inputs in herbicides and Fertilizers. Technology that identifies weeds and eliminates them

- Multiple data capture systems. Multiple calculation systems for recommendations. Applicable to multiple machines.

- Incorporation of UAV system for crop monitoring. Interpretation and collaboration of data with different types of sensors (ground, remote sensing with Drone)

- Adaptation the technology to each farm

- Development of application/utility in the cloud to share data from different sources

- Use of platforms to display information from multiple sources

- Phase demonstration of variable fertilization and analyse it in the same plot. Different technologies and equipment have an impact on the cost / benefit

- Search for new soil humidity sensor

Identification of barriers and incentives for adoption of SFTs

- Compatibility of different systems

- Adaptation the technology to each farm

- Technology (drones) is more expensive than inputs (fertilizer, herbicide…)

- Difficulties in interpreting device data: Software for discriminating irrigation alarms

Interest on adoption and transfer of presented SFTs

- Drones. In the market…

- Variable dosing machinery. In the market…

- Humidity soil sensors. In the market..

Potential new uses for existing SFTs (to feed EIP-Agri template "Needs for research")

No Comments.

Potential inputs for research (to feed EIP-Agri template "Needs for research")

No Comments.

RIW3 Project Ideas

Project Idea 1

Category of project	Smart Farming Technology	Crop system
Technology transfer	*Nitrogen variable rate technologies.*	*Arable*
Promoter/s name/s		
INTIA, Agrisat, Topcon, Smart rural, Aguirre, Agronurb, AAMS Iberia.		
Partner/s of the proposal and role		
- Companies offering services of mapping the variability of plots or services that integrate this phase of the project. The final product is a thematized map. Hemav, Agrae, Agrisat, Topcon, AAMS, Agrisat - Companies offering fertilization advisory services, HAD. INTIA. The final product is a recommendation of fertilizer dose and application time for each thematized area of the map. - Companies of intelligent machinery capable of using thematized maps to perform the fertilization. Aguirre, Agronurb - Farmers with their own teams, Carlos Sánchez, Perico Echarte and Eduardo Luri.		
Title of project		
Demonstration of variable rate Nitrogen Fertilization technologies.		
Expected benefits		
Several benefits from the implementation of variable rate application of nitrogen are expected: - Fertilizer costs reduction. - Increased yields due to an improvement in crop nutrition. - Reduction of water pollution risks.		
Goal and objectives		
Test and demonstrate different technologies and methodologies for field implementation of variable nitrogen application.		
Planned work packages or main activities		

Development of 3-5 practical demonstrations in the field, on a real scale with the participation of all the necessary stakeholders. INTIA will propose a working protocol to carry out the demonstration; methodology preparation, open day organization, evaluation and dissemination.
Demonstration, evaluation and dissemination of:
  i. Systems and tools for mapping intraplot variability
  ii. Systems and HAD for fertilizer dose calculation,
  iii. Intelligent machinery for the management of the field application.		

Estimated budget		
-		
Planned source of funding		
PDR Navarra PDR nacional		

Project Idea 2

Category of project	Smart Farming Technology	Crop system
Innovation	*Platform on-line*	*Vineyards*

Promoter/s name/s
Fundagro-UAGN

Partner/s of the proposal and role
Plataforma tecnológica del vino; Consejo Regulador DO Navarra; Bodega San Francisco Javier de Liedena; UPNA; INTIA

Title of project
Viticulture management platform

Expected benefits
- Improve information management of the farm. - Support Decision making.

Goal and objectives
Development or adaptation of already existing platforms to collect information about the vineyards.

Planned work packages or main activities
Producers ask for several functionalities of the platform: location of plots and sampling areas; satellite images of plots; registration of treatments (field notebook), etc. Several actions are planned: - Study the applicability of different existing platforms (platform of AGER Technology, sigAGROASESOR of INTIA, platform used by UPNA …) for the functionalities that the wineries need. - Development of new functionalities on existing platforms (sigAGROASESOR or RECAP of INTIA) - Identification of platforms already used by the participants - Identification of wineries needs

Estimated budget
-

Planned source of funding
I+D Navarra Government PDR

Maturity level
To be assessed by Smart AKIS partner

Cross-border potentiality
To be assessed by Smart AKIS partner

Project Idea 3

Category of project	Smart Farming Technology	Crop system
Innovation	*Remote sensing and images.*	*Vineyards*

Promoter/s name/s
UCAN

Partner/s of the proposal and role
UCAN, UPNA ; AGER tecn. de Oyon; Cooperativas de DO Navarra y DO Rioja(sin determinar), INTIA

Title of project
Use of new technologies in vineyards characterization

Expected benefits
Improve final product quality

Goal and objectives
Development of index to discriminate different grapes qualities.

Planned work packages or main activities
-

Estimated budget
-

Planned source of funding
I+D+i industria PDR Navarra

Maturity level
To be assessed by Smart AKIS partner

Cross-border potentiality
To be assessed by Smart AKIS partner

Project Idea 4

Category of project	Smart Farming Technology	Crop system
Innovation	*Remote sensing* *VRT technology*	*Vineyards*

Promoter/s name/s
INTIA

Partner/s of the proposal and role
Universidad Autónoma de Madrid, INTIA, Smart Rural y colaboración de RVRNA

Title of project
Use of nutritional index in vineyards

Expected benefits
- More efficient use of fertilizers in vineyards resulting in less environmental impact and economic savings.   - Costs reduction   - Reduction of environmental risks related with the use of fertilizers.

Goal and objectives
Development of an index to discriminate different nutritional needs in vineyards.

Planned work packages or main activities

-
Estimated budget

-
Planned source of funding

I+D+i industria
Maturity level

To be assessed by Smart AKIS partner
Cross-border potentiality

To be assessed by Smart AKIS partner

Project Idea 5

Category of project	Smart Farming Technology	Crop system
Technology transfer	*VRT technology*	*Arable*

Promoter/s name/s
Cooperativa Orvalaiz
Cooperativa Valdorba

Partner/s of the proposal and role
- Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla).
- Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta)
- INTIA : technicians (Anapilar Armesto and Irache Garnica)
- Smart Rural: Drones start up (José Ramón Algarra)
- Hemav: Drones start up (Joan Fons)

Title of project
Herbicide variable rate application in cereals, rapeseed and legumes

Expected benefits
More efficient use of plant protection products in cereals resulting in less environmental impact and economic savings.
The use of herbicides is an environmental problem. The European regulation of phytosanitaries of obligatory compliance makes necessary the use of technologies a reduction in phytosanitary products used in agriculture.

Goal and objectives
Demonstrate the applicability of herbicide variable rate equipment and technologies in cereals.

Planned work packages or main activities
- Selection of plots with problem of ballueca (problems of control in autumn treatments.
- Mapping of plots in February.
- Preparation of prescription maps in March-April.
Selection of plots with problems of narrow leaf, rapeseed and legumes.
- Mapping of the plots in November-December.
- Preparation of prescription maps in December.
- Treatment in December.

Estimated budget
-

Planned source of funding
PDR
Maturity level
To be assessed by Smart AKIS partner
Cross-border potentiality
To be assessed by Smart AKIS partner

Project Idea 6

Category of project	Smart Farming Technology	Crop system
Innovation	*Remote sensing*	*Arable*

Promoter/s name/s
INTIA

Partner/s of the proposal and role
- Cooperativa Orvaláiz - Farmers and technicians (Marisa Ezquiroz, Juan Ignacio Labiano, Jesus Cabodevilla). - Cooperativa Valdorba - Farmers and technicians (Rafael León, Iñaki Martínez, Víctor Castillo, Joseba Intxusta) - INTIA : technicians (Anapilar Armesto and Irache Garnica) - CSIC Cordoba

Title of project
Images interpretation and artificial intelligence

Expected benefits
More efficient use of plant protection products in cereals resulting in less environmental impact and economic savings. The use of herbicides is an environmental problem. The European regulation of pesticides of obligatory compliance makes necessary the use of technologies a reduction in phytosanitary products used in agriculture.

Goal and objectives
Improvement of weeds mapping and data interpretation in arable crops.

Planned work packages or main activities
Supervised images bench to use in artificial intelligence software, for improvement of weeds mapping in arable crops. Images collection, satellite and drones. Machine learning software VRT machinery Interoperability of the different systems

Estimated budget
-

Planned source of funding
I+D+i industria RETOS
Maturity level
To be assessed by Smart AKIS partner
Cross-border potentiality

To be assessed by Smart AKIS partner

Project Idea 7

Category of project	Smart Farming Technology	Crop system
Innovation	*Smart platform*	*Arable*

Promoter/s name/s
Cooperativa Mendigorria

Partner/s of the proposal and role
INTIA IRRIGATION COMMUNITIES AND COOPERATIVES ICT COMPANIES

Title of project
Interoperability between different elements of remote control systems and a Smart platform of collective water management

Expected benefits
- Improved use of water - Yields improvement

Goal and objectives
- Achieve the interoperability between different elements of remote control systems for irrigation - Improve the irrigation efficiency in collective irrigation networks

Planned work packages or main activities
- Smart WEBGIS Platform with hydraulic simulation capacity in order to evaluate the irrigation network infrastructures according to the scheduled hours of irrigation - Obtaining critical points and modify the irrigation demand scenario changing the scheduled hours of irrigation through the programmer - Smart WEBGIS Platform will be integrated as a module in AGROgestor platform

Estimated budget
-

Planned source of funding
-

Maturity level
To be assessed by Smart AKIS partner

Cross-border potentiality
To be assessed by Smart AKIS partner

RIW3 Evaluation

Information summing up the results from the Evaluation Form voluntarily filled in by participants.

Interest	Average score	4,23
	More interesting presentations	
Organization	Average score	4,32
	Improvement areas	
Methodology	Average score	3,87
	Improvement areas	
Project Ideas	Average score	4,00
	Top Project Ideas	
Open suggestions		

5.2. Research needs in Smart Farming

Needs for research from practice (EIP-Agri format) [1]

Title

Identification of weeds in the early stages of development thro

This is the problem (summary in your language)

Las aplicaciones de herbicidas en los cultivos de cereales tienden a realizarse en los primeros estadios de desarrollo tanto de los cultivos como de las malas hierbas y por este motivo es necesario adaptar las técnicas de teledetección a esta situación, con cultivos y malas hierbas poco desarrollados y por tanto más difíciles de diferenciar.

En los estadios tempranos de desarrollo las diferencias entre las plantas son a menudo muy pequeñas y por tanto es necesario desarrollar tecnologías de alta precisión para su diferenciación práctica.

Se trata de una demanda muy importante en el campo de los cultivos de cereales de invierno, siendo estos cultivos muy importantes en toda Europa.

Please briefly explain in your national language the problems you are experiencing in practice and which type of research (or knowledge) you need to solve them.

This is the problem (summary in English)

The applications of herbicides in cereal crops tend to be carried out in the early stages of development of both crops and weeds, and for this reason it is necessary to adapt remote sensing techniques to this situation, with underdeveloped crops and weeds. Therefore, it is more difficult to differentiate.

In the early stages of development the differences between the plants are often very small and therefore it is necessary to develop high precision technologies for their practical differentiation.

This is a very important demand in the field of winter cereal crops, these crops being very important throughout Europe.

Please briefly explain in English the problem that you are experiencing in practice and which type of research (or knowledge) you need to solve it.

Geographical scope

Austria

Please specify the geographical area/s where the need has been identified.

Keywords

Early stages of weed, remote sensing

Agricultural sectors

- None -

Choose the sectors your issue is relevant for (max.5 selections).

Additional information

Please provide here any other relevant information concerning your initiative.

Attachments

When necessary, auxiliary files can be added

Needs for research from practice (EIP-Agri format) [2]

Title

Use of remote sensing to identify the most important vegetative

This is the problem (summary in your language)

Las distintas intervenciones que el agricultor realiza sobre los cultivos están siempre relacionadas a estadios vegetativos muy precisos de sus cultivos. De ahí la importancia de poder identificar esos estadios críticos de desarrollo de los cultivos cuando queremos realizar una agricultura de precisión.
La variabilidad entre parcelas o incluso intraparcelaria lleva a un trabajo de observación muy intenso que podría reducirse significativamente con el uso de la teledetección.

Please briefly explain in your national language the problems you are experiencing in practice and which type of research (or knowledge) you need to solve them.

This is the problem (summary in English)

The different interventions that the farmer makes on the crops are always related to very precise vegetative stages of their crops, hence the importance of being able to identify those critical stages of crop development when we want to carry out precision agriculture.
The variability between plots or even intra-plot leads to a very intense observation work that could be significantly reduced with the use of remote sensing.

Please briefly explain in English the problem that you are experiencing in practice and which type of research (or knowledge) you need to solve it.

Geographical scope

Austria

Please specify the geographical area/s where the need has been identified.

Keywords

Critical stages of crop development, remote sensing

Agricultural sectors

- None -

Choose the sectors your issue is relevant for (max.5 selections).

Additional information

Please provide here any other relevant information concerning your initiative.

Attachments

When necessary, auxiliary files can be added

5.3. Project ideas Research needs in Smart Farming

Create Project ideas [1]

Title (native language)

Reducción del uso de herbicidas mediante teledetección en ce

Title (in English)

Redaction of the use of herbicides in cereal, using remote sens

Description

El uso de herbicidas en cereales está muy generalizado. Ante la falta de instrumentos prácticos de diagnóstico muchos de los tratamientos realizados son preventivos a toda la superficie cultivada. Con este proyecto se trata de dotar al agricultor de tecnologías de teledetección próxima de alta precisión que le permitan identificar las zonas de la parcela afectadas y realizar los tratamientos dirigidos únicamente a esas zonas necesitadas de herbicidas.

Con esta metodología se podría evitar el uso de al menos un 25-30 % del total de herbicidas consumidos actualmente en cereales.

Es necesario integrar varias tecnologías, la primera el mapeo de malas hierbas y la segunda la maquinaria inteligente apropiada.

Please provide information in your national language to describe the background of your project (problems to be addressed , objectives, main activities , target groups, innovative elements of this action, expected results).

Description (in English)

The use of herbicides in cereals is very widespread. In the absence of practical tools for diagnosis many of the treatments performed are preventive to the entire cultivated area. This project aims to provide the farmer with remote sensing technologies of high precision that will allow him to identify the affected areas of the plot and carry out the treatments directed only to those areas in need of herbicides.

With this methodology the use of at least 25-30% of the total of herbicides currently consumed in cereals could be avoided.

It is necessary to integrate several technologies, the first the mapping of weeds and the second the appropriate intelligent machinery.

Please provide information in English to describe the background of your project (problems to be addressed, objectives, main activities, target groups, innovative elements of this action, expected results.

Project coordinator is searching for…

- Specialists are required in the use of remote sensing for the identification of weeds in cereals.
- Specialists in intelligent machinery for the application of pesticides products, sprayers.
- Experts in agronomy and integrated management of weeds in cereals.
- Farmers or cooperatives interested in the use of this technology

Provide information on what you are looking for (for example, specific expertise, partner in a specific location).

Geographical scope

Austria

Please specify the geographical area(s) where the project will (would) be implemented.

Keywords

Herbicides, Remote sensing, Cereals

Agricultural sectors

- None -

Choose the sectors the project is relevant for (max.5 selections).

Proposing person or organization

INTIA

Include the name and address of the person or organization that proposes the project idea.

Contact E-mail

alafarga@intiasa.es

Please provide the e-mail of a contact person for the project.

Expected starting date of the project

Month [Sep ▾] Day [1 ▾] Year [2018 ▾]

Expected duration

24

Please provide the expected duration of the project in months.

Additional information

Demonstrations activities in cereals crops

Please provide here any other relevant information concerning your initiative.

Attachments

When necessary, auxiliary files can be added using this link.

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Smart Farming Thematic Network

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