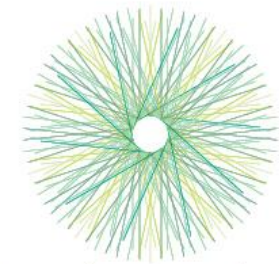


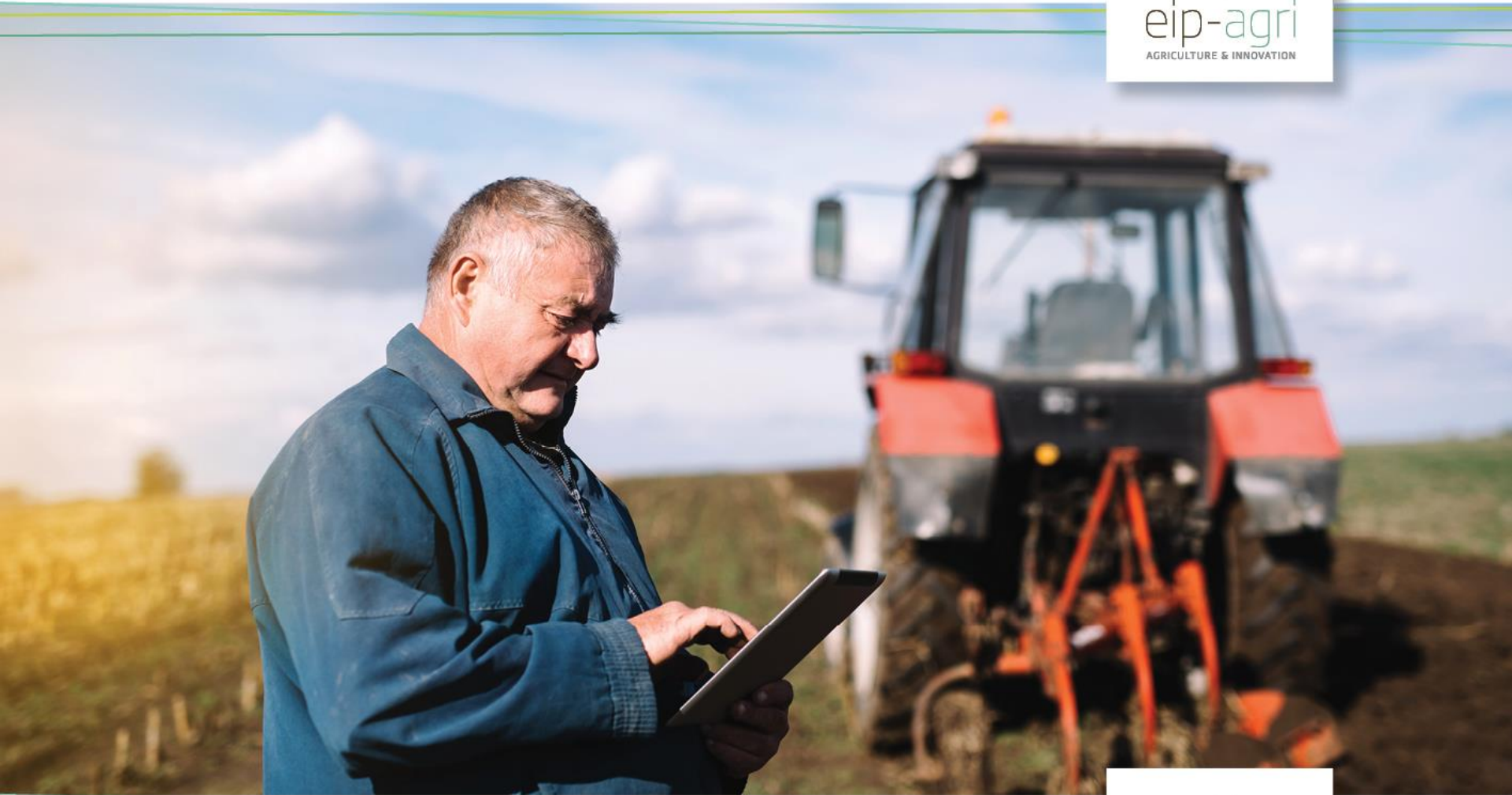
EIP-AGRI Seminar

New skills for digital farming

5-6 February 2020 – Aranjuez, Spain



eip-agri
AGRICULTURE & INNOVATION



funded by  European Commission



Programme

THURSDAY 6 FEBRUARY 2020

08:15 – 08:45 Registration for day 2

08:45 – 09:10 Introduction to the day

Session 2: How do we move forward?

09:10 – 10:45 Developing skills for digitalisation: An inspirational journey

Presentations by: *George Beers (NL), Miguel Cordero (ES), Beatrice Dingli (FR), Thomas Engel (DE), Hubert Gerhardy (DE), Lotte Ipsen (DK), Tom Kelly (IE), Gintare Kucinskiene (Lt), Hercules Panoutsopoulos (GR), Tetiana Pavlenko (DE), Jürgen Vangeyte (BE)*

10:45 – 11:15 Coffee break



Programme

THURSDAY 6 FEBRUARY 2020

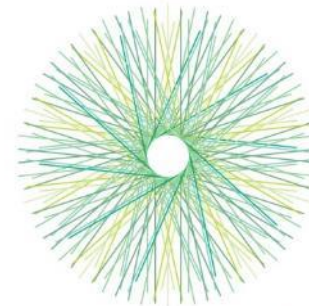
11:15 – 12:30 Tools and approaches for skills development in the farming sector: Breakout session

12:30 – 12:50 Feedback from the discussion

12:50 – 13:00 Closing of the seminar

Kerstin Rosenow, European Commission, DG AGRI

Developing skills for digital farming: An inspirational journey



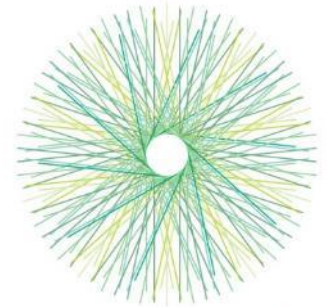
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Seminar: 'New skills for digital farming'
Aranjuez, Spain
5-6 February 2020

funded by  European Commission

Addressing the digital skills gap: how?



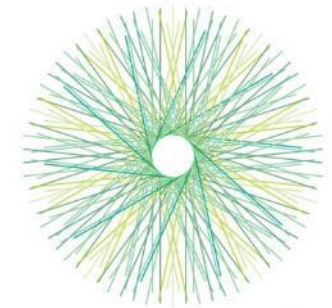
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What opportunities, approaches, tools are out there?

A wealth of inspiring examples across Europe...

...to support knowledge and skills development for digital farming

1. Formal education and training: targeting future farmers



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AGRICULTURE & INNOVATION

How can classical education and training address the digital skills gap in agriculture?

Inclusion of digitalisation in **vocational education and training curricula** for (future) young farmers and advisers. Focus on basic knowledge and practical understanding of digital tools to develop a range of skills and solve farms' problems.

Pulling resources via **Erasmus+** to: improve key competences and skills, prepare for the future (digital) job, foster cooperation and knowledge exchange across Europe, and between education, training providers and others.

Examples:

- Denmark, Bygholm Agricultural College (*Lotte Ipsen*)
- Spain, Fonteboa High Secondary School (*Constante Lorenzo*)

- Erasmus + [SFATE](#) - Smart farming training for employment (*Miguel Cordero*)
- Erasmus+ [SEED](#) - Smart Entrepreneurial Education and training in Digital farming (*Sonia Mendoza*)

FORMAL EDUCATION AND TRAINING

Targeting future farmers



Lotte IPSEN
Bygholm Agricultural College
Denmark





STEAM – educational program

One way of meeting the skills needed in digital farming

Key challenges and skills addressed

Students at agricultural college in Denmark at the age of 16-20 years

Key challenge

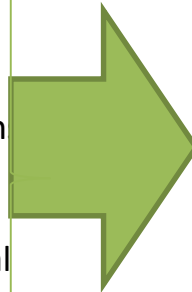
Develop the students competences to use and implement digital technologies in farming

The framework

- At the college we have access to the existing technological solutions used on farms today
- We have access to scientist and companies developing drones, field robots and software
- Teachers have knowledge and skills to use and teach the existing technologies and digital solution

But

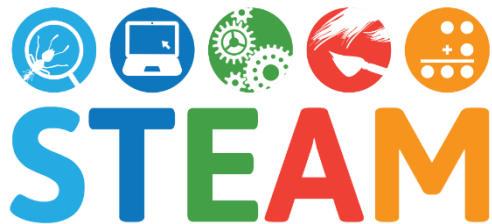
- How do we develop the competences to use digital solutions maybe not yet invented?
- How do we train the students to choose and implement the *right* digital technology – the one, that helps them farm more sustainable at lower costs to the benefit of man, animals and nature?



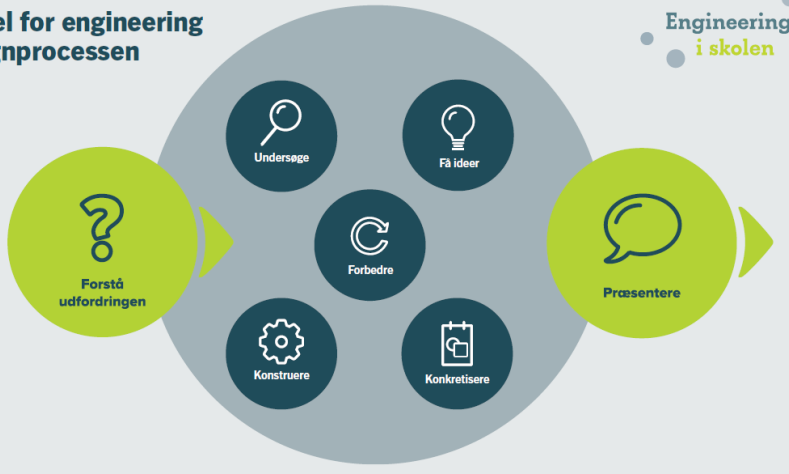
Skills addressed

- Fundamental understanding of how digitalization can contribute in solving practical problems on farms.
 - Focus should be on understanding the principles in digital technology and not (only) on the existing solutions
- Competence to solve problems based on knowledge, collaboration and innovation.
 - These skills are not specific to working with digital technologies.

STEAM – a didactic and pedagogical approach to educating



Model for engineering designprocessen



- **Understand the problem**
 - On farm
- Investigate
 - Look into existing technologies
 - Use knowledge from
- Get ideas
- Create
- Construct
 - Prototype-technologies, LEGO-Mindstorm, LittleBits
- Improve
- **Present**
 - To the farmer

What students learn?



Building prototypes – basic knowledge and understanding of digital technologies

Testing field robot
- Knowledge about existing solutions and technologies



How is this useful for future farmers?

Fundamental understanding of digital technologies:

- As a farmer, you can adapt and implement new technologies on your farm, because you have general knowledge about digitalization

Problem solving competences (critical thinking, creativity, collaboration and communication)

- As a farmer you can choose the right digital, technological solutions to your problem

In cooperation with a primary schools

- Not every body in the primary school go to the agricultural college, but
 - Fundamental understanding of digital technologies can be use in any other business
 - Problem solving competences are important for all students
 - Teachers learn from each other
- Ease the transition from primary to secondary school and further education
 - Teachers use methods that students will recognize
 - Building prototype models require skills – the more the students practice, the more they can focus on i.e. programming or understanding specific technologies and not only on the building-process
 - The students in primary school can see the meaning of learning activities

FORMAL EDUCATION AND TRAINING

Targeting future farmers



Constante LORENZO
Fonteboa High Secondary School
Spain

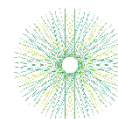


FORMAL EDUCATION AND TRAINING

Targeting future farmers



Miguel CORDERO
Erasmus+ SFATE
Smart farming training for
employment





Miguel Cordero

*Universidade de
Santiago de Compostela*

*Sistema de Información
Territorial*

EU Funds







- Civil UAVs Initiative
- Galician Digital Innovation Hub for Agrifood
-

Smart Farm Training for Employment (**SFATE**)

Erasmus + K2

Vocational Education Training

	Farmer
	Student
	Entrepreneur
	Teacher

To increase **skills**




To improve the CURRICULA

To have a new tool for vocational **training**

To offer a wider VET base on smart farming

To increase attractiveness

To increase the knowledge

	New jobs
	Training
	Technologies



Smart Farm Training for Employment

English Français Galego Deutsch Slovensčina Español



What technologies can I use with my knowledge?



Training search

Profile Selection



Farmer



Student



Entrepreneur




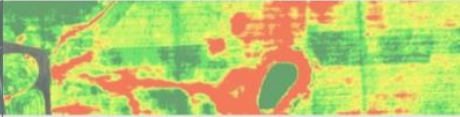
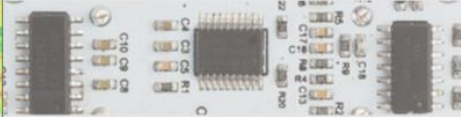



Teacher

All Content



1. Smart Farming Portal

<https://www.edu.xunta.gal/centros/sfateproject/>

<p>Amazon E-Learning</p>  <p>Training duration: Several days Previous training: Farmer in Agricultural Production, Technician in Agricultural Production, Engineer in Agricultural Production Self-learning:</p>	<p>ArcGIS</p>  <p>Training duration: 6 months Previous training: Basic knowledge in GIS Self-learning: Fundamentals of SIG (esp)</p>	<p>Bachelor or MBA Sensors</p>  <p>Training duration: 3-5 years Previous training: Self-learning: More info</p>
<p>Bachelor or MBA Telecommunications</p>  <p>Training duration: 2-5 years Previous training: Self-learning: More info</p>	<p>Decrease my load of mechanization</p>  <p>Training duration: 2 days Previous training: Self-learning: Course</p>	<p>Drone License</p>  <p>Training duration: 2 hours (E-Learning) Previous training: PC knowledge Self-learning: Online Course (de)</p>



SFATE report

2. Study Report on new jobs and farm innovation

<https://www.edu.xunta.gal/centros/sfateproject/node/1420>

Adapting curricula to smart farming technologies and new job opportunities

Challenges and opportunities in main agriculture and forestry sectors at the EU level and in partner countries and regions.....	4
French Atlantic Arc regions	5
Galicia (Spain).....	6
Hesse (Germany).....	8
Slovenia	9
How can smart farming technologies meet the main challenges and opportunities in the agricultural sector?	10
Increasing EU food security.....	10
Foster growth and jobs in rural areas to counter rural population decline.....	10
Tackling environmental challenges and climate change.....	12
Smart farming employment opportunities	13
Information management systems	13
Decision support systems.....	15
Automated systems and robots	16
Training needs in agriculture/forestry training programmes.....	18

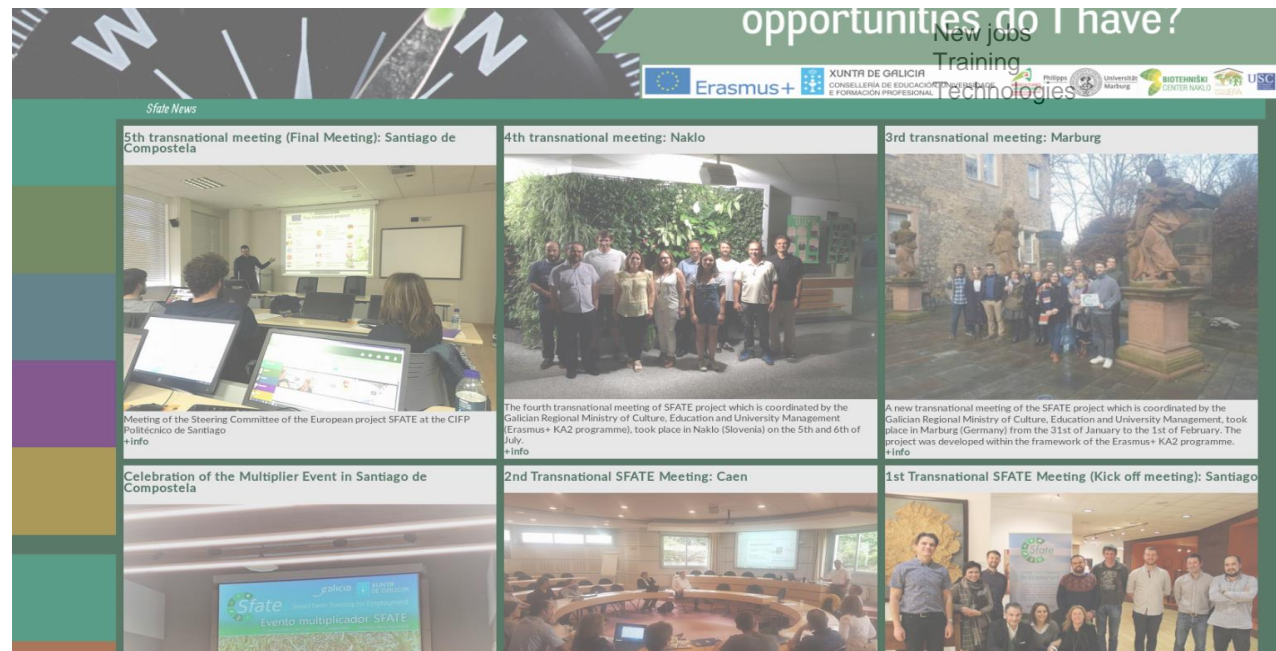
+
Focused on practical examples: Addressing the dual speed challenge between formal education and new technologies
Useful & interesting tools/results in the short run
“Smart” use of Erasmus + K2 potential: Transnational projects, focused on education and innovation development, allow for different types of partners

Dissemination:

Even with excellent actions and evaluation it is never enough

Projects vs services:

Lack of mechanism for maintenance and incorporation of results as permanent services



FORMAL EDUCATION AND TRAINING

Targeting future farmers

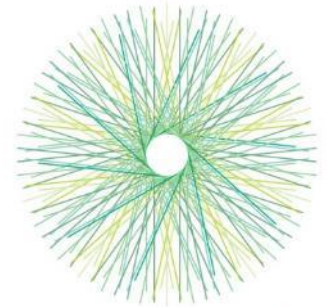


Sonia MENDOZA
Erasmus+ SEED

Smart Entrepreneurial Education
and training in Digital farming



2. Non-formal/informal education and training: from the classroom to the field



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AGRICULTURE & INNOVATION

Focus on peer-to-peer learning

One-to-one or **many-to-many**. Boosts awareness of and confidence in modern technologies. For all skills level: students, beginners, experienced (early adopters). Mutual-learning: it bridges competences and generations.

Multi-actor approaches (such as **Operational Groups**) maximize the use of complementary knowledge, foster active participation of all from beginning to end, focus on farmers' actual needs. Ideal to involve education/training partners (methodology + spread results)

Examples:

- EIT Food, [Educating for Technology Take Off](#) (Tetiana Pavlenko)
- Erasmus+ [Wisefarmer](#), (Mihaly Csoto)
- Greece, Discussion and knowledge transfer groups – Global Sustain (Christoforos Pavalkis)
- EIP Operational Group 'Pig Health Lern Netzwerk' (Hubert Gerhardy)

NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Tetiana PAVLENKO

EIT Food

Educating for Technology Take Off





UNIVERSITY OF
HOHENHEIM



EIT Food is supported by the EIT
a body of the European Union

Increasing adoption of digital technologies on farms

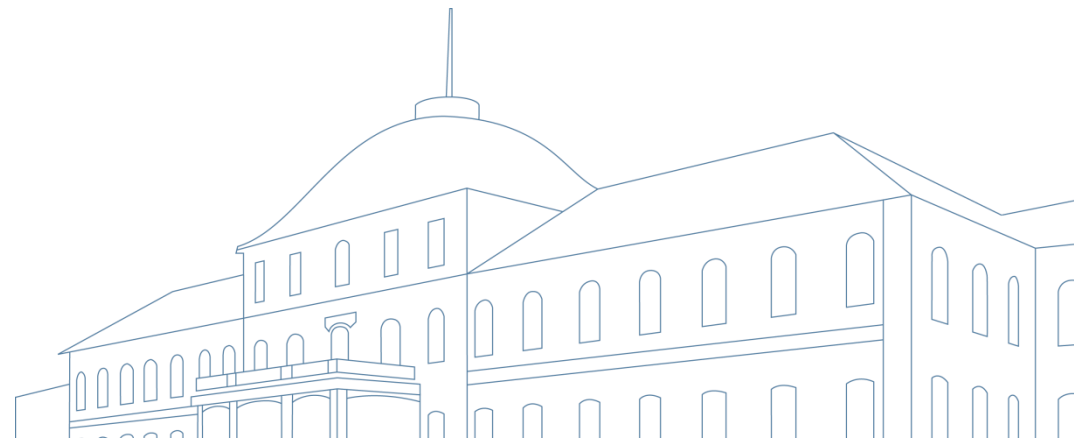
EIP AGRI Seminar 'New skills for digital farming'

5-6 February 2020

Aranjuez, Spain

M.Sc. Tetiana Pavlenko

**Research Center for Bioeconomy
Stuttgart, Germany**



European Institute of Innovation and Technology (EIT)

Increase Europe's ability to innovate by nurturing entrepreneurial talent and supporting new ideas.

7 EIT communities including EIT Food.



Educating for Technology Take-off - 2018

- ✓ Focusing on using student ambassadors to support farmers with technology.
- ✓ 12 students, 64 farms focusing on tractor technology (John Deere) and beef industry technology (ABP).
- ✓ Range of support methods – 1-2-1, training days, online, specialist support.



UNIVERSITY OF
HOHENHEIM



JOHN DEERE



University of
Reading



Food Group



(source: John Deere)

Educating for Technology Take-off - 2018

SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none">Regular personal contact and farm visitsGood training programsContact with competent personnelCoordination, evaluation mechanismsLink with agricultural companiesContinuous exchange of knowledge	<p>Weaknesses</p> <ul style="list-style-type: none">Frequent change of supervisorsLack of time for personal contactDifficulties in email, phone communicationToo short program durationPoor selection of farmersLack of farmers' interest
<p>Opportunities</p> <ul style="list-style-type: none">Implementation of new technologiesTime-saving due to technologiesHigh interest in new technologiesNew relationships, improved collaborationData analysisNew technology as an element to strengthen business model	<p>Threats</p> <ul style="list-style-type: none">Desire to adopt many technologies at onceA risk of misunderstandingFarmers' loss of faithFarmer' 'laziness'Difficulties to satisfy farmers' expectationsFarmers' decisions made on their own

Focus on Farmers - 2019

- ✓ Using students alongside technology ambassadors to support farmers with technology.
- ✓ Based on 2018, but widened to include new partners.
- ✓ Farmer engagement important.



Focus on Farmers - 2019

Target Value of Farmers – 1,000
 Reported value of Farmers – 6,171

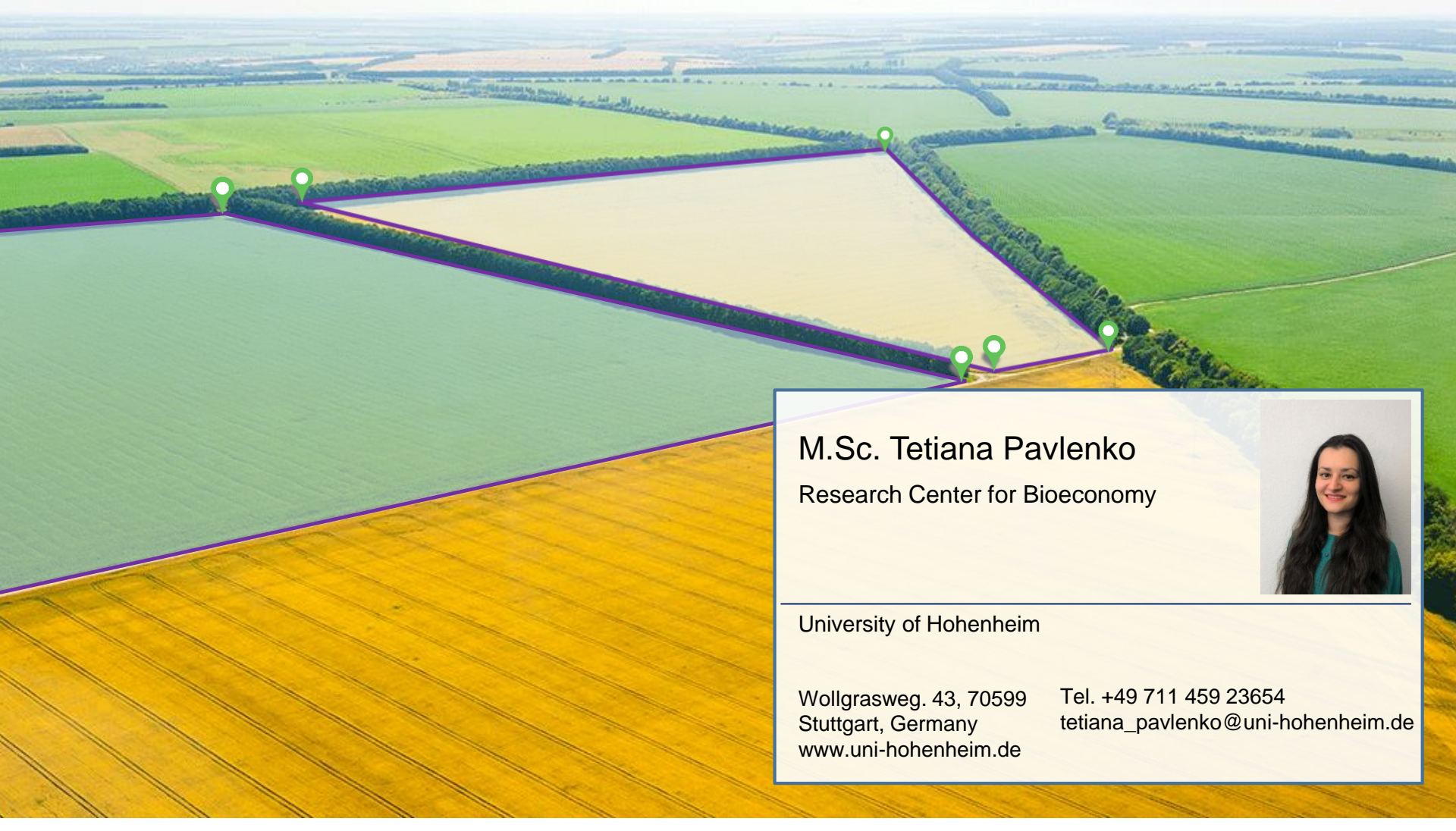
Student Ambassadors – 39
 Farmer and Technology Ambassadors – 42



(source: ABP, AIA, John Deere)



Thank you for your attention!



M.Sc. Tetiana Pavlenko

Research Center for Bioeconomy



University of Hohenheim

Wollgrasweg. 43, 70599
Stuttgart, Germany
www.uni-hohenheim.de

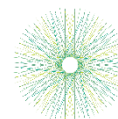
Tel. +49 711 459 23654
tetiana_pavlenko@uni-hohenheim.de

NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Mihaly CSOTO
Erasmus+
Wisefarmer



NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Christoforus PAVLAKIS
Discussion and knowledge transfer
groups – Global Sustain
Greece



NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Hubert GERHARDY
EIP-AGRI Operational Group
'Pig Health Lern Netzwerk'
Germany



EIP Agri Operational Group: PIG HEALTH Lern-Netzwerk

Development of a learning network to continuously improve health management in pig production to reduce antibiotics

Farmers' Challenge

The use of antibiotics has to be reduced to a minimum within the next years

Objectives

- (i) to develop a learning network to enhance the willingness to continuously improve hygiene and health management in pig production**
- (ii) to implement a continuous process improvement to reduce the use of antibiotics**
- (iii) to elaborate guidelines to transfer the results to other workgroups**

EIP-AGRI seminar: New skills for digital farming

5 – 6 February, 2020

Aranjuez, Spain

Contact: Hubert Gerhardy +49 151 21050665 msg-Garbsen@gerhardy.eu

Supported by:



EIP Agri Operational Group: PIG HEALTH Lern-Netzwerk partners

Georg-August-Universität
Göttingen



animal welfare

Leibniz Universität Hannover
Produktionstechnisches Zentrum

IFA

learning factory

VzF GmbH
Erfolg mit Schwein

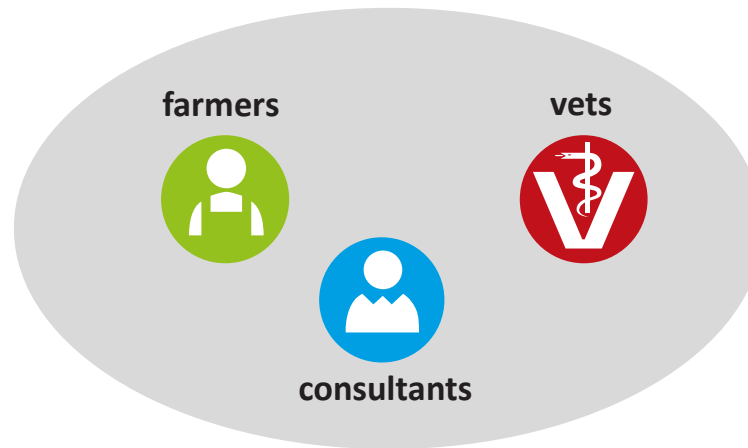


Farmers' organisation

Chamber of agriculture
Lower Saxony

Landwirtschaftskammer
Niedersachsen

Swine Health Service



University of Veterinary
Medicine Hannover

Marketing Service
Gerhardy

Consultancy • Market Research

- Lead partner
- project coordination
- detection of obstacles and fears



EIP Netzwerk
Agrar & Innovation
Niedersachsen

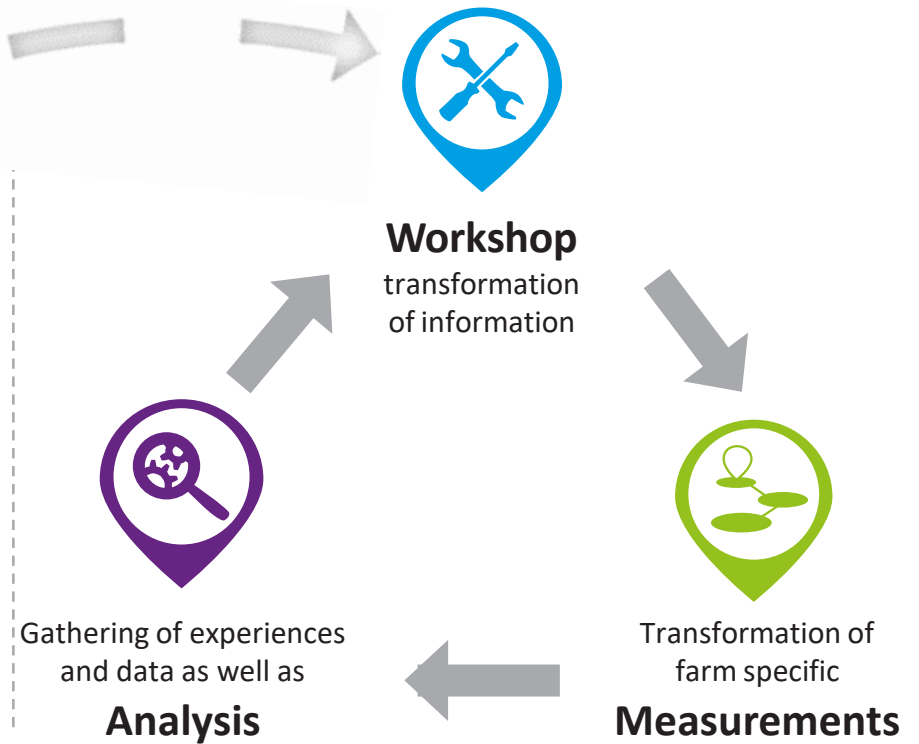


PIG HEALTH Learning-Network

Network participants

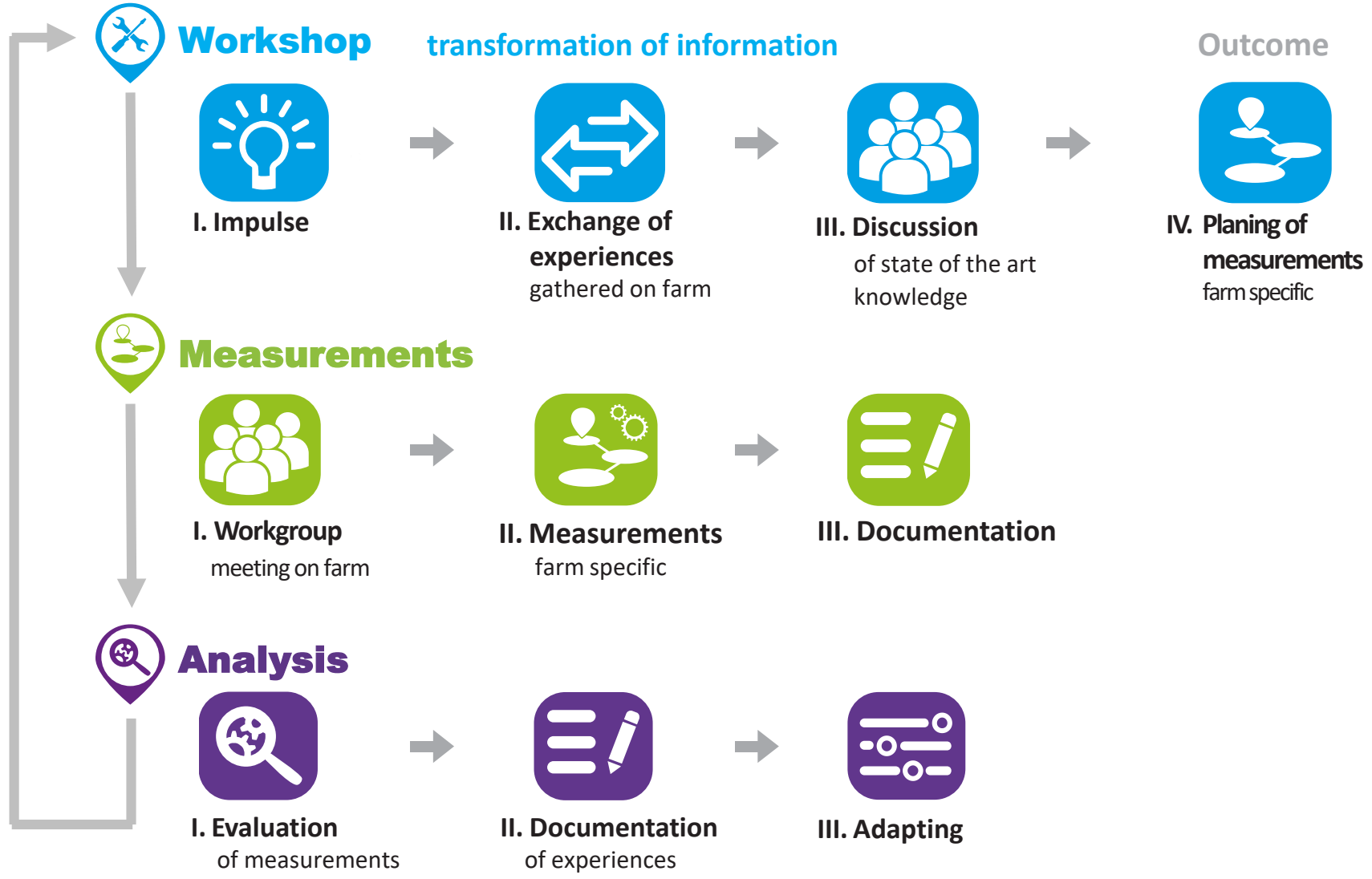


Learning process



PIG HEALTH Learning-Network

learning process



EIP Agri Operational Group: PIG HEALTH Lern-Netzwerk

Added value of the tool
for the farmers

PIG HEALTH
Learning-Network

- improved hygiene and health management
- increased competitiveness and optimized production processes
- building up a sustainable ecosystem pig production
- supporting the digitalization to improve animal health by implementing sensors to develop prediction models to predict diseases
- networking: farmers – vets - consultants

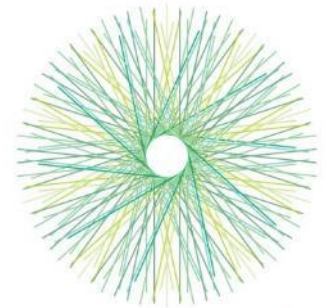
The farmers will use the tool even after the end of the project and are prepared to pay the costs to run the tool.

Contact: Hubert Gerhardy +49 151 21050665 msg-Garbsen@gerhardy.eu

Supported by:



2. Non-formal/informal education and training: from the classroom to the field



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AGRICULTURE & INNOVATION

Focus on demonstration, pilots, trials...with farmers at the centre

Training farmers in **real life conditions**.

A wide range of providers: research and technology centres, advisory services, technology providers, European projects...

Farmers understand **how technologies work** and what can do for them.

Technology providers fine tune their tools and applications based on **users' requirements**.

The starting point is always farmers' needs and knowledge.

Examples:

- Flanders, Living Lab at ILVO (**Jürgen Vangeyte**)
- H2020 FARMDEMO (Peter Paree)
- Greece, Future Intelligence – **FINT**, (*Harris Moysiadis*)
- The Netherlands, FarmHack (*Josien Kampa*)

NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



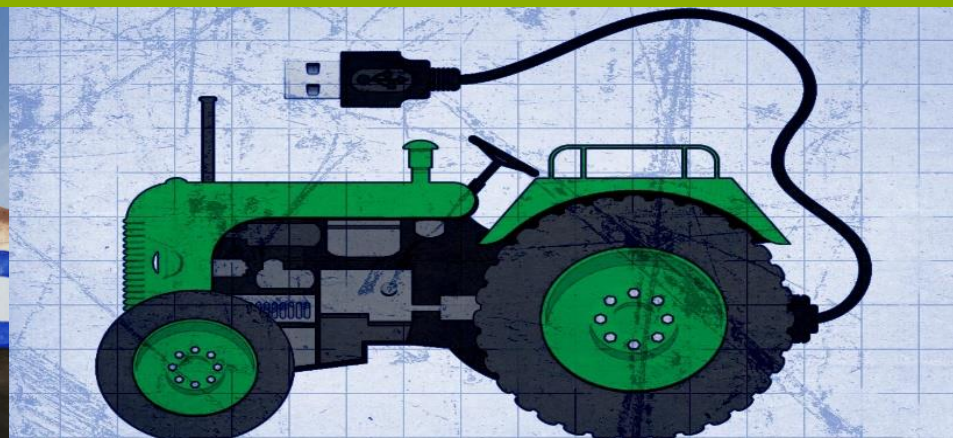
Jürgen VANGEYTE
Living Lab
ILVO, Flanders



ILVO Living Lab

AGRI FOOD TECHNOLOGY

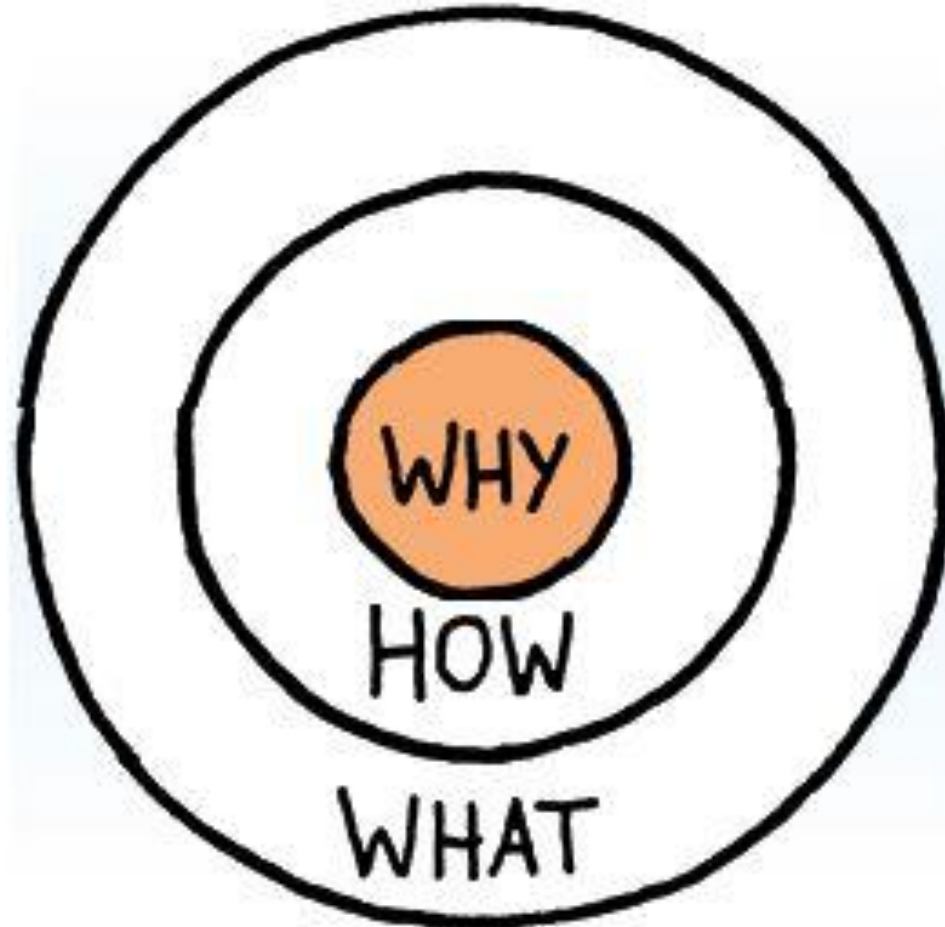
Paving the way to Smart AgriFood
in real practice



ILVO

Flanders Research Institute for
Agriculture, Fisheries and Food

Let's start with the why?



Why a LL on PAF?

AgTech: A Great Investment For The Future

\$ 2 billion expected to be invested in agtech in 2018

As of the third quarter of 2018 \$ 1.6 billion has been invested in Agtech deals are on track to meet or exceed \$ 2 billion, according to Finistere Ventures.

Forbes

Remarkable growth in agtech investment
The last 10 years have seen remarkable growth in agtech investment, with \$ 6.7 billion invested in the last 5 years and \$ 1.9 billion in the last year alone, per the PitchBook Platform. Arama Kukutai: "This outpouring of investment is a clear signal for

RIO Investment Partners Launches New Agri-Food Venture Capital Fund

NEWS PROVIDED BY
[Rio Investment Partners](#) →
Apr 02, 2019, 07:00 ET

SHARE THIS ARTICLE



\$150 million fund is the successor to Avrio Capital, with offices in Calgary and Montreal

CALGARY, April 2, 2019 /PRNewswire/ - Rio Investment Partners ("RIO") is pleased to announce the launch of a new venture capital fund focused on Agri-Food investing across the North American ag-tech and food-tech value chain. RIO invests in growth stage companies operating in the various segments of the agri-food tech continuum and seeking capital of \$3 to \$10 million to catalyze their expansion strategies. RIO is targeting \$150 million of total committed capital and has secured \$77.5 million in a first close.

RIO is the successor to Avrio Capital, a global pioneer in agricultural equity investing. RIO has recruited several members of the Avrio team, including Aki Georgacacos (co-founder and Managing Director), Steven Lealos (Managing Director) and Jonathan Goodkey, promoted to Principal in the new fund. Jean Francois Huc, an experienced entrepreneur, joins RIO as a co-founder and Managing Director. The existing Avrio equity and sub-debt funds will continue to operate under the Avrio name.

Development of promising new technology



Source: Resonon



Source: Naio



Source: Mitrefinch

Slimme camera's kunnen gebruik pesticiden drastisch beperken

Zo werkt het

- Een drone vliegt laag over het veld en maakt een 3D-scane van de gewasopbouw.
- De camera's zijn in staat om te zien of er schade aan de gewassen is.
- De drone krijgt informatie van een andere drone over de schade die is ontstaan.
- De tractor, die daarbij gaat, weet welke plekken behandeld zijn en hoe vaak.

Sproeien tot op de millimeter

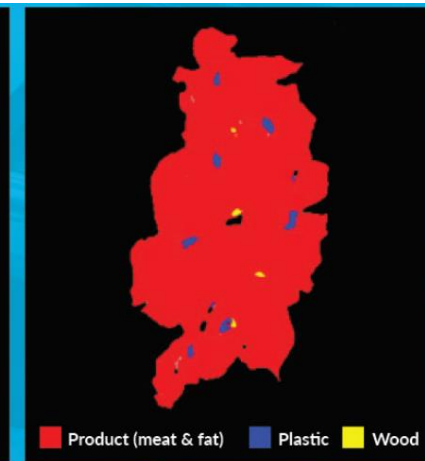
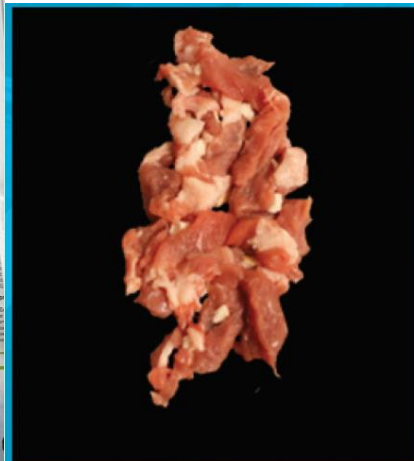
In plaats van een heel veld van 10.000 meter te besproeien, zal een boer straks misschien nog maar 10 vierkante meter moeten oversproeien. Met daarbij een slimme camera's op een drone of een tractor die precies aangeeft en gerechtigd sproeit. Het Instituut voor Landbouw, Visserij en Voeding (ILVO) heeft de technologie ontwikkeld.

Practisch

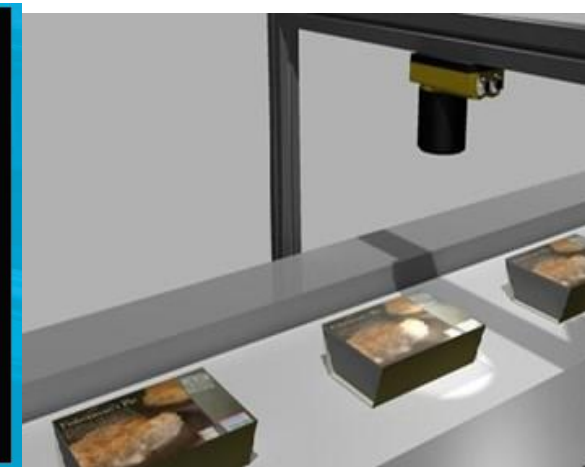
Een slimme camera's kunnen gebruik pesticiden drastisch beperken. Dit is mogelijk dankzij de technologie van de toekomstige boer van de toekomst.

ILVO

Source: Nieuwsblad



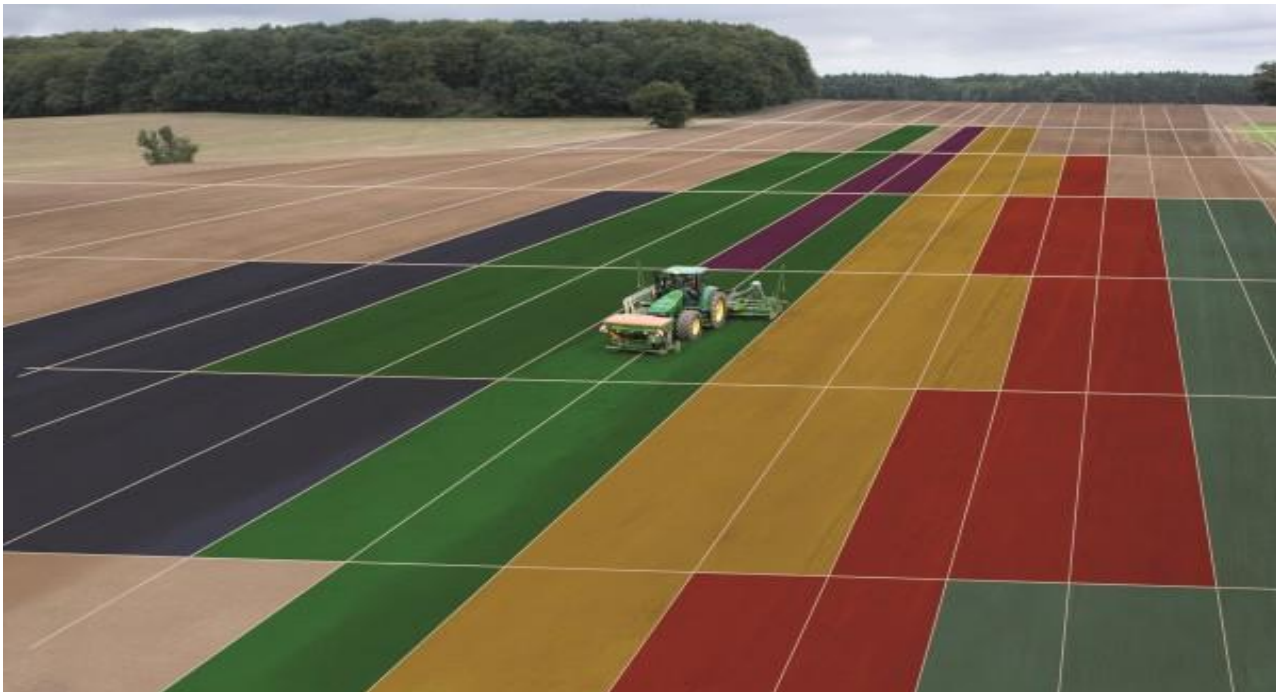
Source: Specim



Source: Foodonline



Precision Farming is the way to go!



So everybody
is doing
smart
farming?

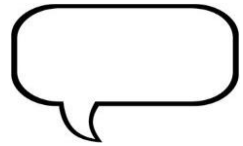




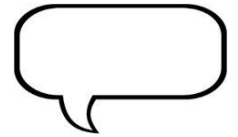
Yes ...
except the
farmers!

Adoption of innovative technology lacks behind

The farmer has questions ...



High investment costs!



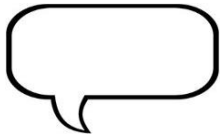
Payback time?

Technological problems?

Added value?

Solution for my specific problem?

Does it work in practice?



Are there independent reviews?

Are others happy with the change?

How to get started?



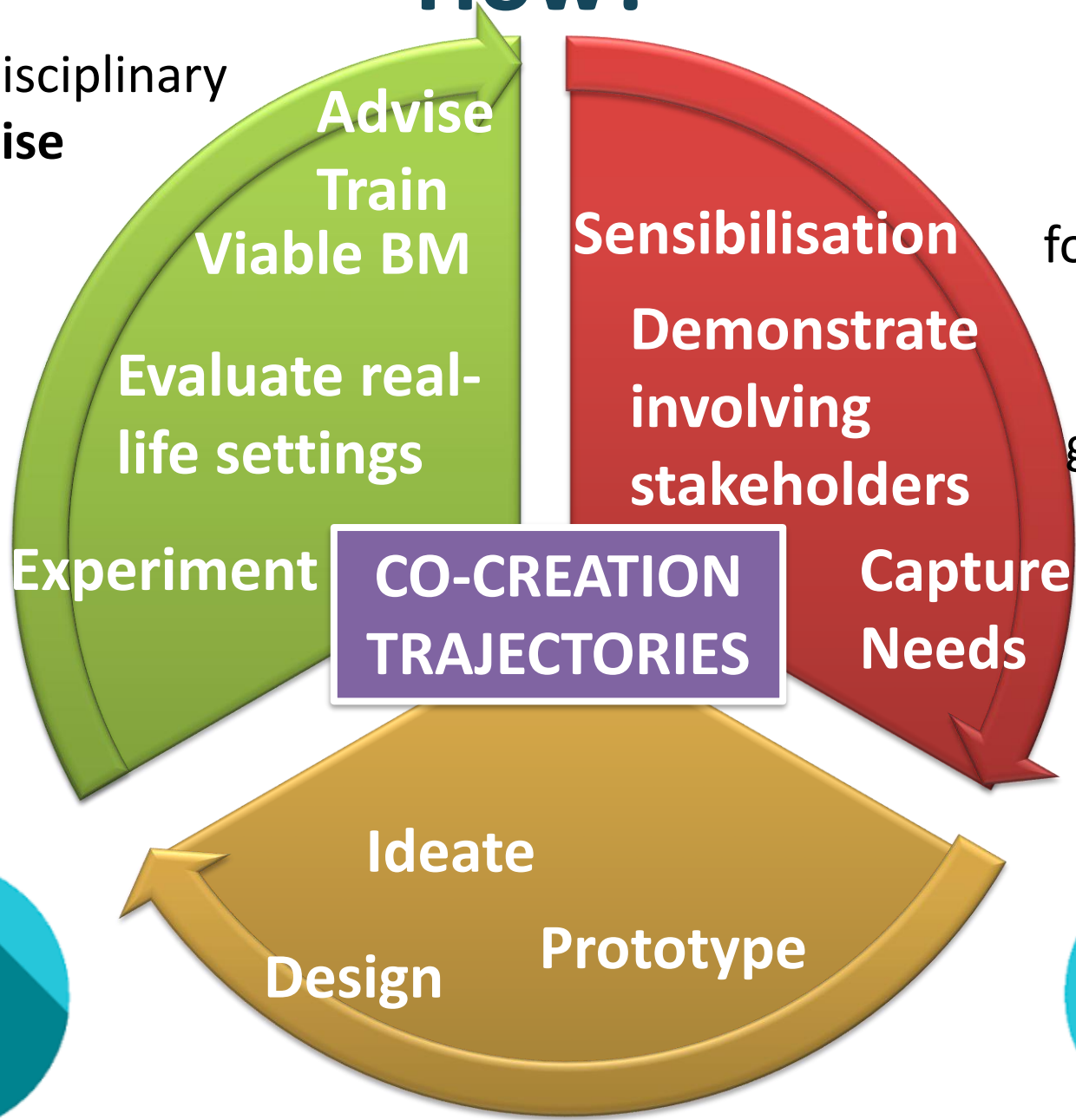
4/06 2007-346 © INKINCINCT Cartoons www.inkincinct.com.au

INKINCINCT

Clear need for Farmer/End-user Involvement!

How?

✓ Multidisciplinary expertise



Farmers,
contractors,
technology
companies,
food industry,
research
institutions,
government,
citizens, ...



Example case

ILVO

Proximal & remote sensing



Multi- & hyperspectral



umec

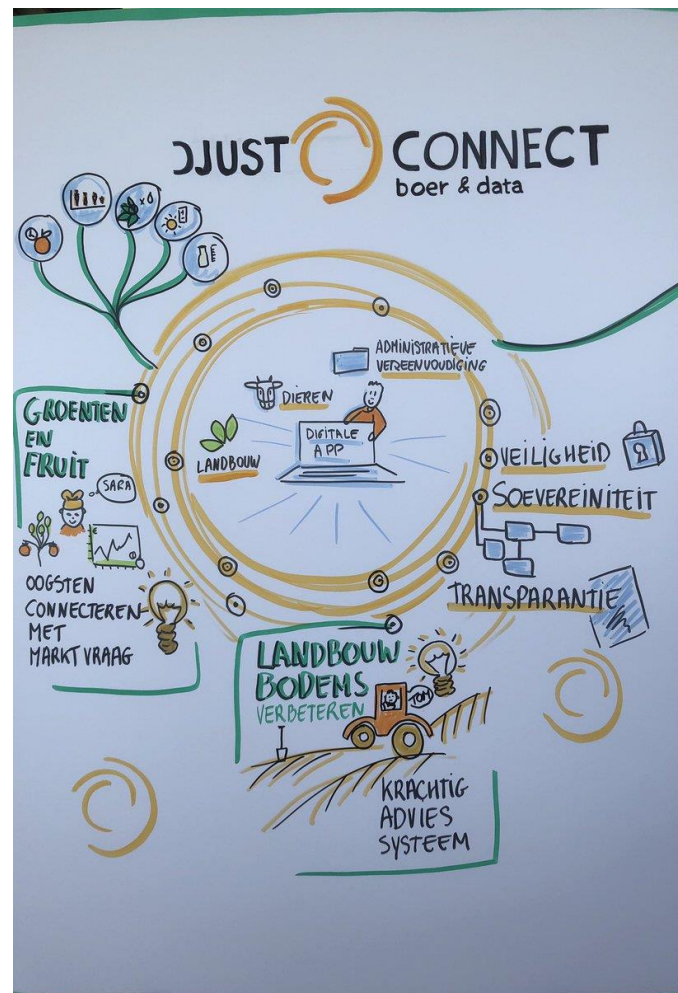


Deep (machine) learning



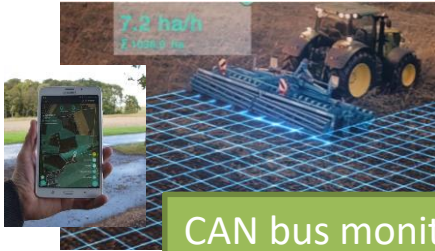
Task maps for variable rate application

Example case



https://www.youtube.com/watch?v=GaB3jz_oGko

Other cases...



CAN bus monitoring

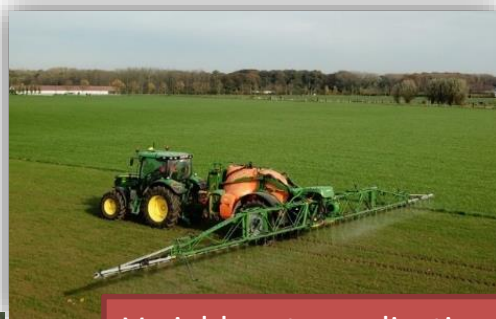
Disease & weed detection



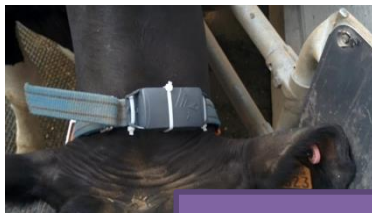
Precision spreading



Soil scanning



Variable rate applications



Cow sensor



Robot applications



Hyperspectral imaging



Variable tire pressure system



Soil passport



Digital farm



Remote sensing



- ✓ Accelerate adoption rate of sustainable technology and digitalisation for agrifood sector
- ✓ Involvement of all stakeholders
- ✓ Tailored advice for end-users
- ✓ Development of new sustainable (data driven) solutions
- ✓ Our challenge: improve in training?
- ✓ Our challenge: involvement of citizens?
- ✓ Our challenge: our business model for LL?

NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field

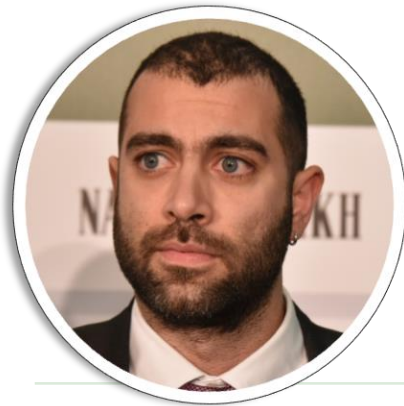


Peter PAREE
H2020 FARMDEMO



NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Harris MOYSIADIS
Future Intelligence – FINT
Greece



NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



Josien KAPMA
FarmHack
The Netherlands

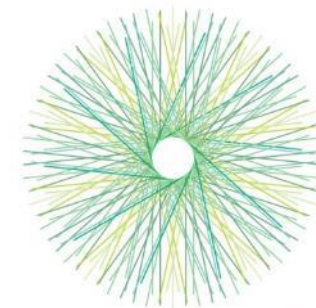


NON-FORMAL/INFORMAL EDUCATION AND TRAINING

From the classroom to the field



3. Linking up with agricultural knowledge and innovation systems (AKIS)



eip-agri
AGRICULTURE & INNOVATION

An innovation 'ecosystem' to support upskilling (for all)

Challenge: short-term, isolated interventions. For wider impact: **linking up the relevant actors** (farmers, advisers, researchers, trainers, service providers, public administrations,...), **resources**, and establishing **synergies among existing tools**.

Added value of **European projects**.

Advisers and service providers are key to build this 'ecosystem'. But they need to upskill too (**train the trainer**).

Examples:

- H2020 SmartAgriHubs (**George Beers**)
- The Netherlands, Facilitating farmers' skills development (*Caroline van der Weerd*)
- Portugal, [HUB4AGRI](#) Digital Innovation Hub for Agriculture (Maria Margarida Segard)
- H2020 Fairshare (**Tom Kelly**)
- H2020 I2Connect (*Miguel de Porras*)
- John Deere training activities (**Thomas Engel**)
- [LIFE - F3](#): Farm Fresh Fruit (Lars T. Berger)

LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



George BEERS
H2020 SmartAgriHubs



SmartAgriHubs

Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector

George Beers, Wageningen University & Research,

Coordinator SmartAgriHubs

EIP-AGRI Seminar ' New skills for digital farming'

5-6 February 2020, Spain



Why Agricultural Digital Innovation Hubs ?

- (Extreme) High speed development of technology
- (Extreme) amount of projects (EU, MSs, Regional)
- Thousands of 'Apps' – few 'systems'
- Digitization as Multi Dimensional innovation:
(**technology, system integration, business, organisation, work forces, legal, security, funding, trust**)

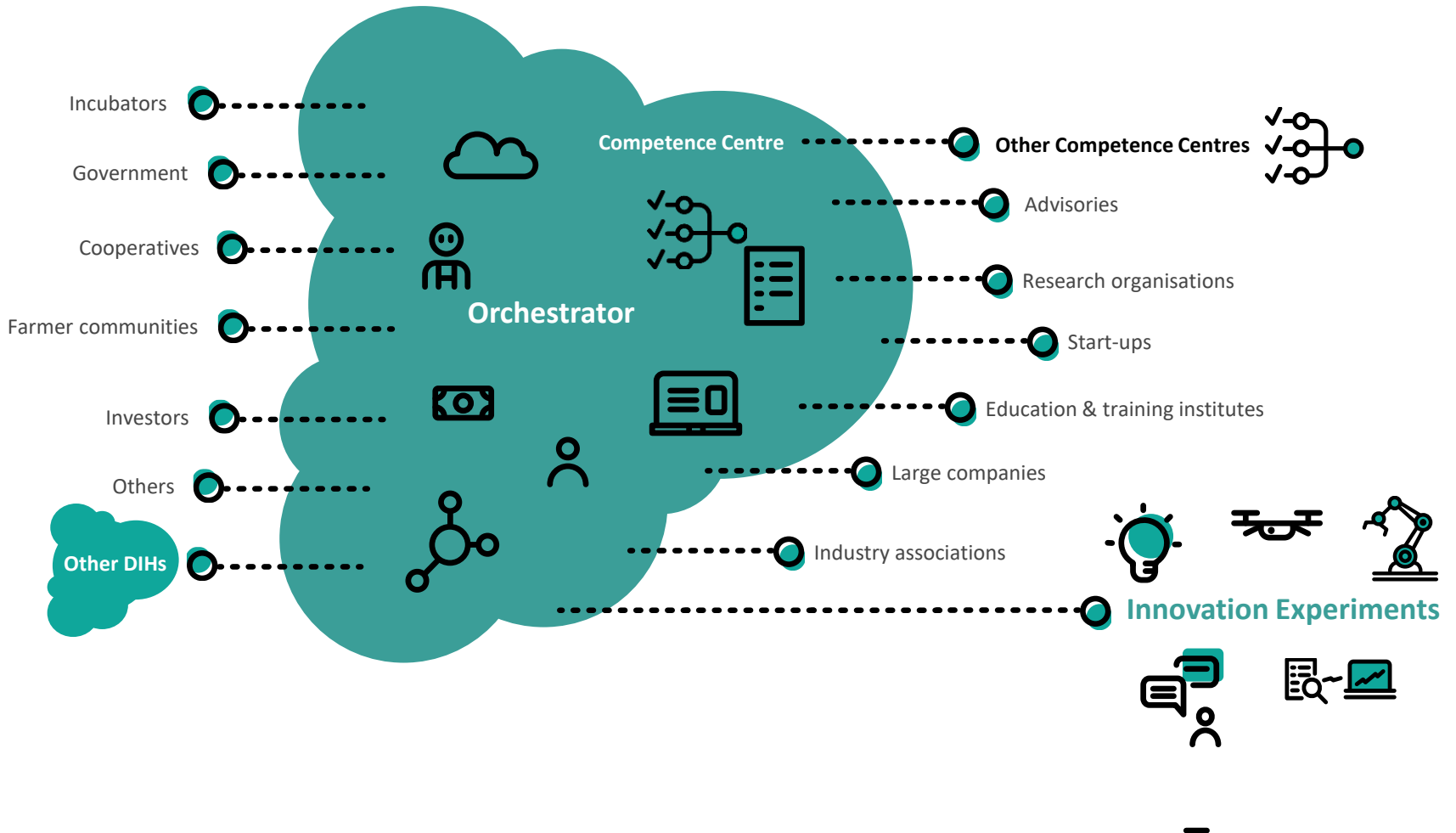
➔ DIH to support Farmers in this complexity

Agricultural Digital Innovation Hubs

- Acts as one-stop-shop in proximity of the farmers
- 'Help desk' for digitizing farmers
- Stimulate & promote digital transformation in Agriculture
- Enables access to the latest knowledge, expertise, and technology
- Provides connection with investors
- DIH is a role embedded in existing organization



What's a Digital Innovation Hub

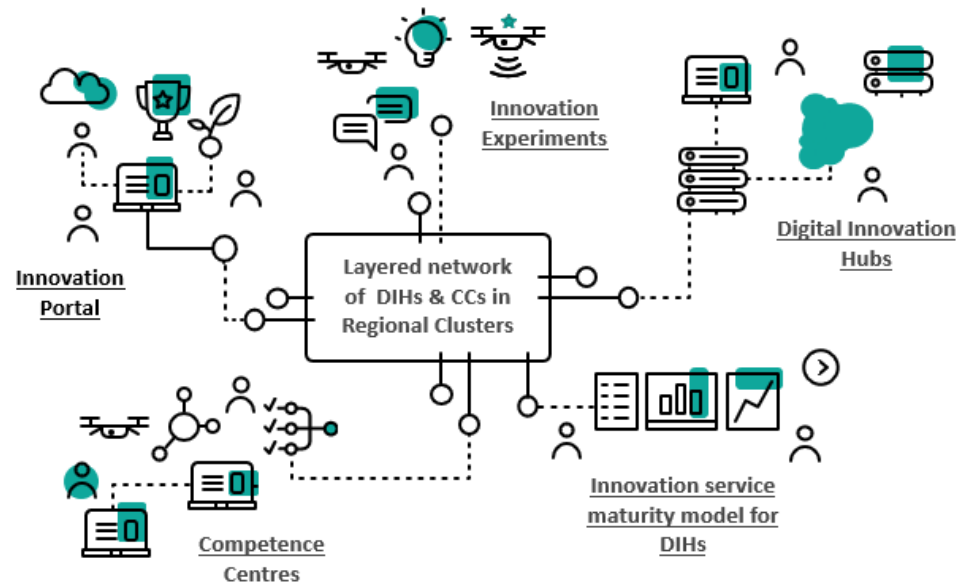


How to Connect the Dots

Innovation Portal for connecting DIHs
EU-wide with:

- Other DIHs and their services
- Competence Centres
- Innovation Experiments
- Re-usable components
- Test and demonstration Farms

➔ To facilitate DIH services for farmers



SmartAgriHubs in numbers (20M€)



Ecosystem

168 Partners

Involving covering all EU

68 partners are SMEs

54% of budget allocated to SMEs



Flagship innovation experiments

28 FIEs

22 Countries involved

13 Cross-border collaboration FIEs (47%)



Impact

30M additional funding

Mobilized from other sources (public, regional, national and private)

80 new digital solutions

Introduced into the market

2M Farms involved in digitisation



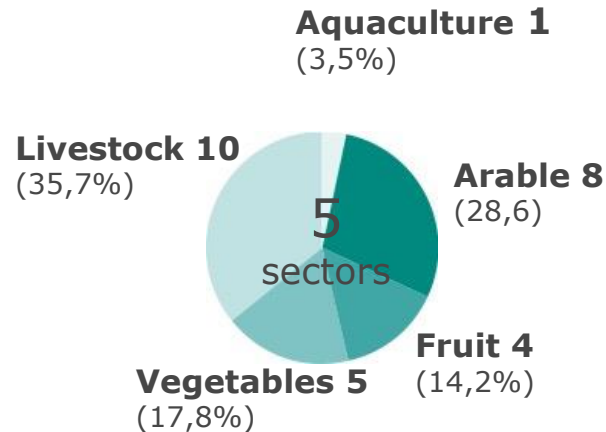
Digital Innovation hubs

140 DIHs in the existing Network covering all **28 Member States**

Regional Approach

9 Regional Clusters

Attract **260 New DIHs**



Open Calls

6M Euros distributed through

Open Calls

75% Open Call budget to SMEs

70 New Innovation Experiments

- Inspiring examples (best practices) from all over Europe
- Re-usable components
- Templates & guidelines for technical and business aspects
- State of the art competence centers
- Funding structures and contacts

To: DIH as intermediate to farmers

Concrete Output

LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Caroline VAN DER WEERDT
**Facilitating farmers' skills
development**
The Netherlands



LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Maria Margarida SEGARD
HUB4AGRI Digital Innovation
Hub for Agriculture
Portugal

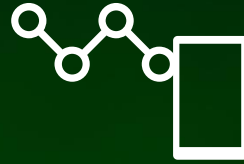


LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Tom KELLY
H2020 Fairshare





FAIR

DIGITAL TOOLS FOR FARM ADVISORS

FAIRshare: The online platform and Network for the European farm advisory community to access and share digital advisory tools and services

Professor Tom Kelly
Director of Knowledge Transfer
Teagasc



FAIRshare

DIGITAL TOOLS FOR FARM ADVISORS



THIS PROJECT HAS RECEIVED FUNDING FROM
THE EUROPEAN UNION' HORIZON 2020 RESEARCH
AND INNOVATION PROGRAMME
UNDER GRANT AGREEMENT N. 818488

FAIRshare Introduction: Ambition and Challenge

- Why = Digital divide is getting wider
 - - Farmer - the non user and the best user
 - - Advisor – tools and examples of services
 - - Other supply chain actors
- What to achieve?
 - More farmers benefiting from digital services
- How?

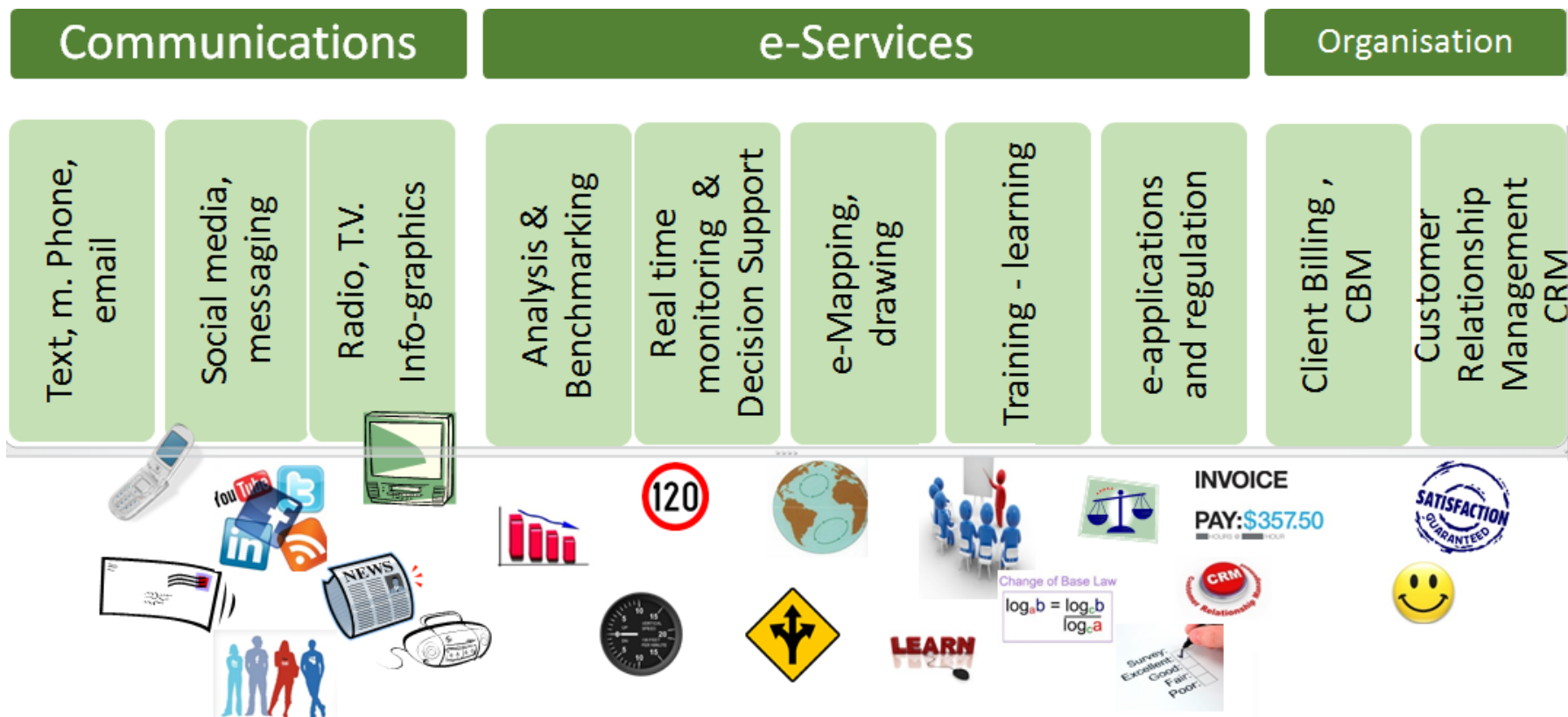
Sharing – adapting - learning from each other

 - Digital Advisory Tools and Services (DATS)
 - Expertise of those that develop and use
 - Motivation /attitudes of advisors and farmers



Source: <https://www.yara.com/crop-nutrition/digital-farming/>

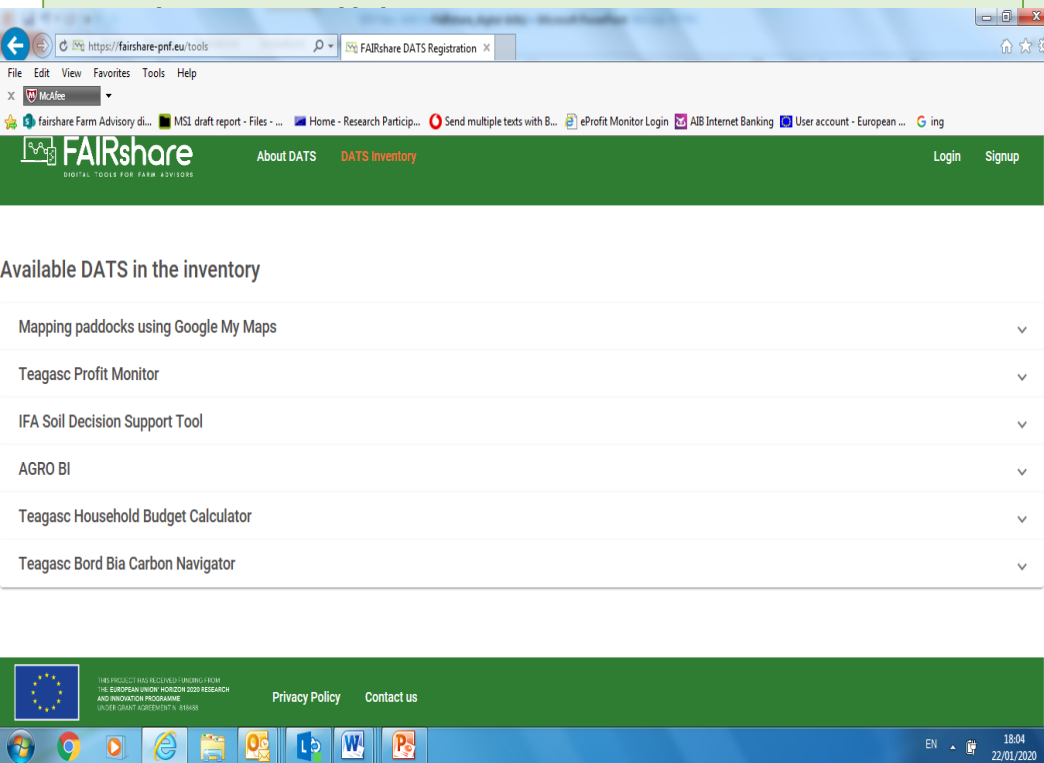
An exciting range of digital tools and services help advisors and farmers, from big data to small apps, all farm advisors can benefit.



Two discreet phases involving partners who want to use more digital technologies in their work

Phase 1. The FAIRshare digital advisor platform: a permanent networking facility for advisors

Phase 2. The process of equipping, skilling and motivating advisors to use DATS



The screenshot shows a web browser window with the URL <https://fairshare-pnf.eu/tools>. The page title is "FAIRshare DATS Registration". The website header includes the FAIRshare logo and navigation links for "About DATS" and "DATS Inventory". Below the header, there is a section titled "Available DATS in the inventory" with a list of tools:

- Mapping paddocks using Google My Maps
- Teagasc Profit Monitor
- IFA Soil Decision Support Tool
- AGRO BI
- Teagasc Household Budget Calculator
- Teagasc Bord Bia Carbon Navigator

The footer of the website includes the European Union flag, a statement about funding from the European Union Horizon 2020 Research and Innovation Programme, and links for "Privacy Policy" and "Contact us". The system tray at the bottom shows the date and time as 18:04 on 22/01/2020.

Select groups of advisors in user cases to plan and implement a change in 40 different advisory contexts.

Engage multi-actor groups – farmers and advisors to plan the change.

Use peer to peer and networking events to equip, train and motivate advisor users
 A living lab approach to embed the learning

<https://www.youtube.com/watch?v=Wwpj--N5-Yc>

Thank you!

Contacts:

Tom Kelly: Tom.Kelly@teagasc.ie

John Hyland: John.Hyland@teagasc.ie

www.H2020fairshare.eu/

info@H2020fairshare.eu



THIS PROJECT HAS RECEIVED FUNDING FROM
THE EUROPEAN UNION' HORIZON 2020 RESEARCH
AND INNOVATION PROGRAMME
UNDER GRANT AGREEMENT N. 818488

LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Miguel DE PORRAS
H2020 I2Connect



LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Thomas ENGEL
John Deere training activities
Germany





New skills for digital farming

Dr. Thomas Engel

Manager Technology Innovation Strategy



JOHN DEERE

Role of Machinery Manufacturers

- Machines are key enablers for digital transformation
- Sensors on machines to detect actual soil and crop information (weed recognition, amount of biomass, nutrient status, pests, diseases)
- Yield mapping for success control of variable rate applications
- Communication protocols and cloud connectivity to facilitate data flow

Role of Service Providers

- Farmers typically need support to transfer raw data into valuable information
- Service providers can offer additionally site specific information using soil sensors, drones and EO satellite data
- Transfer of the data into application maps for seed, fertilizer and pesticides is key for success

Training methods and activities

- Systems need to be as intuitive as possible
- Mainly traditional instructor led training for dealers
- Dealers need to support customers and need also basic agronomic knowledge
- Train-the-trainer approach to increase the footprint of the training
- Remote Display Access is using on-demand learning techniques for coaching and support of the customer
- Farmer testimonials are important (lead farms)

Precision Farming Benefits for Farmers

- Better productivity and profitability of the farm
- Automation on the machines improves operator comfort
- Lower CO₂-footprint and water contamination with nitrate and pesticides
- Improvement of public image of farming
- Use of Hi-Tech can attract young people for farming and keep them in rural areas



JOHN DEERE

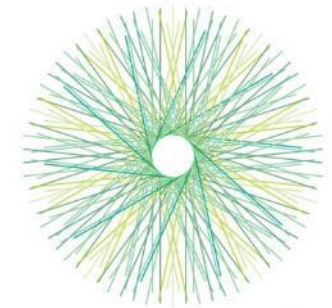
LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Lars T. BERGER
LIFE – F3: Farm Fresh Fruit



3. Linking up with agricultural knowledge and innovation systems (AKIS)



eip-agri
AGRICULTURE & INNOVATION

Focus on the CAP: 'toolbox' for digital skills development

What role for the CAP in digital skills development? **Rural development measures** offer a range of tools → use in a targeted and synergic way to address from basic to more advanced needs:

- **Knowledge transfer and information** (vocational training, skills acquisition, demonstration, information actions, farm exchange/visits)
- **Advice**
- **Cooperation (EIP operational Groups)**
- **Leader**

Reminder for future **CAP strategic plans!**

Examples:

- Estonia, RDP measure 1 and 2 to help farmers with e-applications (**Leho Verk**)
- Austria, LFI educational project - Digitalisation in agriculture and forestry (**Martin Hirt**)
- Poland, Computer workshops for digitally-excluded people over 50 - Northern Jura Partnership Association LAG (**Jerzy Motloch**)

LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Leho VERK
RDP measure 1 and 2 to help
farmers with e-applications
Estonia



LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Martin HIRT
LFI educational project –
Digitalisation in agriculture and
forestry
Austria



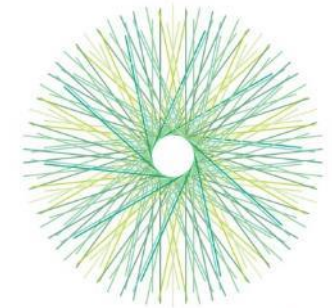
LINKING UP WITH AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)



Jerzy MOTLOCH
Computer workshops for
digitally-excluded people
over 50 – Northern Jura
Partnership Association LAG
Poland



4. Learning about and with digital tools



eip-agri
AGRICULTURE & INNOVATION

Focus on e-learning, e-resources, e-platforms...

Not only learning to use digital tools but using digital tools for learning.

Digital technologies can **enhance opportunities** for skills development in schools, higher education and throughout life.

Digital **platforms, portals...** provide online **learning resources** and help connect people who produce and use knowledge.

Examples:

- France, VIVEA blended digital training (**Beatrice Dingli**)
- Finland, JAMK University of applied sciences – Digital e-learning resources (*Anne-Mari Malvisto*)
- Erasmus+, [Biocontrol E-Training](#) (Laurent Dedieu)
- Lithuania, EIP Operational Group '[Gate of innovations](#)' (**Gintare Kucinskiene**)
- H2020 EURAKNOS / EUREKA (Hercules Panoutsopoulos)

LEARNING ABOUT AND WITH DIGITAL TOOLS



Beatrice DINGLI
VIVEA blended digital
training
France



VIVEA

dedicated vocational training for farm managers



600 000 farm managers

The French fund of training for :



30% are women



The content



The rules about training in France (Blended learning)



The digital revolution in all society : internet, Big Data, Smartphone, Artificial intelligence



Farm managers needs : precision farming, automation, new work organisation, better work-life balance, train differently

Training organisations need to train differently : how to build digital educational scenarios

Challenges for VIVEA



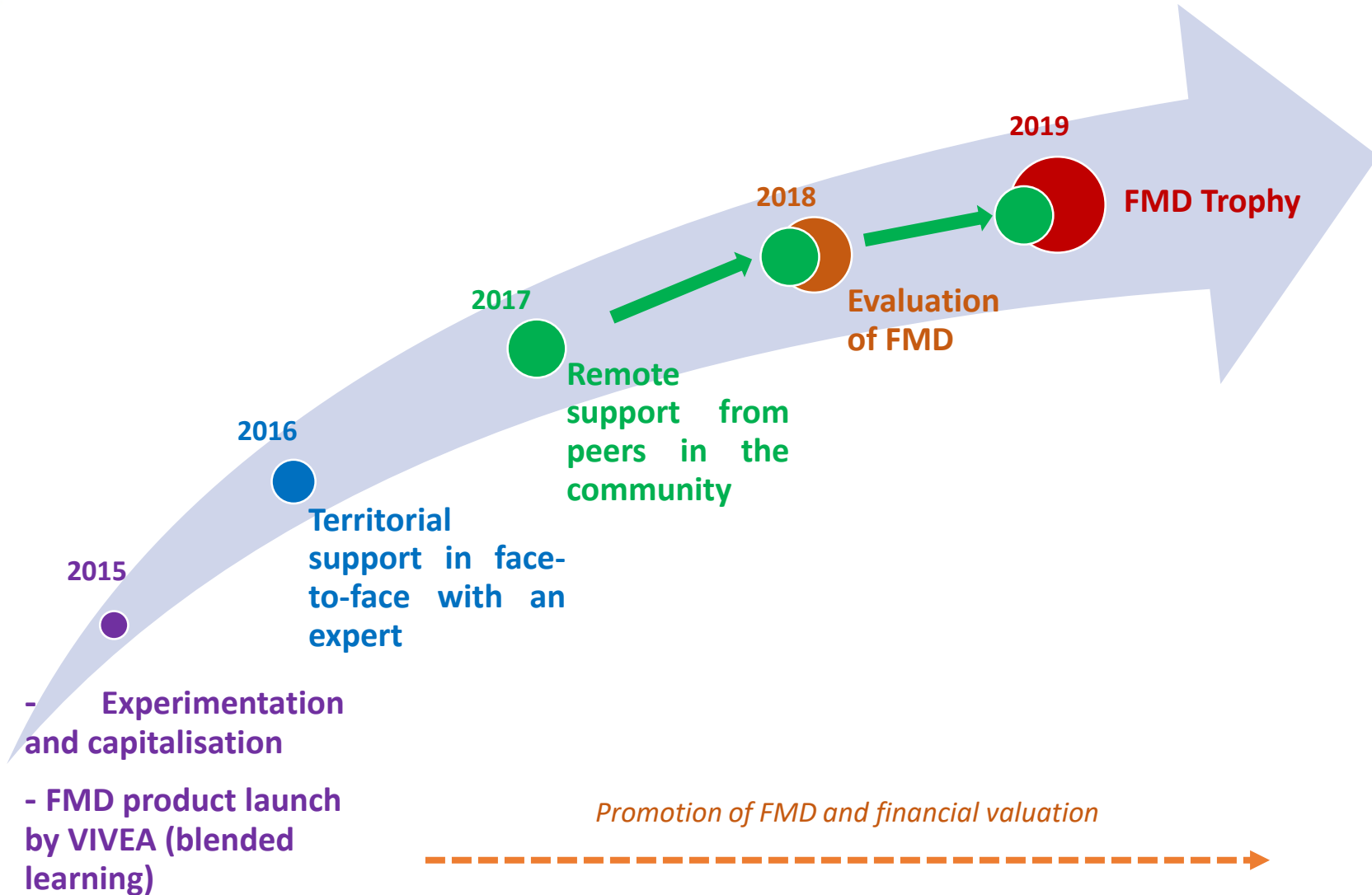
Shaking up
training
practices

**Modernise the
training offered
by developing a
mixed digital
offer**



Digitising
educational
scenarios

A pro active approach





**And more importantly,
what does FMD look like ?**



https://youtu.be/JDwQm_OIxTM



*What do trainees
say about FMD?*

*A very high level
of trainee
satisfaction*

The top three benefits of blended learning to our farm managers :

- More effective face-to-face sessions
- Movement limitation
- Greater application of training outcomes in their work

LEARNING ABOUT AND WITH DIGITAL TOOLS



Anne-Mari MALVISTO
JAMK University of applied
sciences – Digital e-learning
resources
Finland

LEARNING ABOUT AND WITH DIGITAL TOOLS



Laurent DEDIEU **Erasmus+, Biocontrol E-Training**



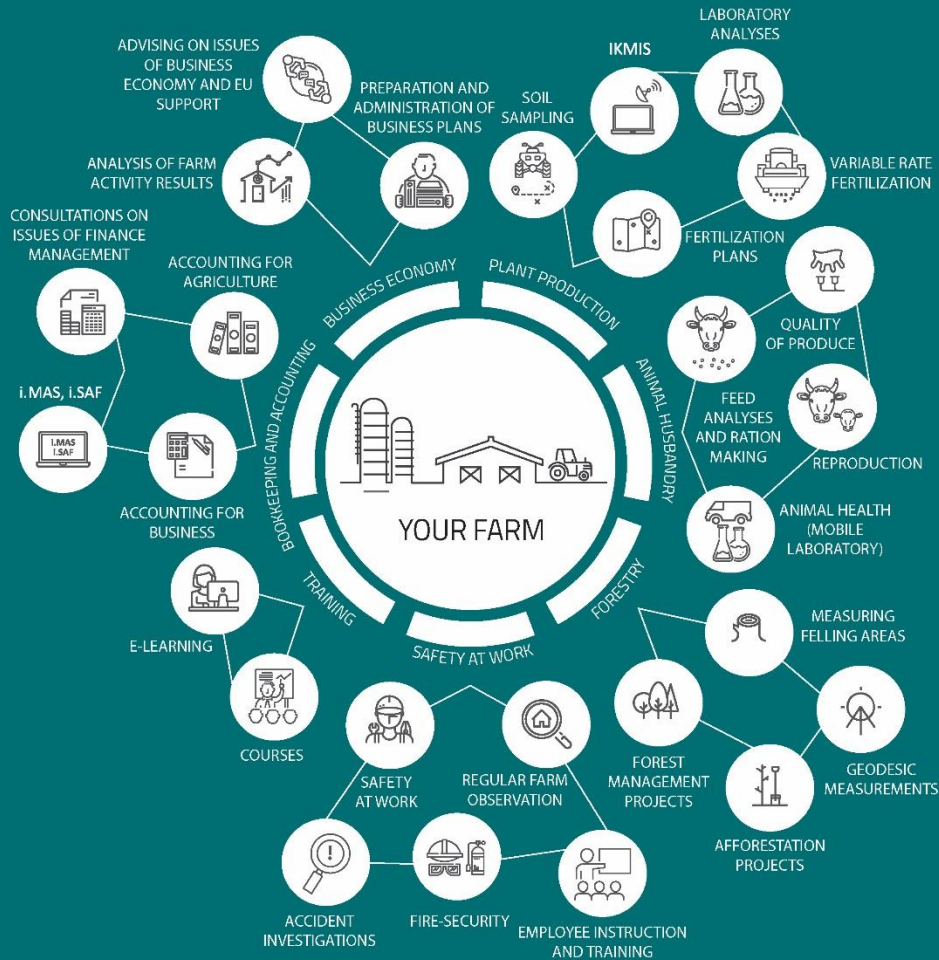
LEARNING ABOUT AND WITH DIGITAL TOOLS



Gintare KUCINSKIENE
EIP-AGRI Operational Group
'Gate of innovations'
Lithuania



Open “Gate of Innovations” - The Centre for knowledge accumulation, transfer, development of agricultural technologies and their demonstration



<https://titris.lzukt.lt/>

Free, Bilingual (LT/EN) Information System of Open Access

Object: non-commercial scientific **research** and practical **innovations** that have or might have influence on **sustainable** agricultural production.

Aspects of novelty:

- The responsible Process of knowledge sharing and its identification (TRL, effects and arguments, additional material);
- The **availability** of EU **funding** for research / innovation is accessed;
- Voluntary news subscription;
- Professional and free **online consultation** on a wide range of innovation topics is provided.

Methodology of TITRIS



News subscription

Select news topics

Email address

A mobile technology line for preventive health care of sheep

Area
Livestock farming

Subarea
Sheep husbandry

[Sheep health](#) [Sheep husbandry](#)

ISC: Šeškusis armeniškytė specializes in keeping and selling of breeding sheep. In order to provide farmers with healthy breeding lambs and to reduce labor costs for maintaining breeding sheep, the company has purchased a modern technology line that meets animal welfare requirements and is used for preventive health care of sheep. The technological line includes: smart scales with computer data storage, a disinfection dais with a tub, an automatic sheep bonitization machine and a mobile reversible sheep hoof care tool. The purpose of this investment was to improve the sheep health and their hoof condition, as well as to assess the characteristics of a particular breed and the suitability of lambs for breeding (bonitization) more accurately. The implementation of this technology line did not cause any difficulties and the staff did not need any training.

Effect: Economic: Animal welfare

Argumentation: Animal welfare and sheep health have improved (50% reduction in sheep morbidity over 3 years), the time spent on sheep hoof care, handling and shearing has been reduced twice, sheep bonitization is carried out with higher quality and 3 times faster, and the safety of the person performing the procedures/work safety is ensured.

[Šeškusis armeniškytė](#)

About Innovation

- Year: 2022

Contacts

- Rimantas Karys
- rkar@armlis.lt
- seškusis.armlis.lt

Partners: "Gate of Innovations" - The Centre for knowledge accumulation transfer, development of agricultural technologies and their demonstration Agreement No. 32019-100-05-0-010001/16/002e

Contact us ▼

Our working hours 8:00 a.m. – 5:00 p.m. at workdays. Leave us your message and we will contact you

Your question*

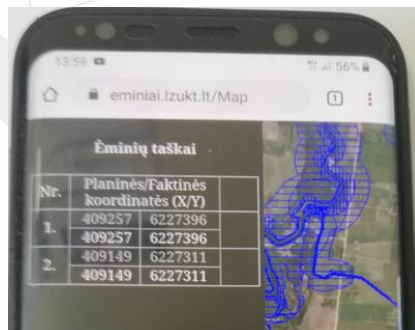
Powered by [Pure Chat](#)

Other digitalisation actions in InnoGates

- Established laboratory works in connection with app for soil sampling and Farm management program *E-GEBA*;



Made in e-GEBA soil sampling plan is sent to the app.

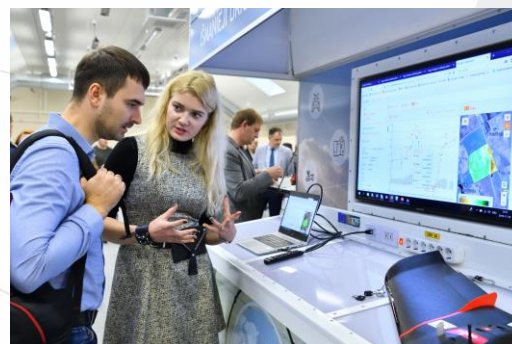


Coordinates of should be taken soil samples are easy found in the field using GPS.



Lab results are going directly to e-GEBA programe for advisers evaluation.

- Centre of Precision Farming Services provides training with Simulation display. The mobile stand shows for clients the full cycle of precision farming and to encourage farmers to use innovative technologies on their farms.



Facts from InnoGates that broke down stereotypes about innovations and projects:

- Project created 8 new workplaces (7 in lab + 1 for TITRIS) during the implementation. The potential another 2–3 employees coming 1–2 years (enabling Innovation support Service and pavilion for demonstration of innovative agricultural technologies and machinery).
- Diversity of project results helped us to keep them sustainable and develop them further (precision services, improvement of TITRIS, the start of new activities in pavilion, etc.)



Thank you!

LEARNING ABOUT AND WITH DIGITAL TOOLS



Hercules PANOUTSOPOULOS
H2020 EURAKNOS / EUREKA





EURAKNOS

**Connecting Thematic Networks as Knowledge Reservoirs
towards a European Agricultural Knowledge Innovation Open Source
System**

New Skills for Digital Farming EIP-AGRI Seminar
February 6, 2020 - Aranjuez, Spain

Hercules Panoutsopoulos email: hpanoutsopoulos@aua.gr
Agricultural University of Athens
Department of Natural Resources Management & Agricultural Engineering



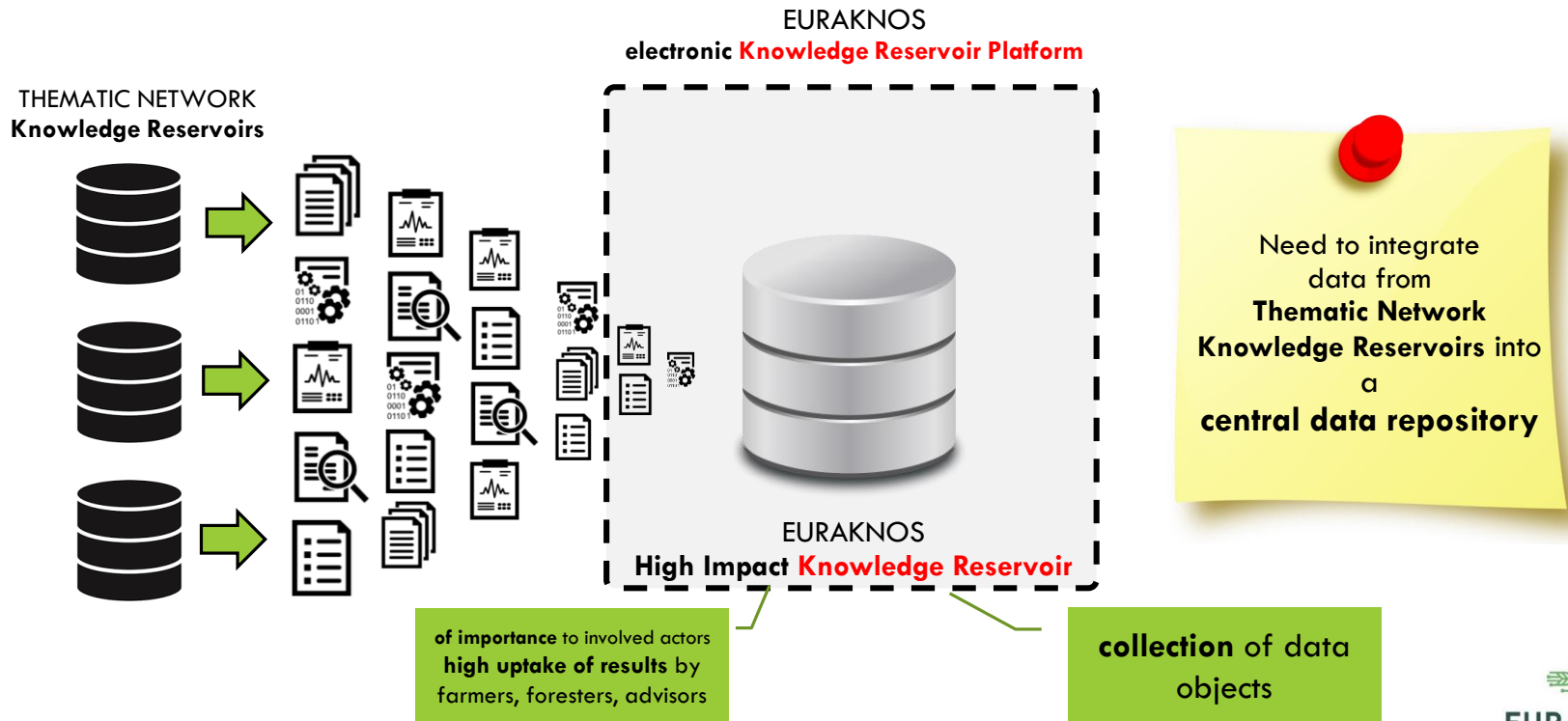
EURAKNOS & EUREKA are projects that have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements No 817863 and No 862790.

PRESENTATION OUTLINE

- Context
- e-KRP architecture
- Storing data into a HIKR
- An ontology of Thematic Networks
- EURAKNOS database model
- User interaction & user experience
- Added value



CONTEXT



ARCHITECTURE



three tier architecture

presentation tier

application tier

data persistence tier



what the user sees



search engine



where data is stored

STORING DATA



- Flexibility
- Data redundancy tolerant
- High performance
- Horizontal scalability
- Rich query language

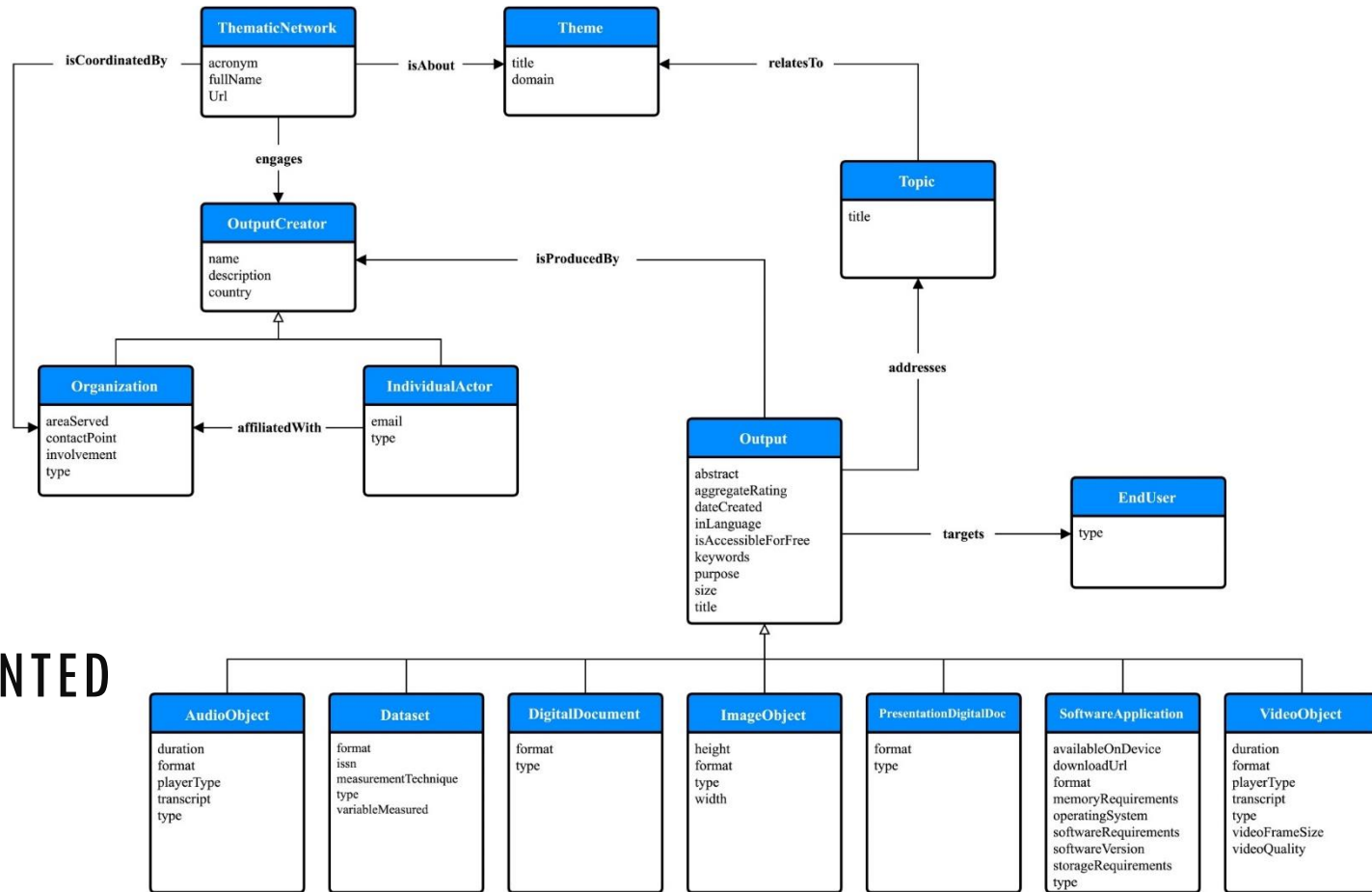


- Need to integrate data from different sources
- Wide range of data object types, formats and sizes of information material
- Each source database makes use of a different model
- Lack of sufficient metadata
- Compliance with FAIR data principles

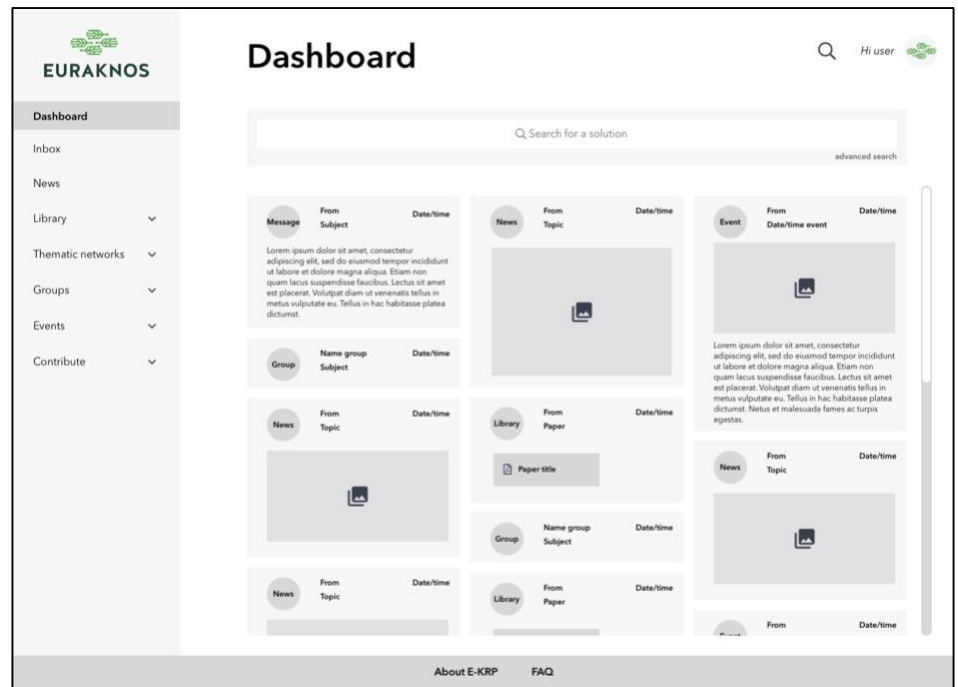
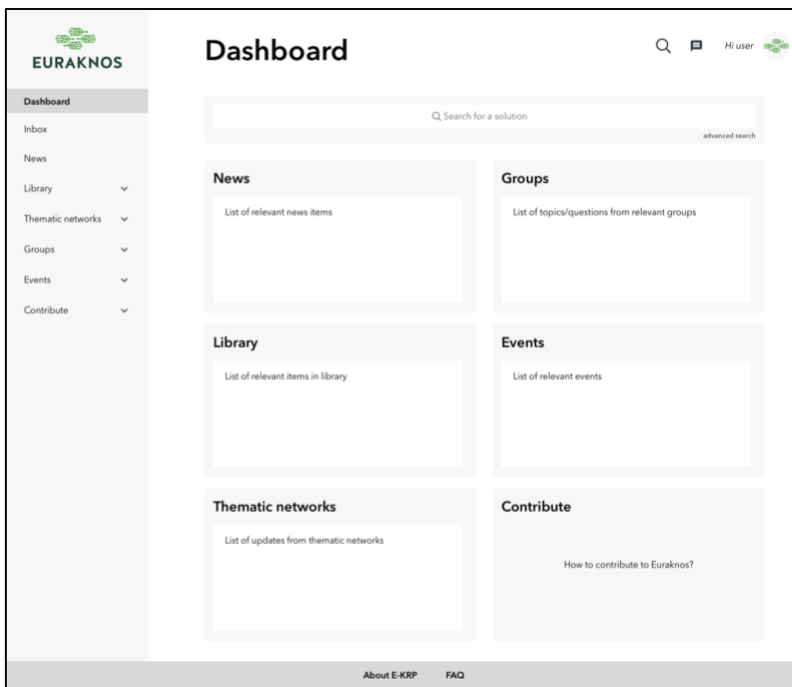


AN ONTOLOGY OF THEMATIC NETWORKS

A PATHWAY TO ORGANISE PRACTICE-ORIENTED KNOWLEDGE



USER INTERACTION & USER EXPERIENCE



ADDED VALUE

- **Perspective of the end-user**
 - **A common dynamic EU repository** of Agriculture- and Forestry-related practice-oriented knowledge serving and connecting AKIS's in all member states and regions
 - Availability of Agriculture-related data objects in a variety of forms and formats capable of **covering a wide range of user needs**
- **Technical perspective**
 - A step towards the **establishment of standards** for Thematic Network – related (and Agriculture-related in general) data repositories
 - A step towards the **establishment of some commonly accepted patterns** for designing user interaction and experience



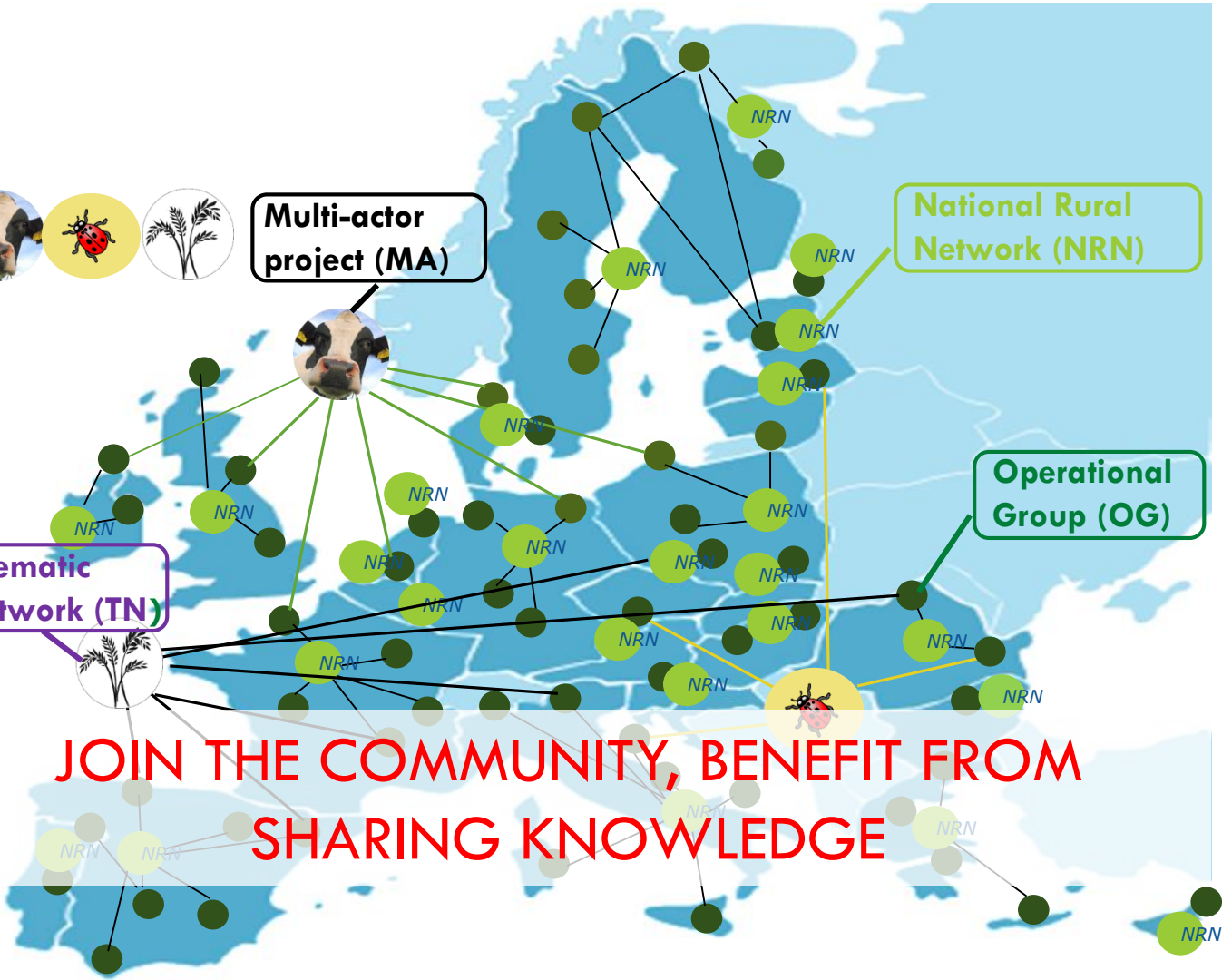
Multi-actor project (MA)

National Rural Network (NRN)

Operational Group (OG)

Thematic Network (TN)

JOIN THE COMMUNITY, BENEFIT FROM SHARING KNOWLEDGE



**THANK YOU
VERY MUCH
FOR YOUR
ATTENTION!**

