ICT-AGRI-FOOD

An ERA-NET Cofund promoting digital enabled agri-food systems

(H2020-SFA-31-2019 A)

01/10/19 – 31/03/25

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Outline

Two Parts of presentation:

1.) What is the ERA-NET committed to?
- ICT-AGRI-FOOD is looking at the entire food value chain and where connectivity is missing
- Funds transnational projects that (further)develop digital technologies to connect actors from farm to fork and beyond
- Bundles numerous and diverse activities in the unique “Knowledge Incubator” Programme

2.) What are our insights and experiences?
- Trends
- Challenges/barriers
- Solutions

Part 1 – What is the ERA-NET committed to?

What is ICT-AGRI-FOOD?

www.ictagrifood.eu

ICT-AGRI-FOOD - is an European Research Area Network (ERA-NET Cofund), funding & promoting research in the field of digital technologies along the whole value chains of agri-food systems

- The network consists of 34 partners from 22 countries
- The total budget approx. 30 Mio. Euro (up to now)
- Lifetime: 01/10/19 – 31/03/25 (> 2,5 more years active)
- Aim to align European research efforts at the "intersection ICT-AGRI-FOOD"
- Two independent and several further Joint Calls for research so far:
  2019 and 2022 Joint Call + Joint Calls with other ERA-NETs and ESA
- Further calls in pipeline
- Additional activities:

-Knowledge Incubator Platform
-Scientific Research & Innovation Agenda (SRIA)
-Workshops & Events for target group

Coordination: BLE, Germany (Elke Saggau, Johannes Pfeifer)
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If I were an SME or researcher in the agri-food domain, I would like to know:

- Where can I find funding opportunities?
- Who can consult me on funding opportunities?
- Where can I find inspiration?
- Where can I find business partners?
- Where can I exchange with peers on innovative ideas?
- What are the trends and opportunities ("hot topics")?

What aims ICT-AGRI-FOOD at?

ICT-AGRI-FOOD aims to

- Connect researchers & innovators in transnational and multi-actor RDI projects
- Connect all stakeholders (farmers, advisors, retailers, consumers, policy makers, …) and make them exchange and interact
- Help to train people and especially the young generation
- Support all farms (small and big, organic and conventional)
- Support SMEs
- Make use of data from all across the food chain to deliver benefits for the society as a whole and empower stakeholders to take better decisions
- Ultimately: To transform our agri-food systems to make them eco-friendly, fair, transparent, resilient, empowering all actors

General thoughts:

How to achieve sustainable & responsible business models

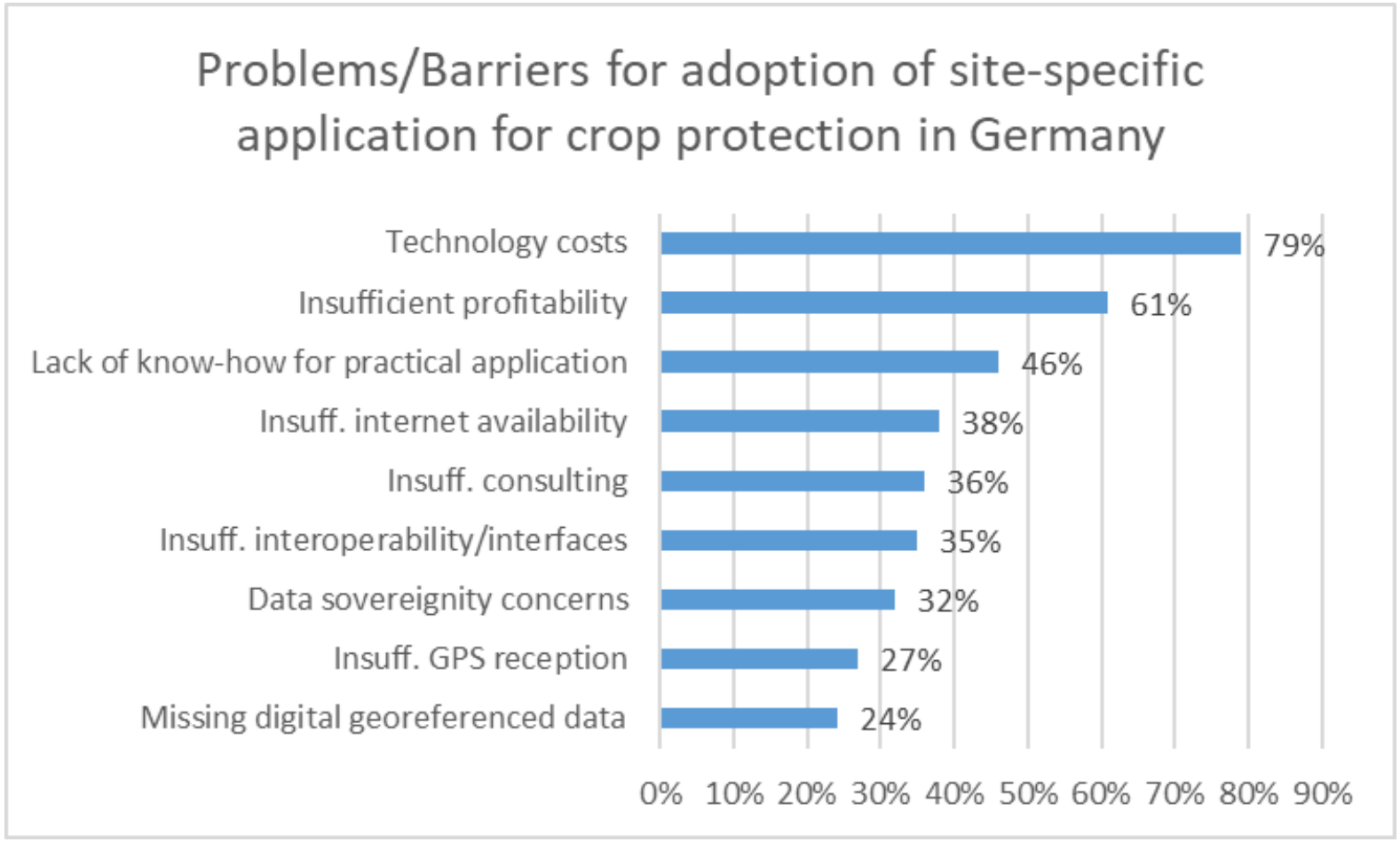
Observations/Assumptions of the ERA-NET community

- Transformation of agri-food systems urgently needed
- The economic pillar should not be neglected
- There is much tech out there – now it is about to connect and make use of it
- Involving other actors along the value chain can release synergies & can help to cover costs for digital technologies
- Involving other scientific disciplines to overcome barriers + peer to peer demo
- Food is not only be sold by retailers any longer
- Focusing only on consumers' information (e.g. labelling) is not fruitful (you don't reach part of society)
- High level of data coverage is required - but to convince all actors along the value chain to share their data is very hard
- There are still manifold barriers to adoption of a shared data economy

Example:

Barriers for site-specific application of pesticides in Germany

Mainly economic barriers, but also social and technical barriers



Source: Jahresbericht 2021/2022 IVA

Funding opportunities and inspiration

Our calls and activities

Joint Calls for research

COFUNDED CALL FOR TRANSNATIONAL, COLLABORATIVE, TRANSDISCIPLINARY RESEARCH PROJECTS ON ICT-ENABLED AGRI-FOOD SYSTEMS (2019)

Since spring 2021, the **19 projects** of the **2019 Joint Cofunded Call** started and are addressing the challenge of transforming the European agri-food systems into sustainable, resilient, transparent and fair systems.

The call is funded by 28 institutions from 22 countries, 3 European regions and the European Commission, and has an overall budget of more than 20 Mio Euro.

Topic 1 – Data-driven ICT platforms and solutions to improve the sustainability of agri-food systems.
This topic relates to **the development and/or application of data-driven ICT platforms and solutions that derive value for multiple actors from the data collected throughout the agri-food chain** (including e.g. research infrastructure, administrative authorities and policy makers).

Topic 2 - Identify and address barriers for adoption of ICT technologies in the agri-food systems.
This topic relates **to identify and address institutional, economic and social barriers** on the application of ICT technologies for achieving sustainability of the agri-food systems.

Projects cofunded call 2019

Project title	Project acronym	Coordinator	Countries involved
Advanced Digital Solutions for Professional Food and Nutrition Catering Services	ADCATER	FFX FoodproFix ltd (IL)	**IL,** RO, DE, IT
A Data-Driven Platform for Site-Specific Fertigation	ADDFerti	UGent Faculty of bioscience engineering, Ghent University (BE)	**BE**, GR, TR
Multimodal sensing for individual plant phenotyping in agriculture robotics	ANTONIO	AUTH-AESA Laboratory for Alternative Energy Sources in Agriculture, (GR)	**GR**, IT, DE, CH
Understanding and anticipating mechanisms of honeybee colony mortality with connected beehives	BeeConnected	UMR EGCE; IRD, CNRS, Univ. Paris-Saclay (FR)	**FR**, DE, GR
Fast and INtuitive Data Retrieval	FINDR	EMI Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut, EMI (DE)	**DE**, NL, PL
A smart-sensing AI-driven platform for scalable, low-cost hydroponic units	GOHYDRO	SCiO - Big Data Analytics in Food Systems (GR)	**GR**, DK, RO, DE
Innovative ICT tools for targeted monitoring and sustainable management of the brown marmorated stink bug and other pests	HALY.ID	Università degli Studi di Perugia (IT)	**IT**, IE, DE, RO, GR, NL
Integrated Model and digital Platform for Harvest Prediction of Canned Peaches	IMPPeach	Agrostis Agrostis (GR)	**GR,** DE, NL
Enhancing environmental sustainability of livestock farms by removing barriers for adoption of ICT technologies	LivestockSense	AgHiTech AgHiTech Ltd (HU)	**HU**, EE, AT, IL, PL, DK, SE
Multiscale Sensing For Disease Monitoring In Vineyard Production	MERIAVINO	INSA CVL (FR)	**FR**, RO, GR
Unlocking data-driven innovation for improving productivity and data sharing in mushroom value chain	MUSHNOMICS	HS Holisun SRL (RO)	**RO,** DK, HU, IE

Projects cofunded call 2019

Project title	Project acronym	Coordinator	Countries involved
sPectraL tools and digitalization for the development of sustAinable structured food with plaNt Proteins	PLAN P	ADRIA ADRIA Développement (FR)	**FR**, DK, GR
Potential of selective harvest based on mycotoxins content assessment in cereal crops	POSHMyCo	UGent Faculty of bioscience engineering, Ghent University (BE)	**BE**, GR, SE, LT, ES
Sunburn and heat prediction in canopies for evolving a warning tech solution	SHEET	ATB, Leibniz Institute for Agricultural Engineering and Bioeconomy (DE)	**DE**, IT, HU
Implementation of soil compaction risk assessment system – end-user's evaluation of potentials and barriers	SoCoRisk	Department of Agroecology (DK)	**DK**, IT, CH, NO, SE
Agrifood quality estimation using spectral techniques	SPECTROFOOD	Laboratory of Machines and Automation (GR)	**GR**, IE, DE, BE
Releasing the potential of ICT for sustainable milk and beef cattle value chains	SustainIT	nstitute of Economics and Social Sciences (EE)	**EE,** FI, SE, DE
An ICT-based real-time advisory tool to minimise tail biting in fattening pigs	TailBiteAdvice	Department of Biosystems, Division of Animal and Human Health Engineering (BE)	**BE,** IE, DK
aUtomaTed Open PrecIsion fArming Platform	[UTOPIA]	Intelligent Autonomous Mobility Center (NL)	**NL,** TR, BE

Why not getting inspired by currently funded projects?

Additional joint calls without EC co-funding

Up to **3** additional Joint Calls will be organized & implemented during ICT-AGRI-FOOD's lifetime until 2024, subject to commitments from funders.

• 2020 & following years:
The **European Space Agency** (ESA) and ICT-AGRI-FOOD collaborate with the aim of promoting the emergence of innovative and commercially sustainable service in the Agritech sector making use of space. Kick-Start activities elaborate the business opportunity and the technical viability of new applications and services that exploit one or more space assets (e.g. Satellite Communications, Satellite Navigation, Earth Observation, Human Space Flight Technology). The call **"Responsible Agritech Kick-Start activities"** was published in October 2020 and was be relevant to companies that intend to develop space-enabled AgriTech applications and services. In 2021 a call on "**Detect and prevent Food and Beverage Fraud"** followed.

• 2021:
The 4 ERA-NET Cofunds SusAn, SusCrop, ERA-GAS and ICT-AGRI-FOOD have published in 2021 a **Joint Call** with the title
"Circularity in mixed crops and livestock farming systems with emphasis on climate change mitigation and adaptation".
Research proposals currently under evaluation, projects will start by the end of 2021.

• **2022:**

ICT-AGRI-FOOD call - **More transparent agri-food systems for consumers and other stakeholders along the food value chain based on ICT technologies**

2022 Joint Call

« More transparent agri-food systems for consumers and other stakeholders along the food value chain based on ICT technologies »

TOPIC 1

Agri-food systems enabled by **interconnected** digital technologies that are more transparent to consumers, farmers and other stakeholders along the agri-food value chain

TOPIC 2

Identify, address and **remove barriers for adoption** of ICT technologies in the agri- food systems

TOPIC 3

Development and impact estimation (if applicable: evaluation) of **data-driven reward and incentive systems** to support sustainable and resilient farm management practices

Additional non-funding activities

Such as → Events such as Workshops, Conferences, Webinars, Publications, Knowledge Incubator Programme

Young Researchers Workshop Spring 2022
About 20 early career scientists have met in a relaxed atmosphere and were coached by a senior scientist from ICT-AGRI-FOOD's research area how write good proposals

Update of our Strategic Research and Innovation Agenda 2024
The SRIA from 2019 is available on our website.
An update is currently under construction and will be published in 2024.

Exchange with our Expert Advisory Group: 20 experts from academia and industry kindly consulting us twice a year.

Knowledge Incubator

There is a **need to stimulate a continuous mutual learning process** based on an iterative learning environment with a continuous interaction among actors of innovation.

→ **Virtual space** and **global network of researchers, stakeholders, businesses and funding agencies** → interacting with & connecting to each other → with the **aim of sharing knowledge, guidance, data, and tools**
to ensure better cooperation and use of resources in the area of digital agri-food research, development and innovation.

Challenging but rewarding task to coordinate this activity (collecting ideas, ambitions and outputs) with the aim of integrating them in a **unique** platform for knowledge and innovation sharing at EU level.

It will allow Start-ups, SMEs, researchers and funders to interact both individually and in groups, e.g. through webinars and online meetings.

More information on matchmaking and inspirational exchange on our website

The KI has multiple functions for different stakeholders:

- Start ups and SMEs interested in developing or using ICT tools in the AGRI-FOOD sector will have the opportunity for **networking, building partnerships for products** and **project proposals development, market analysis, understanding of innovation needs** of the agri-food sector and the potential demand for ICT technologies.
- Farmers, food sector, advisors and civil society working in rural areas will have the possibility to **share their needs** with the ICT sector through an interactive innovation model.
- Researchers and Research Institutions will have the opportunity to **interact with practitioners** coming both from the ICT industry and from the AGRI-FOOD sector, to understand the **research needs** and the **main trends** of both sectors, and learn about **funding opportunities**.
- Funding bodies and policy makers will have the opportunity to understand the **key topics** that need to be funded and to **encourage the valorization** of the research developed with their resources.

Part 2 – What are our insights and experiences?

• Agricultural machinery and food technologies are at the forefront of development and often pioneer new technologies (autonomous steering, forecasting, design of new foodstuffs, design of sensors, design of indicators, etc.)

• The digital transformation happens anyway
→ Let us try to shape it meaningfully and positively, so that nothing and no one is "left behind"

• Digital technologies can offer also social benefits and e.g. strengthen the attractiveness of the jobs
→ Examples:
- Offer highly specialized workforce
- Enable e.g. purchases and work planning and office work on the tractor (connectivity in rural areas)
- Make young people feel proud of the meaningful and considerate work they do for society
- Enable to unleash the enormous potential of agri-food systems to address the big global challenges (climate, water, biodiversity, digital transformation, demographic change, hunger, health,…)

Part 2 – What are our insights and experiences?

• There are barriers to adoption of ICT-technologies and it is hard to overcome them (data sharing, trust in profitability of investments, etc.)

• We received only few proposals that address the “barrier challenge” (but we keep on asking our community to find solutions)

• Same applies to “Rewarding and incentive systems” to support more sustainable businesses
→ Seems challenging for the Research Community to develop approaches and solutions

• Information flow and connectivity is key
→ Example:
- Alternative crops, such as buckwheat or legumes, or mixed cropping systems, have many advantages, but the farmers need processors making tasty food of it and retailers selling it
- Connect stakeholders, allow to find actors along the value chain to cooperate with

Part 2 – What are our insights and experiences?

- When you think of ICT-technologies, robots, Big-Data, satellites, IoT everywhere

→ Consider also the ecologic costs, such as power consumption, carbon emission, use of rare earths

- It may be profitable for the economic pillar of sustainability, but what about the ecological balance?

Next opportunity to meet us:

High-Level Conference organized by
European Space Agency & ICT-AGRI-FOOD & German Aerospace Center

Space Solutions for Sustainable Agriculture -
When space data, connectivity and new technologies meet the agri-food sector

Alongside the International Green Week, **25th January 2023, Berlin**

Food production is becoming a real challenge as crop yields level decline and natural resources, including soils, water, and biodiversity, are stretched dangerously thin. The challenge is indisputable intensified by agriculture's extreme vulnerability to climate change. On a good note, it is evident that new technologies and satellite applications play an imperative role in ensuring food security for the increasing global population.
The scope of this event is to bring together the private and public representatives of the space and agro-sector to find a common understanding of the current main challenges and to facilitate the dialogue among the stakeholders in order to draw a shared roadmap. The event will feature a series of panel discussions and talks on past experiences and success stories from the initiatives already started by ESA, BLE and DLR. The presentations will show how the use of terrestrial technologies, space data alongside with space connectivity can deliver actionable information and enable sustainable services that support the green transition while ensuring food security.

Let’s get in contact!

www.ictagrifood.eu

Priority topics

We should consider also **consequences**

- Sustainability/ecologic footprint & consequences of the technology solutions:
- Dependency on technology? Rare-earth elemnts' demand?
- Energy demand? (Which data/information do we really need?)
- Ever bigger farms… and small farmers capitulating?
- Ever larger fields with moncultures, low biodiversity, soil degradation?
- Soil quality (e.g. erosion, compaction, **water**, carbon, microplastic, antibiotics, …)

There are some **requirements lacking**

- Connectivity in rural areas? GPS, Internet.
- Horizontal data schemes/data spaces
- …

„**Hot topics**“ (still)

- Automation
- Decarbonisation of the agricultural sector and carbon farming
- Re-diversification for agrobiodiversity resilience
- Long-term food security
- Space technologies and satellites (not at all fully exploited!)
- Matchmaking (e.g. who can process and sell my alternative crop?)
- How to finance/reward/incentivise investments or business experiments (of farmers and other companies)?

Did you know?

- Europe wide half of farms are under 5 hectares. Small farms show on average higher biodiversity than large farms

- Only 63% of French farms were connected to the Internet in 2016, while 86% of the French household were connected
- Only 30% of farms in Netherland use milking robots and this reduces to 2% for USA.

→ The use of new technologies will increase only if they provide clear value for farmers and other food producers, and if all stakeholders are able to adapt to these changes

- Data are not available to actors who would like to make use of them because of many reasons: starting with data collection and data quality and integrity/ “completeness”/ coherence up to lack of trust to share them

→ Data must be released from the silos. This will only work with a sound and sophisticated approach working purposefully at all levels, such as building trust, awareness, education and training, peer-to-peer demonstration, rewarding and incentives etc.