



European Commission



AGRI RESEARCH FACTSHEET DIGITAL TRANSFORMATION IN AGRICULTURE AND RURAL AREAS

Why do R&I on agricultural and rural digital transformation matter?

Digital technologies have the potential to revolutionise agriculture by helping farmers work more precisely, efficiently and sustainably. Data-driven insights can improve decision-making and practices and help increase environmental performance while making the job more attractive to younger generations. Digital technologies also have the potential to offer consumers greater transparency as to how their food is produced. They offer opportunities to renew business models in value chains by connecting producers and consumers in innovative ways. Beyond farming, digital technologies are key to make rural communities more attractive,

smart and sustainable, reducing problems related to remoteness and improving access to services. Research and innovation are vitally important to facilitate and accelerate digital transformation in agriculture and rural areas for the benefit of European citizens and businesses. The EU has been active in the last years undertaking R&I activities laying the ground for digitalised and data-empowered European agriculture and rural areas. Strategic interventions support the uptake of digital technologies, increased R&I investments to develop new digital solutions and the crucial assessment of the socio-economic impacts of digitalisation.

Digital transformation in agriculture and rural areas under Horizon 2020 Societal Challenge 2 (SC2)



19

Projects or expected grants



192 M€¹

EU contribution 2014-2020



436

Participations in selected projects

Key themes

Resource use – Robotics – IoT
Sustainability – Precision agriculture
Services in rural areas - Impact

¹ Including 50 M€ from the LEIT & SC6 Work Programmes

Digital transformation under EIP-AGRI activities

Focus group example: Precision farming

bit.ly/2ur1093

Workshop and seminar examples:

Data revolution: emerging new business models in agri-food
 Digital Innovation Hubs: mainstreaming digital agriculture
 Multi-level strategies for digitising agriculture and rural areas
 Enabling farmers for the digital age: the role of AKIS
 Agri-Innovation Summit's: Digitising rural economies

bit.ly/2GfJ5U5
bit.ly/2ra5flu
bit.ly/2zaj1aM
bit.ly/2pKddzl
aislisbon2017.com

The EIP-Workshop 'Data Sharing: ensuring a fair sharing of digitisation benefits in agriculture' (bit.ly/2EzMhZp) in 2017 addressed key issues such as trust and data ownership and lead to the development of a **Code of Conduct on agri-**

cultural data sharing (<https://bit.ly/2HNF2oC>). Future EIP activities will explore "Innovative solutions for small farms and access to new technologies" and "Skills development for the digital transition" (<https://bit.ly/2QctwCu>).

EIP-AGRI operational groups working on digital technologies

A number of EIP-AGRI innovation projects (Operational Groups) are already developing solutions based on digital technologies to address practical problems or opportunities in the farming sector. Currently available data show that around 10% of **Operational Groups work on precision farming or digital transformation**. Examples include:

- **Aqua C+** (Germany) develops an internet based data platform for improving water use efficiency in orchards. The project analyses concrete producer needs, and develops a mobile app and a simple, intuitive user guid-

ance for farmers. bit.ly/2GkkyNx Blog: www.aquacplus.de - 2016-2021

- **Innovative use of emerging technologies to improve pig production efficiency** (United Kingdom) The aim of the project is to control or eliminate production-limiting diseases by the innovative application of emerging technology, actively driving management changes on farm with the support of a knowledge transfer network. bit.ly/2GF1ux5 - Started in 2016.

Horizon 2020 SC2 collaborative projects – Agricultural & rural digital transformation

SMART-AKIS ^{MA}

www.smart-akis.com

Total cost: 2 M€

EC contribution: 2 M€

Coordinator: Agricultural University of Athens

Mar. 2016 – Aug. 2018

SMART-AKIS aims at setting up a self-sustainable Thematic Network on Smart Farming Technology designed for the effective exchange of knowledge between research, industry, extension and the farming community in order to disseminate direct applicable research and commercial solutions and capture grassroots level needs and innovative ideas. ^{MA Multi-actor}

4D4F ^{MA}

4d4f.eu

Total cost: 2 M€

EC contribution: 2 M€

Coordinator: Innovation for Agriculture

Mar. 2016 – Feb. 2019

Data Driven Dairy Decision For Farmers (4D4F) aims at developing a network for dairy farmers, dairy technology suppliers, data companies, dairy advisors, veterinarians and researchers to improve the decision making on dairy farms based on data generated by sensors. It will focus on the role which dairy animal and environmental sensors can play in collecting real time information to help make more informed decisions in dairy farming.

IoF2020 ^{MA}www.iof2020.eu

Total cost: 35 M€

EC contribution: 30 M€

Coordinator: WUR

Jan. 2017- Dec. 2020

The IoF2020 project aims to accelerate adoption of Internet of Things (IoT) to secure sufficient, safe and healthy food and to strengthen competitiveness of farming and food chains in Europe. It will consolidate Europe's leading position in the global IoT industry by fostering a symbiotic ecosystem of farmers, food industry, technology providers and research institutes.

PANTHEONwww.project-pantheon.eu

Total cost: 3,1 M€

EC contribution: 3,1 M€

Coordinator: Rome Tre

University of studies

Nov. 2017 – Oct. 2021

PANTHEON aims to develop the agricultural equivalent of an industrial Supervisory Control And Data Acquisition system to be used for precision farming in large hazelnut orchards. It will design an integrated system where unmanned robotics components move within the orchards to collect data and perform some of the most common farming operations. The information will be stored in a central unit that will integrate the data coming from the different robotic units to perform automatic feedback actions and to support the decisions of agronomists and farmers.

ROMIromi-project.eu/

Total cost: 3,9 M€

EC contribution: 3,9 M€

Coordinator: Institute of Advanced Architecture of Catalonia

Nov. 2017 – Oct. 2021

ROMI will develop an open and lightweight robotics platform for microfarms. Assisting in weed reduction and crop monitoring, these robots will reduce manual labour and increase the productivity. Land robots will also acquire detailed information on sample plants and will be coupled with a drone that acquires more global information at crop level. Together, they will produce an integrated, multi-scale picture of the crop development that will help the farmer monitor the crops to increase efficiency in harvesting.

AfriCultuReSafriCultuReS.eu/project

Total cost: 8,5 M€

EC contribution: 8,5 M€

Coordinator: GMV Aerospace and defence

Nov. 2017 – Oct. 2021

AfriCultuReS aims to design, implement and demonstrate an integrated agricultural monitoring and early warning system based on remote sensing that will support decision making in the field of food security. It will deliver a broad range of climatic, production, biophysical and economic information, for various regions in Africa. It will apply geospatial science natural resource management, biodiversity conservation, and poverty alleviation.

SmartAgriHubs ^{MA}smartagrihubs.eu

Total cost: 22.4 M€

EC contribution: 20 M€

Coordinator: Wageningen University

Nov. 2018 – Oct. 2022

SmartAgriHubs is accelerating the digital transformation of the European agri-food sector. It will consolidate, activate and extend the current ecosystem by building a network of digital innovation hubs that will boost the uptake of digital solutions by the farming sector. The project will achieve this by integrating technology and business support in a local one-stop-shop approach involving more than 100 project participants from all regions in Europe.

FAIRshare ^{MA}fairshareproject.eu

Total cost: 7 M€

EC contribution: 7 M€

Coordinator: TEAGASC

Nov. 2018 – Oct. 2022

FAIRshare aims to mobilise the rural advisory community to take ownership of digital tools and make best use of analytics and communication technologies for agricultural sustainability. The project engages the independent farm advisor community, through sharing of tools, expertise and motivations across various advisory and farming contexts across the EU.

DESIRA ^{MA}bit.ly/2Xd01og

Total cost: 5 M€

EC contribution: 5 M€

Coordinator: Università di Pisa

June 2019 – May 2023

DESIRA will develop the concept of socio-cyber-physical systems to advance understanding of the impact of digitalisation in rural areas, linking analysis directly to the sustainable development goals. A virtual research environment will connect agriculture, forestry and rural stakeholders and will inform the co-developing of scenarios and policies.

NIVA ^{MA}bit.ly/2KlrCPP

Total cost: 10.5 M€

EC contribution: 10 M€

Coordinator: Wageningen University & Research

June 2019 – May 2022

NIVA delivers a suite of digital solutions, e-tools and good practices for e-governance and initiates an innovation ecosystem to support further development of Integrated Administration and Control System (IACS) for CAP monitoring. It will explore the use of IACS data for purposes and develop relevant standards for information flows. The project's results promote a transparent, simpler administrative process that contributes to a future CAP that increases environmental performance.

DEMETER ^{MA}

bit.ly/2WJtvHT

Total cost: 17,7 M€

EC contribution: 15 M€

Coordinator: Waterford

Institute of Technology

Sept. 2019 – Sept. 2022

DEMETER will deploy interoperable smart farming-IoT based platforms delivered through a series of 20 pilots across 18 countries.

The potential of advanced standards-based interoperability between IoT technologies will be demonstrated by adapting and extending existing standards into an over-arching Agricultural Information Model, ensuring security, privacy and business confidentiality across the full value chain in multiple agri-food operational environments.

ATLAS ^{MA}

bit.ly/2Xef5np

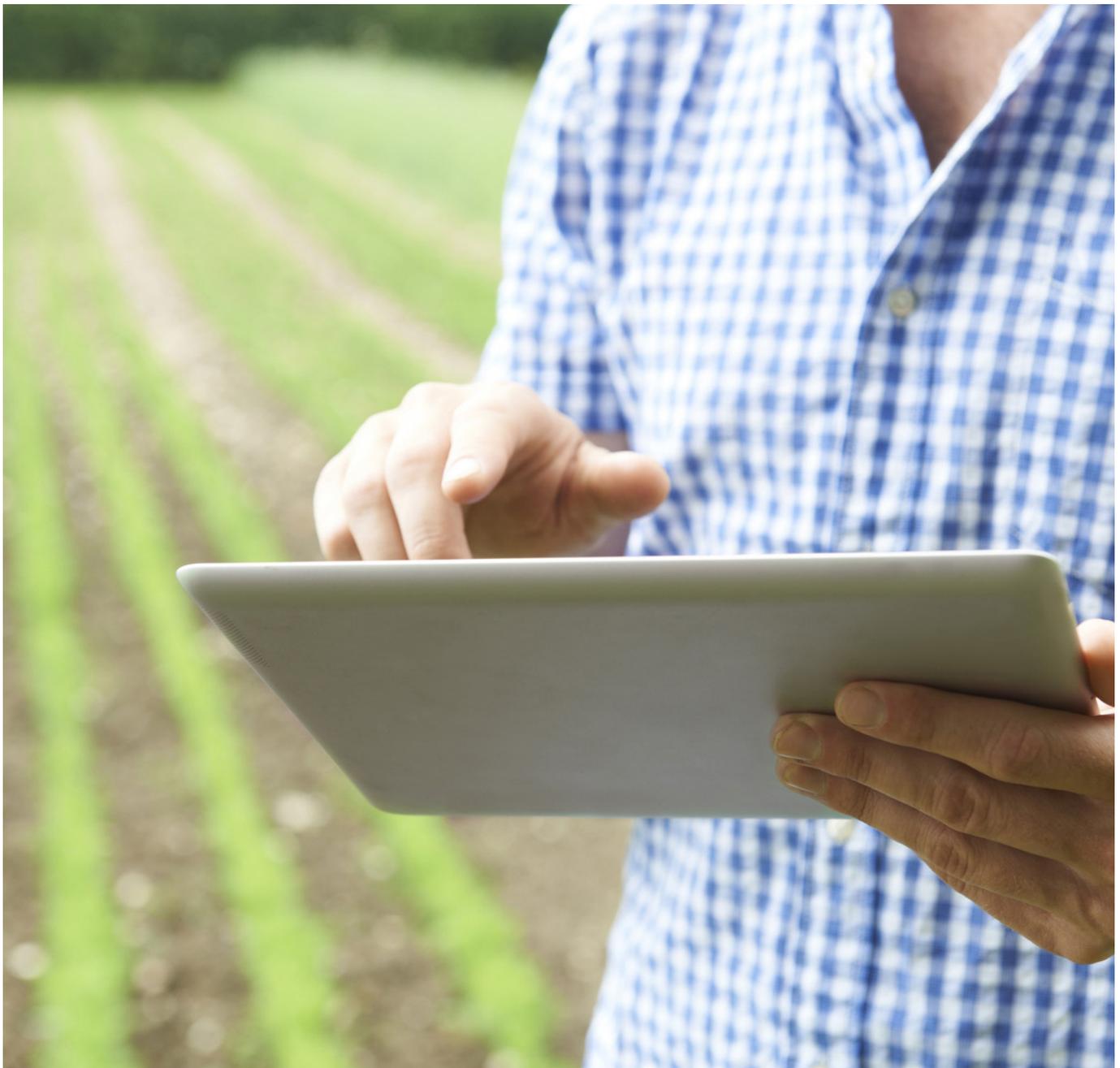
Total cost: 15.8 M€

EC contribution: 12.9 M€

Coordinator: Fraunhofer IAIS

Oct. 2019 – Sept. 2022

ATLAS will develop an open digital service platform for agricultural applications to build a sustainable ecosystem for innovative data-driven agriculture. The platform will allow the flexible combination of agricultural machinery, sensor systems and data analysis tools to overcome the problem of lacking interoperability and to enable farmers to increase their productivity in a sustainable way by making use of the most advanced digital technology and data.



Interesting activities under other Horizon 2020 sections

Several other parts of Horizon 2020 are actively supporting digital transformation in agriculture and rural areas.

The **LEIT-Information and communication technologies** part of Horizon 2020 supports very promising actions. Its section on Digitising European Industries (DEI) will offer some cross-sectoral integration activities. Several actions will build the bridge between general and agricultural Digital Innovation Hubs and other Platforms.

European Research Infrastructures (including e-Infrastructures):

- **SMARTCOW:** integrated infrastructure for increased research capability and innovation in the European cattle sector – EC Contribution: 5 M€ - bit.ly/2I5I1CQ - Feb 2018 to Jan 2022

SME-Instrument:

- **ECOLUP:** Smart collect points as an innovative logistic solution to shorten fruit and vegetables supply chain (EC contribution: 50.000 € - April 2017 - Sep 2017)
- **PhytSigns:** Real-time plant monitoring based on bio-electrical signals (EC contribution 50.000 € - Oct 2017 – Feb 2018)

Societal Challenge 6: Europe In A Changing World - Inclusive, Innovative And Reflective Societies:

- **RECAP:** Personalised public services in support of the implementation of the CAP (EC contribution: 2,1 M€ - May 2016 - Oct 2018)

In the pipeline – 2 projects to start under 2019 H2020 SC2 calls (11 M€)

Improving animal welfare - Precision livestock farming	(1 project, 6 M€)
ERANETs in agri-food - ICT-enabled agri-food systems	(1 project, 5 M€)

Funding opportunities - Open H2020 SC2 & LEIT-ICT calls for 2020 (32 M€)

DT-ICT-09-2020 - Digital service platforms for rural economies	(2 projects, 30 M€)
FNR-02-2020 - Developing long-term monitoring and evaluation frameworks for the Common Agricultural Policy	(1 project, 2 M€)

Shaping the digital (r)evolution

In the “Strategic Approach to EU agricultural research and innovation” of 2016, the European Commission recognised the potential of smart and mobile technologies to provide solutions to many of the challenges faced by the farming sector and rural areas. The activities mentioned here are underpinned by a comprehensive approach based on **3 pillars**:

1. **Research and innovation** to develop new technologies and business models
2. Improving the **uptake** of new technologies in agriculture and rural areas
3. Analysing & managing the **impact** of digitisation in agriculture and rural areas

Ensuring that the EU’s farming sector and rural areas are fully connected to the digital economy is a major priority for the European Union. At the Digital Day in April 2019, 24 EU countries signed a **Declaration of Cooperation on ‘A smart and sustainable digital future for European agriculture and rural areas’**. More information: <https://bit.ly/30xP7Kl>

More information on EU’s approach to and activities on digital farming:



EIP-AGRI brochure on the digital (r)evolution

<https://bit.ly/2ihGn50>



CORDIS result pack on precision farming

<https://bit.ly/2pQeAw5>





Designed & Printed by OIB