



SWG SCAR AKIS 4

Strategic Working Group on Agricultural Knowledge and Innovation Systems

SCAR AKIS study: Exploring digital aspects for future EU AKIS
PRELIMINARY RESULTS

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Advancing digitalisation to enhance knowledge flows in AKIS

*The key question is: how various **digital infrastructures** (platforms and tools) could be used by and for the various **AKIS actors** for **enhancing knowledge flows within the AKIS?***

The main objectives of the study are to:

- ▶ give **an overview of existing good practices** of tools and approaches supporting digital knowledge flows in the different **EU Member States (EU 27+ UK)**
 - ▶ which enable farmers and authorities to learn and exchange knowledge and to better integrate outcomes of agricultural research and best practices into AKIS
- ▶ identify **main barriers** for unlocking the generation, adoption and utilisation of open and free access digital platforms and tools for knowledge exchange by practitioners
- ▶ describe **good examples** based on experiences of MSs, including both the description of the digital infrastructure and the way it came about
- ▶ develop **recommendations for digitalisation strategies within AKISs** and to comply with the modernization objective (Art. 102A) of the new CAP

Team and Funding of the study

- ▶ Core group: NL, BE, HU
- ▶ Expert group related to SWG SCAR AKIS, including 10 partners: IE, IT, SP, EE, AT, SE, RO, HU, BE, NL
- ▶ Alignment with the study 'AKIS IMPLEMENTING TOOLS TO BRIDGE THE GAP BETWEEN RESEARCH AND PRACTICE'
- ▶ FUNDED BY: THE EU CASA PROJECT



Survey Questions: Outline

Open and closed questions in 3 sections:

1. **National/regional strategies** (existing or planned) on digital infrastructures to enhance knowledge flows between AKIS actors
2. **Existing digital infrastructures** to enhance knowledge flows in your region/country
3. **Planned digital infrastructures** (...)

Answers back from 23 Member States (exp.: 25) + various EU regions

Table of national/regional digitisation strategies for agriculture, etc.

C/R	DSA	Status quo	End-users	CAP AKIS SP
AT	UD	Platform on Digitisation in Agriculture' offer good preparatory work to develop the DS	Farmers/Agri Holdings	Under discussion
BE: FL	UD	Action Plan drawn in 2018 ('year of data'). Plan to integrate technologies in current 'E-services counter'	Farmers Advisors Researchers Policy makers	Under discussion
BE: W	Yes	Digital Wallonia, 2019-2024, incl. the Digital Wallonia's Smart Farming Project. Focus knowledge flows unclear.	Public-private partners agri	-
BU	Yes	Strategy for the digitisation of agriculture and rural areas in Bulgaria. Focus on knowledge flows unclear.	Farmers/private agri-hubs	Still unknown
CZ	Yes	Strategy for the Coordinated and Comprehensive Digitisation of the Czech Republic 2018+. Focus on knowledge flows unclear.	Rural areas, mainly farmers	Still unknown
HR	UD	E-Croatia: strategy of digitisation of public services.	(Young) farmers, agri-food ind.	Taken into consideration

Example: Digitisation Strategy in Spain

- ▶ Spain has recently adopted the National Digital Strategy for agri-food, forestry and rural areas (MoA, April 3rd 2019)
- ▶ A horizontal governance strategy is developed including the promotion of interactions, transfer of knowledge and cooperation among actors
- ▶ Regions s.a. Andalusia and Catalonia are developing strategies (e.g. the SmartCAT strategy Smart Rural action for connectivity and dig. infrastructures)
- ▶ Main beneficiaries: 1) SME farmers, 2) cooperatives, 3) farm advisory services, 4) agri-food technology and services providers
- ▶ M&E indicators: A) Connectivity B) Connectivity, digitization and environment C) Productivity, R&D and training
- ▶ Including Operational Indicators:
 - ▶ nr. of dissemination actions on agri-food chain data and impacted actors
 - ▶ nr. of cooperatives which benefited from support
 - ▶ OI on funds invested in the national RDP: nr. of final beneficiaries, nr. of cooperatives which benefited

Example: Digitisation Strategy in Italy

- ▶ The national 'Plan for Agriculture 4.0' (2016-2020) boosting the digital transformation in agriculture to increase competitiveness and the sustainability of the primary sector
- ▶ Main beneficiaries: farmers, advisory services, public funders, researchers and paying agencies
- ▶ M&E indicators:
 - ▶ % of utilised agricultural area achieved
 - ▶ investments on digital farming
 - ▶ no. of farmer beneficiaries from incentives/funds for digitalisation
 - ▶ increased agricultural added value
 - ▶ total accesses to fibre optic broadband in rural areas
 - ▶ increased connectivity in rural areas
 - ▶ nr. of digital platforms and correlated indicators: nr. of participants, nr. of accesses, no. of downloads

Impression end-users of digitisation strategy

As mentioned in a selection of surveys

Farmers/agricultural holdings:



Advisor/advisory service:



Researcher/academic:



Policy maker/government official:



Consumer:



Food company/processing:



Existing digital infrastructures

Lessons learned

- ▶ Answers mostly concerned digital infrastructures initiated and owned by ministries, chambers or research institutes; some private initiatives
- ▶ Most infrastructures are initiated by EU legislation, primarily for environmental compliances
 - ▶ however access to latest market information, legal amendments and open calls also motivate the launch of digital platforms
- ▶ Only one example of an open source infrastructure was mentioned, in which end-users can upload/adjust own information

Existing digital infrastructures

Lessons learned

- ▶ EU digital infrastructures propose a wide range of opportunities for AKIS services addressing local conditions, economic, environmental or social needs
- ▶ Main drivers of the examples are: environmental legislative requirements, mitigation effects and market volatilisation
- ▶ Operators can be both public and private actors and their cooperation is essential for well-functioning and complete knowledge transfer
 - ▶ In most examples: research, advice, chambers, ministries, IT companies

Examples of region based digital tools in MSs/Regions

- ▶ **AT:** the *Arbeitskreise* platform provides farm managers a benchmark system (partly digital) for those who take part in regular working group meetings
- ▶ **IE:** the *Pasture Based Ireland* tool developed by TEAGASC uses the platform for benchmarking the improvement in kg. grass utilised per ha.
- ▶ **NL:** the *Biodiversity Monitor Dairy Farming*, a new tool quantifying biodiversity-enhancing efforts on dairy farms' Key Performance Indicators (KPI). Results are linked to new business models to stimulate ecosystem-based farming
- ▶ **IT** (Emilia Romagna): *IRRINET* is a free service to all farmers on irrigation advice, time of intervention and volumes for optimisation while saving water

Examples of Interactive Infrastructures

BE	EVA-app: Research station pcfruit co-funded Gvt/producers	EVA-app is an interactive tool to reduce the administrative burden and evolved in a knowledge exchange tool and inventory of best practices. As a flexible tool the EVA-app frequently adapts content and structure.
DK	Landmand.dk: SEGES	A living digital platform where each user can set up their own personalised page with the selected channels that the person wants to receive information from.
IT	IMAGE LINE	Involves an interactive community of producers and professionals. The adaptation of the IT tool is ensured by the community of professionals, farmers and other agricultural practitioners who animate the network. Imageline manages the AgrolInnovation EDU project for the promotion of digital agriculture and innovation for students and teachers. The Agriculture 4.0 database contains a collection of Smart Farming tools (Apps and tools) available for farmers and adaptable to their specific needs.

Examples of tools used for CAP compliance

C/R	Digital tools for CAP compliance	Managers	End-users
AT	LK fertiliser calculator	Chambers of agriculture	Farmers
BE	E-loket: e-portal for communication and information exchange.	Gvt. Dpt. Agriculture and Fisheries	Farmers and advisors
BG	Green payments calculator	State Fund Agriculture /Paying Agency	Farmers
CZ	eAGRI websites registers	Ministry of Agriculture	Farmers, professionals, public
DE	GQS Court Check	Chamber of Agriculture NRW LEL Baden Württemberg	Counsellors, agricultural office staff, farmers,
DK	Landbrugsinfo	SEGES	Farmers, advisors and stakeholders
EE	Several calculators for nutrient management	University, NPK, Chamber of Agriculture, Ministry of Agriculture, etc.	Farmers, advisors and scientists
GR	Field locator, cotton crop management (e-cotton), etc.	OPEKEPE (paying agency)	OPEKEPE, administration, farmers, POs
GB	Tried and Tested	NFU, CLA, LEAF, CSF, BGS, AIC	Farmers for nutrient management
HR	Nutrient balance software	Farm advisory service	Farmers

Existing Nutrient Management Tools and the CAP

- ▶ Inventory shows that in many EU countries digital tools are available for CAP compliance
- ▶ And/or (digital) tools for nutrient management are used
- ▶ Tools are mostly managed by national authorities, NGOs or private companies
- ▶ End-users are mostly farmers and advisors who use tools for fulfilling obligations related to the Nitrate Directive and CAP requirements
- ▶ There is a need for advisory services to support farmers in using applications
- ▶ The NMTs are based on results of (mostly national) research and are oriented on local conditions which makes wider interoperability difficult
- ▶ This induces that a standard EU NMP tool is likely not applicable
- ▶ Most NMTs address the whole nitrogen cycle, from feed to applying manure

Monitoring Digital Infrastructures

- ▶ In most mentioned examples, monitoring is not well elaborated
- ▶ Statistical information is gathered by integrated IT applications
- ▶ Some platforms use surveys to gather info by the end-users or improvement of farming practices is measured among particular involved groups

Indicators used are number of:

- ▶ registered users
- ▶ visitors
- ▶ users of different applications, calculation or other services
- ▶ followers in linked social media channels
- ▶ downloaders (in the case of apps)
- ▶ shared content

Planned Digital Platforms and Tools

Most respondents answered there are initiatives for the development of digital infrastructures enhancing knowledge flows in AKIS

- ▶ Some to improve infrastructures, majority of planned examples will be new. E.g. BG, BE, HU, LV, LT, NL, SK already started to implement
- ▶ E.g. BE, IT, DK, LT, SK plan to develop living, open source infrastructures
- ▶ Some can be potentially used in future CAP implementation e.g. BE - Soil passport, EE - Big Data Platform
- ▶ Example of a tool already declared supporting CAP compliance as its main aim: HU - Smart Farm Accountancy Data Network

More and more digital innovation hub ideas are raised and being implemented

Planned Nutrient Management tools and the CAP

- ▶ It was mentioned some tools shall be developed to be compatible related to new CAP requirements, principally the digital modules
- ▶ It was also indicated that more tools shall be digitalised
- ▶ However, dedicated tools and platforms planned to improve CAP implementation and compliance were not mentioned often
- ▶ This could indicate that:
 - ▶ respondents who described readily existing and well-working systems did not indicate how they would improve them
 - ▶ MSs are still discussing how to develop these tools

Examples of Planned Digital Tools for Nutrient Management

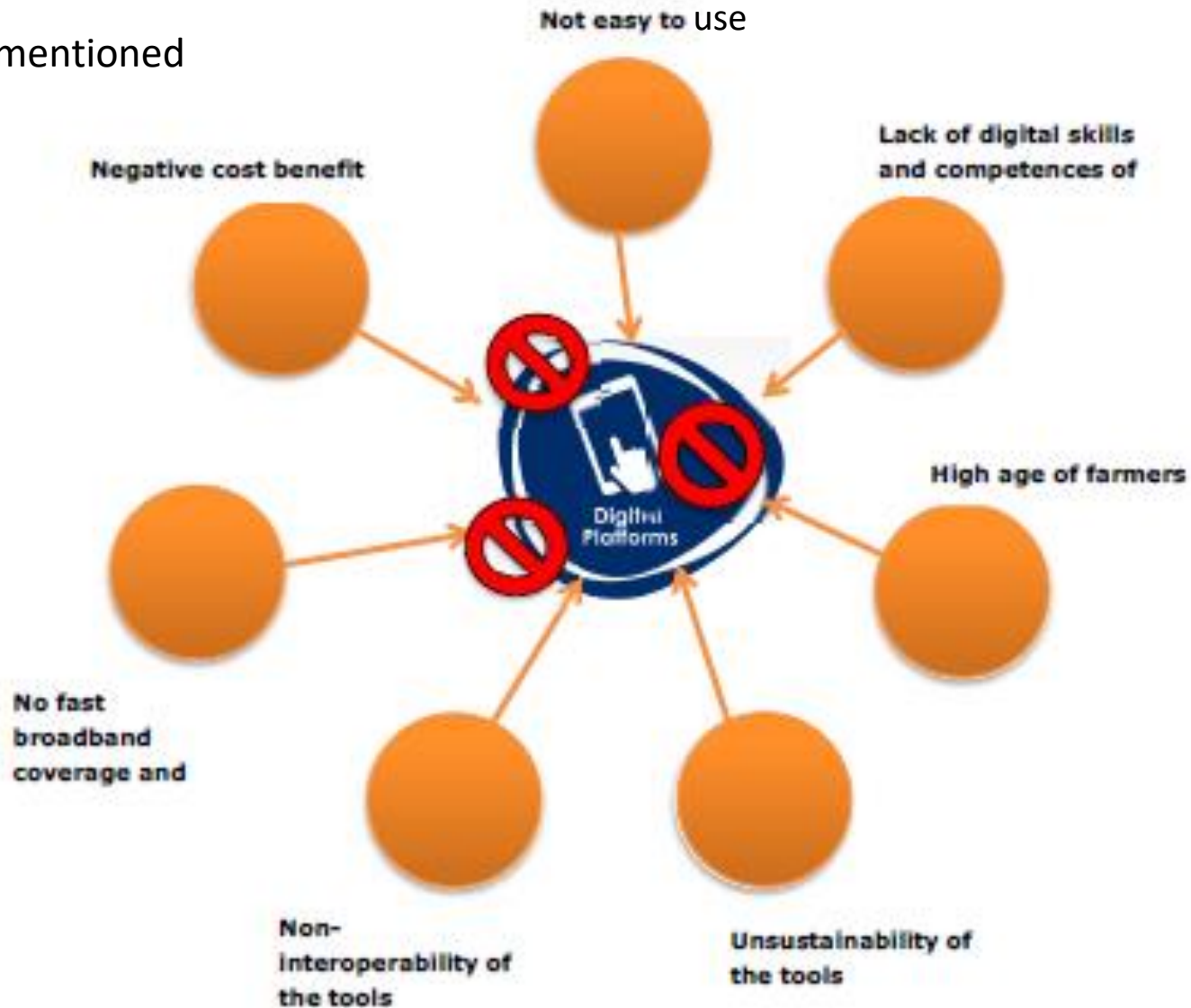
Member state	Name of the planned tool	Developing organisation
Belgium	Soil passport Watch-It-Grow	ILVO
Estonia	Nutrient calculator	Estonian University of Life Sciences
Germany	Fertiliser portal	Chamber of Agriculture NRW
Hungary	Soilweb	Research Institute for Agricultural Economics (AKI)
Luxembourg	Digital system (incl. nutrient management) and in a mobile app version	Ministry of Agriculture in collaboration with advisory organizations

EIP platforms for knowledge exchange in the Member States

- ▶ MSs launched their national or regional EIP-AGRI Platform but the ones mentioned are not applied for interactive knowledge exchange
- ▶ EIP-AGRI national platforms are used for publishing EIP-AGRI and international R&I project calls and knowledge transfer about good practices and projects
- ▶ It did not become clear if MSs plan to set-up knowledge exchange platforms for EIP-AGRI interaction in the future, except for Slovakia

Bottlenecks preventing the use of digital platforms and tools

Mostly mentioned



Recommendations towards digitisation strategies in AKIS

- ▶ Useful to develop a centralised system in which all digital tools, apps, information are available or:
- ▶ ‘Knowledge service counters’ which includes guiding end-users to requested information, connecting different AKIS actors, having an interactive forum functionality and Q&A, etc.
- ▶ Urgent need for interoperability and broad adoption of standards, so that adjacent systems can be better connected and communicate
- ▶ The enhancement of multi-actor networks should be promoted by stimulating digital interactive platforms, including EU-wide networking of AKIS actors for knowledge exchange
- ▶ (Future)/Farmers should be trained and educated in using digital tools and applications for daily farm practices and decision making on the longer term
- ▶ Introduce formal qualifications in education systems and development points for farmers in applying digitisation for improved farming practices

Recommendations towards digitisation strategies in AKIS

- ▶ The (further) development of digital knowledge hubs, interlinking digital databases and 'remote' advisory services should be further supported
- ▶ Future developments in digitisation should be based on readily existing good examples and experiences should be taken into account
- ▶ Examples of successful results from knowledge uptake via digital platforms, should be demonstrated and promoted to farmers (more)
- ▶ A DP should facilitate combining individual farm data stored in a central data hub with data and information from other agri-chain partners and general data to provide the farmer with personalized information
- ▶ Develop a personalized calendar and information system to inform the farmer with news at the right time
- ▶ The public and private sector need to cooperate more closely since the private sector is capable in creating customer friendly solutions
 - ▶ including better linkages between the private sector and researchers

Recommendations Digisation Strategies (DSs)

- ▶ Need for a detailed inventory of the end-user needs, in particular farmers needs, as a basis for the development of agri DSs
- ▶ Evaluation assessment methodologies, incl. indicators and end-user satisfaction levels, should be in place to monitor the efficacy of DSs at national and regional level to be able to adopt accordingly
- ▶ Digital knowledge flows are expected to be stimulated or further incentivised by different funding agencies - financial support and financial mechanisms
- ▶ DSs should be developed in co-design with farmers and advisors
- ▶ DSs should not only cover digital tools and field data but also cover digital infrastructures to stimulate knowledge flows
- ▶ Digital connections between EIP-AGRI projects and other projects should be enhanced by NRNs

Take advantage of other results by H2020 projects such as FAIRshare, EURAKNOS, EUREKA and NEFERETITI

Questions?

