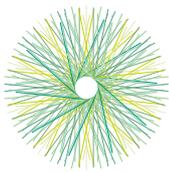


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EIP-AGRI Seminar: New skills for digital farming

FINAL REPORT
JUNE 2020



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1. Summary

The EIP-AGRI seminar 'New skills for digital farming' took place in Aranjuez (Spain) on 5 and 6 February 2020. The event was organised with the collaboration of the Spanish Ministry of Agriculture, Fisheries and Food. 149 **participants** from 27 European countries took part in the event.

During the last 6 years, several EIP-AGRI events have addressed the opportunities and challenges of digitalisation in farming. Despite recognising that the digitalisation of European farming is actually happening, these events showed that the extent to which new technologies are taken up in the field is actually limited. Among the key barriers for a wider technological uptake, one was always mentioned: the lack of adequate knowledge and skills. Participants at the **EIP-AGRI Workshop 'Enabling farmers for the digital age: the role of AKIS'** reflected on how to help farmers – and the advisers who work with them – to understand which digital tools are best suited to their business. This seminar took that discussion further: awareness and motivation are obviously key, but they need to be underpinned by adequate competences.

The seminar thus aimed **to contribute to the design and implementation of approaches and tools that can help farmers and farm advisers develop the skills** they need in the face of the digital transition in agriculture. These questions were tackled in three steps. First, participants identified six main domains of competences and skills that farmers would need to effectively take advantage of the digital transformation. Interestingly, only two of these are typically 'digital' (**section 4**). Addressing the digital skills gap is not a straight way forward; an enabling environment is needed so that efforts towards skills development are fruitful. Discussions in the seminar led to the identification of four categories of elements of that enabling environment: those of the technological, AKIS, institutional and social levels (**section 5**). Finally, the seminar participants listed different sources as well as approaches and tools that support the development of different types of skills and competences (**section 6**). One main conclusion can be drawn: a holistic perspective is required. There is no one single skill to be developed, but a 'package'; and such skills are to be developed not just through single, short-term activities, but through a comprehensive approach that fosters synergies and flexibility. Participants highlighted six key elements of such an approach: it should **address several skills domains; be systemic and strategic; be based on cooperation; use a complementary set of tools; be progressive and flexible** and finally; **work within and on the context**.





2. Introduction

Digital solutions are increasingly used across different administrative and economic sectors, fuelling the demand for digital skills. In the future, they will be required for 9 out of 10 jobs, while 169 million Europeans – 44% of the EU population – do not have any basic digital skills¹. Various EU policy instruments and initiatives promote training in digital skills across economic sectors to tackle that need, such as initiatives under the [New Skills Agenda for Europe](#) or the future [Digital Europe Programme](#).

Digital technologies hold the key for a smarter, more competitive and resource-efficient agricultural sector and previous EIP-AGRI events presented a common picture: the digitalisation of European farming is really happening. EU farmers already benefit from an array of digital solutions that can help their farms to become more sustainable and productive. However, the extent to which new technologies are taken up in the field is actually limited. Barriers preventing a more widespread use of new technologies still exist. Among these, the lack of adequate knowledge and skills occupies a central place. In fact, this issue was also clearly recognised in the [declaration](#) on 'a smart and sustainable digital future for European agriculture and rural areas' that was signed by 26 EU countries in April 2019.

To fully harness the potential that is offered by digital solutions, farmers – and the advisers who work with them – need to know what digital tools are best suited to their business, and how to use them.

In April 2018, the [EIP-AGRI Workshop 'Enabling farmers for the digital age: the role of AKIS'](#) focused on the first issue, reflecting on the right motivation and knowledge to use available digital technologies. It also showed that the farmer's 'digital profile' – a combination of awareness and skill levels – plays a key role in the uptake of digital technologies.

This seminar in Aranjuez on 'New skills for digital farming' took that discussion further: awareness and motivation are obviously key, but those factors alone will not fly drones or operate robots. They need to be underpinned by adequate competences. In addition, in the digitised agri-food sector, such competences and skills are quickly evolving. To close this gap and increase the use of digital technologies in European agriculture and rural areas, the seminar thus built on the recognition of the need to upskill and re-skill the farming sector.

¹ 'The digital skills gap in Europe' (European Commission, 2017)

Seminar objectives and approach

The seminar aimed to contribute to the design and implementation of approaches and tools that can help farmers and farm advisers develop the skills they need in the face of the digital transition in agriculture. This objective was addressed in three steps:

- **The skills gap:** when it comes to 'skills', not everyone may have the same understanding. What do we actually mean by 'skills'? In the context of digital farming one might first think about the capacity to operate high-tech machinery. But this is only one possible aspect. It may even not be the most important one. Discussions on the first seminar day focused on clarifying this point.
- **Developing the right skills:** participants then looked into possible ways to develop the skills that farmers need most. An array of possibilities opened up, at all levels and stages of life: formal and informal education and training, basic and advanced, short-term or life-long learning.
- **Fostering synergies for lasting impacts:** finally, approaches were explored to combine tools and actors for long-term interventions and impacts. Investing in training and upskilling is a long-term effort.

For this last point, participants particularly looked at the potential role of the Common Agricultural Policy (CAP), now and after 2020. The future CAP Strategic Plans ² will have to articulate their contribution to the modernisation of the sector by means of knowledge sharing, innovation and fostering digitalisation, with a well-functioning Agricultural Knowledge and Innovation System (AKIS) as foundation. A specific objective of the seminar was to help all those involved in the development of CAP Strategic Plans in the Member States to look at the wider picture when it comes to developing farmers' skills. Education and training should be considered as an important part of that well-functioning AKIS, in support to the digitalisation in agriculture.



² According to the [EC proposal for the future Common Agricultural Policy](#)

3. The seminar

The EIP-AGRI seminar 'New skills for digital farming' took place in Aranjuez (Spain) on 5 and 6 February 2020. It was organised with the collaboration of the Spanish Ministry of Agriculture, Fisheries and Food.

In total, 149 **participants** from 27 European countries took part in the event. Managing authorities of rural development programmes, advisers and researchers were most represented. The fourth best represented category was farmers, with 12 participants.

The **programme** of the seminar was structured according to the three main steps mentioned in the previous section. It included the showcasing of many inspiring initiatives over two days. In addition, the key questions of the event were addressed by the participants in a collaborative way through several interactive work sessions.

The seminar started with the welcoming words of Luis Planas Puchades, Minister of Agriculture, Fisheries and Food of Spain, followed by an opening speech by María Ángeles Benítez Salas, Deputy Director-General for Agriculture and Rural Development of the European Commission.

After the opening, two keynote speeches set the scene of the seminar. First, Emily Gray from OECD provided an overview of the status of sectorial skills for digital transition. In addition, Ethan Cleary from the Irish Farmers' Association presented the current awareness and usage of farm technology with Irish farmers.

The event continued on day one with 12 farmers presenting their **practical experiences** using digital technologies on their farms and explaining the way in which they acquired the needed competences and digital skills. During the second day, a **comprehensive set** of initiatives and activities aimed at developing digital skills of farmers (and advisers) was presented. In total, 39 speakers intervened during the event. In addition to this, two interactive sessions were designed to reflect on and discuss previous input as well as specifically address how future CAP strategic plans could support skills development for the digital transition.

The attendees' feedback on the seminar was very positive. Almost 85% of the respondents to the evaluation survey done on the spot scored the content part of the event with a 4 or 5 out of 5.

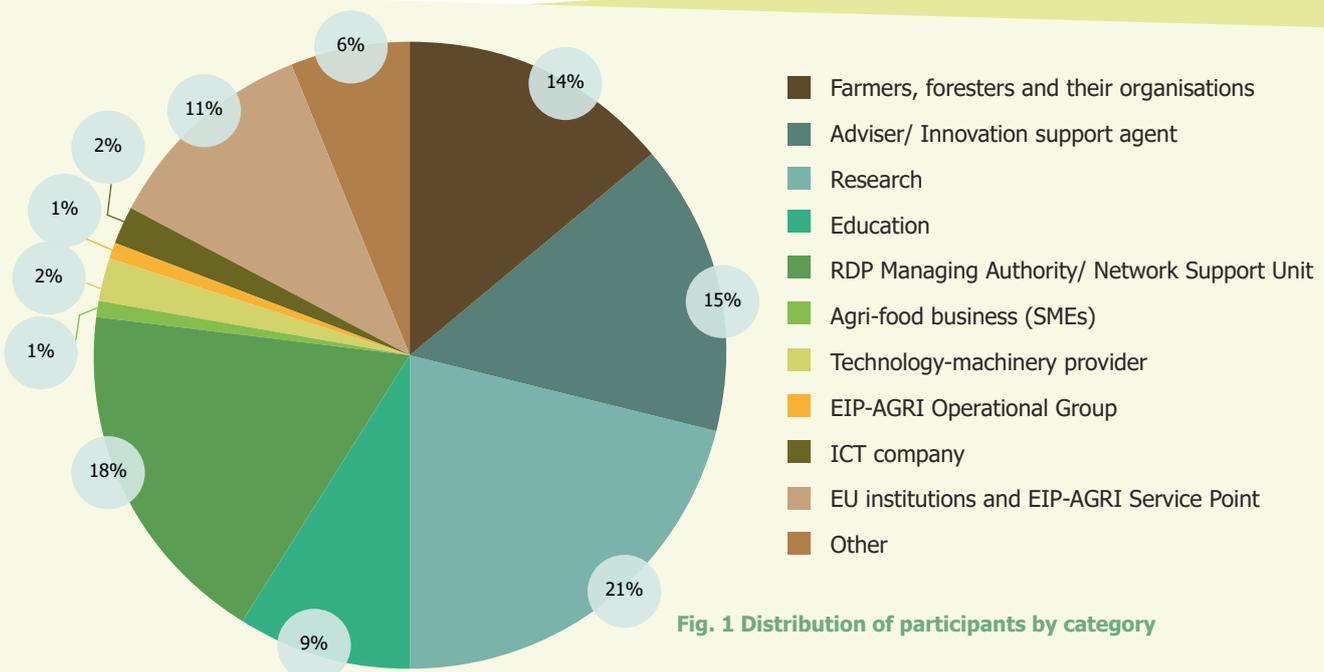
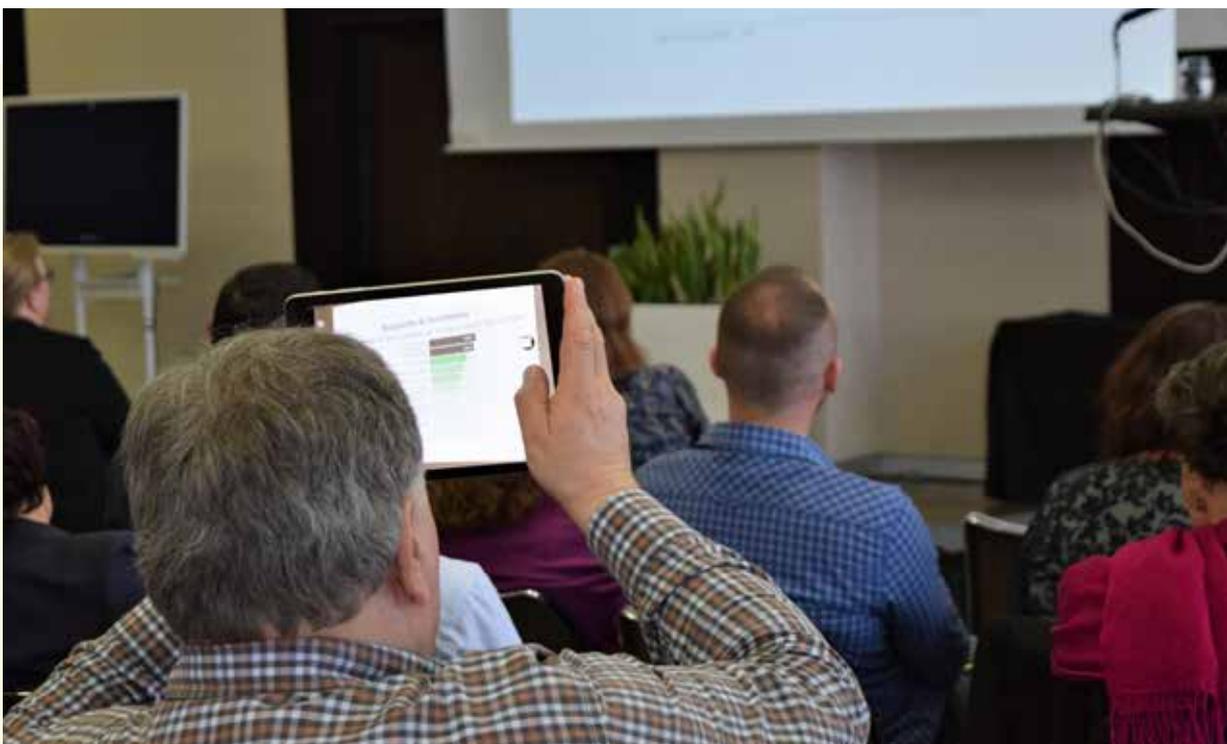


Fig. 1 Distribution of participants by category

Emily Gray from OECD set the scene at the beginning of the Seminar, with an **overview** of the status of sectorial skills for digital transition. She acknowledged that the digital transformation of agriculture is occurring across a broad spectrum from low to high-tech solutions. According to her, farmers need cross-cutting skills to adopt, implement and safely operate digital technologies in an evolving and complex environment which therefore demands complex decisions. However, the agricultural workforce generally presents a low skill level and is only scarcely exposed to the digital world. Finally, she highlighted six challenges for agricultural education and vocational training (VET):



1. Developing cognitive and 'soft' skills, as well as technical farming skills
2. Providing opportunities for lifelong learning
3. Addressing barriers to participating in agricultural education and VET
4. Ensuring that agricultural education and VET are aligned with the sector's needs
5. Integrating digital tools and applications into agricultural education and VET
6. Addressing the skills divide that can lead to some farmers being left behind



4. Which skills and competences do farmers and foresters need for digital farming?

During the last 6 years, several EIP-AGRI events have addressed the opportunities and challenges of digitalisation in farming. Among the key barriers for a wider technological uptake, one was always mentioned: the lack of adequate knowledge and skills.

In April 2018, participants at the [EIP-AGRI workshop in Jurmala](#), reflected on how to help farmers – and the advisers who work with them – understand which digital tools are best suited to their business. Farmers, advisers, rural networks, public authorities, and ICT providers discussed the challenges and opportunities that are raised by the new digital technologies available to farmers. They also discussed the necessary understanding and right motivation to use them. The event attempted to make a first classification of information needs ([see the report](#)).

Skills for digital farming versus digital skills

Taking the discussion further, participants at the EIP-AGRI seminar in Aranjuez highlighted an impressive list of competences and skills that farmers would need to effectively take advantage of the digital transformation. However, there were diverse views on which are the key competences and skills. Some participants focused on the attitude component, and saw that farmers' ability to change their own mindset is the cornerstone of the digital transition. Others advocated for a highly 'technological' farmer, who is able to fully embrace (and understand) the new technologies within her/his business.

Overall, the participants identified six main domains of competences and skills. Only two of these are typically 'digital'. These six skill domains can be listed according to their place in the process of technology uptake:

- Attitude and open-mindedness
- Comprehensive management
- Communication and collaboration
- 'Bridging'
- Digital literacy
- Advanced digital skills³

ATTITUDE AND OPEN-MINDEDNESS

An open mind towards new technologies was a key 'skill' in all the discussion groups. This would imply curiosity and an innovative attitude, which would facilitate the learning process. On the other hand, mistrust of digital solutions could block their uptake. Despite all the opportunities, farmers may see digital technologies as replacers instead of enablers, and may therefore fear their impact. Thus, developing confidence is key to seeing digital solutions as a means to achieve farm objectives, not an end in itself. Confidence may also encourage farmers to invest in exploring and trying.

³ Here, this term does not refer to 'advanced skills' as intended under the Digital Europe Programme, but to advanced skills in general

'BRIDGING'

This domain relies very much on the above skills, and focuses on the process of identifying and integrating the available digital technologies within the farm. As one participant put it, the ability to 'link digital tools with your own business'. Farmers need to have information/knowledge on the technologies that are available on the market. Then they need to identify and assess the most appropriate technologies for their needs, to have information on the costs and benefits of each tool and to know how to interpret the related costs-benefits analysis. In this process, it is important to know where or whom to ask the key questions to help formulate decisions. As already mentioned: farmers are not alone, but they are integrated and operate in an AKIS environment. Finally, farmers need to integrate the new IT solution within [and together with] their own operational context, capacities and farming knowledge.

DIGITAL LITERACY

In this domain we find basic competences for managing digital devices (smartphone, computer), simple applications (e-mail, WhatsApp, Facebook, YouTube, web search, simple agri-apps, etc.) and basic equipment interfaces. A basic understanding of digital fundamentals would later allow farmers to manage more sophisticated software and equipment. Regarding this aspect of basic digital literacy, some participants reflected on the fact that 'digital literacy is not a farmer's problem per se but a societal problem, so the question is if this should be addressed in the farming sector specifically'.

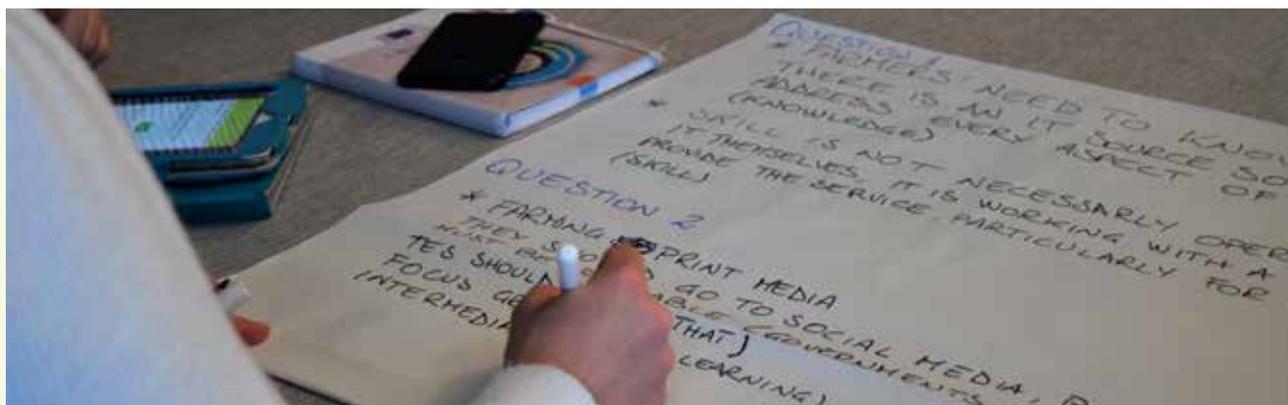
ADVANCED DIGITAL SKILLS

These would include skills and knowledge for using more specialised software, like geographical information systems, databases and spreadsheets. It also includes competences on specific farm/machinery/operation software and applications, the ability to integrate and analyse data from different sources of information and, finally, knowledge on data management (ownership, copyright, security).

Nevertheless, some participants recommended 'not to focus on making all farmers technological specialists but rather on relying on specialised IT advisers and peer-to-peer learning between more and less technologically-skilled farmers'.

Participants were also requested to vote for the top three priority skills. There was no agreement on a particular set of skills but three dimensions were more represented: attitude, management and basic 'digital literacy'. Communication and 'bridging' skills came as runner-up.

All [word clouds](#) can be found on the event webpage.



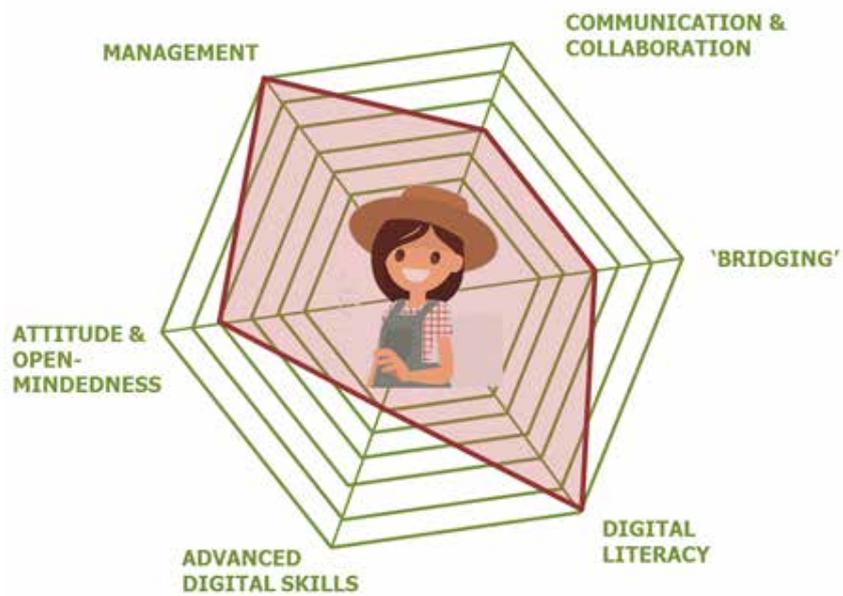
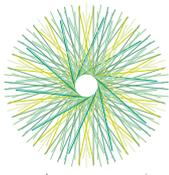


Fig. 2 Skills needed by farmers for the digital transition





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Ethan Cleary from the Irish Farmers' Association **presented** the main results of a **comprehensive survey** carried out in Ireland. It aimed at acquiring better knowledge on the current awareness and usage of farm technology, identifying barriers and incentives that farmers find in using technology, and exploring the roles of training and education. The main takeaways are:



- Usage and confidence: There is a strong use of technology and a positive attitude towards it. The majority of surveyed farmers have a smartphone (84%) and a laptop (69%). Besides, 46% of farmers claim to be already using it on the farm, and 40% more plan to embrace it in the future. However, only few digital solutions are actually implemented.
- Barriers: 55% identify the lack of, or quality of, broadband as the main barrier. This is followed by the cost of the initial investment and the support and maintenance costs of technology. 60% included access to support and training in their top three barriers.
- Leverage and incentives: Agricultural media, advisers and other farmers are mentioned as the top influencers for technology uptake. When it comes to increasing the use of technology, the main drivers that were identified are the reduction of overall costs, a better connectivity and more support for training.
- Education and training: 25% of those who have completed training, have completed courses in digital farming technology. Tailored face-to-face training, on-farm discussion groups and ag-tech advisers are the preferred forms of support to help farmers adopt technology.



5. An enabling environment for skills development

Addressing the digital skills gap is not a straight way forward. An enabling environment is needed so that efforts towards skills development are fruitful.

Participants in the seminar reflected comprehensively on the main elements of this enabling environment. We can group these elements into four levels: the technological, AKIS, institutional and societal levels.

TECHNOLOGICAL LEVEL

Not surprisingly, participants considered the technological environment an important factor to make sure that the development of skills progresses. This concerns several aspects:

- Connectivity in rural areas: full coverage and affordable broadband
- Appropriateness of the digital solutions that are available: according to participants, user-friendliness, simplicity and focus on the actual farm needs (usefulness) are the key elements in making a digital product or service farmer-proof.
- Interoperability and standards to allow integration of systems and tools, as well as to avoid programmed obsolescence of technology as much as possible
- Cost-benefit evidence of the digital tools, not only from an economic perspective, but also from an environmental and social one.

Therefore, there is a strong interdependence between technology and skills development. On the one hand, the uptake of digital solutions requires certain skills, but at the same time, the development of skills needs an attractive, reliable and effective technological supply. In that sense there is a 'virtuous circle' in which technology and skills develop together and reinforce each other.

In line with this, most challenges for skills development that were identified by the [farmers presenting](#) during the first day were also related to the technological environment.



AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS (AKIS)

The second enabling factor shows how AKIS are a key source of skills and competences. They can deliver many skills development activities. Moreover, a well-functioning AKIS provides for a continuous update of farmers' competences. It is worth noting that some of the key skills needed by farmers for the digital transition ([see section 4](#)) are indeed most relevant for being an active part of AKIS. Therefore, these are two sides of the same coin: the farmer involvement and interaction in a strong AKIS will lead to proper skills development, which will then foster digitalisation.

The participants mentioned several characteristics and desired qualities that can ensure this enabling role of AKIS. Most of these focus on the cooperative and interactive dimensions that lead to enhanced knowledge sharing and a collaborative innovation process.

For more information on the role of AKIS in the digital transition [see the report from the EIP-AGRI Workshop 'Enabling farmers for the digital age: the role of AKIS'](#).

INSTITUTIONAL SUPPORT

Participants at the seminar acknowledged that an appropriate institutional environment is also an enabling condition for skills development. They explicitly referred to three aspects where public institutions in general and governments in particular may help reduce the skills gap.

First, they have a direct role in articulating the legal framework for different technological matters (for instance, drone regulation, data privacy, standards, ensuring a competitive market for digital services, etc.). Second, public administration may envisage different types of incentives, particularly those that support farmers in overcoming risk on return barriers or that compensate, at least partially, the costs linked to the learning curves. Besides, they may play a significant role in rural areas deploying IT infrastructure. Last but not least, governments and other public institutions may take up an active role in the digitalisation process by directly providing useful digital data and tools.



SOCIETAL DOMAIN

Participants referred to broader societal aspects as an overarching enabling layer, both from a sectoral and territorial perspective. In particular, they advocated for an inclusive involvement of all farmer groups and specifically those of women, elderly and youth.

Gender equality will improve farm management and at the same time support skills development. Younger generations feel more comfortable with new technologies but they should see agriculture as an interesting sector to work in. They may look for an open-minded (agricultural) society and the sense of freedom to operate within it. This would allow them to maximise their innovative capacity, which is very much needed in a fast-evolving environment like the technological one. On the other hand, the digital dimension of the sector may attract youth. Concerning the older generations, the need for building trust in technology was emphasised.

Finally, a more general comment pointed out that a prerequisite for the other conditions is to recognise the values that are associated with food systems, and society's understanding of the role of farmers. In particular, it is necessary to acknowledge the need to address the skills gap during the digital transition. "Otherwise, the farmers will be left far behind", in the words of a participant.



6. Moving forward: approaches and tools for skills development

Part of the seminar was devoted to identifying paths to upgrade skills.

This section was introduced by a comprehensive [sequence of presentations](#) and interviews showing a diversity of projects, tools and activities that are developing some type of skills for digital farming. This 'inspirational journey' was structured into four blocks ([see Annex 2](#) to check the full list of initiatives presented).

The first block addressed formal education and training. It presented experiences where digitalisation is included in vocational education and training curricula for (future) young farmers and advisers. Besides, this part of the journey explored the potential of mobilising resources via Erasmus+ projects to improve key competences and skills, and foster cooperation and knowledge exchange across Europe.

The second block focused on formal and informal education and training, covering activities at farm level. This included activities from peer-to-peer learning to demonstration, pilots, field trials and other forms of knowledge exchange with farmers at the centre.

The journey then continued, linking up with broader agricultural knowledge and innovation systems (AKIS). Presentations showed different ways in which an innovation ecosystem can support upskilling of farmers (and advisers), and illustrated how short-term and isolated interventions may add up for a wider impact. To achieve this, advisers and service providers have a key role, but they also need to 'upskill'. Besides, the presentation of several H2020 projects showed the added value of European research projects. Finally, this third block reflected on how the CAP toolbox could support skills development. The fourth and last block of presentations focused on the use of digital tools for skills development ('learning about and with digital tools').

After this inspiring overview, participants listed sources, approaches, tools and activities that serve the development of different types of skills and competences, in diverse set-ups. From this exercise we can draw one main conclusion: a holistic perspective is required. There is no one single skill to be developed, but a 'package'; and such skills are to be developed not just through single, short-term activities, but through a comprehensive approach that fosters synergies and flexibility.

This resonates well with the [declaration](#) on the digital future of agriculture and rural areas that calls EU Member States to foster synergies among existing policy tools for the upskilling of farmers and the rural population.



WHERE CAN FARMERS ACQUIRE THE SKILLS THEY NEED?

Participants listed an array of competence sources/providers and means/tools. Almost all the sources that were mentioned belong to one of the following:

- the (extended) farming community,
- advisers,
- educational and training organisations,
- farm suppliers and
- agricultural organisations

Interestingly, research and/or technology organisations as well as public administrations were generally not identified as relevant actors here.

A first category comprises farmers themselves (through self-learning and peer networks) and their social environment, including farm workers, family, friends, neighbours, etc., especially those who could be considered local 'influencers' or 'digital farming champions'.

This group of competence providers was considered particularly important to facilitate changes in mindset and to improve basic digital literacy. Inter-generational knowledge transfer was also mentioned as well as the beneficial role that trust plays. Advisers and/or advisory services were highlighted with the same intensity, either public or private.

Educational and Vocational Education and Training (VET) organisations were pointed out as the second most important source of skills. Formal education at schools should be providing life-long, cross-cutting skills, especially for younger generations, while VET organisations would offer more specific trainings.

The fourth group includes agricultural input suppliers/dealers (services, products, machinery, etc.). Finally, agricultural organisations (cooperatives, farmer associations, chambers of agriculture, etc.) were also mentioned as potential sources for skills development.

The means, channels and tools that were listed were diverse in type and scope. Overall, participants gave the same relevance to both digital and face-to-face learning. The former would include a wide variety of internet resources (videos, tutorials and manuals, technical documents, etc.), social networks and platforms, online media and television, peer-to-peer apps and discussion groups (from just using WhatsApp or Facebook to more sophisticated tools), e-learning and online courses (i.e. MOOC) and online advisory services. Regarding



the face-to-face approach, on-site demonstrations and discussion groups or gatherings on the farm were stressed. Besides, participants took stock of different training sessions and courses, info days and study visits, exchange programmes, workshops and seminars as well as cooperation initiatives.

PATHS TO SKILLS DEVELOPMENT

Upskilling the farming sector does not just rely on delivering a series of single, short-term interventions. This was a very clear message from the participants when asked to 'build' approaches for skills development.

The integrated approaches that were designed, and the variety of models that were presented by the participants make it impossible to sharply summarise the proposals without losing valuable focus and details. Nevertheless, some elements can be generalised and highlighted:

- **Addressing several skills domains:** Skills and competences that are needed for the digital transformation cover different domains (including attitudes and motivations) and the most relevant ones should be considered and addressed together rather than one by one.
- **Systemic and strategic:** Investing in training and upskilling is not only about short-term interventions. To achieve lasting results, it is necessary to link up the relevant actors and establish synergies with existing policies and tools within a strategic framework. This was also one of the key messages from the [EIP-AGRI seminar on "Multi-level strategies for digitising agriculture and rural areas"](#) which was held in December 2018 in Antwerp (Belgium).
- **Based on cooperation:** Skills development is definitively a matter of collaboration between different actors. A well-functioning AKIS can play a key role in this. Vice versa, enhanced skills at farm level (and for advisers) will benefit the performance of AKIS.
- **Using a complementary set of tools:** One size does not fit all, and some tools or means may be more appropriate for certain types of stakeholders or skills to be developed. In line with the previous point, the readiness and capacity of actors to deploy each particular tool varies. They should therefore complement each other.
- **Progressive and flexible:** The duration of design, preparation and implementation of different upskilling actions varies greatly. Adapting a master curriculum for digital farming may take months or years and needs continuous updates. In contrast, creating a WhatsApp group among a group of farmers to share experiences on the use of GPS takes less than a minute and lasts (almost) indefinitely. This should be considered when deciding which actions to promote and for what skills.
- **Working within and on the context:** The process of skills uptake is influenced by the technological, institutional and, more generally, the social environment. Some actions may be tailored to promote more favourable conditions for upskilling at those levels.

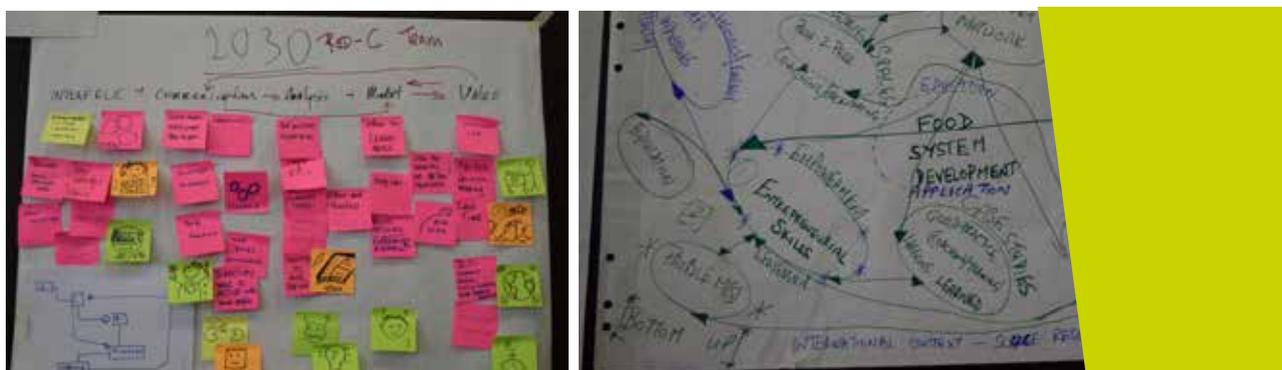


Fig.4 Examples of approaches for skills development designed by participants

7. How could the CAP strategic plans contribute?

Digitalisation also takes up an important role in the future CAP, which will place a strong emphasis on sharing knowledge, fostering digitalisation and encouraging its uptake in agriculture and rural areas. In line with this, participants were requested to reflect on and identify key ideas or elements that would be further developed during the seminar. This concerns key ideas that were considered relevant to feed the future CAP Strategic Plans to help farmers develop the competences they need for the digital transition.

Incentives for digital uptake

- Supporting enhanced connectivity
- Link financial support/incentives to requirement of farm digitalisation
- Support the development of tools/tool developers
- Support investments in digital solutions
- Monitoring and impact assessment
- Data sharing and capitalisation

Incentives for training

- Link the financial support for devices/tools to relevant training
- More training, more support
- Encouraging the upgrade of the educational level of farmers

Skills development activities

- **Peer-to-peer:** support demonstration farms/farmers, discussion groups, hackathons
- **Advisory services:** training of trainers, facilitation skills, digital advisory services
- Support formal **education and training**
- Promote **new and interactive training methods**
- **International / cross-border mobility** and exchange
- Media campaigns to increase awareness

Ecosystem, cooperation and partnerships

- Foster linkages between policies and programmes: CAP and ERASMUS, education and knowledge transfer, digital strategies and agricultural training, etc.
- Support Digital Innovation Hubs⁴ as facilitators for digital transformation
- Promote digitalisation through national and regional AKIS
- Support cooperation and multi-actor approaches for digitalisation: i.e. EIP-AGRI Operational Groups. Combining different sets of skills and competences.

Fig. 5 Ideas to support skills development in the CAP Strategic Plans

The harvest was very rich, and participants suggested approximately 50 potential actions to be considered for the CAP Strategic Plans. Not surprisingly, almost half of these suggestions explicitly refer to skills development and awareness raising, in particular focusing on: fostering peer-to-peer exchange and on-farm demonstrations; strengthening the advisory services and upgrading them to address the challenges posed by the digital transition; linking to educational and training activities and, in general; supporting new interactive learning approaches. Besides, suggestions for the CAP plans also covered different ways of promoting digital uptake, including the improvement of connectivity, incentives for farmers to get specific training, and a diverse set of potential measures aiming to consolidate an enabling ecosystem and collaborative partnerships at various levels (see figure 5).

⁴ For more information on Digital Innovation Hubs read the final report of the [EIP-AGRI Seminar 'Digital Innovation Hubs: mainstreaming digital agriculture'](#) held in Kilkenny (Ireland) in 2017 as well as the [main framework](#) fostered for DIHs by the EC.

Annex 1. Farmers presenting their experiences

- Knud Bay Smidt (Denmark) - [watch the testimonial video](#)
- Boris Brestnichki (Bulgaria)
- Miguel Cachão (Portugal) - [watch the testimonial video](#)
- Saverio Delsante (Italy)
- Vincenza Ferrara (Italy)
- Laura Girdžiūtė and Gedminias Urbonavičius (Lithuania)
- Gediminas Kontrimavičius and Aušrius Kučinskas (Lithuania) - [watch the testimonial video](#)
- Maja Kósa (Serbia) - [watch the testimonial video](#)
- Thomas Lagkas (Greece)
- Juan Olivares (Spain)
- Yolène Pagès (France)
- Agnès Papone (France)
- Jolanda Raaijmakers and Peter Parea (Netherlands)

[Download the poster booklet](#)

[Watch the YouTube playlist, including all Farmer videos](#)

Annex 2. Activities and tools for skills development: initiatives presented

Activity	Organisation / Project - Presenter
1. Formal education and training: targeting future farmers	
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 problems of farms.	Bygholm Agricultural College (Denmark) Lotte Ipsen Fonteboa High Secondary School (Spain) Constante Lorenzo
Mobilising 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.	Erasmus+ SFATE Smart farming training for employment (EU) - Miguel Cordero Erasmus+ SEED Smart Entrepreneurial Education and training in Digital farming (EU) Sonia Mendoza
2. Non-formal / informal education and training: from the classroom to the field	
Focus on peer-to-peer learning	
One-to-one or many-to-many. Boosts awareness of and confidence in modern technologies. For all skills levels: students, beginners, experienced (early adopters). Mutual learning bridging competences and generations.	EIT Food Educating for Technology Take Off (EU) - Tetiana Pavlenko Erasmus+ Wisefarmer (EU) Mihaly Csoto
Multi-actor approaches (such as Operational Groups) maximise 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 + spreading results).	Discussion and knowledge transfer groups, Global Sustain (Greece) - Christoforos Pavalkis EIP Operational Group 'Pig Health Lern Netzwerk' (Germany) - Hubert Gerhardy
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 they can do for them. Technology providers finetune their tools and applications based on users' requirements. The starting point is always farmers' needs and knowledge.	Living Lab at ILVO (Belgium) Jürgen Vangeyte H2020 FARMDEMO (EU) Peter Parea Future Intelligence FINT (Greece) Harris Moysiadis FarmHack (The Netherlands) Josien Kampa

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

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

The 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 in building this 'ecosystem'. But they need to upskill too ("train the trainer").

H2020 **SmartAgriHubs** (EU)

George Beers

Facilitating farmers' skills development (The Netherlands) - Caroline van der Weerd

HUB4AGRI Digital Innovation Hub for Agriculture (Portugal) - Maria Margarida Segard

H2020 **Fairshare** (EU) - Tom Kelly

H2020 **I2Connect** (EU) - Miguel De Porras

John Deere training activities - Thomas Engel

LIFE F3 : Farm Fresh Fruit (Spain)

Lars T. Berger

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

What role does the CAP have in digital skills development? Rural development measures offer a range of tools, which need to be used in a targeted and synergic way to address basic to more advanced needs:

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

RDP measures 1 and 2 to help farmers with e-applications (Estonia)

Leho Verk

LFI educational project Digitalisation in agriculture and forestry (Austria)

Martin Hirt

Computer workshops for digitally excluded people over 50 - Northern Jura Partnership Association LAG (Poland)

Jerzy Motloch

4. Learning about and with digital tools

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

VIVEA blended digital training (France)

Beatrice Dingli

JAMK University of applied sciences – Digital e-learning resources (Finland)

Anne-Mari Malvisto

Erasmus+ **Biocontrol E-Training** (EU)

Laurent Dedieu

EIP Operational Group '**Gate of innovations**' (Lithuania) - Gintare Kucinskiene

H2020 Euraknos - H2020 Eureka

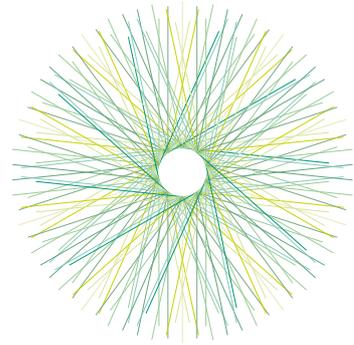
Hercules Panoutsopoulos

Annex 3. Relevant documents

- [EIP-AGRI Brochure Shaping the digital \(r\)evolution in agriculture](#)
- [EIP-AGRI Brochure Agricultural Knowledge and Innovation Systems](#)
- [Agrinnovation magazine - Issue n° 6 - June 2019](#)
- [Agrinnovation magazine - issue n° 5 - October 2018](#)
- [EIP-AGRI Factsheet Digital evolution](#)
- [EIP-AGRI Factsheet Precision Farming](#)
- [EIP-AGRI Factsheet on Benchmarking](#)
- [EIP-AGRI Factsheet on Skills development](#)
- [EIP-AGRI Factsheet on Digital opportunities for primary production](#)
- [EIP-AGRI Factsheet on Digital opportunities for agricultural value chains](#)
- [EIP-AGRI Seminar on Multi-level strategies for digitising agriculture and rural areas: Final report](#)
- [EIP-AGRI Workshop Enabling farmers for the digital age: Final report](#)

All presentations, background documents, project posters and other results of this seminar are available on the EIP-AGRI website: <https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-new-skills-digital-farming>





eip-agri
AGRICULTURE & INNOVATION



The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as through the EIP-AGRI network.

EIPs aim to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- the EU Research and Innovation framework, Horizon 2020,
- the EU Rural Development Policy.



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Join the EIP-AGRI Network & Register via www.eip-agri.eu

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