



# FAIRshare

DIGITAL TOOLS FOR FARM ADVISORS



## Task 3.3: Contextual Advocacy and Animation approaches

**Author:** Evelien Lambrecht (Inagro)

**Contributions from:** Anita Naughton (Teagasc), Mateja Gorse Janezic (SEASN), Dovile Petkeviciene (LAAS), Peter Parea (ZLTO), Lies Debruyne (ILVO), , Vanja Bisevac (CEMA), Noémie Bernard Le Gall (ACTA), Evi Arachoviti (i4Agri)

### Technical References

Project Acronym	FAIRshare
Project Title	Farm Advisory digital Innovation tools Realised and Shared
Project No.	H2020 818488
Project Coordinator	Teagasc
Contact	John Hyland

Deliverable no	3.3
Deliverable name	Advocacy and animation of DA applications
Dissemination level	Public
Work Package	WP3
Task	3.3 Contextual Advocacy and Animation approaches
Lead beneficiary	Inagro
Contributing beneficiaries	Teagasc, LAAS, ZLTO, SEASN and all Partners
Deliverable type	
Due date of deliverable	M26 (Dec 2020) – extension till 15.01.2021
Actual submission date	15.01.2021



v	Date	Beneficiary	Author
1	24.12.2020	Inagro	Evelien Lambrecht
2	15.01.2021	Inagro	Evelien Lambrecht

## Content table

1.	Introduction .....	3
1.1	Objective .....	3
1.2	Methodology .....	3
1.2.1	Participants and data collection .....	3
1.2.2	Set-up of focus group discussion guide and preparatory exercise....	4
1.2.3	Test + rework .....	5
2	Analysis and results.....	5
2.1	Characteristics of DATS and their importance.....	6
2.2	Day-to-day challenges.....	6
2.3	Tools that can help to address the challenges.....	11
2.4	Barriers related to uptake of tools and digital technologies .....	15
2.5	Solutions to remove the barriers and inspiration from other sectors....	16
2.6	Interesting trainings .....	19
3	Conclusions .....	20
	Annex 1: Focus group discussion guide .....	21
	Annex 2: Completed excel file with characteristics and their importance .....	24



## 1. Introduction

The document at hand is the result of the work undertaken in Work package 3 “The interface between DA and the advisory & farming communities”, specifically Task 3.3. “Contextual Advocacy and Animation approaches” running between the project months 16 and 25.

The objectives of this Work Package are to thoroughly understand how digital agriculture is advocated & animated in the interface between the advisory and farming communities. We understand the interface between advisors and farmers as the relational locus in which *cooperation, collaboration, mutual influence and trust* occurs.

### 1.1 Objective

The specific objective of task 3.3 is to identify common “working-day” challenges faced by farmers across the different member states and to identify the digital advisory technologies which are best positioned to address them. Furthermore, the aim is to identify barriers for the uptake of interesting technologies, and how these barriers could be removed. Also, possibilities to transfer the advocacy and animation approaches to other contexts will be discussed and in response to the different needs, attention will be paid to the potential of piggy-backing on existing approaches.

### 1.2 Methodology

To achieve the objective, four 2-hour focus groups were held, one in each of the four geographic areas (West Europe, Central Europe, South-East Europe and North-East Europe). This was done online, due to the COVID 19 situation. The focus groups were organized by the four hub leaders, by means of Zoom or MS Teams, depending on the preference of the organisers. As supporting tool, Klaxoon was used (PinUp as backup), an online platform supporting, amongst others, brainstorm exercises. Klaxoon allows participants to post sticky notes, to organize and ‘like’ them, in a similar way to using the ‘like’ button on social media platforms.

Inagro was the supporting partner, who set up the focus group discussion guide. Also, the Klaxoon brainstorming board was created by Inagro, and could be reused in the 4 regions. Before the organisation of the 4 focus groups, all the hub leaders were invited for a training event, where they could familiarize themselves with the facilitation of the focus groups.

#### 1.2.1 Participants and data collection

15-20 participants were expected to be present per group discussion, including a representative panel of farmers, advisors and digital industry actors (selected in task 3.1). The idea was to have a representative of each of the identified categories for each country. The hub-leaders, with the help of all the partners through the set-up of the long



list in task 3.1, established the groups, and sent out the invitations for participation. For South-East and North-East Europe, reaching the expected number of participants was challenging, as several Eastern European countries are not involved in the Fairshare project. WP3 leader, together with the project coordinator and hub leaders made an extra effort through the EUFRAS network, but unfortunately did not reach the target in the end. As it is important to include the opinions and concerns of all the regions, it was better to proceed with smaller groups than leaving them out. The good thing about focus groups is that you don't need to have many participants to ensure it is relevant, as a focus group is a method of using a small number of demographically similar people to collect qualitative data through interactive and directed discussions, so small numbers are not necessarily a problem. Below (table 1), an overview is given of the number and type of participants per hub.

**Table 1: Overview of the number and type of participants per hub (some persons belong to more than 1 category)**

	<b>Farmers</b>	<b>Advisors</b>	<b>Digital industry actors</b>	<b>Total (including partners)</b>
<b>Western EU</b>	5	5	5	20
<b>Central EU</b>	3	16	6	23
<b>North-East EU</b>	1	5	1	7
<b>South-East EU</b>	1	1	/	9

The four focus groups were held on the following dates:

- Western EU: 27/11/2020, organized by Teagasc
- Central EU: 4/12/2020, organized by ZLTO
- South-East EU: 17/12/2020, organized by SEASN
- North-East EU: 18/12/2020, organized by LAAS

The output of the brainstorming boards can be consulted through the following links:

- Western EU: [www.pinup.com](http://www.pinup.com), code pvVMTDV9
- Central EU: [www.klaxoon.com](http://www.klaxoon.com), code 9USTC7A
- South-East EU: [www.klaxoon.com](http://www.klaxoon.com), code U7B6XKS
- North-East EU: [www.klaxoon.com](http://www.klaxoon.com), code KDAK3MJ

### **1.2.2 Set-up of focus group discussion guide and preparatory exercise**

In August 2020, the first version of the focus group discussion guide was prepared by Inagro and sent out for feedback. This guide indicates the questions, method to be used,



and gives an indication of the foreseen time per question. It was also presented online during a WP3 meeting.

In addition to the focus group discussion, it was decided to include a preparatory exercise for the participants, based on the work in T3.5, where a summary of characteristics from digital tools was created. For this exercise, the idea was to ask all participants to complete the excel file and give a score to the importance of the different characteristics of DATS. This allowed them to become familiar with the characteristics of tools and the terminology to be used within the focus groups. Furthermore, it gives us insight in the characteristics of tools that are deemed important by the sector. Both documents were adapted in line with the feedback received from the project partners. See annex 1 for focus group discussion guide and annex 2 for a printscreen of the excel-file with characteristics.

### **1.2.3 Test + rework**

The first focus group was held in Western-EU, with Teagasc as hub leader. Despite some technical issues with Klaxoon and a remark related to the use of vignettes, the focus group went smoothly. Both issues were solved by the next focus group meeting.

-Klaxoon: there were technical issues with Klaxoon and Pinup was used as backup. For the following focus groups, there were no problems.

-Use of vignettes: the idea was to work with vignettes with examples of working DATS for specific challenges, identified from the Fairshare inventory. The participants were expected to read the 5 vignettes, and choose one addressing their most important challenge, as a basis for discussion (Would you make use of the tool? Why/why not? What factors are important to consider it as a useful tool? What potential barriers do you see?). The DATS were selected from the inventory, in a way that all potential domains of challenges were addressed. An important issue with this methodology was that participants not knowing the tool from practice, had the feeling of not having enough information to discuss on the tool and to answer the questions. Adding more information would make it hard to read everything and take too much time. From that point of view, it was decided to ask participants themselves to come up with one or more tools that they consider helpful in addressing their challenges, and start the discussion from these tools. This was the methodology used in the remaining three focus groups.

## **2 Analysis and results**

For the analysis of the preparatory exercise with scores on importance of characteristics of tools, Inagro put all the answers together in the master excel file, and an overview of the most important findings is given below.

The analysis of the focus groups was also done by Inagro. Per question, the answers of the four different focus groups were bundled or arranged in categories or tables, giving an overview of what has been discussed in the different regions. A summary is included in this report.



## 2.1 Characteristics of DATS and their importance

When having a look at the scores given for the different characteristics of DATS, we see no big differences among the regions. In annex 2, an overview of the average scores for the 4 regional hubs can be found, as well as the general average.

The most important characteristics mentioned are:

1. general challenges and benefits - save time and money, lower workload, better decisions and confidence
2. user friendliness - easy to use
3. user centred – using the language and approach of the DATS’s users
4. animal health management
5. data presentation - visualisation understandable for farmers and advisors

The characteristics found least important are:

1. all sectors covered
2. language is gender neutral
3. safety management
4. macro economy – tool gives broader economic advantages
5. residue management

## 2.2 Day-to-day challenges

With respect to the day-to-day challenges in farming, we identified that challenges mentioned were often related to each other, and tried to put them into different categories. The categories identified were:

- economics and prices
- time and work management
- optimize use of inputs
- complying with regulations + quality
- climate change
- producing in a sustainable way
- DATS available and useful
- other

In what follows (tables 2-9), per category of day-to-day challenges identified, an overview of aspects mentioned during the focus groups is included, arranged per region.



**Table 2: Challenges in relation to economics and prices, per region**

<b>Economics and prices</b>			
Central EU	Western EU	South-East EU	North-East EU
Insight in cost-benefit ratio	Getting feasible info from the Markets	Keeping balance in new investment	Cost rationalization
Price uncertainty	Financial - cashflow - banks are not helping	Adding value to production	High investment costs
Price volatility	Markets	Reducing costs	To know the current economic situation of the farm
Market estimate	Predict the needs of our crops	Economic issues, Prices, Market reaching, Profitability	
Insights in cost	Be competitive		
Stay competitive	Market prices especially in beef, sheep and tillage production systems	Price of production and price of selling is not in good ratio	
Obtain good price			
High investment costs for farm technology			

**Table 3: Challenges in relation to time and work management, per region**

<b>Time and work management</b>			
Central EU	Western EU	South-East EU	North-East EU
Manage time	Time management	No time for hobbies	Time management
Job satisfaction	Optimize efficiency to maintain competitiveness		Lack of qualified labour
Labour			Too much administrative work
Get all the work done in time			
Workload			

**Table 4: Challenges in relation to optimize use of (external) input, per region**

<b>Optimize use of (external) inputs</b>			
Central EU	Western EU	South-East EU	North-East EU
<p>Good decisions in short time with respect to long term strategy</p> <p>Overall production management (input use, pest management, etc)</p> <p>Apply research insights at the level of the farm</p>	<p>Improve outcomes, improve production, reduce workload etc</p>	<p>Efficient management of pests and diseases</p>	<p>To know what pesticides to use</p> <p>Finding tool that fits perfectly for your farm and brings more benefit than cost</p>

**Table 5: Challenges in relation to complying with regulations and quality, per region**

<b>Complying with regulations + quality</b>			
Central EU	Western EU	South-East EU	North-East EU
<p>CAP management</p> <p>Too many regulations</p> <p>Fulfil all legal terms</p> <p>Meet standards</p> <p>Keep track of the status of the legal requirements</p> <p>Too much farm administration work</p> <p>Bureaucracy</p> <p>Improve quality</p> <p>Quality standards above regulations</p> <p>Changing regulations – how to determine strategy?</p>	<p>Limit the administration paper work</p> <p>Dealing with Department of Agriculture paperwork, regulations</p> <p>Getting confident on consistent quality and availability of our product</p> <p>Challenge for older farmers in their lack of understanding of how to use technology to capture data that is required by legislation</p>	<p>How to meet standards?</p> <p>Understand new CAP schemes</p> <p>Unnecessary paper/administrative work</p> <p>Administrative requirements</p>	<p>High administration load</p>

**Table 6: Challenges in relation to climate change, per region**

<b>Climate change</b>			
Central EU	Western EU	South-East EU	North-East EU
Fighting against climate crisis Weather conditions Invasive pests and diseases Negative image of farmers in public – farming seen as climate enemy	Climate	New pests and diseases	Climate change Unstable and different weather between years

**Table 7: Challenges in relation to producing in a sustainable way, per region**

<b>Producing in a sustainable way</b>			
Central EU	Western EU	South-East EU	North-East EU
Evaluate the effects (indicators) of agro-environmental practices Managing societal concerns Take care of the environment Balance with rural development, environment, climate neighbours Sustainability Objections of local residents Connecting with the consumer Biodiversity Choice of cultivars	Why does it feel like we are always trying to fight battles and justify what we do as farmers?	Lack of practical demonstrations	Satisfy consumers' changing expectations Share knowledge with other digital tool users



**Table 8: Challenges in relation to DATS available and useful, per region**

<b>DATS available and useful</b>			
Central EU	Western EU	South-East EU	North-East EU
<p>Lack of digital competences among farmers and advisors to operate DATS</p> <p>Overview about useful technologies, practical toolbox for advisory</p>	<p>Specialized workforce for handling digital tools</p>	<p>Existing digital tools more or less not combining different fields of work</p> <p>Lack of records' keeping on farms</p>	<p>Finding tools to solve field problems</p> <p>Poor skills to use digital tools</p> <p>Implement and learn digital tools</p> <p>How to keep up with changing technologies</p> <p>Finding tool that fits perfectly for your farm and brings more benefit than costs</p>

**Table 9: Other challenges mentioned, per region**

<b>Other challenges mentioned</b>			
Central EU	Western EU	South-East EU	North-East EU
<p>Respond as quick as possible to threats</p> <p>Prevent unnecessary risks</p>	<p>Mental welfare</p> <p>Politics</p> <p>Dealing with variable weather and local conditions</p>	<p>Lack of connectivity between farmers in the market</p> <p>Unstable weather-unreliable forecasts</p>	<p>To predict weather conditions</p> <p>To know if farm animal is healthy</p> <p>Limited contact during the pandemic</p>

For each region, we could identify that some challenges were more prominent than others. In a voting process, the most important ones were identified. It could be the identified categories in general, or a specific sub-item. The results are given below in Table 10.

**Table 10: Most frequently mentioned challenges per region**

<b>Most frequently mentioned challenges per region</b>			
Central EU	Western EU	South-East EU	North-East EU
(no voting, other procedure, see above)	Producing in a sustainable way  Economics/prices  Time and work management  Overview about useful technologies, practical toolbox for advisory	Efficient management of pests and diseases  Administrative requirements  Not combining different fields of work  Lack of records  Unstable weather/unreliable forecasts	Unstable and different weather between years  Finding tool that fits perfectly for your farm and brings more benefit than costs  Climate change: New rules for farmers and EU regulations  Lack of qualified labour  Poor skills to use digital tools

### 2.3 Tools that can help to address the challenges

Starting from the aforementioned challenges, we were in search for tools that could be helpful in addressing the day-to-day challenges on the farms. As already mentioned, a different approach was used in Western-EU. For this region, the starting point were the vignettes with tools from the inventory, expected to lead to interesting discussions on advocacy and animation approaches. However, reaction was limited. Nevertheless, results are included in table 11.

**Table 11: Tools from the vignettes and discussions - Western EU**

<b>LK Fertilization tool</b>
<ul style="list-style-type: none"> <li>-Could help reduce admin and time with compliance and audits</li> <li>-This could be really useful in driving adoption through using farmers as ambassadors for digital adoption and also bring the advisory layer and farmers closer together in collaboration and knowledge sharing</li> </ul>
<b>Opticow</b>
<ul style="list-style-type: none"> <li>+: Captures data automatically (by camera, sensors...), saves time</li> <li>-: Is the data really fair and available or less straightforward in practical terms?               <ul style="list-style-type: none"> <li>• <u>Benchmarking</u> to better understand farm performance from data collected</li> </ul> </li> </ul>

<b>My farm my way</b>
Interesting to see other farmers ideas and new methods of making money. How to turn things around and help solve cash-flow problems we all seem to have.
<b>Smart farming platform</b>
Not chosen/discussed
<b>GIS map of the month</b>
The GIS map would be my preference as long as all data given, collected from farmers on livestock, crops, financial data, management data would be given once. Farmers are often asked for the same data over and over again. Once is enough to give and collect.
<b>Other tools mentioned:</b>
<b>Muddy boots software:</b> Platform to connect farmers and advisors to give advice/recommendations on pesticides/fertilizer, all in one place accessible. You have to pay. Also focus on financial data, what is making profit and what isn't? Especially for livestock. It is usable on phone, connects to UK supermarkets, they can have access, widely used in UK, gatekeeper software, fantastic tool
<b>Herdwatch</b>
<b>Agriweb</b>

For the other 3 focus groups, we did not start from the vignettes, and participants could suggest themselves interesting tools tackling (partly) the challenges mentioned. In what follows, for the most frequently mentioned day-to-day challenges (see table 10), an overview is given from the answers. This is done per region.

Table 12: interesting tools for the most frequently cited challenges - Central EU

<b>Tools related to producing in a sustainable way</b>
<ul style="list-style-type: none"> <li>• <a href="#">Layman - SmartAfriHub</a></li> <li>• EU router database for the use of organic seeds <a href="https://www.liveseed.eu/wp-content/uploads/2020/10/Liveseed_Router_database_guide_authorities_english.pdf">https://www.liveseed.eu/wp-content/uploads/2020/10/Liveseed_Router_database_guide_authorities_english.pdf</a></li> <li>• RISE – getting sustainability down to earth <a href="https://www.bfh.ch/en/research/reference-projects/rise/">https://www.bfh.ch/en/research/reference-projects/rise/</a></li> <li>• Several tools to generate the optimal recipe for the animal feed mixture</li> <li>• Automated disease warning system for pests LKO (<a href="https://warndienst.lko.at/">https://warndienst.lko.at/</a>)</li> <li>• <a href="https://organic-farmknowledge.org/">https://organic-farmknowledge.org/</a></li> <li>• Kringloopwijzer</li> <li>• Prognosis and risk of disease; <a href="http://www.agrometeo.ch/">http://www.agrometeo.ch/</a></li> <li>• Use the CoolFarmTool, a global tool by the Cool Farm Alliance</li> <li>• Various sustainability assessment tools (e.g. RISE, SAFA, SMART)</li> <li>• Several tools to select the right crop protection product for the specific crop field situation</li> </ul>



<ul style="list-style-type: none"> <li>• Pest forecasting System: <a href="http://www.pissrbija.com">www.pissrbija.com</a></li> <li>• pest monitoring network and forecasting models: <a href="http://agroambiente.info">agroambiente.info</a></li> <li>• Model for prediction of the risk of soil compaction due to agricultural field traffic: <a href="https://www.terrano.world/CH/Default.aspx">https://www.terrano.world/CH/Default.aspx</a></li> </ul>
<b>Tools related to economics/prices</b>
<ul style="list-style-type: none"> <li>• Simple Calculators for Farm productivity: eg. Gross margin calculator by IPN (<a href="http://www.psss.rs">www.psss.rs</a>) but in serbian</li> <li>• <a href="http://www.impro-dairy.eu/index.php/outreach/economic-tool">http://www.impro-dairy.eu/index.php/outreach/economic-tool</a></li> <li>• <a href="https://www.verantwoordeveehouderij.nl/show/JONKOS-1.htm">https://www.verantwoordeveehouderij.nl/show/JONKOS-1.htm</a> (Dutch only)</li> <li>• <a href="https://fegra.be/home/agriculturalprices">https://fegra.be/home/agriculturalprices</a></li> <li>• Financial tracking system</li> </ul>
<b>Tools related to time and work management</b>
<ul style="list-style-type: none"> <li>• Apps which automatically document working time (e.g. Working Hours App)</li> <li>• Herd management software</li> <li>• Telemetry boxes can record machine data and documentation</li> <li>• Any tool that saves time, f.e. by making the administration process easier, using datasharing, ...</li> <li>• Senslog: <a href="https://www.senslog.org/">https://www.senslog.org/</a></li> <li>• <a href="https://www.barto.ch/">https://www.barto.ch/</a>; a digital farm - data manager; based on 365farmnet, introduced in Switzerland</li> <li>• SMS/Push notifications with alerts from advisors</li> </ul>
<b>Overview about useful technologies, practical toolbox for advisory</b>
<ul style="list-style-type: none"> <li>• Atlas of Best Practices; <a href="https://atlasbestpractices.com/">https://atlasbestpractices.com/</a></li> </ul>

**Table 13: Interesting tools for the most frequently cited challenges - South-East EU**

<b>Tools for efficient management of pests and diseases</b>
<ul style="list-style-type: none"> <li>• Agroptima- Efficient management of pests and diseases</li> <li>• AgriSens app</li> <li>• Plantix</li> <li>• Phytoview-Efficient management of pests and diseases</li> <li>• Agrobases-farmis</li> <li>• Plant forecasting and reporting service portal at <a href="http://www.pissrbija.com">www.pissrbija.com</a></li> </ul>
<b>Tools for administrative requirements</b>
<ul style="list-style-type: none"> <li>• Pitanja i odgovori-fullfilled administrative require</li> </ul>
<b>Tools for combining different fields of work</b>
<ul style="list-style-type: none"> <li>• Pantheon farming</li> </ul>
<b>Tools for keeping records on farms</b>

<ul style="list-style-type: none"> <li>• Pantheon farming</li> </ul>
<b>Tools for unstable weather/unreliable forecasts</b>
<ul style="list-style-type: none"> <li>• Agrodox-Unstable weather-unreliable forecasts</li> </ul>
<b>Other interesting tools</b>
<ul style="list-style-type: none"> <li>• Quick gross margin calculator at <a href="http://www.psss.rs">www.psss.rs</a></li> </ul>

Table 14: Interesting tools for the most frequently cited challenges - North-East EU

<b>Tools for unstable and different weather between years</b>
<ul style="list-style-type: none"> <li>• Irriwatch</li> <li>• Manna Irrigation</li> <li>• Crop manager</li> <li>• Fertisat</li> <li>• GeoSerwis</li> <li>• IKMIS</li> </ul>
<b>Finding tool that fits perfectly for your farm and brings more benefit than costs</b>
<ul style="list-style-type: none"> <li>• TITRIS</li> <li>• Agroplatforma</li> <li>• e.geba</li> </ul>
<b>Tools related to climate change. New rules for farmers and EU regulations</b>
<ul style="list-style-type: none"> <li>• Agroakademija</li> <li>• Fast</li> <li>• Ministries portals</li> <li>• Webinars</li> <li>• IKMIS</li> <li>• Paying Agency Mobile apps. f.e. NMA Agro</li> </ul>
<b>Tools for lack of qualified labour</b>
<ul style="list-style-type: none"> <li>• Work search platforms</li> <li>• LinkedIn</li> <li>• Facebook</li> <li>• National labour exchange</li> </ul>
<b>Poor skills to use digital tools</b>
<ul style="list-style-type: none"> <li>• IKMIS (training sector)</li> <li>• YouTube (how to section)</li> <li>• Webinars, advisory services</li> </ul>



## 2.4 Barriers related to uptake of tools and digital technologies

When discussing the most important barriers related to the uptake of these tools and technologies (tables 11-14), the aspects in table 15 were mentioned. They were defined by the participants during the meeting. In the table, a cross indicates the regions in which those barriers were mentioned.

Table 15: Barriers for the uptake of tools, indication per region

<b>BARRIERS</b>	<b>Western EU</b>	<b>Central EU</b>	<b>S-E EU</b>	<b>N-E EU</b>
Too many different tools – what to choose/ appropriate one			X	X
Lack of independent advisors on DATS				X
Lack of/Bad internet connection	X		X	X
Poor skills/lack of skills/lack of training to use digital tools (both farmers and advisors)	X	X	X	X
Low importance of data for decision making				X
Lack of time/willingness/motivation to learn DATS		X	X	X
Language		X	X	
Fragmentation of tools which address only 1 or a few problems	X	X		
Unique data formats		X		
Region specific tools not applicable on large scale		X		
Output not easy to understand/ no straightforward data presentation		X	X	
Unknown tools or technologies/unawareness		X	X	
No independent tool		X		
Tools not updated after project end		X		
Not enough focus on specific user problem		X	X	
Too expensive (for small farmers)		X	X	
Value/benefit not clearly visible		X	X	X
Data collection and security too complex	X	X	X	
Tools promise more than they deliver/not always complete		X	X	
Not user friendly (+ take into account profile/age group)	X	X		
No marketing for free tools		X		
Too much tools without clear benefit/benefit or added value not recognizable	X	X		
Too much work for data input (in different tools, same data)	X	X		
Older farmers not interested in tools			X	X
Tools look complex to start with			X	
Willingness to cooperate in problem solving is limited			X	
Unpleasant public tenders			X	

## 2.5 Solutions to remove the barriers and inspiration from other sectors

All barriers that were mentioned in more than one regional hub are put in the first column of the table below. In the second column, all potential solutions and inspiration from other sectors, as mentioned by the participants, is included.

Table 16: solutions and inspiration from other sector for the mentioned barriers

Barriers	SOLUTIONS, inspiration from other sectors
Bad internet connection	<ul style="list-style-type: none"> <li>- DATS that are available/work off line shortly with basic functions</li> <li>- Investing in infrastructure</li> <li>- Simple and loaded quickly</li> </ul>
Poor skills/lack of skills/lack of training to use digital tools (both farmers and advisors)	Efficient trainings, working groups, learning networks
Lack of time/willingness/motivation to learn DATS	Work on different kinds of motivation: advantages (financial or not), network, information, good support, ...
Too many different tools – what to choose/ appropriate one	Promotion of DATS by trained advisors  Toolbox of checked DATS by independent expert  "trusted" short-list of best performing tools
Language	Direct online translation, linguistic tools, google translate/deepl
Output not easy to understand/ no straightforward data presentation	Working groups to share benefits and tips, including the advisors
Unknown tools or technologies/unawareness	"trusted" short-list of best performing tools  promote tools provided (paid) by public institutions
Not enough focus on specific user problem  Not user friendly (+ take into account profile/age group)	Cocreate with user group  address the daily work of the farmer and at the same time the advisors/agronomists need  Take into account profile/age group  Attractive interface

Too expensive (for small farmers)	Free promotional period (although no long term solution)
Value/benefit not clearly visible	<p>Working groups to share benefits and tips, demonstration farms, learning networks/competition</p> <p>Free promotional period</p> <p>Team work</p> <p>Information hub</p> <p>"trustful" short-list of best performing tools</p> <p>work on different kinds of motivation: advantages (financial or not), network, information, good support, ...</p>
Tools promise more than they deliver/not always complete	"trustful" short-list of best performing tools
Too many tools without clear benefit/benefit or added value not recognizable	<p>Advisors, policy, companies should all believe in it</p> <p>DATs must be clearly distinguished from the bunch of other useless tools (rating)</p> <p>"trustful" short-list of best performing tools</p> <p>DATS must come not only from commercial oriented companies</p>
Too much work for data input (in different tools, same data)	<p>Interoperable tools: Apps should communicate to each other</p> <p>Focus on interoperability from start</p> <p>joined data, political trigger to open up commercial data</p> <p>standardization of data for easy exchange</p> <p>Aggregating data from multiple sources. Not all farm data is recorded by the farmer. Records need to be brought together to provide a full picture of the farm.</p> <p>Data Capture needs to be as automated as possible</p>



Data collection and security too complex	Legislation regarding data safety in DATS Data cooperatives at local level Ensure purpose of the data is clear
Fragmentation of tools which address only 1 or a few problems	Interoperable tools: Apps should communicate to each other Focus on interoperability from start

As can be seen, a lot of solutions are valid for more than 1 barrier. In what follows, we summarize the solutions that should be taken into account, thus potentially solving the majority of the mentioned barriers. This takes also into account the answer to the question ‘in what kind of solutions would you be interested’, so this also indicates that people from the field are waiting for and could be helped by these kinds of solutions, which is interesting information for the set-up of the user cases.

**1/ Organization of working groups, learning networks, peer to peer learning, trainings, tutorials, webinars and on-farm demonstration** was mentioned several times and would make sure that farmers:

- select a promising tool that is suitable for their farm
- their skills are trained
- become familiar with the use of digital tools
- become more motivated by seeing others using and benefiting from the tool, also older farmers
- obtain insights in the potential benefits
- know how to interpret the output
- ...

The above mentioned aspects are not only valid for farmers, but also advisors could benefit, as they are often not sufficiently aware of the tools themselves, and hence can also learn from the working groups and trainings.

**2/ Develop DATs that also work offline for a certain period**, or at least the basic functions, simple tools that load quickly, would be of great help in countering the issue of limited internet access.

**3/ Development of tools in co-creation with the users** could take into account both the needs of farmers and advisors, since this would increase the benefits for both. Within the development process, developers could also consider the profile of the users, and for example their preference for working with a smartphone or rather with a computer. In this development, an attractive interface that doesn’t look too complex, potentially discouraging users, should be considered, as well as an understandable, easy to interpret output. Furthermore, attention should be paid to the testing within the sector, and should



lead to well-tested digital solutions that certainly work in a variety of circumstances and areas.

4/ **A (short) list with interesting/useful tools compiled by an independent advisor** would help in the selection process of promising tools. Farmers often mention that they do not know how to select a tool and that they would be interested in a rating or list with promising tools, to distinguish a good tool from a bunch of useless tools.

5/ **Direct online translation** with linguistic tools such as google translate/deepl would make sure that language is no longer an issue with the use of DATS that are developed in a foreign language. This would enlarge the domain in which a tool can be used as well. However, it is not sure that digital tool providers would include any direct translation tool directly into their app, without control on the translation output.

6/ **Development of an integrated platform or tools that communicate with each other**, that are interoperable, in which can be worked with joined data would minimize the work needed to put the same data into different tools/systems. Developers should focus on interoperability from the start, and standardize data and APIs for easy exchange. Furthermore, not all data is recorded by the farmer, so aggregation of data from multiple sources could also be of help, in order that data capture is as automated as possible. Mentioned examples are JoinData from the Netherlands and DjustConnect in Flanders. Although this was mentioned as a desirable situation, some participants expressed doubts about the feasibility of combining the variety of different types of data systems/technologies, and potential danger for the development of a monopoly.

7/ Related to the previous point on integrated platforms, attention to **data security** and working in a safe environment is also an important issue to take into account. There were discussions on integration with open national research databases and commercial databases. Some suggest that a political trigger would be needed to open up commercial data. Others pointed to the sensitivity of certain data (such as animal health), making users more reluctant to share data. Elaboration of legislation on data safety in DATS was suggested as a possible solution. A clear insight of the purpose of data collection and use could also be helpful.

## 2.6 Interesting trainings

As we noticed that the organisation of trainings, no matter the format, will be an important element in the animation and advocacy approaches, we asked participants if they are aware of interesting trainings, so that we could include these insights in the organisation of trainings in the upcoming work packages.

On this question, mainly general training ideas were mentioned (farminars on specific themes, own trainings of tool providers, demonstrations, apprentice networks, practical trainings), while specific trainings mentioned related to the use or a higher uptake of DATS was limited.

Interesting ones to further explore are:



- the competency development programmes for advisors and consultants in rural areas, concluding with the CECRA certificate, which is a Certificate for European Consultants in Rural areas. In this programme, as well as a focus on knowledge, skills development is also included.

-IPN Serbia offering Trainings for Advisors on Digital communication

-WiseFarmer project (Erasmus +), including training programmes for farmers and advisors on digital communication.

Furthermore, it was mentioned that the training material is often not the biggest challenge, but rather the facilitation of the trainings.

### 3 Conclusions

Going from the identification of day-to-day challenges, to interesting tools to tackle those, followed by barriers for the uptake of the tools, we came to solutions to remove the barriers and inspiration from other sectors to improve the uptake. The identified points are:

**1/ Organization of working groups, learning networks, peer to peer learning, trainings, tutorials, webinars and demonstration at farms**

**2/ Develop DATs that also work offline for a certain period, or at least the basic functions**

**3/ Development of tools in cocreation with the sector** could take into account both the needs related to the daily work of farmers and advisors.

**4/ A (short) list with interesting/useful tools compiled by an independent advisor**

**5/ Direct online translation**

**6/ Development of an integrated platform or tools that communicate with each other**

**7/ Data security**

When comparing the results of the scoring exercise of characteristics of tools with the ones from the focus group, it can be seen that they are in line with each other, and both indicate the desire to save time, money, lower workload and better decisions, the importance of user friendliness and a user centred tool, and the visualization in an understandable way. Also, the safe storage, transfer and access of data closely follows. Only the characteristic of a tool focusing on animal health management was very prominent in the scoring exercise, but seemed less present in the focus group discussions. The characteristics coloured in red (see annex 2), were not or in a very limited extent discussed in the focus groups, indicating their low importance.



## Annex 1: Focus group discussion guide

### 1. Introduction - Instructions

**Objective:** The objective of this task is to identify common “working-day” challenges faced by farmers across the different member states and to identify the Digital advisory tech which is best positioned to address this need.

**Methodology:** 4 focus groups will be held, one in each of the four geographic areas (West Europe, North East Europe, South East, South and Central Europe). This will be done online, due to the COVID 19 – situation.

**Means:** We advise to make use of MS Teams, in combination with Klaxoon

**Attendants:** 15-20 people will be present per group discussion, including a representative panel of farmers, advisors and digital industry actors (selected in task 3.1)

**Focus group facilitator:** The focus group discussions will be facilitated by the 4 hub-leaders.

**Support:** Inagro sets up a focus group discussion guide which should be used during the discussion. This guide gives the questions, method to be used, and an indication of the foreseen time per question. We advise the hub leader to experiment with both Teams and Klaxoon before the start of the meeting, and to have someone supporting the focus group facilitator (following discussions, add notes when required, take minutes, follow up time...). Furthermore, Inagro will set up an online training event where the 4 hub leaders can familiarise themselves with how to facilitate the groups.

Do not forget to **record** the discussion and to ask permission for this.

Send the **Excel** and **consent form** in advance to the participants. All documents are in the folder on sharepoint.

### 2. Focus group discussion guide

#### INTRODUCTION (3 min)

Today, we are here together in the frame of the Fairshare project. The goal of the project is to ensure that farm advisors and their organisations effectively use digital tools and services for supporting a more productive and sustainable agriculture. Therefore, we would like to gain insight in the needs and barriers of both farmers and advisors in using digital tools, and to come up with potential solutions to overcome this.

It would of course have been more ideal to meet in a physical way, but let’s make use of digital tools, and discover the advantages and possibilities.

We invited farmers, advisors and digital industry actors, to have a representative platform, and to be able to come up with solutions to overcome barriers.

We estimate that this discussion will take about 2 hours.



- 1. COULD ALL OF YOU SHORTLY PRESENT YOURSELF, YOUR NAME, YOUR FUNCTION OR PROFESSION (15 min)**
- 2. WE WILL START WITH A SHORT FEEDBACK ROUND ON THE RESULTS OF THE PREPARATORY EXERCISE ON THE EVALUATION OF DIFFERENT CHARACTERISTICS YOU'VE MADE. WE SEE THAT ...IS SCORED AS VERY IMPORTANT..., AND... AS NOT SO IMPORTANT CHARACTERISTIC FOR A DIGITAL ADVISORY TOOL. (10 min)**

*(all participants will be asked in advance to complete the Excel-file and give a score to the importance of different characteristics. As hub facilitator, you collect all the answers. With the Excel provided in D3.5, it is very easy, and all answers are immediately coloured and summed. Highlight the most important findings).*

- 3. MAYBE WE WILL FIRST ADDRESS THE FARMERS. WHEN THINKING ON THE MOST COMMON WORKING DAY CHALLENGES YOU FACE, WHAT WOULD YOU MENTION? (15 min)**

*All participants write down their answers on sticky note in Klaxoon - similar ones are grouped by facilitator.*

*(Inspiration: Plant protection management, Water management, Nutrition/Fertilisation management, Livestock, Green House Gas, Livestock stock management/care/feed, Management of natural resources, Environmental monitoring & control, Climate, Compliance with legislation and standards, CAP management, Strategic planning, Finance and budgeting, Operational management focus, Post-harvest management, Harvest prediction, Logistics, Markets and sales, Sustainable food production and healthy diets, Work safety, Business model, Intellectual property)*

- 4. ADVISORS PRESENT, IS THIS IS IN LINE WITH YOUR EXPERIENCES? DO YOU HAVE ISSUES TO ADD? (10 min)**

*Advisors can also write down, facilitator further makes groups of similar themes*

- 5. FOR THESE 5 COMMON WORKING DAY CHALLENGES, WHAT TECHNOLOGY/TOOL WOULD BE BEST POSITIONED TO ADDRESS THEM? (15 min)**

*Online discussion, FG facilitator writes down the answers, adds a sticky note per challenge, indicating all potential technologies. Sticky note in other color.*

*Someone is taking minutes.*

- 6. WHAT ARE THE BARRIERS RELATED TO THE UPTAKE OF THESE TECHNOLOGIES/TOOLS? (15 min)**

*Online discussion, sticky notes in other colour can be added, completed by FG facilitator, or by attendants.*

*More important to listen and to take notes here.*



**7. HOW WOULD YOU SEE POSSIBLE SOLUTIONS TO REMOVE THESE BARRIERS? (12 min)**

*Online discussion, follow and take notes.*

**8. DO YOU SEE SOLUTIONS THAT WORK IN OTHER REGIONS OR SECTORS, THAT WOULD BE OF HELP FOR YOUR SECTOR? (8 min)**

*Online discussion, follow and take notes – summary can be made in Klaxoon*

**9. HOW COULD WE TRANSFER THEM? (4 min)**

*Online discussion, follow and take notes – summary (keyword) can be made (written down) in Klaxoon*

**10. IN WHAT KIND OF SOLUTIONS WOULD YOU BE INTERESTED? (4 min)**

*Online discussion, follow and take notes – summary (keyword) can be made (written down) in Klaxoon*

**11. WHAT KIND OF TRAININGS ARE YOU AWARE OF, THAT WOULD BE INTERESTING TO BE WIDER AVAILABLE? (4 min)**

**CONCLUSION (5 min)**

Thank you for your presence and contribution.

The results and report of this exercise will be published online, on the Fairshare page. In the report, next to the insights of today, we will take into account results from other regions, as well as insights from questionnaires, to come to a strategy on how approaches may be transferred to other contexts.

We will now take into account your views and try to test your suggestions in different cases.

Also, for the owners of digital advisory tools, we give you the opportunity to share your tools, by adding it to our DATS-inventory (share link online).



## **Annex 2: Completed excel file with characteristics and their importance**



		CE	NEE	SEE	WE	AVERAGE
characteristics	ambition for DATS in FAIRshare analysis and reporting					
<b>GENERAL</b>		1=not - 5=very important				
Sector	All sectors covered	2,29	2,00	2,13	2,49	2,23
Farm Size	Can be applied for both small and big farms	3,57	3,33	3,49	3,56	3,49
Country	All regions covered	3,14	3,33	3,05	3,03	3,14
Web access	Efficient use of web access, proxies when needed	3,71	4,00	3,87	4,11	3,92
Cost structure of DATS	Low cost with possibility of free trial period	3,57	4,00	3,46	3,80	3,71
Maintenance of DATS	Regular updates without disruption to users data	3,63	2,75	3,67	4,00	3,51
Experiences	Shared experiences of users (farmers and Advisors)	4,00	4,25	4,11	4,21	4,14
Visuals	Visually attractive examples and illustrations	4,50	4,75	4,48	4,23	4,49
<b>USABILITY</b>						
Integration	Integrated business information	3,00	3,25	3,20	3,59	3,26
Efficient work	Saves time or reduces workload (more efficient service delivery)	4,25	4,25	4,32	4,43	4,31
User friendliness	Easy to use	4,75	4,75	4,77	4,70	4,74
Auto Data Input	Little manual data input; single data entry multiple use	4,00	4,50	4,14	4,23	4,22
Data input documentation	Clear which data is imported	3,57	4,00	3,66	3,88	3,78
Supportive	Clearly defined which activities are supported	4,13	4,25	4,13	4,28	4,20
<b>DATA MANAGEMENT</b>						
Data management strategy	Data users' rights well defined /comply to Code of Conduct	4,00	4,33	4,13	4,18	4,16
Data security	Safe storage, transfer and access of data	4,38	4,50	4,44	4,52	4,46
Data presentation	Visualisation understandable for farmer / advisor	4,63	4,50	4,65	4,74	4,63
Data reliability	Integrity of data is checked in well defined way	4,13	4,50	4,24	4,43	4,32
Data sharing	Easy shared acces to tool, service and data	3,57	3,33	3,69	3,97	3,64
FAIR	Data is Findable, Accessible, Interoperable, Reusable	4,38	4,25	4,42	4,57	4,40
<b>CHALLENGES&amp;BENEFITS(C&amp;B)</b>						
Challenges/Benefits general	Save time, money, workload; Better decisions, confidence.	4,63	5,00	4,69	4,77	4,77
Diagnosis support	Easy to diagnose the problem and give advise based on data/ no need to	3,13	2,50	3,15	3,36	3,03
Decision support	Better and well explained decisions	3,63	3,75	3,67	3,94	3,75
<b>C&amp;B: ENVIRONMENT/NATURE/WELFARE</b>						
technical result visualisation	Improvement of technical & sustainability results clearly visualised	3,83	4,00	3,87	4,05	3,94
production management	DATS improve production management	4,00	4,33	4,13	4,36	4,21
resource management	resource management	3,43	3,00	3,44	3,86	3,43
residue management	residue management	2,86	2,67	2,85	3,36	2,93
compliance management	compliance management	3,33	3,00	3,26	3,69	3,32
environmental management	environmental management	3,86	4,67	3,95	4,17	4,16
climate/risk management	climate/risk management	3,86	4,33	3,92	4,21	4,08
animal health management	animal health management	4,43	5,00	4,54	4,66	4,66
<b>C&amp;B: BUSINESS/ECONOMY</b>						
subsidy management	subsidy management	3,43	3,67	3,31	3,69	3,52
strategic management	strategic management	3,29	4,00	3,33	3,64	3,56
financial management	financial management	3,71	4,33	3,80	4,12	3,99
cost management	cost management	4,14	4,67	4,08	4,33	4,30
operational management	operational management	4,00	4,50	3,83	4,17	4,13
quality management	quality management	3,57	3,67	3,52	3,92	3,67
harvest prediction	harvest prediction	3,71	4,00	3,67	4,03	3,85
logistic management	logistic management	3,71	4,00	3,57	3,95	3,81
marketing	marketing	3,14	3,67	3,08	3,59	3,37
safety management	safety management	2,71	2,67	2,64	3,20	2,81
time management	time management	3,57	3,67	3,52	3,92	3,67
personnel management	personnel management	3,43	4,00	3,24	3,44	3,53
economic result visualisation	Results are visualized in relation to possible earnings/ savings	3,50	3,67	3,57	3,90	3,66
advisor service economy	DATS improve economic situation of Advisory Services	3,13	3,50	3,24	3,49	3,34
farm economy	DATS improve economic situation of Farmers	4,00	3,75	4,07	4,30	4,03
macro economy	DATS give broader economic advantages	2,88	2,75	2,88	3,28	2,95
<b>CHALLENGES: BROKERAGE</b>						
AKIS structure	Support Advisory Knowledge & Innovation Support services	3,00	3,00	2,91	3,26	3,04
ICT attitude advisor	DATS stimulate advisors to work with ICT	3,00	2,75	3,16	3,39	3,08
ICT attitude farmers	Farmers see how their data contribute to better/accurate advice	3,88	4,25	4,01	4,14	4,07
Individual/Group advice	Clearly specified if DATS work in individual and/or group advice	4,13	4,50	4,15	4,18	4,24
Connection with advisor	DATS enhance better connection with client	3,71	4,33	3,90	4,00	3,99
Advice-Decision interaction	Clearly specified which advice is needed in combi with DATS	4,13	4,25	4,13	4,17	4,17
Advisory support	Clearly specified which decisions are supported	4,00	4,00	3,91	3,99	3,98
<b>USERS</b>						
User centred	Using the language and approach of DATS' users	5,00	5,00	4,08	4,79	4,72
Education level	DATS work for relevant education levels	4,13	3,75	3,85	4,23	3,99
Type of employment	types of employment (self-employed, employee,...)	3,88	3,50	3,88	4,08	3,83
Role in organisation	roles in organisation	3,88	3,75	3,97	4,10	3,92
Experience	experience levels	4,00	3,67	2,60	4,02	3,57
Gender	Language is gender neutral	2,63	3,00	2,91	2,60	2,78
Age	All ages understand language used	3,00	3,00	3,66	3,23	3,22
Support preference	Clearly specified what support is needed in combi with DATS	3,75	3,50	3,84	3,88	3,74
Support offered	Where relevant, affordable support offered (helpdesk,...)	3,75	3,50	3,52	4,05	3,71
Training need	Clearly specified under which conditions training is needed	3,50	3,25	3,00	3,73	3,37