FAIRshare

DIGITAL TOOLS FOR FARM ADVISORS

D8.5 Data Management Plan

Living Document
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Acronyms

DA: Digital agriculture
DATS: Digital agriculture tools and services
DMP: Data Management Plan
FAIR: Findable, Accessible, Interoperable and Reusable (with respect to data management)
MA: Multi actor
PLA: Participatory learning and action
PNF: Permanent Networking Facility
UC: User case
WP: Work package

1.   Introduction

Electronic data generation, analytics and communication technologies potentially enable more accurate, faster and better decision-making on farms, with huge potential to improve agricultural sustainability. There is a major focus on digitisation by EU and national/regional policy-makers to ensure that digital innovation in agriculture keeps pace with other sectors and the benefits of digitisation are available to the wider farming community. However, there is a danger that digitisation and future innovations will be hampered unless the rural advisory community is mobilised to take ownership of digital tools and to advocate at the user interface. This CSA (Coordination and support action) will engage, enable and empower the independent farm advisor community, through sharing of tools, expertise and motivations.

FAIRshare has two main programmes. Firstly, work-packages (WPs) 1, 2 and 3 will gather an evidence base of the digital tools and services used internationally, leveraging the social networks of partner institutions that span EU and non-EU countries. The inventory of tools will be accessible to end-users on an intuitively navigable online interface that has been co-designed using a multi-actor approach. Accompanying the tools in the online inventory will be information, for instance short 'good practice' vignettes, on how the tools may be used/adapted for use. Secondly, WPs 4, 5 and 6 will generate and resource a participatory 'living laboratory', empowering advisor peers from across the EU to interact with the online inventory and, in a series of workshops, to exchange, co-adapt, co-design and apply digital tools. The FAIRshare 'living lab' will enable advisors to address challenges to embedding digital tools in different advisory and farming contexts across the EU. Special focus will be on co-designing powerful communication and engagement approaches for advisors to advocate and inspire their peers and farmer clients, driving a social movement for the wider and better use of digital tools. FAIRshare's nine WPs are outlined below:

WP1: Develop a Permanent Networking Facility (PNF) with pan-European online search and inventory of DATs and digital support services
WP2: 'Good practice' DATS development and use
WP3: The interface between digital agriculture (DA) and the advisory & farming communities
WP4: Novel digital advisory tools and services (DATs) and their potential use and impacts on advisory
WP5: Develop roadmap for enhanced use of digital farm advisory tools
WP6: Support the exchange, modification and use of digital tools by advisors
WP7: Dissemination and communication
WP8: Co-ordination and Management
WP9: Ethics requirements

1.1 Objectives

The overarching aim of FAIRshare is to ensure that farm advisors and their organisations effectively use digital tools and services for supporting a more productive and sustainable agriculture. The co-ordinators commit to ensuring that farm advisors are included in all workshops and actions to ensure that they have an ownership of the project and its ambitions. The nine interrelated specific objectives of FAIRshare are:

1. Provide an inventory of existing DATs and decision support services across the EU and create a comprehensive online catalogue of at least 200 that can be accessed and used. WP1
2. Identify from 60-70 effective DATS, the critical success factors in their development and use, as well as the multi-faceted barriers affecting acceptance, usage and sharing of these tools WP2-3
3. Co-design communications and public engagement tools that build trust around ICT, preparing diverse EU agricultural societies for the greater digital age WP2-3
4. Identify the change management and innovation process issues arising from the adoption of new DATS in at least 30 different farm advisory contexts. WP4
5. Provide a set of at least 30 EU-wide roadmaps with regional/sectoral spread for the improved contribution of digital tools in advisory services and networks leading to the development and widespread use of better digital tools specific to each context.WP5
6. Expand the use of proven high impact digital technologies among independent advisers within and between regions, member states of EU and internationally. WP4 & 6.
7. Identify high impact digital tools or services that could be adapted by advisors in different contexts, providing a menu of professional advisory tools and services in different languages with a common standard. WP1, 4 & 6.
8. Create dynamic learning experiences for participants leading to more effective training for advisors, agriculture students and farmers to use digital tools and solutions in their business. WP1 & 6.
9. Increase the geographic and sectoral spread of advisory digital tools and services, and good practices that enhance the participation of farmers in different contexts in the digital age.WP7.

2. Data Management Plan: Scope

Research data includes audio and video files, questionnaires, laboratory notebooks, statistical and other data files, models, algorithms etc. Data can take many forms, it can be digital or non-digital, and may be collected using a variety of methods such as observations, experiments, simulations, or from existing datasets. There are different data types (primary and secondary) which can exist in different states (raw, cleaned, processed, and analysed).

As part of the Data Management Plan (DMP) FAIRshare partners should conduct good data management practices such as planning, organising, storing, and preserving data (Fig. 1). In brief a DMP for project partners is:

"…**a to-do list that details how they plan to collect, clean, store, and share the products of their research**."[1].

Figure 1: Data management planning and processes[2].

The following DMP is not a static document. Instead it is a living artefact that provides a detailed breakdown of how data will be stored, used and shared during and after the project as well as how this data will be made available. The DMP will be updated when necessary, including but not limited to when new data is required, or upon any relevant changes to the consortium.

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[1] Everyone needs a data management plan. Nature, 555, 286. doi: 10.1038/d41586-018-03065-z
[2] Adapted from The University of Sheffield
https://sites.google.com/a/sheffield.ac.uk/rdm_links/pro

3.   Data Summary

The purpose of data collection in the FAIRshare project is to generate freely reproducible material that can be shared and incorporated into other platforms, such as the EIP-AGRI platform and the EIP-AGRI practice abstracts. EU policy aims to speed up innovation in agriculture, forestry and rural areas. The project will identify and screen digital solutions for advisory services that are already on the market, either within house from the EUFRAS members and from third parties (industry, academic, etc.) (e.g. WP1;T1.3). Furthermore, FAIRshare will compile a database of approximately 200 good practice vignettes. In addition, up to 30 User Cases which identify the change management and innovation process issues arising from novel or new digital tools and services will be documented (i.e. WP4; T4.2). Table 1 presents the main opportunities for data collection/sharing over the course of the projects lifetime.

Table 1 Main opportunities to collect and/or share data in FAIRshare

WP	Tasks	Brief overview	Source/method
1	1.3	200 digital solutions will be identified, with at least 70 of them to be applicable to more than one advisory service member.	A structured questionnaire including the assessment criteria developed in Task 1.1 will be utilized. Partners will contact directly their local technology vendors to collect the latest developed technologies adapted to their specific requirements. - Digital solutions providers - telephone or face-to-face
1	1.4	The development of a Permanent Networking Facility (PNF), design, operation and maintenance Although initially the PNF database will be filled with data extracted from the T1.3, the interested stakeholders will also be able to input additional data into the database The database will be open for public entry, but those entries will be unpublished until they are validated by several strict rules and a moderator	T1.3 and stakeholder input
2	2.3	Collection of data on good practice DATS, completing the vignettes. Approximately 200 good practice vignettes will be created, approximately 15-20 per partner country. The data collection will take place in a phased manner.	Interviews Face-to-face-meetings Secondary data
2	2.1	A multi-actor group will interrogate existing policy, academic and practitioner literatures, online sources and existing product inventories	Desk-based Multi-actor workshops

		in preparation for co-designing a framework/criteria for the identification of approximately 200 good practices for greater investigate from the inventory created in WP1. Workshop settings will be used to brainstorm criteria for identifying relevant and potentially impactful good practices.	
3	3.1	The goal is to establish four multi-actor co-design groups with a representative panel of farmers, advisors and digital industry actors. The task draws from the multi-actor toolbox of WP8.	Multi-actor groups (PLA) Focus group
	3.2	Review current advisor farmer engagement activities and identify motivating factors for farmers and their advisors that actively engage with or not engage with novel DA technologies.	Online survey Focus groups
	3.3	The multi-actor groups will interrogate the vignettes and will brainstorm ways of transferring the advocacy and animation approaches to other contexts and actors (who, where, how, why etc.) and in response to different needs, paying attention to the potential of 'piggy-backing' on existing approaches. Co-design of story maps, charting the stages and strategies of how these advocacy & animation approaches may be transferred to other contexts will be undertaken.	Workshops Focus groups Survey
	3.4	In collaboration with WP7, co-design of communication interventions customised to different EU agricultural social groups and societies including different typologies of advisers and farming typologies preparing for the greater digital age will be undertaken by the multi-actor group.	Four regional workshops Survey Focus groups
3	3.5	Compile the evidence base for a range of good applications with features such as user reviews, filter and search, testimonials and case studies of digital tools in action. Continue to develop this interface in line with user feedback and analysis of impact and functionality.	Focus groups
4	4.1	Assess what is already known about realising step changes or radical and transformative changes in advisory services to farmers within pilots of novel digital technologies This task will set the scene or a clear structured methodological approach to facilitate the practical work in WP5 (Road maps) and WP 6 (Implementation)	A combination of desk review and interactions (interviews/focus groups/meetings) with a broad range of actors
	4.2	30 user cases will be identified from partners, third parties and subcontractors mainly from across Europe that represent different sectors, production systems, regions and farm advisory	Meeting to identify and select pilot DATS based on learnings from WP1-3 and T4.1

		contexts. These user cases will be a combination of those selected in advance through project partners and third parties, and those selected at a later date via subcontracting.	
4	4.3	Learning from ongoing pilot adoptions of DATS – identifying the economic, social and demographic issues impacting the success of these pilots.	Using results of T4.1 Semi-structured interviews or short surveys carried out with different relevant stakeholder groups, including advisors, farmers, ICT-technologists, digital tool developers and researchers. Organise structured (Skype) meetings to discuss the most relevant issues at stake focussing on learning from the 15- 30 pilots.
	5.1	Create a visioning exercise at macro level for the enhanced use and implementation of DATs by the advisory community and to develop a roadmap as input for policy making at EU-, national and regional level as well as for other participants such as stakeholder unions and users.	Outputs from WP1, WP2, WP3, and WP4 Workshop
	5.2	This task will carry out a broader analysis of factors influencing the current state of the use of DATs in advisory services to farmers at UC level	Outputs from WP1, WP2, WP3, and WP4 Workshop
	5.3	For all 30 UCs, the UC leader will organize a multi-actor UC workshop in order to identify the strategy, opportunities and value chains related to the use of DATs in advisory services to farmers.	Workshop
	5.4	The action plan template, designed in WP4 (Task 4.4) aims to enhance the adoption of advisory services driven by DATs at UC level. It will be used in Task 5.4 as a common template to develop the action plan at UC level, in a co-creation process within the multi-actor UC stakeholder platforms, based on the strategy, opportunities and value chains, identified in Task 5.3 for each specific UC.	T4.4
	5.5	The content of the action plan, developed in T5.3 and T5.4 for each UC, will be distilled into a simplified yet compelling and visually strong image, underpinned with an explanatory EIP abstract. As a first step in this task, a common methodology and design for the images and the EIP-abstracts will be defined	T5.3 and T5.4
6	6.1	Identifies specific UC actions in business case format, based on the action plans and road	Workshop Desk based

	6.5	Train and support trainers of advisors in the use of digital tools	Workshop Seminars Conferences
7	7.5	To better reach and engage with farmers and advisors, the project will have a presence in at least 3 main European agricultural exhibitions.	Workshops
	7.6	Responsible Research and Innovation workshops	Workshop
8	8.8	Teagasc will provide MAA training events to support the multi-actor networks involved in the project.	PLA workshop

The first row of the table above reads: "maps previously identified (Task 5.4 and 5.5)."

From the above synopses it is clear that most of the data collection/sharing will take the form of focus groups, interviews, workshops, participatory approaches, and secondary data. A brief overview of each of these methods is detailed in the following section.

Focus groups[3]

Focus groups consist of small groups of people who are brought together to explore attitudes and perceptions and ideas about the topic at hand. They are particularly useful for gauging the extent to which there are shared views among a group of people. It is suggested that focus groups have six to nine people in them to allow for a range of views and opinions to be present among the group. Focus groups have three distinctive features:

- There is a focus to the session, with the group discussion being based on an item or experience;
- Emphasis is placed on the interaction within the group as a means of eliciting information;
- The facilitator's role is to facilitate the group interaction rather than lead the discussion.

Interviews[3]

An interview is a purposeful discussion between two or more people. In semi-structured interviews the researcher will have a list of themes and questions to be covered, although these may vary from interview to interview. Additionally, the sequence of questions may vary depending on the flow of the discussion. Semi-structured interviews are non-standardised interviews which are used to attain an in-depth understanding of the perception and attitudes of a particular group of people – say, farmers and digital technology.

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[3] Denscombe, M. (2010) The good research guide for small-scale social research projects, Buckingham: Open University Press.

Workshops

A workshop can be described as an intensive educational program in a given field which emphasises participation in problem solving efforts. It provides learners with an opportunity to exchange information, practice skills and receive feedback. Workshops are inherently flexibility and promotion of principles of participatory learning. They can be adapted to diverse settings in order to facilitate knowledge acquisition, attitudinal change or skill development.

PLA [4&5]

Participatory learning and action (PLA) involves a growing family of approaches, methods, attitudes, and behaviours to enable people to share, and enhance and analyse their knowledge of life and conditions and to plan, act and monitor, evaluate and reflect. There are some key principles of participatory learning which include:
- The right to participate
- Hearing unheard voices
- Seeking local knowledge and diversity
- Reversing learning
- Using diverse methods
- Attitude and behaviour change

PLA is oriented towards the inclusion of those who are marginalised. It uses a wide variety of tools/methods to bring diverse stakeholders together to focus on issues of common concern and to engage in a process of shared, enhanced learning. The knowledge created generates creative solutions to problems that might otherwise inhibit action/change.

Desk Review/Secondary data

Desk research can be defined as gathering and analysing information, already available in print or published on the internet.

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[4] 2.Chambers R. (1994) The origins and practice of participatory rural appraisal. World Dev. 1994;22:953-69.

[5] 4.Chambers R. (2007) From PRA to PLA and Pluralism: Practice and Theory. Brighton: Institute of Development Studies; Working Paper 286.

4.   Data Collection and Management Guidelines

Data collected/generated by FAIRshare should as much as possible be open and made available for practical use by all FAIRshare actors (as a minimum) and beyond:

- Availability should be meaningful for others both inside and outside the consortium. Therefore, data and information should be easy to find and identify.
- Open access data and public documents will be available via the FAIRshare website; and the repository (see FAIRshare Communication Strategy D7.1).
- Information planned to be made accessible will be reviewed with respect to data quality and General Data Protection Regulation (GDPR) compliance prior to its submission to a data bank or another organisation. Adequate anonymization of the data is a general requirement.
- FAIRshare consortium partners will store all information collected for WP and task activities in the shared data platform in a structured manner. This internal platform serves as a central means for data storage and information exchange between consortium partner teams. It is regularly updated, quality checked and saved by the coordination team. Members of the Project Management Committee (PMC) maintain an overview of these processes. The shared data platform is only accessible and open to consortium members. Access is granted on an individual basis by the coordinating team.
- If there are no objections with regard to the Grant Agreement and the Consortium Agreement, and if the considered data is not subject to General Data Protection Regulation (GDPR), data collected and processed in FAIRshare will be made available and/or accessible via download from the website or repository. However, the PMC can decide that data will not be published if PMC members argue that the data have no value added for parties other than consortium partners.
- To ensure adequate quality it is imperative to conduct quality: selection, review for data protection, quality assurance, availability of consent from research participants, and the formatting of datasets.
- Publicly available data will be uploaded and made publicly available on the FAIRshare website: https://www.h2020fairshare.eu/
- Consortium members are not responsible for maintaining the data or providing support to the prospective users once data that have undergone internal quality checks and have been published.
- Nevertheless, partners or responsible authors must review and correct the data when preventable inadequacies occur despite quality control.

- All consortium members can contribute to and help with the development, improvement and application of guidelines of the DMP.
- When the DMP is updated the coordinating team will notify the consortium partners.
- The coordinating team and the PMC will oversee and assess the adequate implementation of the open data availability.

Data collected as part of the project will primarily be qualitative in nature, nevertheless there are opportunities to collect data that is quantitative. There are fundamental differences in how data is analysed depending on its type (Table 2).

Table 2: The five main stages of data analysis

	Quantitative data	**Qualitative data**
Data preparation	Coding Categorizing the data Checking the data	Cataloguing the text or visual data Transcribing the text Preparation of data and loading to software (if applicable)
Exploration of data	Look for obvious trends or correlations	Look for obvious recurrent themes or issues Add notes to the data Write memos to capture ideas
Analysis	Use of statistical tests Link to research question or hypotheses	Group the codes into categories or themes Comparison of categories and themes Look for concepts (or fewer, more abstract categories) that encapsulate the categories
Presentation	Tables Figures Written interpretation of the statistical findings	Written interpretation of the findings Illustration of points by quotes and pictures Use of visual models, figures and tables
Validation	External benchmarks Internal consistency Comparison with alternative explanations	Data and method triangulation Member validation Comparison with alternative explanations

Adapted from Creswell and Plano Clarke (2007: 129), Table 7.1.[6]

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[6] Creswell, J.W. and Plano Clark, V. (2007) Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: Sage.

Data formats

Qualitative data comprises the primary form of data collected throughout the FAIRshare project. The table below outlines the format for how data should be presented and a brief justification of the chosen formats.

File format	Explanation/Justification
DOCX, XLSX, PPT (OFFICE 2010™ OR NEWER)	Microsoft Office™: software for documentation (Word™), presentation (PowerPoint™) and spreadsheet calculation (Excel™).
XLSX, CSV, TSV	Support data in CSV and TSV formats will be used when needed to avoid the limitations of Excel™.
ODT, RTV	Excel™ and Access™ are not easy to work on MacOS/Ios; if required we may need to transfer formats to enhance interoperability between different systems.
JPG, PNG	File formats for photographs and images.
MP3	Format for audio files.
OGG, FLV, MP4	Format for videos
PDF	Fixed formatting for documents. To be used for documents available for download from the public website. It will also be used for the submission of deliverables.

5. FAIR Data

The following sections describe how FAIRshare plans to make the project data Findable, Accessible, Interoperable and Reusable (FAIR). The FAIR principles were initially developed as a set of guidelines for the management of data in the life sciences, although they have since been extended to other areas of research and to innovation projects and are now a cornerstone of all EU research data management plans[7]. The aim is to organise research data in a way that ensures transparency and standardisation in order to make them accessible over a long period of time.

Figure 2: Digital Advisory Tools and Services Findable, Available, Interoperable, Reusable and Shareable

The project will provide more than just access to digital tools and relevant technological backup, it will explain the context and relevance of the tools, the motivation of its users and the value added to advisors and their farmer clients (qualitative and quantitative where it exists). This platform will also enable advisors to participate in virtual support networks of expert advisor users through the PNF (T1.4) and cross visits (T6.3)

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[7] European Commission.(2016). Open innovation, open science, open to the world—a vision for Europe. European Commission, DG Research and Innovation, https://bookshop.europa.eu/en/open-innovation-open-scienceopen-to-the-world-pbKI0416263/

Little is known within advisory communities about the range of digital farm advisory tools. The searchable platform created in FAIRshare will enable advisors and other interested actors, who are effectively lost in the melee of digital agriculture technologies and services, to identify the most appropriate technologies and services in a particular situation.
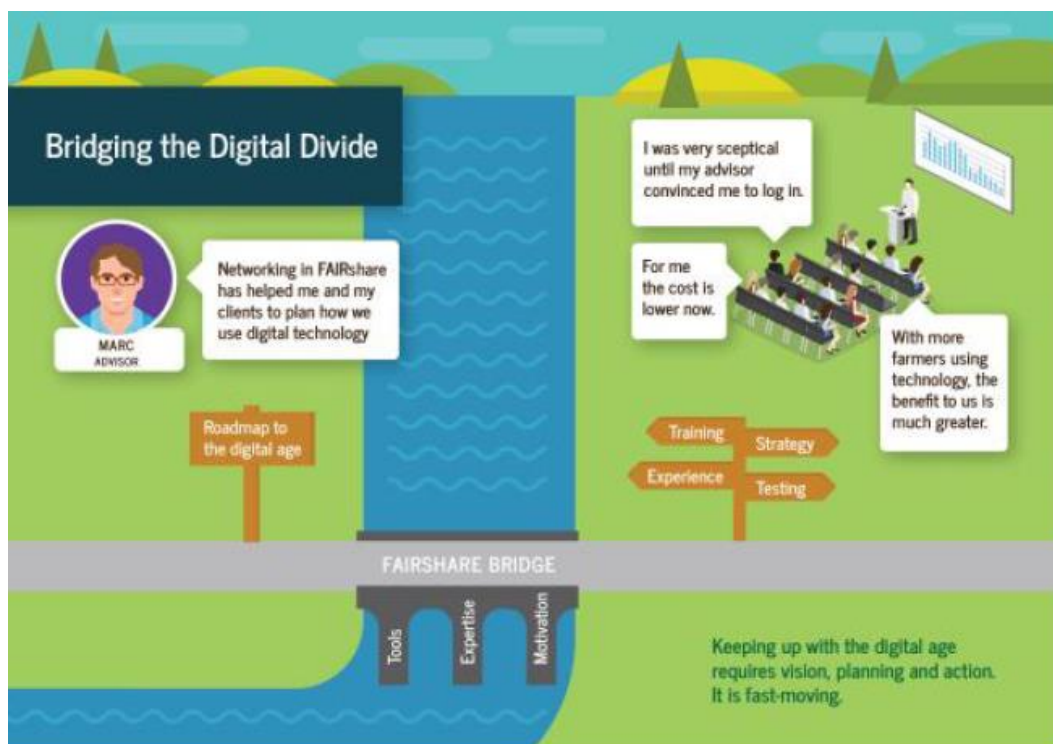

Figure 3: Making DATs Findable, Available, Interoperable, Reusable and Shareable

Making FAIRshare data findable

FAIRshare will generate, collect, and deposit data in an open online research data repository of digital tools for advisory services. The protocol below outlines the management principles behind storing and making findable data collected through FAIRshare.

For data to be findable it should be:
- Assigned a globally unique and persistent identifier
- Described with rich metadata
- Registered or indexed in a searchable resource
- Specified with a data identifier

PROTOCOL – Storing FAIRshare data and making it 'Findable'

Beneficiaries will follow these processes for each dataset collected or generated through the FAIRshare project:

> • Store and make findable any FAIRshare data that can be made openly accessible (see next section) in an online data repository suitable for the type and format of data generated or collected.
> • Ensure that research outputs and data-sets are cross-referencing each other (e.g. scientific publications and the data behind them).
> • Outline the discoverability of the data.
> • The organisation, data collection and most convenient format will be under the responsibility of the relevant task leader.
> • Each task leader will be responsible for depositing relevant data to the online repository.
> • Each beneficiary is responsible for their records and documentation in relation to data generated. To avoid losses partners must take appropriate measures to ensure that data is backed-up.

Making FAIRshare data accessible

Even if an advisor finds out about digital technologies they are likely to be out of reach for most advisors from a cost and effort point of view. FAIRshare will help advisors from different contexts to get access to more tools.

For data to be accessible it should:
- Assigned a globally unique and persistent identifier
- Described with rich metadata
- Registered or indexed in a searchable resource
- Specified with a data identifier

The European Commission's approach to open access is to ensure data is "**as open as possible, as closed as necessary**". This rhetoric should constantly be acknowledged when partners are considering what information to make accessible.

To share data with FAIRshare consortium partners a repository is set up via ShareDrive. It will provide access to data through a web interface and also a platform to view sync and share the files across devices easily; all under user's control. It uses an open architecture for applications and plugins and it works across multiple devices. The repository will be used for the storage of project-related files in the project-specific folder structure and for the exchange of information. The coordinating team maintains an overview of the use and the maintenance of the ShareDrive folder structure.

The FAIRshare ShareDrive is accessible to partners and third parties. This platform enables partners to complete data collection, storage and sharing in a

secure and efficient manner. The system will be used to support internal documentation and version control of reports. This platform will be used to store draft document, videos, infographics, videos and reports, and will facilitate remote collaboration on deliverables and co-ordinated scheduling. Individual data collected form informants will be managed in accordance with the GDPR regulations.

In order to maximise the impact of FAIRshare the project will facilitate sharing of results and deliverables within and beyond the consortium. Selected data and results will be shared with the scientific community and other stakeholders through publications in scientific journals and presentations at conferences, as well as through open access data repositories. There will be an open access policy applied to these following the rules outlined in the Grant and Consortium Agreements which is highlighted below:

PROTOCOL – Storing FAIRshare data and making it 'Accessible'

Beneficiaries will follow these processes for each dataset collected or generated through the FAIRshare project:

- Unless against beneficiaries legitimate interests they must, as soon as possible, 'disseminate' its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium) (see Article 29.1).
- Beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of, unless agreed otherwise, at least 45 days, together with sufficient information on the results it will disseminate (see Article 29.1).
- Beneficiaries must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results (see Article 29.2).
- If dissemination of knowledge does not adversely affect its protection or use and subject to legitimate interests, the partners shall ensure further dissemination of their own knowledge as provided under the Grant Agreement (see Article 29) and the Consortium Agreement (see Section 8.4) which has been signed by all partners.
- All FAIRshare data should be completed prior to the official deadline as outlined for each task. Partners are expected to observe such deadlines and ensure data is formatted appropriately and ready for open sharing.
- Any proposed publication or communication by one of the parties is required to be submitted to other beneficiaries for their consent, according to the

Consortium Agreement (see Article 8.4.2.1). All publications will be either gold or green open access in accordance with the H2020 requirements.

- Data will be produced in common electronic document/data/image formats that do not require specific software.
- The ShareDrive can be used for preservation and sharing of internal data and datasets.
- For open access data and publications FAIRshare will use the projects website.
- When considering the potential to make data open access, Partners are requested to review the project Consortium Agreement which follows the standard rules as outlined in the DESCA model (http://www.desca-2020.eu/) for Horizon 2020.
- Access to all folders and files should be granted to all FAIRshare partners unless special restrictions apply.
- All partners contribute to the regular update and to the cleaning of folders in the ShareDrive.
- All partners should be consistent in their naming of documents in the ShareDrive and be conscious that all documents are placed in the correct folder.

Access to all folders and files should be granted to all FAIRshare partners. If special restrictions are required (e.g. for data privacy reasons) data are only stored in the digital data-sharing platform (password protected).

If further restrictions apply, a folder should be created in ShareDrive that ensures the restriction of access. This folder will be named 'xxx_restricted', and it shows access restrictions for named personnel. At least two people should have access to restricted folders and files in case of emergency, i.e. Teagasc as coordinators and WP leaders. The project coordinating team is responsible for the implementation of the access rights. Furthermore, the Consortium Agreement defines the access and use of data produced by partners beforehand (Background) and during the project. All partners signed the Consortium Agreement before the FAIRshare project commenced.

Making FAIRshare data interoperable

Digital tools that can be used in different contexts have huge value to advisors, many tools are developed for specific contexts and will not operate outside of that context. This legacy from the personal computer era is now redundant and must be addressed as more and more tools are web-based on mobile devices.

It is pertinent that common approaches to working with data are resilient, meet the expectations of all types of end-users, and support the development and implementation of future interactive innovation project approaches. FAIRshare

comprises of a diverse community of actors who work together and exchange information both internally and externally. FAIRshare will use common data formats and communication protocols that allow actors to communicate with each other. Furthermore, all materials and tools will be available in English and, where appropriate, in the local language.

For data to be interoperable it should:
- Use a formal, accessible, shared and broadly applicable language for knowledge representation
- Use vocabularies that follow the FAIR Principles
- Include qualified references to other metadata

PROTOCOL – Storing FAIRshare data and making it ' Interoperable'

At the core of the dissemination and communications strategy of FAIRshare is an inclusive and open approach, realised through several actions:
- Targeted content and activities will be designed for all relevant societal actors, stakeholders and end users directly and through their networks: private and public entities linked to the agricultural sector, advisors, farmers, the education and research community, school teachers, PhD students and postdoctoral researchers, representatives of consumer organisations and retailers, and civil society representatives.
- Detailed content will be made available in different languages at the FAIRshare web platform, to raise stakeholders' involvement beyond those associated with the project.
- An emphasis will be placed on generating freely reproducible material that can be shared and incorporated into other platforms, such as the EIP-AGRI platform and the EIP-AGRI practice abstracts.
- Regional workshops and a final high-level policy conference will ensure that results are widely disseminated, including to EU state members not directly involved in the project.
- Specific attention will be paid to ensure as much as possible that the outputs of the project will extend to all farmers, including small scale farmers who may not be making use of advisory services.
- Effort will be made to concentrate on user friendliness and ease of use. Project portals will employ good practice for user accessibility, navigation, and use.
- Dissemination tools deployed will aim to deliver the project outputs to a wide and varied audience, taking account of varying digitals skills and accessibility of the target audience.

Making FAIRshare data re-usable

The huge value to advisors of tools that are always live, updated remotely and used more frequently makes tools more powerful. This in turn will lead to more users - more efficiency – and more value in managing client data and allowing them to perform better.

For data to be reusable it should:
- Have a plurality of accurate and relevant attributes
- Be released with a clear and accessible data usage license
- Be associated with its provenance
- Meet domain-relevant community standards

FAIRshare follows a multi-actor concept. The project shall seek synergies with the national or regional EIP networks and Operational Groups and provide input to and coordinate their strategy with the SCAR-AKIS Strategic Working Group. Close cooperation and sharing of knowledge of FAIRshare with similar European initiatives will support the Europe 2020 Strategy in fostering and enabling innovation at the European level.

Where FAIRshare data is reused in another project a link should be provided from the original project folder to the new project. As a principle, datasets should never be moved or copied to a different project without reference to the FAIRshare project. This is important to keep track of the FAIRshare impact (reporting). As the project progresses and data is identified and collected, further information on increasing data re-use will be outlined in subsequent versions of the DMP.

Allocation of resources

Costs related to open-access to research data in Horizon 2020 are eligible for reimbursement under the conditions defined in the H2020 Grant Agreement, in particular Article 6 and Article 6.2.D.3, but also other articles relevant for the cost category chosen. The potential cost of long term data preservation is yet to be determined. Nevertheless, the costs for implementing and running the DMP are covered in the project budget. €10,000 has been set aside for website development and maintenance (€4,000 for development of website + €1,500 per year for 4 years for maintenance of website = €4,000 + €6,000 = €10,000) (p.30 of Grant Agreement). Project beneficiaries will be responsible for applying for reimbursement for costs related to making data accessible to others beyond the consortium.

Data security

FAIRshare will be follow regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

Every partner is responsible for the data they produce. To ensure that data collected is secure the following provisions apply:

Provisions for data security for FAIRshare	The following guidelines will be adhered to ensure data security: • For the duration of the project, datasets will be stored on the responsible partner's storage system. • Team members are responsible for regular back-ups of their personal computers. • Store data in at least two separate locations to avoid losses. • Every partner is responsible to ensure that the data are stored safely and securely and in full compliance with European Union data protection laws. • If required data should be encrypted. • Data should be labelled in a structured and systematic manner. • Limit the use of USB dives. • All data files will be transferred via secure connections. • Generally "raw" data pertaining to the project shall only be handled by the researchers interacting with the participant.

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