D1.5 DATA MANAGEMENT PLAN AND SUPPORT PACK

WP 1

19 March 2021

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Authors	Hennie van der Veen, Vivian Luttikhuizen, Annette Breemer and Milica Trajkovic
Contact details of the coordinator	George Beers george.beers@wur.nl

PROJECT SUMMARY

The internet of things (IoT) has a revolutionary potential. A smart web of sensors, actuators, cameras, robots, drones and other connected devices allows for an unprecedented level of control and automated decision-making. The project Internet of Food & Farm 2020 (IoF2020) explores the potential of IoT-technologies for the European food and farming industry.

The goal is ambitious: to make precision farming a reality and to take a vital step towards a more sustainable food value chain. With the help of IoT technologies higher yields and better-quality produce are within reach. Pesticide and fertilizer use will drop and overall efficiency is optimized. IoT technologies also enable better traceability of food, leading to increased food safety.

Nineteen use-cases organised around five trials (arable, dairy, fruits, meat and vegetables) develop, test and demonstrate IoT technologies in an operational farm environment all over Europe, with the first results expected in the first quarter of 2018.

IoF2020 uses a lean multi-actor approach focusing on user acceptability, stakeholder engagement and the development of sustainable business models. IoF2020 aims to increase the economic viability and market share of developed technologies, while bringing end-users' and farmers' adoption of these technological solutions to the next stage. The aim of IoF2020 is to build a lasting innovation ecosystem that fosters the uptake of IoT technologies. Therefore, key stakeholders along the food value chain are involved in IoF2020, together with technology service providers, software companies and academic research institutions.

Led by the Wageningen University and Research (WUR), the 70+ members consortium includes partners from agriculture and ICT sectors, and uses open source technology provided by other initiatives (e.g. FIWARE). IoF2020 is part of Horizon2020 Industrial Leadership and is supported by the European Commission with a budget of €30 million.

EXECUTIVE SUMMARY

Big Data is becoming a new resource, a new asset, also in the agricultural sector. Big Data in the agricultural sector includes enterprise data from operational systems, farm field sensor data (e.g. temperature, rainfall, sunlight), farm equipment sensor data (from tractors, harvesters, milking robots, feeding robots), data from wearable animal sensors (neck tag, leg tag), harvested goods and livestock delivery vehicles sensor data (from farms to processing facilities) etc. In the IoF2020 different use cases are taking place in which data also plays a key role involving farm companies that share their (big) farm data with enterprises and organisations who strive to add value to that data. This implies that the data from one party is combined with data from other parties in the chain, and then analysed and translated into advices, knowledge, or information for farmers.

This document describes the open Access Support Pack, developed to support the Use Cases (UCs) and the project to develop their Data Management Plan (DMP). For the data collected by the WPs, the DMPs are presented in this deliverable. For the UCs, an inventory is done on how data management is implemented.

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ABBREVIATIONS

DMP	Data Management Plan
H2020	Horizon 2020 the 8th Research Framework Programme of the European Union
SAH	SmartAgriHubs
UC	Use Case

1. INTRODUCTION

1.1. CONTEXT AND BACKGROUND

As already described in D1.4, Big Data is becoming a new resource, a new asset, also in the agricultural sector. Big Data in the agricultural sector includes enterprise data from operational systems, farm field sensor data (e.g. temperature, rainfall, sunlight), farm equipment sensor data (from tractors, harvesters, milking robots, feeding robots), data from wearable animal sensors (neck tag, leg tag), harvested goods and livestock delivery vehicles sensor data (from farms to processing facilities) etc. In the IoF2020 different use cases are taking place in which data also plays a key role involving farm companies that share their (big) farm data with enterprises and organisations who strive to add value to that data. This implies that the data from one party is combined with data from other parties in the chain, and then analysed and translated into advices, knowledge, or information for farmers.

1.2. Objective of this document

Task 1.4 'Development Data Management Plan' is meant to address these questions by developing a plan and specific guidelines for the use cases and the project as a whole concerning data management and includes D1.4 and D1.5.

D1.4 provided an overview of general developments on data management, relevant past and on-going initiatives and projects on data management in agriculture. Additionally, a first inventory of the needs and potential issues of the use cases was described, resulting in some general guidelines for data management in IoF2020. D1.5 describes the implementation of D1.4 in the IoF2020 project.

D1.5 translates these guidelines into an Open Access Support Pack and DMPs for the data collected in IoF2020.

1.3. Outline

The remainder of this document is organized as follows. Chapter 2 will describe the approach. Chapter 3 provides an overview of the Open Access Support Pack and Chapter 4 presents more information on the implemented DMPs of IoF2020, followed by some general conclusions in Chapter 5.

2. APPROACH

D1.4 of IoF2020 was delivered at an early stage of the project. Meanwhile, the H2020 project SmartAgriHubs started, which for a large part is building on the IoF2020 ecosystem but with the intention to become a more sustainable network for the longer term. To increase the impact of IoF2020 results it was concluded therefore that it would be logical to use and disseminate through the SmartAgriHubs project as much as possible. Hence, because comparable data management issues play a role in SmartAgriHubs, D1.5 is developed in close connection with this project.

In SmartAgriHubs, an Innovation Portal has been developed, providing an excellent platform to make Use Cases, but also other stakeholders more aware of data management. Based on the SmartAgriHubs experience, we started with outlining the folders of the Open Access Support Pack, filling them with several documents. After this initial actions, the Support Pack will be further updated and extended continuously.

Partners were informed on the availability of the Support Pack and the forum of the Innovation Portal was open for general questions on this topic. WP1 and WP2 guided the WPs and UCs in developing their DMP, answered questions in the forum and more specific questions were answered by e-mail.

3. SUPPORT PACK

3.1. Outline

Figure 1 shows the general outline of the Support Pack on the Innovation Portal (https://www.smartagrihubs.eu/portal/library?path=/data-management-plan), consisting of 4 parts: DMP Examples, Best Practices, Policy Documents and Templates. The FAQ button on the right side, leads currently to the Forum. Later on this will be developed in an FAQ. The following sections describe the folders in more detail.

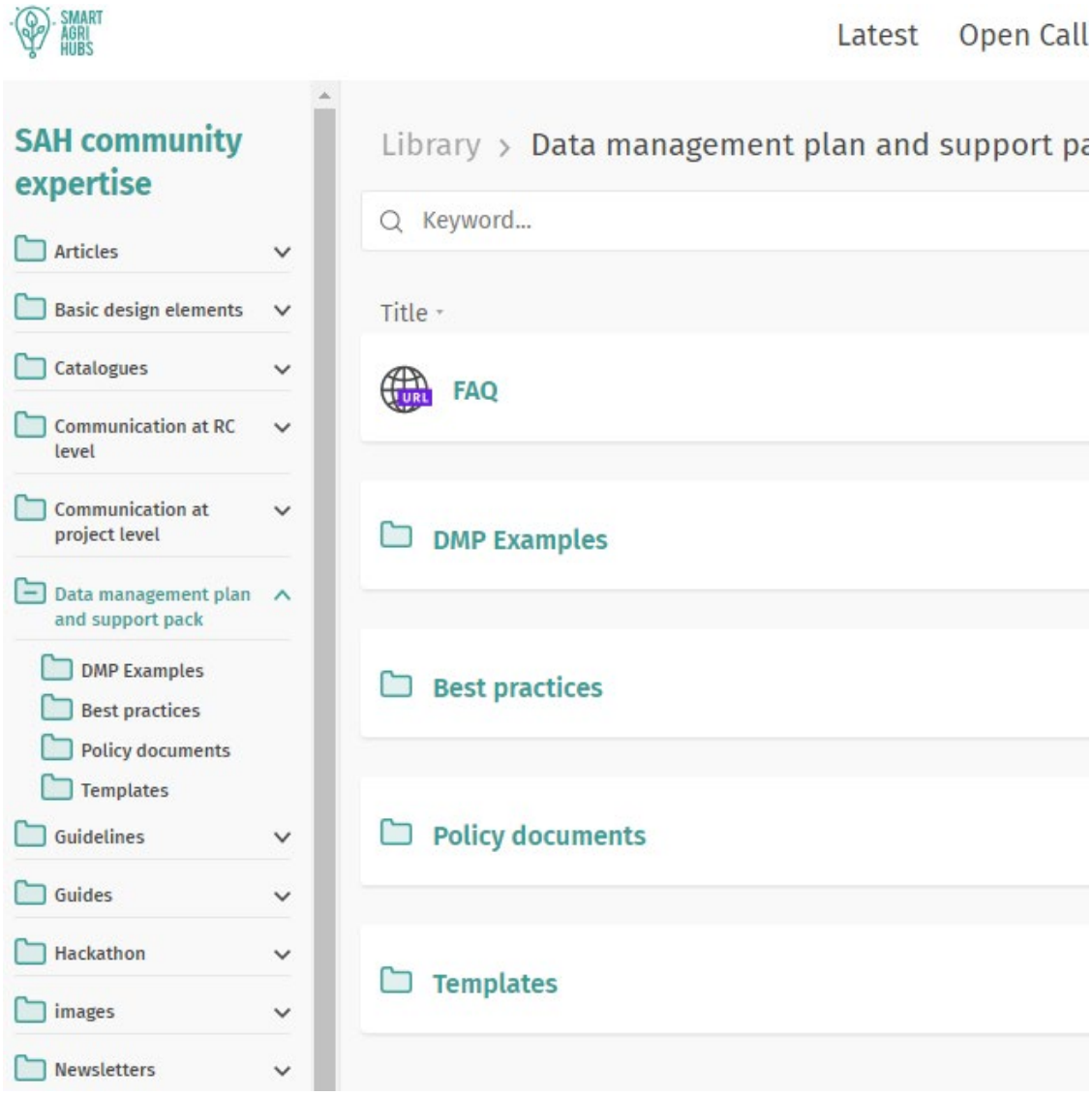

Figure 1 Outline of the Data management plan and support pack in the Innovation Portal

3.2. DMP Examples

This folder is meant for DMP examples of both the IoF2020 and the SAH project. Initially, we started with the DMP of Flagship Innovation Experiment 20 of SAH. Other Use Cases or Innovation Experiments that followed the official template developed in SmartAgriHubs, will be uploaded if we obtain consent.

3.3. Best Practices

In this folder, documents related to best practices are uploaded (see Figure 2). Besides documents on file formats and anonymization, a number of chapters of the CESSDA Data Management expert guide on are uploaded. In the DMP template, we referred to these documents. This guide is written for social science researchers who are in an early stage of practising research data management. With this guide, CESSDA wants to contribute to professionalism in data management and increase the value of research data. The guide is designed by European experts to help social science researchers make their research data Findable, Accessible, Interoperable and Reusable (FAIR) and is developed by different European experts who are - on a daily basis - busy ensuring long-term access to valuable social science datasets.

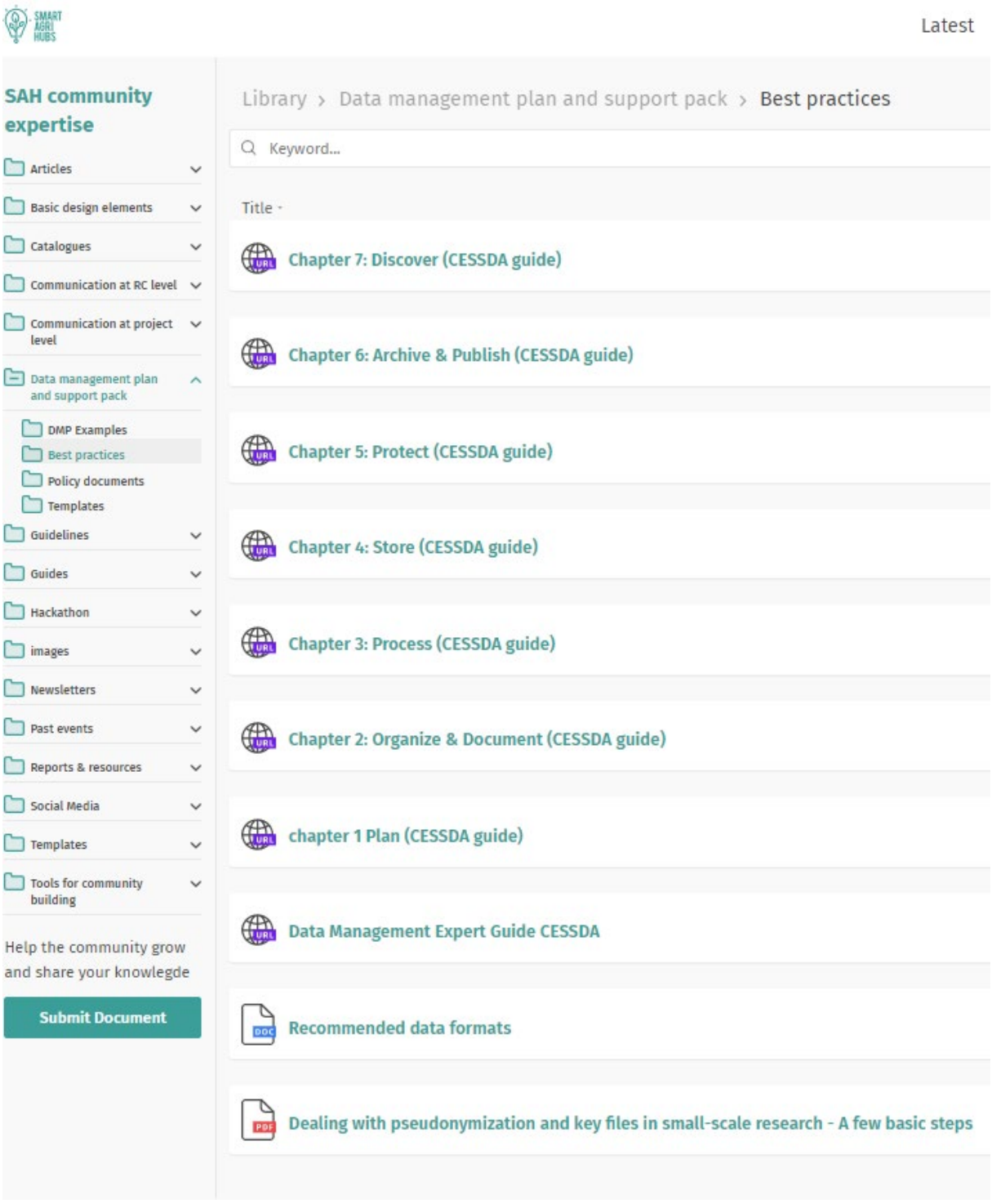

Figure 2 Outline of the Best Practices section in the Innovation Portal

3.4. Policy Documents

Some EC documents related to GDPR and Data Management are uploaded in this folder (see Figure 3).

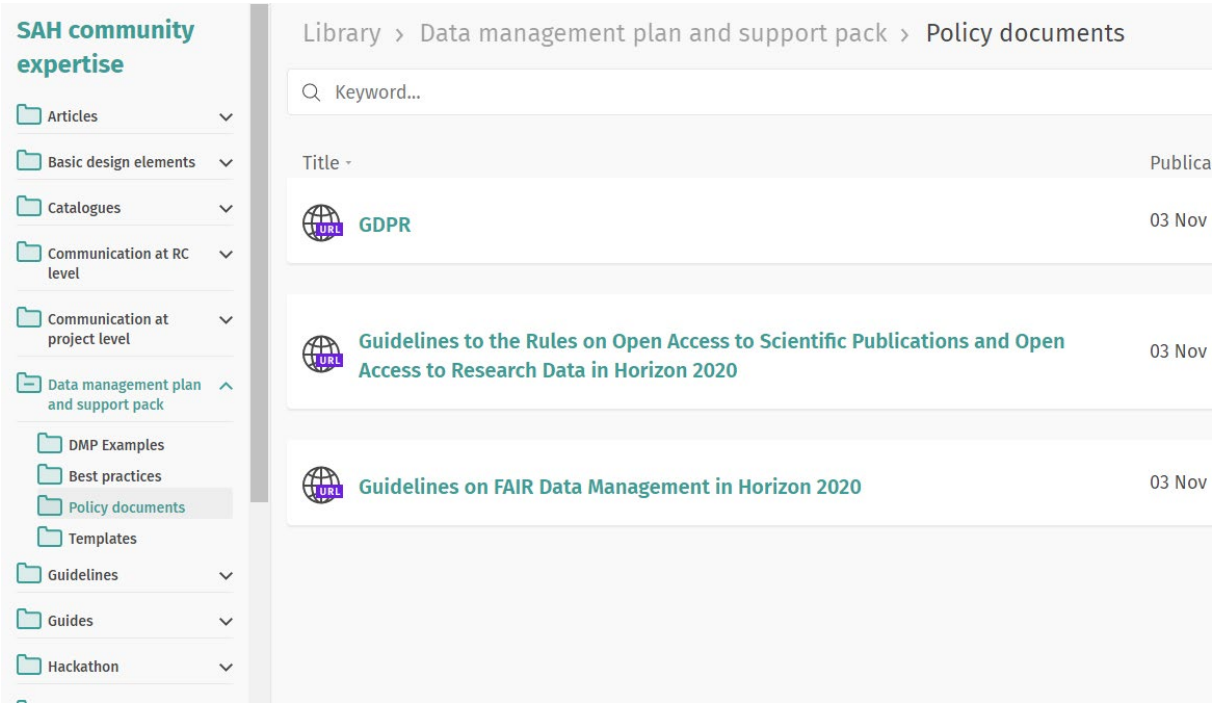

Figure 3 Outline of the Policy documents

3.5. Templates

This folder includes the templates for the IoF2020 DMP (see annex I) and the SAH DMP. Additionally a template for informed consent is available (see Figure 4).

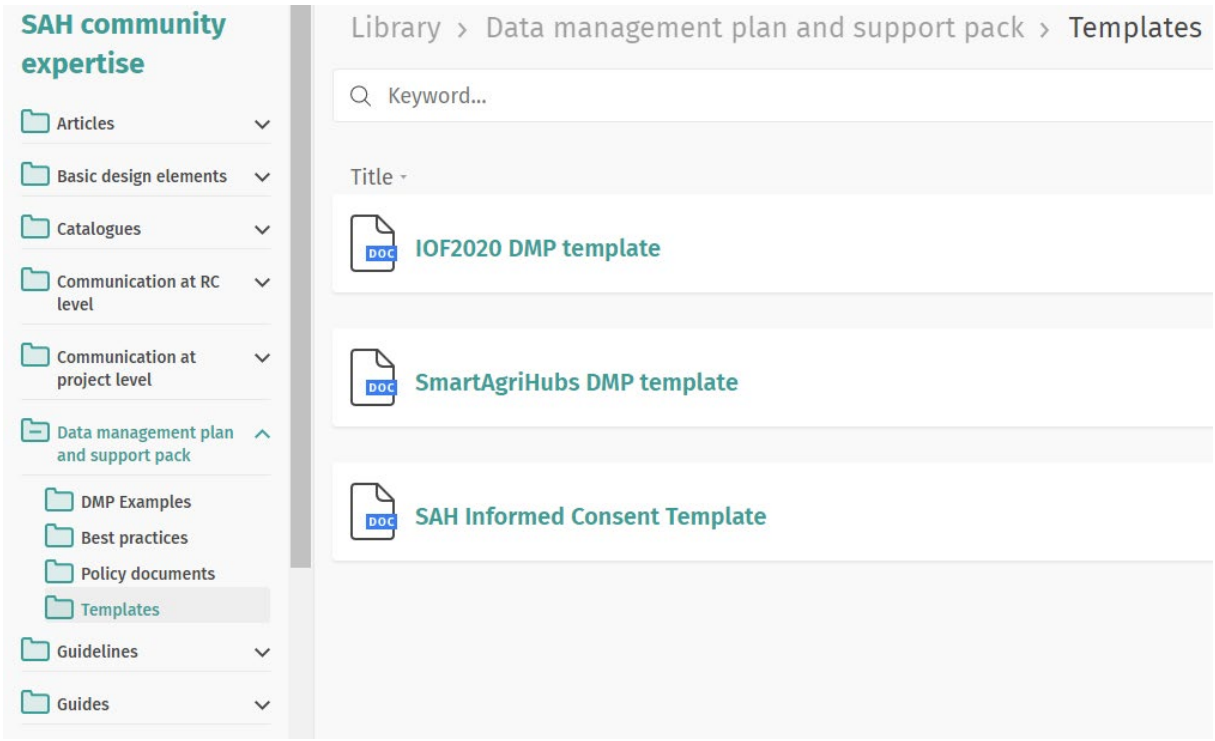

Figure 4 Outline of the Policy documents

4. DATA MANAGEMENT PLANS

4.1. WORK PACKAGES

In IoF2020 a number of datasets have been collected by the WPs (see **Table 1**). The complete Data Management Plans can be found in the Annexes. From the feedback WP1 received, not all WPs already had experience with making a DMP. The template provided good guidance and led to a greater understanding of data management and its importance.

WP	Dataset	Annex
WP3	IoT Catalogue	2
WP3	Security analysis	3
WP4	User Acceptance Test (UAT)/KPI	4
WP4	KPIs	5
WP7	Ethics	6

Table 1 Overview of DMPs of IOF2020 at project level.

4.2. INVENTORY OF USE CASES

D1.4 provided a quick scan of issues related to data privacy and security. In the second stage of the project, the use cases were asked whether they developed a DMP or that they took other steps to take care of Data Management. The results are listed in **Table 2**.

Considering the fact that every UC is unique and that we cannot have the one-fit-all approach, a flexible, yet firm approach was implemented. WP2 did not force UCs to prepare any kind of document, rather tailored the type of document that addresses their needs and type of data they are working on and the kind of stakeholders involved. The majority of UCs showed interest in this topic and willingness to learn more. The topic was discussed during Trial-specific online meetings, where the topic was presented. After that, every UC received 1-1 assistance via email and/or during dedicated online meetings.

At the beginning of the process, WP2 tried to identify which UCs are already familiar with DMP (its purpose, structure, content, etc.). Very positive aspect was that in every trial there was at least one UC that has already developed a tailored DMP. This facilitated the discussion during WP2 regular monthly meetings and accelerated the adoption of the Plan and acceptance of more (additional) non-field related work. Total, there were 10 already developed and implemented DMPs.

The next step was to work with the rest of the UCs on the analysis of their case-specific data and relations they have within the consortia. At the end of the process, there were 15 new DMPs developed and implemented across 5 trials.

During analysis, it was realised that in some cases, the DMP is needed due to the data-sensitive relations between partners. Those UCs have already addressed the issue with Consortium Agreements, which tackles the data management within the UC. Therefore, the IoF2020 project did not force such UCs to prepare an additional document where the majority would be copied from the CA. We accepted the CAs as a practical tool which successfully regulates data protection issues. At the end, there were 6 UCs with adequate established CAs.

In addition to DMPs and CAs, the project wanted to identify if UCs are actively using the Code of Conduct provided by COPA-COGECA in their day-to-day operations. 21 UCs were identified. All the others were encouraged to consider CoC adoption.

Table 2 Data Management of use case (status 28 February 2021).

Trial and use cases	**DMP**	**Followed CoC**	**Consortium Agreement**
Arable Trial			
UC1.1. Within-field management zoning		Yes	
UC1.2 Precision Crop Management		Yes	
UC1.3 Soya Protein Management	Yes		
UC1.4 Farm Machine Interoperability	Yes		
UC1.5 Potato Data Processing Exchange		Yes	Yes
UC1.6 Data-driven Potato Production	Yes		
UC1.7 Traceability for Food and Feed Logistics		Yes	Yes
UC1.8 Solar-powered Field Sensors		Yes	Yes
UC1.9 Within-field Management Zoning Baltics		Yes	
Dairy Trial			

Trial and use cases	DMP	Followed CoC	Consortium Agreement
UC2.1 Grazing Cow Monitor		Yes	
UC2.2 Happy Cow	Yes		
UC2.3 Silent Herdsman	Yes		
UC2.4 Remote Milk Quality	Yes		
UC2.5 Early Lameness Detection through Machine Learning			Yes
UC2.6 Precision Mineral Supplementation		Yes	
UC2.7 Multi-sensor cow monitoring		Yes	
Fruit Trial			
UC3.1 Fresh table grapes chain		Yes	
UC3.2 Big wine optimization	Yes		
UC3.3 Automated olive chain	Yes		
UC3.4 Intelligent fruit logistics	Yes		
UC3.5 Smart Orchard Spray Application	Yes		
UC3.6 Beverage Integrity Tracking			Yes
Vegetable Trial			
UC4.1 City farming leafy vegetables	Yes		
UC4.2 Chain-integrated greenhouse production	Yes		
UC4.3 Added value weeding data		Yes	
UC4.4 Enhanced quality certification system	Yes (company DMP)		
UC4.5 Digital Ecosystem Utilisation	Yes		
Meat Trial			
UC5.1 Pig farm management		Yes	Yes
UC5.2 Poultry chain management	Yes		
UC5.3 Meat Transparency and Traceability	Yes		
UC5.4 Decision-making Optimisation in Beef Supply Chain	Yes		
UC5.5 Feed Supply Chain Management	Yes		

Trial and use cases	DMP	Followed CoC	Consortium Agreement
UC5.6 Interoperable Pig Health Tracking	Yes		

5. CONCLUSIONS

For both the WPs and the UCs, a DMP is not something that is yet automatically made. For most public funders a DMP is now mandatory, but that will be different for private funders. However, we do expect that due to the growing awareness among all parties in the agri-tech network, good data management practices will become increasingly common.

The developed template and the Open Access Support pack provides good guidance for developing and thinking about a DMP and made the partners aware of the added value of data management. For partners not yet very familiar with making a DMP, it was good to provide guidance from the Project Coordinator or in the case of IoF2020 of the Trial Management. However, after the end of IoF2020 and SmartAgriHubs, other parties in the agri-tech community should take over this role.

ANNEX 1. TEMPLATE DATA MANAGEMENT PLAN

From the start, each WPs must identify the related research datasets[1] that will be collected and analysed during the lifetime of the project. This includes data to be collected through trainings and workshops, the IoT catalogue etc. Each WP must provide a detailed description of the datasets generated or collected. This template can be applied for separate datasets or combined for a number of datasets, whatever is most convenient.

Authors:

1 Data Summary	
Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	*The reasons why we are collecting this specific dataset -> data minimisation principle*
Describe what types of data the task will generate/collect?	
Describe what formats of data will the task generate/collect?	
Will the task re-use any existing data and how? If yes, what is the origin of the data?	
What is the expected size of the data? (in Gb)	
To whom might it be useful ('data utility')?	

[1] Refers to information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images.

2.1 FINDABLE	
How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	
What naming conventions do you follow?	*Folders and files conventions*
How are search keywords provided that optimize possibilities for re-use?	*e.g. Tagging items (i.e. datasets, documents, code, etc.) with relevant keywords, that are automatically indexed by the search*
How do you provide clear version numbers?	*Might be taken in charge by a tool* *Might only upload one version of each dataset*
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	*e.g. Description, ownership, date etc.* *e.g. Standard e.g. Dublin Core metadata standard* *e.g. readme.txt file*

2.2 ACCESS	
Which data produced and/or used in the task will be made openly available as the default[2]?	
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property,	

[2] In case that specific datasets will be associated to scientific publications (i.e. underlying data), public projects reports and other raw or curated data not directly attributable to a publication, then the open access policy of H2020 is applicable.

2.2 ACCESS	
commercial, privacy-related, security-related, etc.).	
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	*e.g Deposited in open access repository (e.g. OSF, Zenodo)*
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	
Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.	*e.g Deposited in open access repository (e.g. OSF, Zenodo)*
Have you explored appropriate arrangements with the identified repository?	
If there are restrictions on use, how will access be provided?	
Is there a need for a data access committee[3]?	
Are there well described conditions for access (i.e. a machine readable license)?	
How will the identity of the person accessing the data be ascertained?	*e.g user registration process*

[3] *A committee that reviews and authorizes requests for data access and use.*

2.3 INTEROPERABLE[4]	
Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	*e.g. metadata format is compliant with standard formats (MARCXML, Dublin Core, and DataCite Metadata Schema)*
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	

2.4 REUSABILITY	
How will the data be licensed to permit the widest re-use possible?	*e.g. Creative Commons license CC-BY or CC-0 (according to the H2020 guidelines)*
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	*e.g. after upload*

[4] Due to the versatility of the innovation experiments, a number of standards should be used to ensure interoperability and proper communication, protection, and reusability of the generated data. These include various ISO, W3C, OASIS, OGC, IEEE, VDMA-ISOBUS, and agroXML standards. Specific information can be found in a report from the IoF2020 project: 'D3.3 Opportunities and Barriers in the present regulatory situation for system development' and an upcoming deliverable 'D3.5: Guidelines for the use of IoT related Standards in Smart Farming and Food Security' (will be made available on https://www.iof2020.eu/about/deliverables).

2.4 REUSABILITY	
How long is it intended that the data remains re-usable?	*e.g. at least 15 years, for the lifetime of the repository*
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	*After the project is finished, the generated spatial data will be useful for other researchers who…*
How is the data quality assured?	

3 ALLOCATION OF RESOURCES	
What are the costs for making data FAIR in your task? And how will these be covered?	*e.g. Long term storage, journal open access costs etc.* *e.g project's budget*
Who will be responsible for data management in the task?	*e.g. data access committee*
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	

4 DATA SECURITY	
What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	*e.g, data stored in the partners' networks with backups, firewall; in the project's SharePoint accessible with credentials; Basecamp etc.*
Is the data safely stored in certified repositories for long term preservation and curation?	

5 ETHICS

Are there any ethical or legal issues that can have an impact on data sharing?	*e.g. data from 3rd-party that didn't give an explicit consent, data that need to comply to the GDPR etc.* *D7.2 of IoF2020 shaped a 'landscape' with four different themes:* • *distributive justice* • *right to data* • *privacy/right to know* • *responsibility/liability*
Does your task involve data collection in non-EU countries[5]? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?[6]	
Does your task involve data transfer to non-EU countries[7]? - In case it does, please specify which data are transferred to non-EU countries.	

[5] EU's ethics requirements apply to all EU-funded research, irrespective of where it takes place. Similarly, the GDPR applies to all data-processing operations conducted by data controllers based in the EU, irrespective of where the processing takes place. This means that, even if you are collecting personal data outside the EU, you must still ensure and be able to demonstrate compliance with EU law

[6] For activities carried out outside the EU, it is not enough for that the activity to be accepted and comply with the legal obligations of a non-EU country; the activities must ALSO be allowed in at least one Member State

[7] In case personal data is transferred from the EU to an organization located in a non-EU country, then such transfer must comply with Chapter V of the GDPR and must be submitted as a deliverable (https://gdpr-info.eu/chapter-5/)

5 ETHICS	
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	
Do you comply with the GDPR concerning right to object and automated individual decision-making?	
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and keep records of its processing activities)?	

6 OTHER ISSUES	
Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	

ANNEX 2. DMP WP3 IOT CATALOGUE

Author: Bruno Almeida

1 Data Summary

Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	Main Principle of collecting the data in IoT-Catalogue is to share the main results of the project to the outside world
Describe what types of data the task will generate/collect?	The main types of data are the results of the use cases, it will include deployment info (devices, platforms, etc) and results (photos, KPIs, etc)
Describe what formats of data will the task generate/collect?	The data will be collected and generated using the IoT-Catalogue internal data structure
Will the task re-use any existing data and how? If yes, what is the origin of the data?	Use cases, use technology that is not developed in the project, but readily available in the market. Information about that technology is being gathered from the original third-party, and their terms and conditions for the use of information is being respected.
What is the expected size of the data? (in Gb)	Not relevant.
To whom might it be useful ('data utility')?	To the System integrators, that can be aware of the technological choices that IoF2020 use cases made, and can use that knowledge to advise newcomers about the possible applications and results of using IoT technologies.

2.1 FINDABLE

How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	IoT-Catalogue is a website available in http://www.iot-catalogue.com/ and the information is all publicly available. The data is identifiable based on three principles, Value Propositions, ICT Problems and Metadata Tags.
What naming conventions do you follow?	IoT-Catalogue internal structure.

2.1 FINDABLE

How are search keywords provided that optimize possibilities for re-use?	The use cases are classified in terms of Value propositions and ICT problems in order to the searchable, and the products are linked to the use cases they are used. For a more granular possibility for information linking, all the data in IoT-Catalogue has associated metadata in the form of tags.
How do you provide clear version numbers?	The focus of IoT-Catalogue is to provide the final results, so versions are not applicable.
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	IoT-Catalogue use a generic tag based classification, and metadata is being generated on that basis. This classification goes from the application type, tomato crops to IoT technologies, like sensor, gateways, etc.

2.2 ACCESS

Which data produced and/or used in the task will be made openly available as the default?	Use Case results, including KPIs
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related, etc.).	Information is only going to IoT-Catalogue after an established authorization process. So since all the information will only go to IoT-Catalogue after the process, all the information will be publicly available.
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	Website
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	Web-browser

2.2 ACCESS

Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.	Standalone website
Have you explored appropriate arrangements with the identified repository?	
If there are restrictions on use, how will access be provided?	none
Is there a need for a data access committee?	no
Are there well described conditions for access (i.e. a machine readable license)?	yes
How will the identity of the person accessing the data be ascertained?	Anonymous public access

2.3 INTEROPERABLE

Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	Owners of data can extract the data in json format
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	none
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	no

2.4 REUSABILITY	
How will the data be licensed to permit the widest re-use possible?	IoT-Catalogue only index results, thus generating metadata, so license is not applicable
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	Not applicable
How long is it intended that the data remains re-usable?	lifetime of the IoT-Catalogue
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	After the project ends, the results will stay publicly available at IoT-Catalogue
How is the data quality assured?	The data is review and approved by their owners
3 ALLOCATION OF RESOURCES	
What are the costs for making data FAIR in your task? And how will these be covered?	IoT-Catalogue is a UNPARALLEL product which is a commercial, self-sustained product.
Who will be responsible for data management in the task?	UNPARALLEL data management team
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	Not applicable, because IoT-Catalogue is already a sustained product
4 DATA SECURITY	
What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	IoT-Catalogue deployment infrastructure, as a multi level backup system, dispersed in several locations
Is the data safely stored in certified repositories for long term preservation and curation?	yes

5 ETHICS	
Are there any ethical or legal issues that can have an impact on data sharing?	All data is given an explicit consent, so no legal and ethical issues.
Does your task involve data collection in non-EU countries? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?	no
Does your task involve data transfer to non-EU countries? - In case it does, please specify which data are transferred to non-EU countries.	Information in IoT-Catalogue is available worldwide
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	no
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	
Do you comply with the GDPR concerning right to object and automated individual decision-making?	
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and keep records of its processing activities)?	
6 OTHER ISSUES	

5 ETHICS

Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	no

ANNEX 3. DMP WP3 SECURITY ANALYSIS

Authors: Felix Manthey & Kiran Shekhar

1 Data Summary

Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	Data was collected to do security analysis of the 33 use cases (UC)
Describe what types of data the task will generate/collect?	UC owners created a dataflow model of their solution and highlighted the potential security threats in every component, ranked the identified threats according to criticality and gave info counter measures they employed. They asked NXP for security consulting to recommend best security solution customized to their solution
Describe what formats of data will the task generate/collect?	Word doc
Will the task re-use any existing data and how? If yes, what is the origin of the data?	No
What is the expected size of the data? (in Gb)	0.001 GB
To whom might it be useful ('data utility')?	For the use case owners and anybody who is building an IoT solution (and wishes to do security analysis & incorporate security countermeasures)

2.1 FINDABLE

How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	There is no metadata and no plans to incorporate Digital object identifiers
What naming conventions do you follow?	Name of the use case and their number as name of word doc
How are search keywords provided that optimize possibilities	No reuse planned as it is UC owner property

2.1 FINDABLE	
for re-use?	
How do you provide clear version numbers?	2 version for legacy use cases (17) and 1 version for open call /new use case
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	There is no metadata
2.2 ACCESS	
Which data produced and/or used in the task will be made openly available as the default?	Participation is incompatible with the need for confidentiality in connection with security issues. (None of the data will be made public. It is analysed within the project and feedback is given back to use case owners.)
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related, etc.).	Participation is incompatible with the need for confidentiality in connection with security issues. (Data belongs to use case owners. So they hold complete ownership)
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	Data will not be published. No public access will be given. However, summary of security analysis will be published on IOF2020 Website under following topics (as HTML Webpage with infographics) • Importance of Security by Design • Guidelines to do security analysis & standard countermeasures to known threats & vulnerabilities
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	Only Microsoft Word or Open Document viewer is used. Microsoft XL was used to create graphs & statistics. Standard Browser can be used to access iof2020.eu website and see security summary page
Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where	Data will not be published. No public access will be given. Will be deleted once the project is over.

2.1 FINDABLE	
possible.	
Have you explored appropriate arrangements with the identified repository?	NA
If there are restrictions on use, how will access be provided?	NA
Is there a need for a data access committee?	NA
Are there well described conditions for access (i.e. a machine readable license)?	NA
How will the identity of the person accessing the data be ascertained?	NA

2.3 INTEROPERABLE	
Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	No
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	None
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	NA

2.4 REUSABILITY	
How will the data be licensed to permit the widest re-use possible?	NA
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	No
How long is it intended that the data remains re-usable?	NA
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	Data will be deleted once the project ends
How is the data quality assured?	NA

3 ALLOCATION OF RESOURCES	
What are the costs for making data FAIR in your task? And how will these be covered?	NA
Who will be responsible for data management in the task?	NA
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	NA

4 DATA SECURITY	
What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	STRIDE Analysis summary and anonymous summary statistics are on Basecamp
Is the data safely stored in certified repositories for long term	NA

3 ALLOCATION OF RESOURCES	
preservation and curation?	
5 ETHICS	
Are there any ethical or legal issues that can have an impact on data sharing?	NA
Does your task involve data collection in non-EU countries? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?	No
Does your task involve data transfer to non-EU countries? - In case it does, please specify which data are transferred to non-EU countries.	No
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	No Yes
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	yes
Do you comply with the GDPR concerning right to object and automated individual decision-making?	yes
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and keep records of its processing activities)?	yes

6 OTHER ISSUES

Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	No

ANNEX 4. DMP WP4 USER ACCEPTANCE TEST (UAT)/KPI

Authors: Mireille van Hilten, Gohar Nuhoff-Isakhanyan

1 Data Summary	
Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	The reasons why we are collecting this specific dataset are to: • Collect user feedback • Collect product improvements • Assess status of use cases • Assess status of product development • Assess status of user acceptance
Describe what types of data the task will generate/collect?	• General information on use case (use case number etc) • Demographic information (age, gender etc) • Test farm / company information • Personal information respondent (name, e-mail address) • Information of the usage of the solution from the user perspective

Describe what formats of data will the task generate/collect?	• Questionnaire data using Qualtrics, downloaded in Excel format.
	• Interview data
	  ○ recorded MS Teams meetings
	  ○ notes
	  ○ transcriptions

Will the task re-use any existing data and how? If yes, what is the origin of the data?	Only to prepare for interviews, information about use cases on the IOF2020 website is used and information coming from progress reports to which team members have access.
What is the expected size of the data? (in Gb)	121 Kb (on May 26th 2020) – questionnaire data Interview data: 0,5 Gb for one interview recording Total of 10 interviews = around 5 Gigabytes Interview transcripts (text files), total of max 2 Mb
To whom might it be useful ('data utility')?	People working in IOF2020 or IOF2020 use cases, European commission, anyone interested in user acceptance of agtech implementations and Horizon 2020 project results. This concerns only high level, aggregated information and

1 Data Summary	
	conclusions in a report that does not lead to the identification of persons or personal information.

2.1 FINDABLE	
How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	Questionnaire responses are uniquely identifiable by the Qualtrics software (each row represents a respondent). Digital Object Identifiers are not used. Sharepoint, where downloaded data is stored, tracks usage and versions.
What naming conventions do you follow?	All data files, analysis files are stored on the secured Sharepoint folders within the Wageningen and Reasearch network, which are used for IOF2020 data. A dedicated folder for the UAT data is used.
How are search keywords provided that optimize possibilities for re-use?	Items and files are not tagged but can be found through the Sharepoint search service.
How do you provide clear version numbers?	Sharepoint has automatic versioning. Downloaded datasets are versioned once uploaded to Sharepoint.
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	Sharepoint stores the creation date, the author and the modification date which are metadata

2.2 ACCESS	
Which data produced and/or used in the task will be made openly available as the default?	Data itself will not be made public. The analysis will be reported on in IOF2020 Deliverable 4.6.
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property,	Individual and use case data can be sensitive (R&D innovation type of information). Team members work at Wageningen Research or have signed an NDA contracts.

2.1 FINDABLE	
commercial, privacy-related, security-related, etc.).	
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	The data will not be made publicly accessible. But can be requested for through the IOF2020 website if necessary.
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	- Qualtrics - MS Excel - MS Word - Atlas.ti
Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.	Not applicable.
Have you explored appropriate arrangements with the identified repository?	Not applicable.
If there are restrictions on use, how will access be provided?	Not applicable.
Is there a need for a data access committee[8]?	Not applicable.
Are there well described conditions for access (i.e. a machine readable license)?	Not applicable.
How will the identity of the person accessing the data be ascertained?	Within the IOF2020 program, management approval is requested each time a person needs to access the data and a dedicated WUR employee grants the Sharepoint access.

[8] *A committee that reviews and authorizes requests for data access and use.*

2.3 INTEROPERABLE	
Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	Data is not being exchanged at this point. The questionnaire items (questions) are shared upon request for similar projects or Digital Innovation Hubs (DIHs) that need to do UAT testing.
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	Not applicable.
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	Not applicable.

2.4 REUSABILITY	
How will the data be licensed to permit the widest re-use possible?	Not applicable.
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	Not applicable
How long is it intended that the data remains re-usable?	As long as it is available in Sharepoint
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	Only the questions of the questionnaire are made available if re-use is requested.
How is the data quality assured?	

3 ALLOCATION OF RESOURCES	

2.4 REUSABILITY	
What are the costs for making data FAIR in your task? And how will these be covered?	Not applicable
Who will be responsible for data management in the task?	The WP4 UAT team
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	When the project ends, the data is archived. It should be kept based on the project data policy principles.

4 DATA SECURITY	
What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	SharePoint (provided by Wageningen University and Research that ensures the data security and recovery) is accessible with credentials, Basecamp as well.
Is the data safely stored in certified repositories for long term preservation and curation?	Not applicable

5 ETHICS	
Are there any ethical or legal issues that can have an impact on data sharing?	Yes. Personal information; name, role, education level, age, e-mail address.
Does your task involve data collection in non-EU countries? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?	No
Does your task involve data transfer to non-EU countries? - In case it does, please specify which data are transferred to non-EU countries.	No

5 ETHICS	
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	Yes Yes Personal information; name, role, education level, age, e-mail address. During the interviews respondents were informed of the way their data was going to be used and asked if the recording was allowed. Respondents agreed to this during the interview.
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	Yes
Do you comply with the GDPR concerning right to object and automated individual decision-making?	Yes
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and keep records of its processing activities)?	Yes. Access to Sharepoint folder is managed within the IOF2020 project to ensure only team members have access.

6 OTHER ISSUES	
Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	No

ANNEX 5. DMP WP4 KPIS

Authors: Capucine Soum , Emil Georgiev, Gohar Nuhoff-Isakhanyan

1 Data Summary

Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	Data is collected to assess the impact of all IoF2020 use cases in terms of their economic, environmental and social impacts. This is measured via Key Performance Indicators (KPIs). They are linked to the UN Sustainable Development Goals (SDGs) and the Green Deal Goals.
Describe what types of data the task will generate/collect?	The task collects (mainly field/farm) measurements for each pre-defined KPI per use case and per year, for the whole length of the project.
Describe what formats of data will the task generate/collect?	The KPIs data is provided in a word table in the IoF2020 progress report per use case. They will be updated each reporting period. From the progress report they are transferred and aggregated in one Excel file called Heatmaps. For the use cases that give their consent, the KPIs will be published in the IoT Catalogue (https://www.iot-catalogue.com/)
Will the task re-use any existing data and how? If yes, what is the origin of the data?	SDGs data are collected in terms of SDGs principles from the UN website.
What is the expected size of the data? (in Gb)	The size of Heatmaps Excel files is now about 7 MB. It shouldn't exceed 10 MB. KPIs SDGs chart is less than 1 MB
To whom might it be useful ('data utility')?	The data could be useful for the European Commission to assess the impact of IoT solutions on the environment. It could also be useful for other companies to validate their solutions using measurable KPIs in the agricultural domain and understand their contribution to the SDGs and Green deal goals.

2.1 FINDABLE

How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	No
What naming conventions do you follow?	The SharePoint is organized in Task. One of them is dedicated to the KPIs assessment (e.g., 01 - Tasks : T4.1 - KPI Assessment). One subfolder called KPI heatmap is storing the KPIs collection. KPIs and SDGs folder stores all information with regards to linkages between the KPIs and the SDGs.
How are search keywords provided that optimize possibilities for re-use?	Not applicable
How do you provide clear version numbers?	The creation date is used in the file name to know what is the latest version of the file to consult or edit
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	SharePoint stores the basic metadata: created and last updated date and author. Further, a KPI Catalogue for each IoF2020 use case was done in Work Package D4.1 available via https://www.iof2020.eu/about/deliverables. The KPI Catalogue classifies the KPIs by sustainability dimension (economic, environmental and social), categories (e.g., cost reduction; quality; ease of work), and by use case (e.g., Arable, Dairy). In the KPI Catalogue each KPI is shortly described and the units are specified

2.2 ACCESS

Which data produced and/or used in the task will be made openly available as the	All deliverables of the IoF2020 project are/will be available on Internet via https://www.iof2020.eu/about/deliverables. In addition, for the use cases that give their consent, the KPIs data will be published

2.2 ACCESS	
default?	via IoT Catalogues via https://www.iot-catalogue.com/. For the KPIs to be published, it goes through a well-defined process of feedback and approval which ensures that the available information is updated, depicts the current status of the use case, and that no confidential information is made public. This feedback process is supported by a private version of the IoT-Catalogue, which is protected with a login and password, only accessible within the consortium, to support the interactions of the use case partners and the IoT-Catalogue team. Due to the complexity of the information within the use cases, the KPIs will be publicly available at different times. This is an ongoing process, of collecting, approving and publishing information for the project's use cases. KPIs will be also linked to the SDGs in a chart.
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related, etc.).	The data won't be shared for the use case that disagree to the publication. That could be for confidentiality reason (farmers don't give their consent) or commercial reasons (the collected data don't reflect what the use case partners achieved and intent to sell in the future)
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	The public data can be seen in the IoT Catalogues via https://www.iot-catalogue.com/. Please note that it is not possible to download the data but only visualise it. KPIs will be also linked to the SDGs in a chart (not clear yet how and where to be available)
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	The Heatmaps file is accessible with any spreadsheet application (Microsoft Excel, Open Office etc.). Published data is available on Internet via IoT Catalogues via https://www.iot-catalogue.com
Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.	See answers above
Have you explored appropriate arrangements with the identified	For the KPIs to be published, it goes through a well-defined process of feedback and approval which ensures that the available information is updated, depicts the

2.2 ACCESS	
repository?	current status of the use case, and that no confidential information is made public. This feedback process is supported by a private version of the IoT-Catalogue, which is protected with a login and password, only accessible within the consortium, to support the interactions of the use case partners and the IoT-Catalogue team.
If there are restrictions on use, how will access be provided?	Only members of the IoF2020 WP4 have access to the SharePoint where the Heatmaps file is stored. Moreover, a private version of the IoT-Catalogue is protected with a login and a password, only accessible within the consortium, to support the interactions of the use case partners and the IoT-Catalogue team before the data are made public to the public version of the IoT-Catalogue.
Is there a need for a data access committee?	No
Are there well described conditions for access (i.e. a machine readable license)?	Public data is available on Internet via IoT Catalogues via https://www.iot-catalogue.com.
How will the identity of the person accessing the data be ascertained?	User registration process for the private version of the IoT catalogue and the SharePoint.

2.3 INTEROPERABLE	
Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	The KPIs dataset and SDGs KPI mapping could be exchanged and re-used between researchers and organisations involved in the IoF2020 project. The data is interoperable via Microsoft applications (e.g., Excel and Word)
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	A KPI Catalogue for each IoF2020 use case was done in D4.1 available via https://www.iof2020.eu/about/deliverables. The KPI Catalogue classifies the KPIs by sustainability dimension (economic, environmental and social), categories (e.g., cost reduction; quality; ease of work), and by use case (e.g.,

2.3 INTEROPERABLE	
	Arable, Dairy). In the KPI Catalogue each KPI is shortly described and the units are specified.
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	Yes

2.4 REUSABILITY	
How will the data be licensed to permit the widest re-use possible?	Work Package 3 (IoT) task D3.12 defines Reference Catalogue for the Reuse of Open Platform available via https://www.iof2020.eu/about/deliverables Public data is available on Internet via IoT Catalogues via https://www.iot-catalogue.com
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	The publication date is defined with each use case willing to publish the KPIs. The latest date should be the end of the project.
How long is it intended that the data remains re-usable?	The public KPI data will remain reusable as long as the IoT catalogue is running. There is no guarantee on the duration (see Terms and Conditions https://www.iot-catalogue.com/termsandconditions). When the project ends, the data is archived. It should be kept based on the data policy principles.
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	The 'catalogue of IoT (reusable) components' is aimed especially at IoT users (particularly at advisors working close to the farmers) and technology providers/integrators of IoT solutions. The catalogue is intended to include all the features as to allow users to access the information in order to identify and choose (reusable) components for their applications/projects. Among other information, the KPIs show the impact of the IoT solutions so it can help the use

2.4 REUSABILITY	
	case partners to convince potential customers.
How is the data quality assured?	IoT-Catalogue has a very strict approval process for having use cases' information public. This is to ensure quality of information (see Access section for more information)

3 ALLOCATION OF RESOURCES	
What are the costs for making data FAIR in your task? And how will these be covered?	UNPARALLEL Innovation, Lda develops the IoT-Catalogue. It has received funding from the European Union's Horizon 2020 research and innovation programme in the following projects: WAZIUP, IOF2020 and CROSSMINER
Who will be responsible for data management in the task?	Members of the consortium only that are part of Work Package 4 - Business Support
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	Concerning the data published in the IoT Catalogue, since it is a commercial product from UNPARALLEL, it is covered in long term.

4 DATA SECURITY	
What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	The Heatmaps file is stored in a SharePoint provided by Wageningen University and Research that ensure the data security and recovery. The private version of the IoT-Catalogue is only accessible for members of the consortium with a login and a password. The IoT Catalogue is hosted in amazon Ireland, with the proper security mechanisms, and UNPARALLEL has daily backups in their office with redundancy, that operate through encrypted channels.
Is the data safely stored in certified repositories for long term	Not applicable

4 DATA SECURITY	
preservation and curation?	

5 ETHICS	
Are there any ethical or legal issues that can have an impact on data sharing?	The KPIs data collected will be made public only for the use cases that give their consent.
Does your task involve data collection in non-EU countries? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?	No
Does your task involve data transfer to non-EU countries? - In case it does, please specify which data are transferred to non-EU countries.	No
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	KPI data are not personal data. The KPI values are not enough to trace back the farmers
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	Not applicable
Do you comply with the GDPR concerning right to object and automated individual decision-making?	Not applicable
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and	Not applicable

5 ETHICS

keep records of its processing activities)?	

6 OTHER ISSUES

Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	No

ANNEX 6. DMP WP7 ETHICS

Author: Simone van der Burg, Capucine Soum

1 Data Summary

Describe what the purpose of the data collection/generation is and its relation to the objectives of the task?	The purpose of the WP7 is to improve acceptability of IoT innovation in the use cases while analysing and monitoring the ethical requirements that the partners of IoF2020 must comply with. The task collecting data was carried out for the deliverable D7.3. A a series of interviews with smart farming stakeholders in the Netherlands and Belgium about ways to govern farm data were carried out. These interviews were done to gather input for workshops that have carried out in 2019 across the EU with farmers and developers of digital technologies for farms. The purpose of these workshops was to make farmers and ICT developers reflect on the ethics of data governance and come to a conclusion as to what the best way to govern farm data is.
Describe what types of data the task will generate/collect?	The task collected qualitative data (interviews/workshops).The interviews were semi-structured in-depth interviews which lasted between 45 minutes and 2 hours.
Describe what formats of data will the task generate/collect?	Audio recordings were collected but deleted once the transcripts were ready. The transcripts are Microsoft Word documents.
Will the task re-use any existing data and how? If yes, what is the origin of the data?	no
What is the expected size of the data? (in Gb)	23 interviews (each about 10 pages long) and about 35 workshops (each 20 pages long)
To whom might it be useful ('data utility')?	It could be useful to other social scientists to compare results between countries

2.1 FINDABLE

How are the data produced and/or used in the task discoverable with metadata and identifiable? Refer to standard identification mechanisms. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	We did not make the qualitative data available for re-use until now. If we would do this, we would have to go back to all interviewees and workshop participants to ask them for consent to do that. We asked for consent to use the data and quote them anonymously in our deliverables. We did not ask for consent to make the entire interview transcripts available for re-use. The interviews transcript are stored in a SharePoint where they can be accessed by WP7 project members, currently three persons. The workshop transcripts are stored in the Wageningen University and Research network.
What naming conventions do you follow?	The transcripts are anonymised. They are given a code and we do not mention any names. We did link the codes to a type of role of the respondent (such as, farmer, researcher, SME etc...) as this is important for the interpretation of the results. For instance the name of the interview 1 with a policy maker would be: I1 policy maker
How are search keywords provided that optimize possibilities for re-use?	Not applicable
How do you provide clear version numbers?	Only one version of each interview and workshop transcript exist
What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.	Not specific metadata have been created. For the one stored in SharePoint, basic metadata are provided (author, creation date, modification date).

2.2 ACCESS

Which data produced and/or used in the task will be made	We did not make it accessible to people outside of the project

2.2 ACCESS	
openly available as the default?	(see a detailed explanation in the findable section)
If certain or parts of datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related, etc.).	The transcripts may indirectly identify people. If you know the role of this person and the place where he or she lives, then it becomes easy to identify him or her
How will the data be made accessible (e.g. by deposition in a repository)? Can you provide us the link and D.O.I.?	Not applicable. We did not make them accessible.
What methods or software tools are needed to access the data? - Is documentation about the software needed to access the data included? - Is it possible to include the relevant software (e.g. in open source code)?	Idem. Data are not accessible outside the project team.
Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.	Idem
Have you explored appropriate arrangements with the identified repository?	No
If there are restrictions on use, how will access be provided?	Idem. The access to the Sharepoint teamsites is provided by invitation and only accessible for the WP7 members
Is there a need for a data access committee?	No
Are there well described conditions for access (i.e. a machine readable license)?	Idem
How will the identity of the person accessing the data be ascertained?	Idem, not applicable.

2.3 INTEROPERABLE

Is the task allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?	The data could allow data exchange as explained above. But a lot of work needs to be done to satisfy restrictions.
What data and metadata vocabularies, standards or methodologies will the task follow to make the data interoperable?	Not applicable. The data are qualitative, they are text transcription of interviews and workshops.
Will your task use standard vocabularies for the data types present in the data sets to allow inter-disciplinary interoperability? - If not, will you provide mapping to more commonly used ontologies?	Standard rules for layout were used to ease the analysis

2.4 REUSABILITY

How will the data be licensed to permit the widest re-use possible?	Not applicable
When will the data be made available for re-use? - If applicable, specify why and for what period a data embargo is needed.	Not applicable
How long is it intended that the data remains re-usable?	Not applicable
Are the data produced and/or used in the task useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.	It could have been but no informed consent has been provided for re-use. So in principle we cannot do it right now.
How is the data quality assured?	Idem, see above

3 ALLOCATION OF RESOURCES

What are the costs for making data FAIR in your task? And how will these be covered?	Not applicable
Who will be responsible for data management in the task?	Simone van der Burg (WP7 leader) was responsible of gathering and storing the data
Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?	Not applicable (see above)

4 DATA SECURITY

What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?	Data are now stored on sharepoint and are only accessible for project members. They are stored under codes.
Is the data safely stored in certified repositories for long term preservation and curation?	It is safely stored

5 ETHICS

Are there any ethical or legal issues that can have an impact on data sharing?	Yes definitely. Privacy plays a role: therefore we coded transcripts and asked for consent beforehand for using (anonymous) quotes in our deliverables
Does your task involve data collection in non-EU countries? In case it does, please specify: - Which data are collected in non-EU countries? - Is the research conducted legal in at least one EU Member State?	No
Does your task involve data transfer to non-EU countries? - In case it does, please specify which data are	No

5 ETHICS	
transferred to non-EU countries.	
Does your data collection involve collection of personal data or data that can be traced back to whom it is about? In case not, the remainder of section 5 can be skipped. Do you comply with the GDPR concerning information provisions and access to personal data (right to be informed, right to access and informed consent for data sharing and long term preservation included in questionnaires is given by data providers)?	Yes, transcripts can indirectly trace back to identifiable persons: if you know the role of this person and the place where he or she lives, then it becomes easy to identify him or her. We asked for consent beforehand for using (anonymous) quotes in our deliverables
Do you comply with the GDPR concerning rectification and erasure of personal data (rights to rectification, erasure, restriction of processing, to be notified and data portability)?	We informed the participants they could stop the interviews at any point
Do you comply with the GDPR concerning right to object and automated individual decision-making?	Yes
Do you comply with the GDPR responsibilities for data controllers and processors (the controller and the processor have implemented appropriate technical and organisational measures to ensure a level of security appropriate to the risk and keep records of its processing activities)?	Yes. WUR is both the data controller and data processor here.

6 OTHER ISSUES	
Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?	No