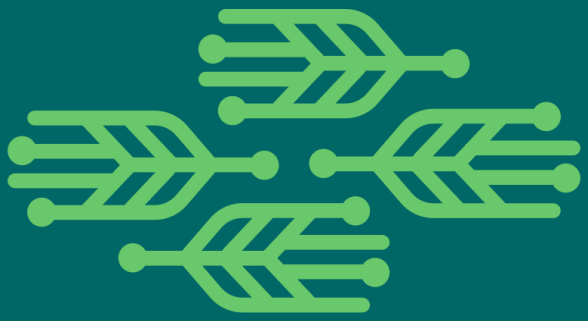
D1.4. Report on available multi-actor (MA) project data – Best practices



EUREKA

European Knowledge Repository for Best Agricultural Practices

TASK 1.2

Summary

This report presents an overview of the knowledge and data produced in multi-actor projects (MAPs). We assessed which types of knowledge and data were generated as well as how they were generated and processed in order to identify best practices in the case of a MA approach. The methodology included an analysis of 101 MAP websites plus any related information available in the CORDIS (Community Research and Development Information Service) database, supported by close interaction with a selected sample of MA projects by means of a physical workshop and face-to-face interviews. In addition, an on-line validation survey was conducted with various actor types. The results show a diversity of knowledge and data outputs produced in MA projects that differ widely between different types of projects (research and innovation action-RIA, coordination support action-CSA, innovation action-IA). It shows while the published outputs (e.g., scientific and technical papers) are mainly in line with that with respect to the FAIR principles (Findable, Accessible, Interoperable, Reusable), more efforts are needed to assure the access to the underlying raw data and software/applications produced in the projects. In this respect it also highlights the importance of a common approach for data management. The importance of intangible results and the sustainability of online knowledge community was also emphasized. The validation survey demonstrated a strong agreement with the statements that MA projects generate a wealth of useful data for practitioners, that a unique on-line repository would greatly increase their impact, and that such a repository should give access to raw data, knowledge objects, and digital tools. However, interviewees and survey respondents largely agreed that raw data are useful only in the context, i.e. with accompanying metadata.

Deliverable Number	Work Package
1.4	WP 1
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Planned Delivery Date	Actual Delivery Date
31/08/2020	31/10/2020

Type of Deliverable	***R***	**Document, report (excluding periodic and final reports)**	
	DEC	Websites, patents filing, press & media actions, videos	
	E	Ethics	

Dissemination Level	***PU***	**Public**	
	CO	Confidential, only for members of the consortium	

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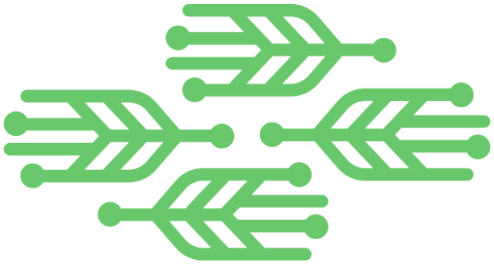

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1. Content

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2. List of figures

3. List of tables

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4. List of annexes

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5. List of abbreviations and acronyms

CORDIS	Community Research and Development Information Service
CSA	Coordination and Support Action
EIP-Agri	Agricultural European Innovation Partnership
FG	Focus Group
KR	Knowledge Reservoir
IA	Innovation Action
MA	Multiactor-Approach
OG	Operational Group
RIA	Research and Innovation Action
TN	Thematic Network
WP	Work Package
KoM	Kick-off meeting
FAIR	Findable, Accessible, Interoperable, Reusable
EXCOM	Executive Committee
ToT	Training of trainers

6. Objective of the task

Knowledge community is strongly aware, that there is an urgent need to improve the infrastructure supporting the reuse of scholarly data (Wilkinson et al., 2016[1]). EUREKA addresses this challenge and its workprogramme is devoted to creation of a common platform of agricultural knowledge. Thus the present task followed the objective aimng to analyse the types of outputs created in MA

[1] Wilkinson, M. D. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci. Data 3:160018 doi: 10.1038/sdata.2016.18 (2016).

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projects (without thematic networks which are studied in EURAKNOS project), the knowledge objects, the raw data, how these are collected and processed. This task of EUREKA was executed in the frame of WP1 which aimed to map all the MA projects listed in EIP-AGRI and CORDIS database and to engage with them in order to collect the researched information and to learn about the best practices in creating the useful knowledge for different actors, with special emphasis on their creation for and with practitioners.

Thus the specific objectives of this task in EUREKA were to

- get an overview of the knowledge and the data produced in multi-actor projects;
- analyse the types of the data available and the ways data is generated and processed; and
- identify the best practices on how to generate knowledge.

7. Methodology applied

7.1. Identifying MA projects (other than TN)

Starting with the H2020 programme, the European Commision decided to implement the multi-actor (MA) approach in research, as a way to bridge the growing gap between science and practice. With the aim of analysing MA projects in EUREKA, we first examined the EIP-AGRI and CORDIS websites databases of the European Commission to identify completed or on-going MA projects in the field of agriculture and food research; *i.e.* that were being accepted or financed until February 2020 (not including, however, TNs which are have been under considered in the by EURAKNOS project).

As a result, an Excel database with a list of 101 MA projects was created which comprising information on the type of the project (RIA, CSA, IA), category and topic covered (according to EIP-AGRI), topic call identifier, itinerary to web site of the project, project duration and coordinator contact.

Illustration of the steps in methodology

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7.2. First insights - exercise with selected MA projects (at kick-off meeting)

During the KoM, a **delineation** of data and knowledge was suggested by defining the terms of:

- **primary or raw data**[2]; and
- **secondary or processed data**[3] also referred as **knowledge objects**.

The first exercise with the MA projects was organised during the EUREKA kick-off meeting (KoM). The coordinators of the selected MA projects were invited to participate in the workshops organised for the KoM meeting. In the frame of WP1.2, the participating coordinators attended the workshop in which they were asked to address the **key question: knowledge objects produced in MA projects of interest for common KR (FarmBook).** They were asked to provide the examples of knowledge that was produced in their project; what is the importance for the end-user and whether this outcome is available according to the FAIR principles[4]. The cases of eight projects were covered in the KOM's workshop, namely IMAGE, FAIRSHARE, TREASURE, OPTIMA, FEED-A-GENE, IOF2020, SMART-AGRI-HUBS, and RUSTWATCH. In addition, the KoM participants, acting as actors of various categories, joined a parallel workshop and replied to similar questions (*i.e.* which knowledge is most important, why and how to present it to end-users, etc.).

7.3. Desk-top analysis (screening) of all MA projects

The second step of the task was to organise the screening (investigation) of all the identified MA projects to acquire information on the types of data and knowledge objects available by the various projects produced and on the ways in which this data is collected and processed to become knowledge objects. For that purpose we thoroughly examined:

- the website pages of the MA projects collected in step 1 (cf. paragraph 5.1.); and
- for each individual project the information available from the respective CORDIS web page[5].

For each project a spreadsheet (in an Excel file) was created with the information on the types of data/knowledge produced and the links to a number of such data and knowledge objects, as examples. This is of high significance for the task 3.1 and with regard to the process of the evaluation of the relevance of knowledge objects and data sets for the joint platform (FarmBook).

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[2] Primary data = newly collected for the specific purpose of the project (e.g. measurements, observations, interviews)

[3] Secondary data – outputs obtained after processing of primary data. = the conversion of data into usable and desired form. It consists of a wide range of operations performed on data, including by manual or automated means. The output or "processed" data can be in different forms (image, graph, table, vector file, audio, charts) or any other desired format depending on the software or method of data processing used.

[4] FAIR abbreviation stands for findable, accessible, interoperable, reusable

[5] https://cordis.europa.eu/

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7.4. Interviews with representatives from a selected set of MA projects

The third step was to develop a questionnaire and select the MA projects for the in-depth on-line interviews aiming to help us obtain quality insights about the generated data and knowledge objects. The questions were split into an on-line survey conducted prior to the interview (Table 1) and a face-to-face interview discussion (Table 2). The selection of the projects (Table 3) was made taking into consideration the type of the project, the duration of the project (the projects selected should be at least in their first reporting period) and the topic of the project (according to EIP-AGRI categorisation[6]).

*Table 1**. The questions for the preliminary on-line survey on data generation***

Q1. Can you please start by sharing with us the acronym of your project?
Q2. Does/did your Multi-Actor Project (MAP) prepare a Data Management Plan? Y/N
Q3. Did your project generate any raw/primary data (datasets)? Y/N
Q4. Please share some representative examples of the types/kind of raw data that your project generated/collected?
Q5. How were these data further used or processed in your MAP?
Q6. Do you think some of these raw data have potential to be reused? Y/N Which data?
Q7. What is the reason that you think these data can be reused?
Q8. Are these data currently made accessible for others?
Q9. How are they made accessible?
Q10. Could you explain why these data are only partially or not made accessible for others?
Q11. Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects should include this raw data?
Q12. What is the reason you think these or some of these data should be included in a KR for MA projects?

*Table 2**. The questionnaire for the in-depth interview on generated data and knowledge***

Question determinants		**Interview question**
What?	Why?	
Most important outputs of MA project	What is interesting knowledge to store in the FarmBook	Q1. In your opinion, which of the results/outputs of your project are/were the most valuable and why? And which are the most valuable for practitioners? How do/did you assess this?
Output strategy	Thinking behind output generation	Q2.Why and how were these most valuable outputs generated?

[6] https://ec.europa.eu/eip/agriculture/en/about/multi-actor-projects-scientists-and-farmers)

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Question determinants		Interview question
What?	Why?	
Target users for outputs	Who is the knowledge for	Q3.Can you please specify all the intended target user types of your MAP results (select the ones that apply)? - Farmers/Foresters (practitioners); - Advisors - Researchers - Policy makers - Industry professionals - Others
Practitioners as target groups	Is the knowledge also for practice ?	Q4.Which other outputs were intended for practitioners? Did target users participate in the creation of these outputs? (Y/N) Why? How?
Involvement of actors in data generation	Which actors contributed to outputs ?	Q5.How did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? (specify according to the type that applies) Farmers/Foresters (practitioners) Advisors Researchers Policy makers Industry professionals Others
If the project has sub- or over- realized the planned outcomes	Self-evaluation of accomplished results	Q6.On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10 – none to all) If not 10, can you please elaborate which ones not and why?
Most impactful outputs	What is interesting knowledge to store in the FarmBook	Q7.In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you assess this?
Which outputs for FarmBook	Identifying added value for FarmBook	Q8. Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N) Why Y, why N? How is this done and for how long?
Market interest for FarmBook	Identifying added value for FarmBook	Q9. Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N) Why?
Did the project exchange the results with other initiatives?	Transfer to other projects/groups	Q10. Did you transfer or exchange any data or knowledge objects with other projects/groups? (Y/N) If Y, what, how and why?
Accessabilty of knowledge	Thinking behind access of knowledge	Q11. On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible? (1 to 10 – none to all) Which data/knowledge objects are, which not? Why? For the data that are, how is this done?
Best practices and lessons learned for data collection or generation	For best practice guidelines	Q12. Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice? Any advice for future MA projects?

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Table 3. ***Selected MA projects for the in-depth interviews***

Acronym	Full title	Duration	Coordinator	Country	Type	Topic
BOND	Bringing Organisations and Network Development to higher levels in the farming sector in Europe	2017-2020	Coventry University	UK	CSA	Human,social capital
Diverfarming	Crop diversification and low-input farming across Europe: from practitioners engagement and ecosystems services to increased revenues and chain organisation	2017-2022	Universidad Politecnica de Cartagena	ES	RIA	Sustainable primary production
DIVERSIFOOD	Embedding crop diversity and networking for local high quality food systems	2015-2019	INRA	FR	RIA	Sustainable primary production
EMPHASIS	Effective Management of Pests and Harmful Alien Species - Integrated Solutions	2015-2019	Universita degli studi di Torino	IT	RIA	Sustainable primary production
FAIRshare	Farm Advisory digital Innovation tools Realised and Shared	2018-2023	TEAGASC	IRL	CSA	Human,social capital
Feed-a-Gene	Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems	2015-2020	INRA	IT	RIA	Sustainable primary production
InnoForEst	Smart information, governance and business innovations for sustainable supply and payment mechanisms for forest ecosystem services	2017-2020	Hochschule Fur Nachhaltige Entwicklung Eberswalde	DE	IA	Rural innovation
IoF2020	Internet of Food and Farm 2020	2017-2020	RSK Environment Limited	UK	IA	Rural innovation
LIVERUR	Living Lab research concept in Rural Areas	2018-2021	Fundacion Universitaria San Antonio	ES	RIA	Rural innovation
LIVESEED	Improve performance of organic agriculture by boosting organic seed and plant breeding efforts across Europe	2017-2021	International Federation of Organic Agriculture Movements European Union Regional Group	SE	RIA	Sustainable primary production
NoAW	Innovative approaches to turn agricultural waste into ecological and economic assets	2016-2020	INRA	FR	RIA	Sustainable primary production
MycoKey	Integrated and innovative key actions for mycotoxin management in the food and	2016-2020	Consiglio Nazionale delle Ricerche	IT	RIA	Sustainable primary production

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Acronym	Full title	Duration	Coordinator	Country	Type	Topic
	feed chain					
NEFERTITI	Networking European Farms to Enhance Cross Fertilisation and Innovation Uptake through Demonstration	2018-2021	Association de Coordination Technique Agricole	FR	CSA	Human,social capital
OPTIMA	Optimised Pest Integrated Management to precisely detect and control plant diseases in perennial crops and open-field vegetables	2018-2021	Agricultural University of Athens	GR	RIA	Sustainable primary production
RUSTWATCH	A European early-warning system for wheat rust diseases	2018-2022	Aarhus Universitet	DK	RIA	Sustainable primary production
SiEUGreen	Sino-European innovative green and smart cities	2018-2021	Norges Miljo-Og Biovitenskaplige Universitet	NO	IA	Rural innovation
SmartAgriHubs	Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector	2018-2021	Stichting Wageningen Research	NL	IA	Rural innovation
TomRes	A novel and integrated approach to increase multiple and combined stress tolerance in plants using tomato as a model	2017-2020	Universita degli studi di Torino	IT	RIA	Sustainable primary production
TREASURE	Diversity of local pig breeds and production systems for high quality traditional products and sustainable pork chains	2015-2019	Agricultural Institute of Slovenia (KIS)	SI	RIA	Sustainable primary production

7.5. Validation by on-line survey

As a last methodological step, the interviews were validated by means of the on-line (internet) survey. For that purpose, five "key statements" (Table 4) arising as the most outstanding inferences on data and knowledge objects were developed from the interviews and tested with the respondents[7] (targeting various actors of all MA projects) as a part of the questionnaire prepared for the whole WP1.

[7] Information about the respondent (region, age, gender, actor type: Farmer, Forester, Advisor, Salesperson (Fertilizer, Pesticides, Seed, Feed, Machinery, etc.), Researcher, Food processor, Student, Teacher, Policymaker, Other)

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Table 4. ***Statements used in the validation survey for task 1.2 (data and knowledge objects produced).***

1. Multi-actor projects generate a wealth of potentially useful data/knowledge for the farmer, forester, and advisor.
2. Making these data open and easily accessible in an online knowledge repository would greatly increase the impact of MA projects.
3. A central online knowledge repository for agricultural innovation should include primary/raw data (e.g., measured soil nitrogen levels, temperature) in addition to secondary outputs such as instructional videos and practice abstracts.
4. In order for primary/raw data to be meaningful and useful to other users, adequate metadata (e.g., location, type of field/crop, time of year, author/creator) is crucial.
5. Having a formal data management plan (DMP) is now a requirement in MA projects, but collaborators often lack the know-how and resources to translate it into daily practice.

8. Results

Introduction

Our Excel database resulted in a coverage of 101 MA projects[8], from which 8 were CSA, 9 were IA and 84 were RIA projects (Figure 1). About 27% of the surveyed projects were in the early stage (< 36 months duration *i.e.* first reporting period), 46% were in the second reporting period and 28% were in the last reporting period or finished.

Considering the structure according to the topics/categories available from EIP-AGRI[9], 9 projects belonged to the category *Enhancing the human and social capital*, 26 projects belonged to *Enhancing rural innovation: modernising rural territories and policies* and 66 projects belonged to the *Creating value from land - sustainable primary production* category.

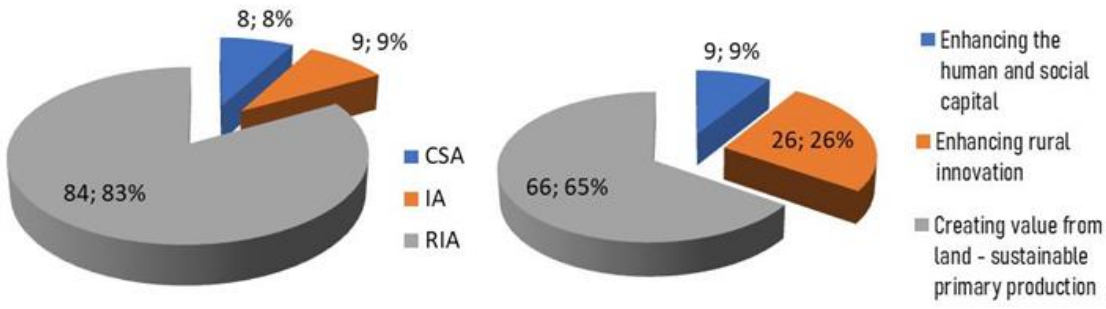

Figure 1. ***Structure of MA projects under survey according to project type and topics***

[8] We considered MA projects accepted for financing until March 2020 (TN excluded as they are covered by EURAKNOS); CSA – coordination and support action, IA innovation action, RIA research and innovation action
[9] https://ec.europa.eu/eip/agriculture/en/eip-agri-projects

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8.1. First insights - exercise with selected MA projects at KoM

During the workshops held at the KoM (summaries from the KoM workshops are available in Annex 8.1) different knowledge objects of importance for the common knowledge platform (Figure 2), were listed by different actor groups or by MA project coordinators that attended the workshop.

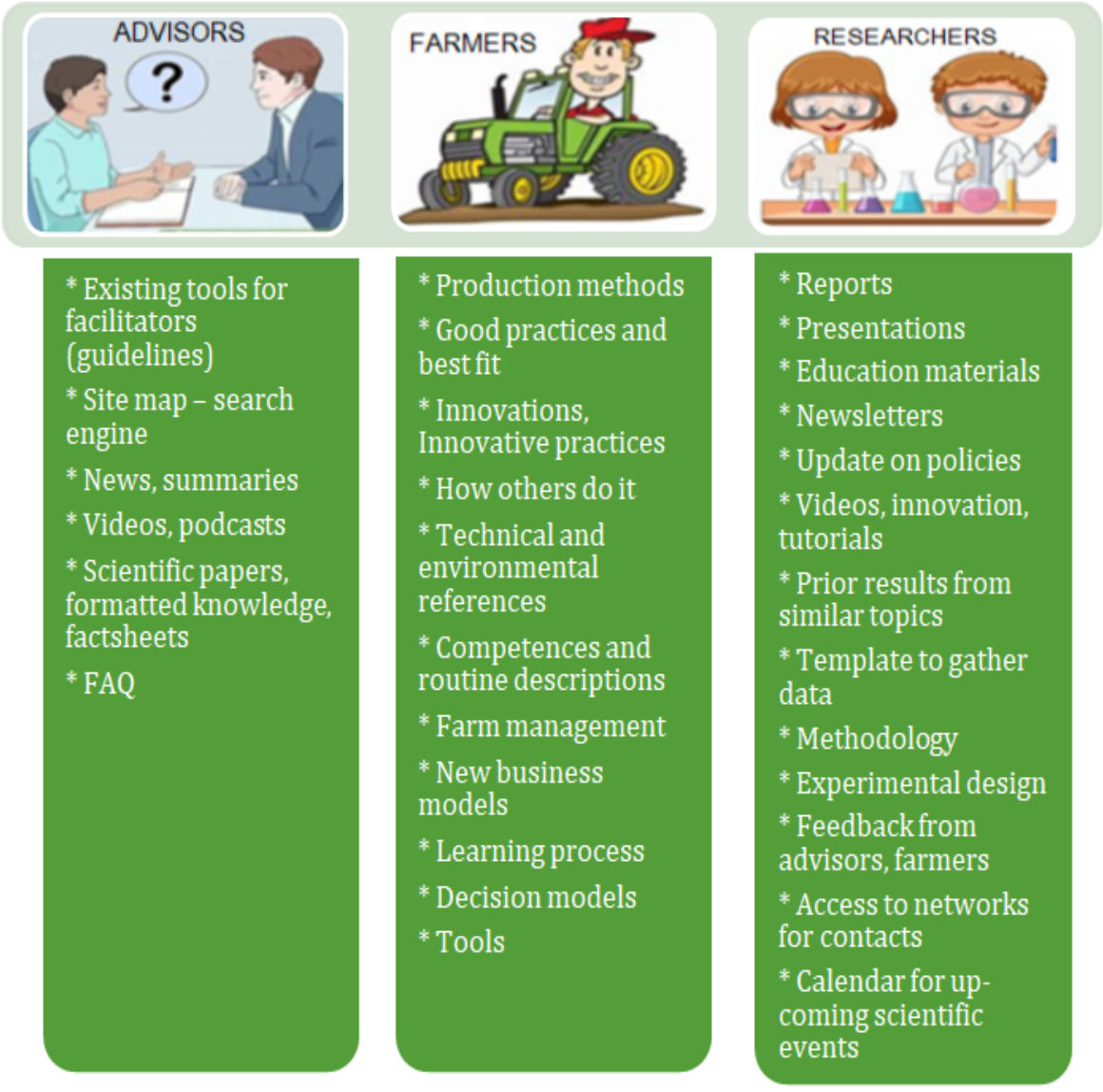

Figure 2. ***Knowledge types/objects of interest to be comprised in the common platform (FarmBook) developed in EUREKA***

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The outputs of projects may be grouped in the clusters of

- **tangible** (e.g. publications), and
- **intangible outputs** (e.g. networks of people, of demo farms, of living labs, of innovation hubs),

as depicted in Figure 3.

*Figure 3**. Clusters of outputs identified in the workshops with MA projects.***

In Figure 4, the knowledge types or objects of interest to be comprised in the common platform (FarmBook) developed in EUREKA are presented for each of the interviewed MA project, as listed/written by coordinators for their MA project. It can be seen that in this case as well, the coordinators revealed both, tangible and intangible outputs as being of interest for FarmBook.

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Figure 4. ***Knowledge types/objects of interest as listed/written by MA project coordinators to be comprised in the common platform (FarmBook) developed in EUREKA***

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8.2. Desk-top analysis (screening) results of all MA projects

The screening consisted of examining the information available at the MA project website pages, and the CORDIS database, and was performed for all 101 identified MA projects by the partners involved in WP1.

Examination of outputs from MA projects appearing in the CORDIS database

The investigation of the CORDIS database revealed that the outcomes of projects are classified into three broad categories (namely Deliverables, Publications and Datasets) with each of them being further divided in a number of subcategories as depicted in Figure 5.

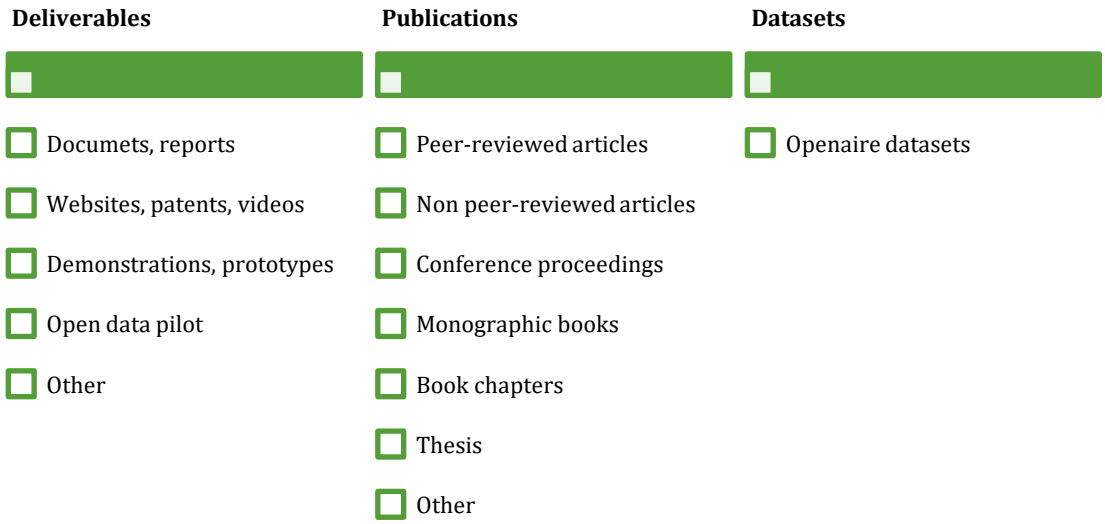

*Figure 5. **Categorisation of project outputs in CORDIS***

According to this analysis, the statistics revealed that 26 projects (out of 101) had no outputs recorded, and these were the projects in the early stage of duration. Thus, we decided that for further consideration (interviews with MA projects' representatives), we would focus on MA projects that had completed their first reporting period.

As shown in Figure 6, all projects in CORDIS (in agreement with their contractual obligation) demonstrate the deliverables, with documents and reports being the most common forms, while only 76% of the projects had a publication recorded in CORDIS, with peer-reviewed papers being the most common publication type. Only 23% of projects have published their datasets in OpenAire.

It needs to be emphasized that the data in CORDIS are not complete and/or accurate and that a lot of outcomes that projects generate are not registered with CORDIS. This observation was made based on the projects that the partners of EUREKA were involved in or coordinating and thus having a more thorough information on the projects. Apart from that weakness, the information collected in CORDIS is very useful for the identification of the types of knowledge objects generated in MA projects and to get insights with regard to the most common and less frequent results.

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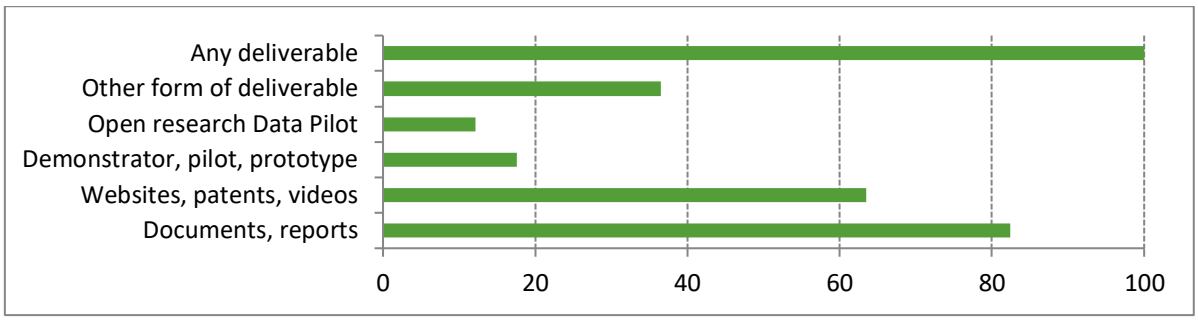

Figure 6. ***Types of outputs reported for MA projects in CORDIS in the category DELIVERABLES (N.B. only MA projects after first reporting period considered).***

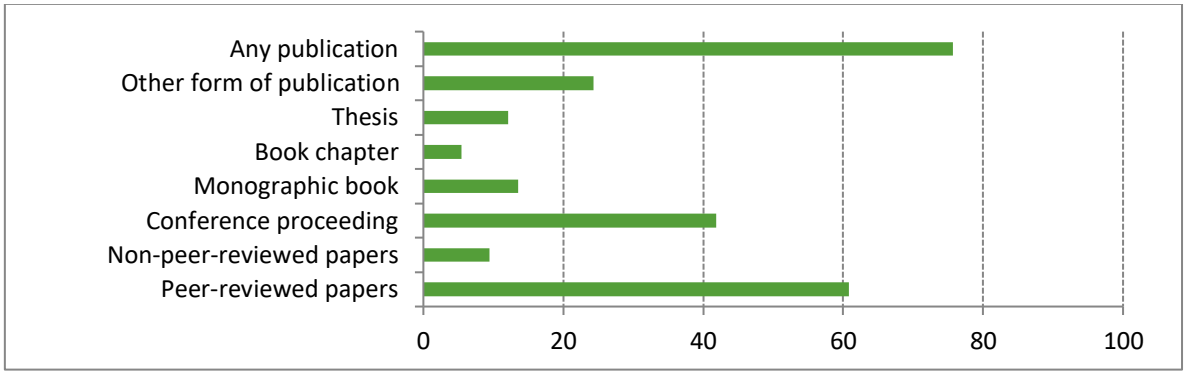

Figure 7. ***Types of outputs reported for MA projects in CORDIS in the category PUBLICATIONS (N.B. only MA projects after first reporting period considered).***

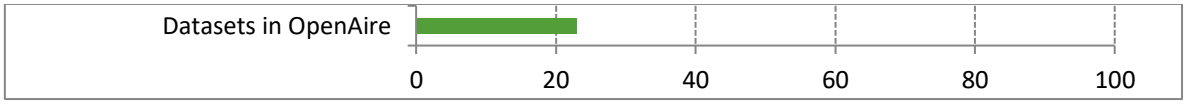

Figure 8. ***Types of outputs reported for MA projects in CORDIS in the category DATASETS (N.B. only MA projects after first reporting period considered).***

Examination of outputs in the websites of MA projects

The examination of the websites of MA projects showed that various types of dissemination and communication materials are reported there. The most frequent are deliverables, videos, scientific papers and newsletters, followed by flyers, practice abstracts and posters (Figure 9). The availability of primary data (datasets) in the project website was evidenced only in about 20% of MA projects.

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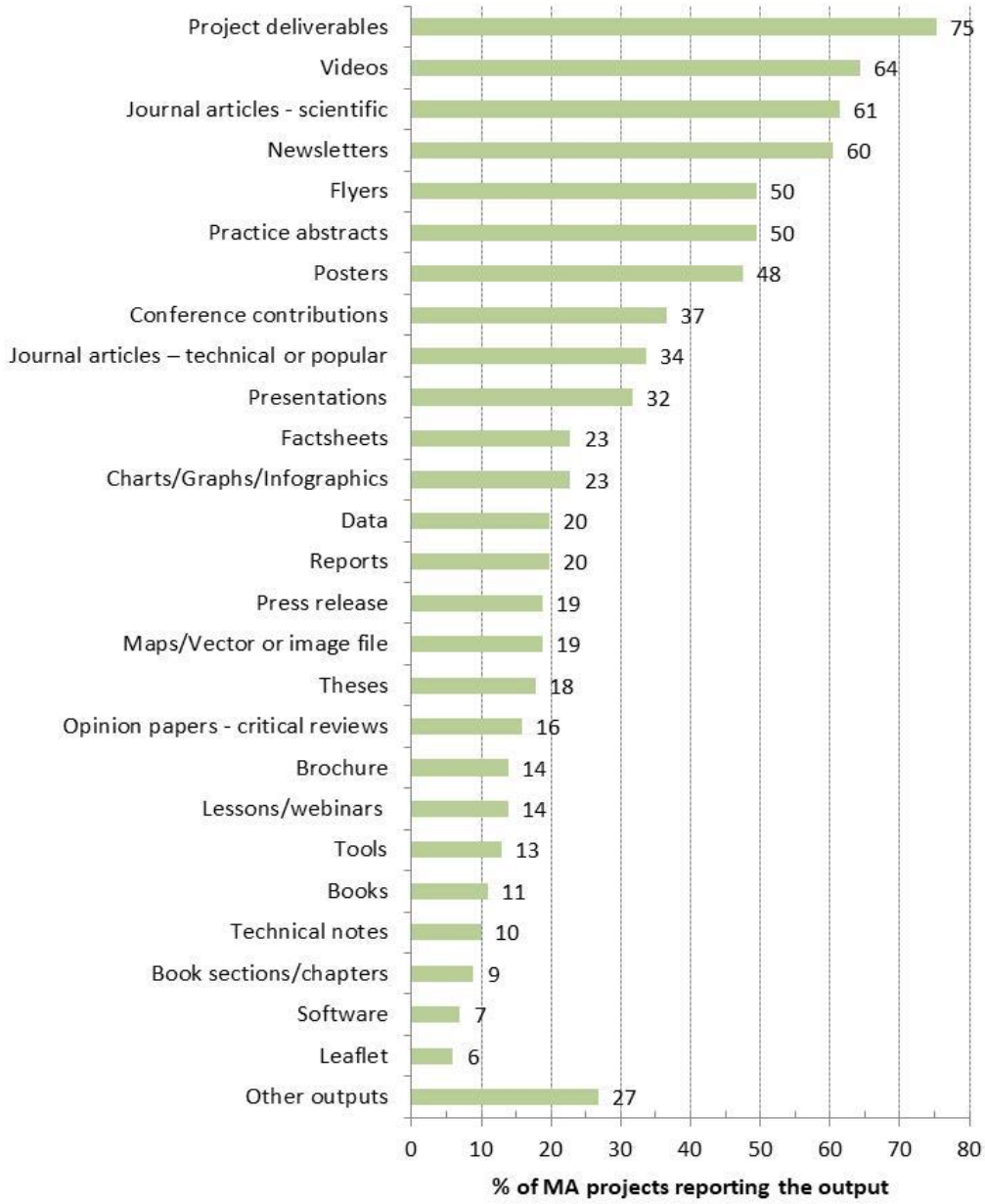

*Figure 9**. Types of outputs of MA projects available/accessible on their websites***

8.3. Results of the interviews with selected MA projects

Preliminary on-line survey regarding the primary or raw data generated in MA projects

The results of this short preliminary survey showed that a big majority of the projects opted for pilot data in H2020 and prepared a plan on how to deal with the data generated (DMP), despite the fact that this not an obligation (Table 5). As depicted in Table 5 (see Q4) and demonstrated in

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Figure 1, various types and forms of data are generated in MA projects. The ways data is generated consist of recordings, measurements, analytical determinations, observations and collecting existing data from different sources.

In the interviews, only 67% (10 out of 15) of projects stated to have generated primary data, which agrees with the results of the screening of all MA projects, where we found 62 out of 102 (61%) projects to have scientific publications[10]. However, we consider this number to be underestimated; namely 27 out of 102 (26%) of screened MA projects was in the early stage of duration (i.e. before the first reporting perod) and, thus not yet having publications from primary data collection. Indeed, only 6 out of 27 MA projects reported scientific publications in this period. We may also observe a gradual increase in the projects producing scientific papers, as well as the number of scientific papers per project with increasing project duration (Table 4). Practically all MA project (except for one CSA action) reported the publishing of scientific papers, which denotes that all RIA projects generate data and also the majority of CSA and IA projects.

Table 5. ***Scientific papers as markers that almost all MA projects generate primary data***

Duration phase of project	Number of projects	% of projects that produced scientific papers	Number of scientific papers per project
<18 months	27	15	3,0
18-36 months	46	65	5,5
>36 months	10	90	17,8
Finished	18	94	24,9

In the on-line survey conducted prior to the interview, the respondents listed the types of the primary data generated in the MA projects (Table 6, Q4) and how they were further processed (Table 6, Q5). Regarding the value of primary data and reusability of data (Table 6, Q6, Q7), 90% of respondents stated that the data created in MA projects have the potential to be reused, by listing some examples and reasons. The most important reasons appears to be a more global, big data assessment, the lack of availability of some data types and the potential of re-use in future research. Regarding the accessibility of this data, it can be deduced from the answers, that primary data of the MA projects is accessible to a limited extent (Table 6, Q8). The majority of respondents have reported the value of storing primary data in a joint platform and the importance of accompanying meta-data has been mentioned to be crucial. Among the reasons for storing primary data in a joint platform (Table 6, Q12), the issue of central location and a common form of access were mentioned.

[10] We hypothesized that research/scientific paper can't be prepared without generating or collecting the primary data

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Table 6. ***Results of the survey (on-line before the interview) on primary data produced in MA projects***

	Question	Summary of answers
Q1	Can you please start by sharing with us the acronym of your project?	15 projects filled the survey
Q2	Does/did your Multi-Actor Project (MAP) prepare a Data Management Plan? Y/N	Yes: 13 (87%) No: 2 (13%)
Q3	Did your project generate any raw/primary data (datasets)? Y/N	Yes: 10 (67%) No: 5 (33%)
Q4	Please share some representative **examples** of the types/kind **of raw data** that your project generated/collected?	- Data from field trials - Data of crop yield and quality - Soil data - Emission data - Erosion data - Economic analysis data - Animal production data (growth, feed intake) - Laboratory test data - Genetic data - Consumer tests data - Water and nutrient use efficiency data - Disease surveillance data - Observational data - Survey data - Data from demonstrations - Literature data
Q5	How were these data further used or processed in your MAP?	- Data is still being generated and treated - Partners mostly processed their own data “in-house”. Some data were shared (as intended) and reused by other partners and same data has been made available through data repositories. - It was assessed by certain assessment criteria , the result was written in Deliverable - Partner who collected data is responsible for data validation, statistical analysis and interpretation of data. Data are shared among partners in common intranet (sharepoint). Results are shared and discussed among partners (EXCOM will prove quality and IP issues of results), are published on webpage, disseminated via newsletter, conference presentations, specific workshops, farmers newspapers, communicated via social media (twitter, facebook). Any kind of publication will be made available on open access repository organic eprints, and peer-reviewed paper via Zenodo. Data including metadata will be provided together with the publication. - Data about agricultural wastes were aggregated using social choice technics - Data about LCA were used to compare alternative scenario using social choice aggregation and analysis of justifications using argumentation technics - Data are stored and integrated into tools and services; genetic data analysed with the genetics platform associated with the Toolbox - Used for deliverables, needs assessment

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	Question	Summary of answers
		- Elaborate to produce reports/publications - Bioinformatic analysis of genetic data - Statistical analysis of experimental data - Data were processed for preparing secondary data in form of publications and other types of dissemination
Q6	Do you think some of these raw data have potential to be reused? Y/N Which data?	Yes: 9 (90%) No: 1 (10%) - All data - Biological data - Results of seed supplier and farmer survey - Data of field trials - Demonstration farm data - Other technical data - Data about agricultural wastes - LCA data - Most of them as metadata - All, especially genetic data
Q7	What is the reason that you think these data can be reused?	- It comes from experimental fields across Europe with different characteristics implementing crop diversification. Data are prepared to be FAIR with meta-data and uploaded to Zenodo. **It is of interest to make big data analysis** about crop yields and ecosystem services in agriculture - Mostly for **research purposes** - Because the data could be used as **Best Practices** as well. - There are very **limited data available** on organic seed across Europe, the results of certain field trials might be of interest for across region and across years analysis - It could **be reused** for future R&I projects. - Two reasons: 1) enriching the dataset for a more **global assessment** involving other countries; 2) datasets could be **reused** to confront different methodological computational approaches. - We need to do shorterm **disease warnings** - but long term strategies re-breeding resistant cultivars, update tools for variety choice and best r-gene deployment at landscape level and update of DSS that make use of pathogen and host information - They are of use for **system evaluations** - Any data can be **reused**
Q8	Are these data currently made accessible for others?	Yes: 3 Partially: 5 No: 2
Q9	How are they made accessible?	- Data repositories - Open survey (free access) - Public map and chart tools - Toolbox (for data providers) - At the end of the project
Q10	Could you explain why these data are only partially or not made accessible for others?	- Data is still being generated - Open data was encouraged but on voluntary basis - Data will be open after publication - Not available due to data protection reasons - GDPR rules

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	Question	Summary of answers
Q11	Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects should include this raw data?	Yes: 3 Some data, not all: 4 No: 1
Q12	What is the reason you think these or some of these data should be included in a KR for MA projects?	- **Higher availability** of data related to agriculture. If a specific repository is created, people seeking for these data will have them in **located in one place**, not like nowadays, with multiple general repositories, more difficult to find - Data and knowledge are not the same thing. Projects generate many data, but this is not knowledge per se (without context, interpretation, etc.). We should be careful to ensure that **whatever is put in a repository is** (or: will be) **useful** for others to avoid "pollution". That is of course a difficult decision to make (by the data/knowledge creator) - After COVID-19, our collected data would be useful for the targeted local communities - Certain data are typical for MA projects, e.g. the governance of on farm varietal trials in different countries, statistic data on organic seed demand in different countries and crops, **data on involved MA networks might be specifically important for future projects**, e.g. mapping of organic breeding initiatives, as well as templates for conducting various surveys - GDPR rules - For dissemination purposes - FAIR data management is relevant, rational, stimulate to collaboration and sharing of data, and more comparable data with high quality result in more robust conclusions data - To have a **common form of access** To give possibility to others **to re-use them**, if there is interest, idea

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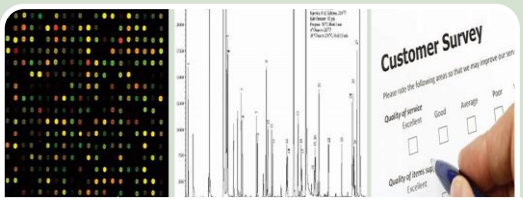

Forms and types of data generated in MA projects

- Data from field trials
- Data of crop yield and quality
- Soil data
- Emission data
- Erosion data
- Economic analysis data
- Animal production data (growth, feed intake)
- Laboratory test data
- Genetic data
- Consumer tests data
- Water and nutrient use efficiency data
- Disease surveillance data
- Observational data
- Survey data
- Data from demonstrations
- Literature data

Ways data are generated in MA projects

- Automatic recordings (e.g. weather data, welfare observations ...)
- Measurements (field, stable, laboratory ...)
- Laboratory analytical determinations
- Genotyping
- Collecting data from different sources (e.g. literature)
- Surveys
- Interviews
- Capturing images (for image analysis)

*Figure 10. **Types of data and ways data are generated in MA projects***

Face-to-face interviews with MA projects' representatives

Representatives from a total number of nineteen MA projects were contacted and interviews were planned. However, the actual response rate at the end was a bit lower and we were able to finalise 16 interviews. The transcripts of these interviews are available in Annexes (cf. 8.2 to 8.17).

The most valuable outputs, as highlighted by different projects, are listed in Table 6. It shows the close agreement with the most important outputs reported by coordinators at the workshops during the KoM and with the desk-top analysis (screening) of MA projects' and CORDIS websites.

The most valuable outputs

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Table 7. ***Most valuable outputs of MA projects according to the opinion of key interviewed persons***

Project	Type	Most valuable outputs
BOND	CSA	Best practice case studies; ToT training materials
DIVERFARMING	RIA	Case studies results; Prototypes of machinery; Decision support tool for configuration of agroecosystems; White paper to update the regulation
EMPHASIS	RIA	Diverse and innovative pest management and surveillance solutions - different forms of dissemination materials
Feed-a-Gene	RIA	Precision farming results in various forms; Scientific outputs, videos, factsheets
FairSHARE	CSA	Inventory of digital advisory tools
InnoForest	IA	Network; project case studies
LIVERUR	RIA	European network of living labs; Real-life collected data
LIVESEED	RIA	Knowledge about different perspectives of organic seeds; data on plant resistance, variety trials
MyCoKey	RIA	Scientific publications; lay summaries for farmers and industry; videos; trainings
Nefertiti	CSA	demonstration farms network for uptake of innovation
NoAW	RIA	Sci papers, data and software (preferences and justification about LCA criteria, on valorisation of biomass of agricultural wastes; multi-criteria decision assessment tool)
OPTIMA	RIA	IPM (integrated pest management) protocols; website with disease alerts
RUSTWATCH	RIA	Network of labs doing pathogen diagnostic i.e. variety genotyping, phenotyping; training courses; alignement studies; shared facilities – wheat rust toolbox; train the trainers. Publications are open, data as open as possible and as closed as necessary.
SmartAgriHubs	IA	AgriTech network and Innovation portal – a network of digital innovation hubs (environment for ideas, concepts, prototypes)
TOMRES	RIA	Scientific outputs, for practitioners demonstration, practical abstracts and technical papers, tools like precision agriculture protocols
TREASURE	RIA	Scientific papers, genetic characterisation data; book on breeds with data on productive traits and literature; IPR output – trademark; software for application in breeding program

In agreement with the observations in the previous steps (workshops at KoM), it can be noted that many of the outputs listed in Table 7 are not just the tangible ones, but also the intangible (in particular, the networks and demonstrations). Typically, **RIA projects** put a lot of emphasis on the creation of new knowledge demonstrated as scientific outputs (various forms of scientific publications such as articles and congress proceedings), but underlined to have produced many other types of outputs like datasets, software, tools, prototypes and also various forms of dissemination materials tailored to practitioners' needs (factsheets, videos, practice abstracts[11], lay summaries, technical papers, training materials, white papers). The networks or hubs (of people,

[11] Producing practice abstracts based on project results are now an obligation for the projects according to grant agreement; however the first MA projects financed in H2020 did not have this obligation.

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subject or knowledge community) are also considered as very important intangible outputs of many respondents in the case of RIA projects. On the other hand, **CSA and IA projects** typically represent projects which produce less publications and other tangible outputs, but put high relevance on intangible outputs like networks, hubs and demonstrations which are important for the innovation uptake.

Regarding the **opinion on the value of the common KR platform**; the opinion about its relevance was mainly positive, with some mixed views. However, it was strongly indicated that such **platform should consider various outputs**:

Opinion on the value of the common knowledge platform

- the knowledge objects;
- the data with associated meta-data; and
- other aspects transcending the boundaries of "storage" function such as sustainability of the knowledge community, collaboration, etc.

It was also mentioned that farmers are unlikely to use such a platform on a large scale due to language barriers. The opinion expressed was that the produced publications, as knowledge objects, are well covered and recorded within the existing bibliographic system. Moreover, the open access to scientific publications is a now a contractual obligation. Regarding the data produced in the MA projects, the efforts on their availability and re-usability are on-going and developing though in a less advanced stage compared to classical bibliography. Other types of project outputs (e.g. different types of software and tools, intangible outputs, etc.) are the most critical as they have high value for practitioners but remain poorly covered and accessible, and also unsustainably stored.

The opinions on a common knowledge repository (KR) foreseen by EUREKA, and as communicated by key people responsible for data management in different projects, are listed in Table 8.

Table 8. ***Relevance of special agriculture related knowledge repository - opinion of key interviewed persons***

Project	Type	Opinion on the relevance of KR
BOND	CSA	The things with such platforms are that they are very well structured, have a very good research opportunity and they are continuously updated. There are a lot of platforms with knowledge articles which are well updated but nobody uses them – they die somehow, it is the sustaining process that is needed.
DIVERFARMING	RIA	Because so far there are no specific repository for this topic. Most of them are very generalistic. …collecting the results of previous projects, because it's something that we need, and if we want to go further to the state of the art or also to make proposals for the European Commission, we need to know the previous results …and it would be easier if we had this platforms to check it and not to repeat experiments or generate data that was already assessed.
EMPHASIS	RIA	Yes I think so. It would help the agri community to have one repository were it is possible to find all information and knowledge generated by EU funded project, with one access point.
Feed-a-Gene	RIA	Sustainability (of knowledge) is the issue, not the repository by itself, but continuity, creating knowledge community.

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Project	Type	Opinion on the relevance of KR
FairSHARE	CSA	I definitely think its relevant … from an end users point of view if you're targeting farmers or advisors or policy makers across Europe. I think it's very handy to have a platform that can have all this information available in one place instead of trying to find a particular horizon 2020 projects that provide a particular thing. Instead you would go into this particular platform and all the information is there. I think its required, I think its needed.
InnoForest	IA	It depends, my concern is loss of knowledge in the translation. Sometime knowledge repository loses the experience of the people involved in the knowledge creation. There is necessity of highlight the information of the creator of the knowledge objects in the knowledge repository. If somebody need more information on the how the knowledge objects have prepared and what was process, he or she should be able to reach out the concerned person.
LIVERUR	RIA	Yes, at the moment we are following what the DG Agri developed, a common Agri platform would be very relevant, not only as a knowledge repository, including best practices or data, accessible databases, but also to create community about specific questions.
LIVESEED	RIA	It is a good idea, since there is a lot of MA project and putting results together would be very good, however, organic sector already has its own solution (EU consortium on organic plant breeding)
MyCoKey	RIA	Yes, sharing information is important, we also need easy access for the data, not only for scientific institutions, and sharing the results would be helpful and useful. But of course it depends on the partners if they are willing to share the results.
Nefertiti	CSA	Split feelings. Everything produced should be stored, for sure. To be available, accessible. The project is important for that. I have doubts about the access to the knowledge. I doubt that European farmer will go to such platform. We have a similar at French level and it's difficult to reach the farmers. Only low % of farmers chase the knowledge. Some national access would be better. I doubt that many farmers would go to huge English database. Principle is nice, but to ease the access and knowledge is used by expected targets, I have doubts.
NoAW	RIA	Yes, for two reasons: 1. Dissemination, 2. Collaboration (with other people, partners). The main advantage is to get new ideas, we could use our methodology on the data that were produced by other people, the problem may be pushing people to publish and it may not be so easy. Papers are interesting but data is even more interesting. There is a lot of discussion on data because it needs to be prepared in a way that other person can reuse it.
OPTIMA	RIA	Yes, after the project ends not much work is done to keep it updated, the website is often not functioning – the project/results would make a bigger value if put on common knowledge repository.
RUSTWATCH	RIA	Yes if it is a meta data platform guiding people to the knowledge and data
SmartAgriHubs	IA	Presently, the data collected at project level like survey and farmer information are with the survey center or innovation hubs and have been stored locally. We prepared the inventory of collected information but to need check and assess them. We will make digital innovation hubs mature to have data management plan but it is not in the project priority at this point. We are not so far in it and people are not interested at this point.
TOMRES	RIA	Yes, it would be. I have not worked with meta-data analysis – but should be easier if not many platforms exist, but one or few platforms. Software and data storage possibilities for complex and big data is definitely interesting possibility. Genetic and transcriptomic sequences that are published in genetic repositories are typical examples; without such data you couldn't work today. What is written in the papers is less as if data is available.

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Project	Type	Opinion on the relevance of KR
		Meta-data associated with the data is very important for potential reuse.
TREASURE	RIA	It depends. We were struggling during the project to fill 3 platforms (web page, Zenodo, Research gate). So yes, it could be useful if it is only one platform. It is interesting because it's specialized. But, to consider, what to be put there.

From the answers in Table 8 it can be deduced, that in general, there was a very positive attitude about the relevance of such a common repository. In the interviews, it was emphasized that the **continuity and sustainability of knowledge** is the key issue and the mentioned **benefits of such common platform** could be summarised to:

- the centralisation and specificity of repository (agricultural knowledge)
- the access to knowledge, software and data for complex and big data analysis
- the creating the knowledge community; and
- the association of dissemination and collaboration

However, some **concerns or doubts** were also expressed regarding its usefulness. In particular, that the farmers are unlikely to use such a platform (based on previous experience at national level; see interview transcript with NEFERTITI), mostly due to the problem of language. Concerns were also raised due to the fact that some sectors already have their own platform (e.g. organic; see interview transcript with LIVESEED), or that it should not be just an additional platform needing the inputs but that it would serve as a unique (single, specialised and centralised) repository for agricultural projects (TREASURE).

The best practices in the creation of knowledge objects

The best practices in the creation of knowledge objects as highlighted by different projects, are listed in Table 9. It could also be observed from the transcripts that there was a big variability in the understanding and interpretation of the question asked. Nevertheless, the highlighted **best practices in creation of knowledge outputs of MA projects** can be summarised into the following conclusions:

- face to face interviews work better than internet surveys;
- close interaction with stakeholders (*i.e.* end-users) is important;
- it is important to have in view/consider the meaning, usability of knowledge outputs that are created and present them in a structured manner;
- it is important to publish data-related papers, so that people can re-use the data;
- consider the end-user when preparing knowledge outputs; lay summaries, applications for end-users and others may be considered;
- the value is not just in the object, but also in the learning experience in creation of it;
- assure the validation of outputs by data providers;

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- make ready-to-use advice for farmers;
- make database driven tools and services ;
- farmers use social media a lot – to reach them projects need to adapt to their channel;
- make a good data management plan.

Table 9. ***Best practices on the creation of knowledge objects - opinion of key interviewed persons***

Project	Type	Best practices on the creation of knowledge objects
BOND	CSA	As we learned it is much easier to talk to people and get the feedback out of them with 1 to 1 interview. We were also surprised that farmers use the social media a lot.
DIVERFARMING	RIA	A good communication strategy is very important with a good coordination strategy and to make sure that the knowledge from all the different stakeholders are considered because it is important to understand the different focus.
EMPHASIS	RIA	Close interaction among project partners was our own best practice. No advice.
Feed-a-Gene	RIA	That it has meaning, usability. How to ensure that the knowledge is accessible? Structured. When the project ends, the concept of why it was carried out will disappear, but bricks will stay, while the plan to make a house will disappear. It is also important to see the context of results, the context in which the results were produced; the historical perspective, why we did what we did (provides the example of efficiency and product quality in livestock production, the changes, importance of aspects that appears and disappears)
FairSHARE	CSA	This is something i suppose we are trying to develop - the collection of good practices in relation to digital tools that advisors use. … What I consider a good practice, I think it has to be engaging with the end user. … So I think that if you are creating knowledge objects it's really important to engage with the end-users as much as possible. In doing so those end users have to get a sense of ownership of the solutions that you create. I think that's far more powerful in terms of solutions.
InnoForest	IA	… apart from creating knowledge objects if knowledge hub can become the mediator between the knowledge object creator and people who need to use knowledge objects. Majority of the time knowledge objects out of any MA project only highlight the final output but what was the learning experience it stays with the knowledge object creator. If we able to fill in this gap that should be considered a good practice.
LIVERUR	RIA	Two folds: one is a circular business model dedicated to rural /periurban communities – the object itself is a circular business model canvas, on the other side the development of a specific platform (knowledge base) called RAIN. It is a platform where all the regional authorities or decision makers can access their rural regions and territories (involved in the national development plan – can involve several regions)
LIVESEED	RIA	it is important to plan properly - a couple of months before the deadline, we try to plan properly, we have a practice that other people are included in the validation of outputs.
MyCoKey	RIA	The lay summaries are really helpful for the farmers, the app could be a good practice. The integration of knowledge objects in a friendly tool – it could be very good practice.
Nefertiti	CSA	basically to make exercise for whom, to use most relevant channel to reach them, to pay attention to contextualise the knowledge, to pay attention to language not only national but adapted speaking to target user, accessibility. MA approach changes behaviour of people and in such setting for example researchers also become more practice oriented.

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Project	Type	Best practices on the creation of knowledge objects
NoAW	RIA	To publish datapaper so that people can actually use that, to make an external review, to use some standards.
OPTIMA	RIA	Ready to use advice for farmers/practitioner (creation of IPM for diseases, a website with disease alerts, videos on how to use the sprayers)
RUSTWATCH	RIA	Database driven tools and services, a good website and intranet, use of social media and a good data management plan and a good Plan for Exploitation and dissemination of results
SmartAgriHubs	IA	As a coordinator of the project we can only make people and stakeholder aware about the policies of open accessibility of knowledge objects or data of European Commission and ask them to provide reason to do so.
TOMRES	RIA	One area is favoring collaboration between projects and OG or focus groups. In these groups there is a high farmers participation. Agri-summit meetings organized by DG Agri is also important for wide communication. Problem is engagement of farmers, it is very difficult; not so much to engage the companies (they do not like reports but otherwise yes). OG gather farmers interested in innovation so this could be a good channel for RIA projects to communicate the results.
TREASURE	RIA	Cooperation at regional level between science and practice, involving all the actors in the creation of all these outputs.

At the end of the interview, the respondents were asked to give **a piece of advice regarding the creation of data and knowledge objects** in MA projects. The answers largely matched those given for best practices, as follows:

Advice regarding the creation of data and knowledge objects

- apply a participatory approach in knowledge creation; improve participation of practitioners in the creation of knowledge;
- assure open access to knowledge outputs and to interoperability and re-use of data;
- provide simple explanation for scientific outputs and metadata for re-use of data;
- exercise a constant exchange of knowledge with stakeholders;
- the data provider should access and validate the data;
- the exploitation of results should be mandatory;
- easy digital tools are necessary for farmers;
- more emphasis on innovation and not just research;
- efficient time management and coordination for best outputs; and
- be clear with regard to what is being offered to practitioners.

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8.4. Validation results

As a final step, a validation survey (of the statements regarding the knowledge and data generated in MA projects) was performed to test the level of agreement of different actors with the statements. The request with a link to the survey was sent to all MA projects, as well as to the networks of EUREKA partners, and 210 responses were obtained from different European regions.

The socio-demographic structure (Figure 11) of the sample of respondents shows that the majority (2/3) of them come from the Mediterranean and Atlantic area. The predominant age of resepondents was between 30 and 64 years. With regard to the type of respondents, the majority of them come from the research domain (60%), with the next most frequently occurring group being the advisors (15.2%). All the other actor groups (e.g. farmers, industry, policy makers) were quite scarcely represented.

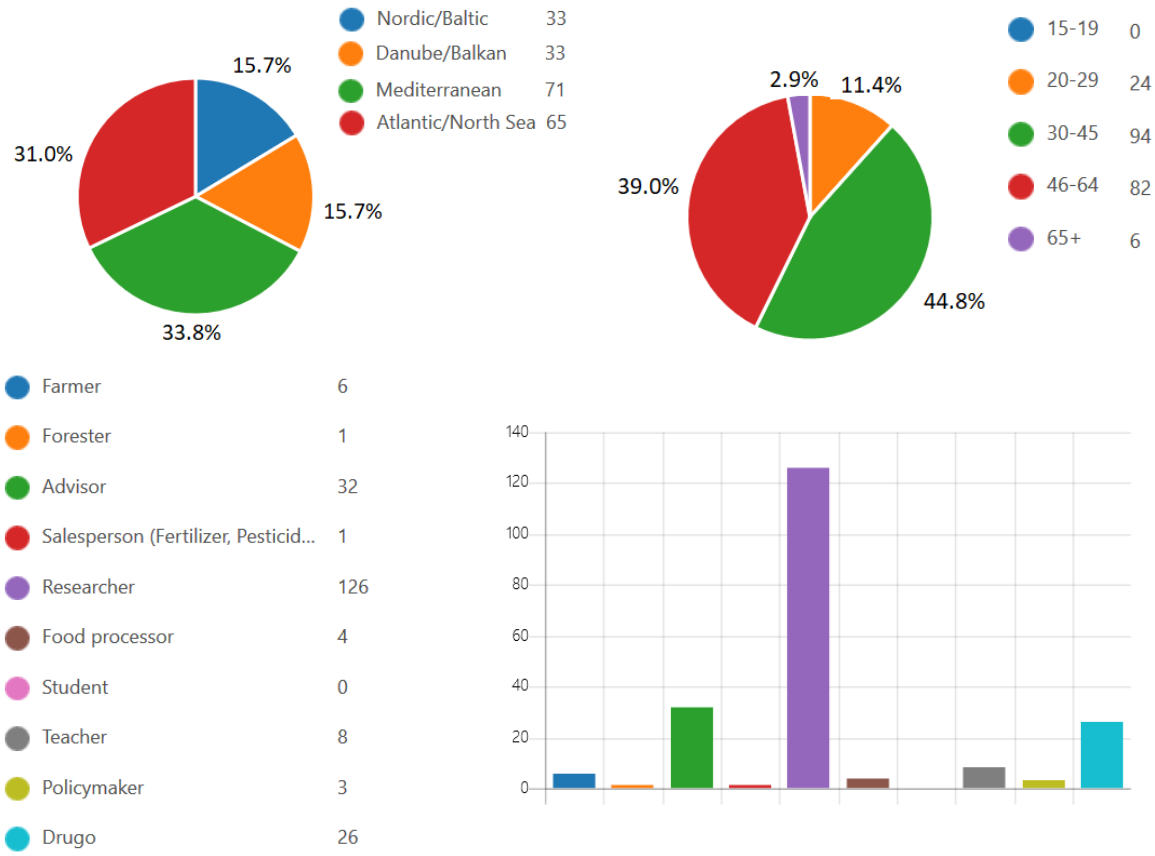

Figure 11. ***Socio-demographic and actor-type structure of respondents***

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With regard to the **agreement with the statements** (Figure 12), a big majority of the respondents agreed or strongly agreed with the proposed statements. More specifically:

- MA projects generate a wealth of useful data for practitioners (92.4%).
- In order to make the primary data meaningful and useful, accompanying metadata is necessary (92.4%).
- Making this data/knowledge available through the on-line repository would greatly increase their impact (92.8%)
- Despite being requested, a DMP is often not adequately prepared due to lack of know-how and resources to translate it into daily practice (85.2%).
- An on-line repository should provide access to both, raw data and knowledge objects (82.9%)

	Statement
1	Multi-actor projects generate a wealth of potentially useful data/knowledge for the farmer, forester, and advisor. 
2	Making this data open and easily accessible in an online knowledge repository would greatly increase the impact of these MA projects. 
3	A central online knowledge repository for agricultural innovation should include primary/raw data (e.g., measured soil nitrogen levels, temperature) in addition to secondary outputs such as instructional videos and practice abstracts. 

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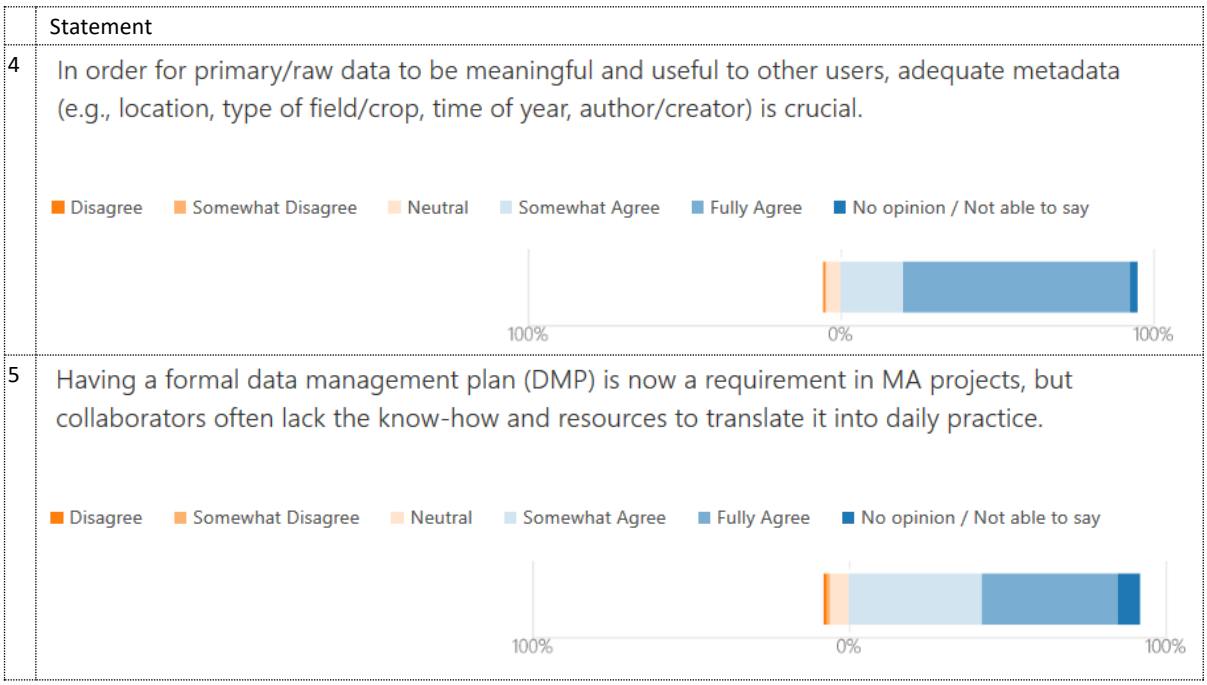

Figure 12. ***General agreement with the statements regarding the knowledge and data generated in MA projects***

It is noteworthy to look at some further remarks made by respondents, which provide even more useful insights than the level of agreement with some of the key statements regarding the knowledge produced in MA projects (those related to knowledge/data produced in MA projects are emphasized in bold):

Validation survey – additional remarks

Remarks from the respondents (citations) obtained in a validation survey[12]:

- *"Our MA project deals with food processing issues. Hence, it would be good to include all topics (agriculture and food) in a knowledge repository."*
- *"I do not find much useful data for farmers and advisers from MA projects in progress."*
- *"I believe open data is great, but I would be mindful of who has ownership over the data. Moreover, if at all possible, I would suggest to prioritise making the data open and available to practitioners and not-for-profits, rather than for-profits."*
- ***"Including primary/raw data into the central online knowledge repository and sharing will transform the KR and its services into a European-wide data-centric Digital***

[12] "(In some cases) Interview quotes have been slightly edited for clarity."

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Innovation Hub (DIH). *The emerging needs for establish national level DIHs and interconnect them will strenghten this direction."*

- ***"Primary data is only useful if presented in an easily understandable way****; however, they can greatly serve people's needs with different backgrounds and knowledge/skills."*
- ***"All MA projects should be obliged to produce and deliver real data and a replicable management plan."***
- *"Sometimes it takes a long time for the projects output (field research) to bbe "translated" into public learnings."*
- *" **In order to be usefull for farmers/foresters, there is a need for more understandable articles in agricultural magazines** (like the "Top Agrar" magazine in Germany) apart from papers published in peer-reviewed journals. "*
- *"The most important aspect of Multi-Actor projects is the process of bringing people together, and the evolving process between those actors. Hence, instead of trying to capture processes into datasheets, the most important impact of Multi-Actor projects should be a paradigm shift; next to understanding data, understanding processes in research and in daily life are crucial. They are both important."*
- ***"It would be helpful if the EU commission provides templates for DMP instead of asking each project to develop its own DMP.*** *Also there should be a centralized database for EU projects devided for the different disciplines providing already concreate tempates for data assessement and metadata which can be amended and then will be available for all other EU projects."*
- ***"It should be kept in mind that different actors have different information needs as well as different preferred ways to obtain the information they need.*** *My guess is that raw data are only useful for a very small selection of potential users, and probably not for the ones you mentioned (farmers, foresters and advisors)."*
- ***"Specific templates should be developed to facilitate the uploading of any primary/raw data in open data repositories.*** *Considering the potential heterogeneity of information all uploaded datasets should be kept user-friendly and relatively unconstrained. Hence, an open-source database management system that accepts a variety of data files (e.g. plain text files) should be available to avoid errors during data transfer."*
- ***"To make the most out of the data and information provided, we need to make as much data as possible accessible*** *so that others can use the data in the future to build on what the MA projects are already doing."*
- ***"For most users it is important to have the processed data, but for some advanced users it may also be important to have the raw data in order to develop new information/results adapted to their needs."***
- *"The European GDPR regulation makes location and owner related data quite difficult to be made available."*

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- ***"I think farmers have no need for raw data as such, unless it can feed their practice** (e.g. calibration data)."*
- *"I am working in agricultural research. **A common management software** is needed for field trials, data collection and fill out automatically the metadata like location, soil, etc."*
- *"We must define a number of main topics that constitute common interests and take into account specificity (climate, ressources, soil, etc.) of every region to be sure of the reliability of results and its valorisation."*
- ***"The conversion of data into meaningful information and appropriate application is a challenge** which most projects experience. Taking activities from a "research" arena to a practical "revenue" arena will make a project more purposeful."*
- *"The key of success is not only the collaboration and open data , but also the openness and engagement of the main actors."*
- *"For farming organisations, the MAA is an effective mechanism for acquiring knowledge and parsing and disseminating that knowledge to our member constituents."*
- *"Open data (and publication) policy should be supported by a dedicated budget NOT by the project budget."*
- ***"A raw data repository would be a huge step forward for those of us developing solutions and providing advice.** The main problem is that those that generate the data are reluctant to share it, even if annonimity is guaranteed. Moreover, this leads to the need of two diferent systems, namely one oriented to farmers with ready-to-use, simple advice, and another one for scientists/advisors."*
- ***"Results must be applied and be widely and easily disseminated**."*
- *"The fact that data is useful, does not mean that it is ready-to-use."*
- *"The **type of data is crucial**. In many cases, researchers generate numerous raw data which is hardly useful for end-users and policy makers. In such cases, publications - not only scientific papers but also brochures and booklets summarizing outputs of experiments are more useful for the general public and end-users than raw data."*
- *"The level of awareness and mainstreaming in programming are key elements for local domestication."*
- *"Internet can't solve everything."*
- ***"To make results available to farmers, we need to deliver the results in a way that the farmers trust them. For instance peer to peer exchanges and study visits."***
- *"A multi-actor approach in itself is not a guarantee of successful aplication. There is no doubt that co-creating with the final users and resource producers is key for a success in the research and innovation ideas, but there are many variables in which innovation can*

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fail (margins and costs, development of the idea for the final user, trade-offs, not appropriate knowledge transfer etc.).”

- *“Although a lot of emphasis is being put on it, the multi actor approach sometimes fails to push current practices and activities at the farm level a step forward.”*
- ***“Researchers want raw data, farmer/foresters/advisors want outputs translating the data into meaningful knowledge they can relate to.”***
- *“There is evidence of a need to* ***raise the levels of understanding of project teams in regard of the importance of data management, adherence to FAIR principles, and associated compliance with Open Access.*** *This is for reasons of compliance to EU funding rules, and as part of good scientific practice.”*
- *“Face-to-face communication is a prerequisite and on-line communication should be complementary to it.”*
- *“Actors should be carefu when making information openly accessible: the information should be provided anonymously (GDPR).”*

9. Conclusions

The knowledge and data produced in MA projects were analysed with different approaches including desktop research and interactive work with coordinators and other key persons involved. It was determined that there is a large diversity of outputs from MA projects, and that the ouputs differ mainly according to the type of project (research and innovation action-RIA, coordination and support action-CSA, innovation action-IA). RIA projects typically put more emphasis on scientific publications, whereas CSA and IA projects are more knowledge-exploitation oriented. With respect to FAIR principles, the published outputs (scientific and technical papers) are mainly in-line with them, whereas more efforts are needed to assure the access to other types of important outputs produced in the projects, e.g. raw data, software/applications. It has emerged that publication of data papers (raw data and metadata) should be encouraged for a better re-use of data. It was also stressed that a common data management plan in EU projects is needed, including a model or guide to follow in the creation of a data management plan. The importance of intangible benefits that MA projects create was highlighted, as was the challenge for the sustainability of the created knowledge community. This last point is particularly important in the context of the MA approach paradigm, since it helps the practitioners to keep in touch with the knowledge-creation process while allowing the knowledge creators to better balance their research goals with the needs of practitioners. It was recognised that there is a need for the “infrastructure” that would support the reuse of scholarly data and that a unique online repository could greatly increase the impact of MA projects.

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10. Annexes

Introduction (short explanation of the workshop)

The first exercise with the MA projects was organised during the EUREKA kick-off meeting (KoM). The coordinators of the selected MA projects were invited to participate in the workshops organised for the KoM meeting. In the frame of WP1.2, the participating coordinators attended the workshop in which they were asked to address the key question: knowledge objects produced in MA projects of interest for common KR (FarmBook). They were asked to provide the examples of knowledge that was produced in their project; what is the importance of created knowledge for the end-user and whether this outcome is available according to FAIR principles. Eight projects were covered by the workshop, namely IMAGE, FAIRSHARE, TREASURE, OPTIMA, FEED-A-GENE, IOF2020, SMART-AGRI-HUBS, RUSTWATCH. In addition, the KoM participants, acting as different actors, joined a parallel workshop and replied to equivalent questions *i.e.* which knowledge is most important, why and how to present it to end-users.

Annex 1. Resume of workshop scripts ADVISORS

KNOWLEDGE

1. Contacts (***)
2. Existing tools for facilitators (guidelines) (*****)
3. Site map – search engine (*)
4. News, summaries (**)
5. Videos, podcasts (***)
6. Scientific papers, formatted knowledge, factsheets (********)
7. FAQ (**)

WHY

- To ask additional information
- To build its network for work
- Looking for answers
- Looking for collaboration
- To improve skills, save time
- Overviews of content (guidance) search function
- To get/be updated, cross-fertilisation in interest domain
- Policy, changes, updates; he needs to inform his clients
- Lokking for events to go to
- To increase knowledge info to be presented to farmer

HOW TO PRESENT IT

- Emails
- Contact opt via website
- Messageing
- Interaction also under article

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- On-line courses
- Community evaluation
- Navigation solutions
- Live feed
- Filter search
- Newsletter
- Videos, youtube+link to platform »embedding«
- Scientific data; highlights, keywords; related topic content

Annex 2. Resume of workshop scripts FARMERS

KNOWLEDGE

- Production methods
- Good practices and best fit
- Innovations, Innovative practices
- How others do it
- Technical and environmental references
- Competences and routine descriptions
- Farm management
- New business models
- Learning process
- Decision models
- tools

WHY

- To get more information and choose right thing to do; to solve problems
- Economic benefit
- Increase efficiency, save time
- Regulatory compliance
- To provide practical learning opportunity
- Advertise, marketing; reach out potential new stakeholders
- What is actually out there
- To increase use of knowledge generated by projects
- To share; knowledge exchange

HOW TO PRESENT IT

- Toolbox
- Educational materials
- Guidelines
- Presentation
- Demo
- Video, small instruction movies
- Training modules
- Infographics
- Podcasts

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- Apps
- Webinars
- On-line forum

Annex 3. Resume of workshop scripts RESEARCHERS

KNOWLEDGE

- Article
- Reports
- Presentations
- Education materials
- Newsletters
- Update on plicies
- Videos, innovation, tutorials
- Prior results from similar topics
- Template to gather data
- Methodology
- Experimental design
- Feedback from advisors, farmers
- Access to networks for contacts
- Calendar for upcoming scientific/experimental events

WHY

- To talk to the farmer
- To test
- To have good explanations for farmer
- Copy repeat as the reseracher did
- Have other good experiences
- To get in contact

HOW TO PRESENT IT

- Success stories (*******)
- Practical presentations/video (***)
- Search for who is this info (***)
- Guideline/handbook/SOP (*)
- Movie/video
- Views/statistics (*****)
- Ranking****
- Real human support/get help (****)
- Community building (*)

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Annex 4. Resume of workshop scripts with COORDINATORS

FAIRSHARE

KNOWLEDGE

Knowledge objects	Rank	FAIR principles
Information about DATS, descriptors, features, function, costs	5	Y on all
Knowledge – user experience How it works – Value ++	3	Y on all
Data	4	N;
40+ P.A.from user	6	Y
Information on MAA in different contexts. 4 workshops. Regional.	1	Y
Best practice in DATS. User experience	2	Y

WHY

- To inform others
- To share experience, best practice, how to choose, Trust?
- To guide the users and provider
- Show the diversity of knowledge gap
- How local knowledge can be used to final solution and improve life for all
- Help to guide other digital projects

TARGET USER

- Advisors, farmers
- Advisors
- Projects, TN, advisors
- Other TNi, projects
- Developer, investor

FEED-A-GENE

KNOWLEDGE

Knowledge object	Rank	FAIR principles
Scientific publications from the project	1b	Partly F, A, R
Factsheets, videos	2	Partly F, A, R
Data generated in the project	3	Partly F, A, R
Data from which sci publications sort out; may differ between disciplines	1	Partly F, A, R

WHY

- They will be scattered around in diff journals after the project is over
- They will be lost after the project – it will require work to organise this
- For data the same, they will be lost after end of project

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- Scientists are reluctant to put data on open – fear of misinterpretation

Comment: if this is to be done there is a need for standardisation; ontology

TARGET USER

- advisors
- Farmers, advisors
- All stakeholders
- Scientific community

IMAGE

KNOWLEDGE

Knowledge object	Rank	FAIR principles
IMAGE web portal (rank 2)	2	F-need discovery metadata; I data made available will be described in a standard way
IMAGE SNP chip (rank 3)	3	F-in a few months; A-public; I-standard manifest;
MOBPS software (rank 4)	4	F-but needs a discovery metadata; R-needs score training tutorial
Molecular data on genetic diversity of animal breeds(rank 7	7	F-by the end of project
Papers on reproductive biotechnologies and protocols (rank 6	6	I-not applicable; R-need training to apply
Survey data (individual answers, anonymous, to be stored) (rank 1)	1	F-not at present; A-on IMAGE web page; I-not at present; need a solution to make individual answers accessible R-not at present
Economic optimisation model (rank 5)	5	F-not at present; R-yes, training

WHY

- Connect all available data on gene banks; make them visible, help to update, a link is needed
- To make it visible,promote use link is sufficient, towards the provider catalogue
- To make it visible, promote use, link to github repository
- To make them visible, avoid duplication, link to EBI repository
- Useful to gather them in specific section
- To enlarge the readership, to avoid duplications, to get feedback (maybe)on interpretation, to provide a reference point
- To promote its use

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- Gene bank managers, researchers, advisers

IoF2020

KNOWLEDGE

Knowledge object	Rank	FAIR principles
How to deploy IoT devices; guidelines, references	1	N
standards		N
Benefits of IoT solutions (kpis + measured indicators; webinars	3	N
Complexity of data sharing and valorisation of data; cod of conduct; webinar	4	N
How to make business model for IoT solutions; guidelines + reference mode webinar	2	N
Demonstrations of IoT solutions (place, owner)	5	N
Product video	1	N
Use case specific data not included in this sheet		Not yet

WHY

- Not reinventing the wheel, but build on existing
- For interoperability of different devices; integrating in existing farms
- Relevance and importance of solutions for specific farms
- Defining agreements that are clear for all involved
- Creating business + sustaining project results
- See for yourself
- Demonstrate results

TARGET USER

- Integrators
- Standardisation organisation; Supplier of farm equipments
- Farmers + funders DIH
- DIH, advisors
- DIH, advisors
- Farmers, suppliers of IT
- DIH, farmers, all

OPTIMA

KNOWLEDGE

Knowledge object	Rank	FAIR principles
Report on economic, social, environmental, assessment per crop disease	2	No

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Practical information on reducing spray drift with the new controller	3	No
New camera specs for detecting 3 diseases	4	No
New IPM plan for the 3 crop diseases	1	No
Software to be mounted on sprayer to best regulate	5	No

WHY

- All actors want to see the economics first, then the social and environmental impact of new systems with real field tests in multiple years
- Spray drift causes huge loses of PPP. High economic and environmental impact means money for farmers
- Everyone would like to have a digital system to early detect the disease
- Crop production needs to implement w IPM strategies
- Apply precision spraying

TARGET USER

- Farmers, advisors, industry; policy makers
- Farmers, advisors
- Farmers, advisors, industry
- Farmers, advisors, industry
- Industry, research

▶ RUSTWATCH

KNOWLEDGE

Knowledge object	Rank	FAIR principles
Primary data hosted by AU	1	F-yes; A-yes
Secondary data-knowledge	3	F-yes
Early warning of disease outbreak	2	F-yes A-yes
EIP-AGRI abstracts	4	
Deliverable reports		
Outputs from existing platforms /networks		
Public disseminations, publications Scientific output		

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WHY

- Why not? Data providers generally own their data. Multiple layers of raw data. AU cannot provide access to these data from projects without permission by the owner.
- Generally freely accessible on the web site; more details available in intranet after login
- Important but time and space dependent
- Made ready for farmers; for certain specific stakeholders

TARGET USER

- COMMENT: overview of how different multi-actor projects communicate and disseminate to different stakeholders would be very interesting. What can we learn.

SMARTAGRIHUBS

KNOWLEDGE

Knowledge object	Rank	FAIR principles
Register of agricultural innovation hubs	1	F-yes; A-yes
Register of competence centers	3	F-yes
Collection of best practices (description …??)	2	F-yes A-yes
Register of funding organisation	4	
Specific data not included in this sheet		

WHY

- For farmers to go to for support in digitisation
- For state of the art tools, knowledge and experience in new projects
- Inspiration, use of already existing results
- For farmers and projects

TARGET USER

- Farmer
- Project initiator
- DIH ecosystem
- Project initiator

TREASURE

KNOWLEDGE

Knowledge object	Rank	FAIR principles
Scientific papers on experimental work done	4	Y on all

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Trademark	1	Y
Database software	1	N; but available
Professional papers in national languages	3	Y
Genetic data (raw data)	2	partly
Monographic publication with data on productive performance of breeds	2	Y
Surveys (raw data)	3	N

WHY

- to be in the repository specialised for agriculture; perhaps only abstract with doi link
- the info about TM, that people are aware of its existence and can join the association if they are interested to use it
- the info about software, that people are aware of its existence and if they are interested to be able to use it
- prof. papers as typical format for end users (farmers advisors)
- genetic data for re-use for other scientists
- book represents a compendium of data on and of literature on breeds
- data from surveys for potential re-use

TARGET USER

- Scientists, transfer knowledge people
- End-users; farmers and meat processors
- Farmers, breeding organisation
- Scientists/researchers
- All farmers, advisors, scientists; society at large
- Anybody interested to use the data

Annex 5. Transcripts with BOND

A transcript of the interview; May 12th 2020

- You have some communication material available on you website (brochures, posters, roll-up), have you created any other knowledge objects in your project?

The question is what you mean by knowledge objects? We have done a lot of things, we have done special events, training sessions, we have collected best practices, case studies. We have prepared and signed 11 MOUs (cooperation agreements) and a documents on legal frameworks . Do you have any reports on these evets – I noticed that you organized roundtables, study tours. Did you make some reports, interviews? Did you record, make some videos – all such materials are knowledge objects that can be used for communication. Like in every H2020 project we have done deliverable documents where all the details of different activities are described, analysed and

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summarized. We have done special summary documents, we shared them with our community via the project webpage and social media channels, we have a big section of the training of trainers (ToT) sessions where you can also find training plans, training material and some additional things. We have a summary report on each of the six study tours – you can find the details, the program on the case studies we visited. All the material is described in the deliverables. Are these deliverables accessible (publically available) or are they confidential? They are confidential.

- Which of these results do you consider the most valuable (Q1) – which will make the most impact?

The best practice case studies are very helpful for farmers, land managers, farmer networks to see how other people/organisations saw issues that were established by other networks/organisations –learning from best practices is always good. Our ToT material is also helpful, there is also participatory methodology, our legal framework document is also very helpful because it compares different regulations in different countries which might be a basis for the coming up proposals for regulations in their own countries. Cooperation agreements (MOU) can also be helpful because they can be a baseline for establishing something similar within their own organisations. When were these outputs created – in the frame of workshops, policy roundtables? They were collected and created by the project. The first 20 case studies were collected during the study tours, the additional were collected by our media expert (they can be found in our repository) – she did interviews with the hosts of the study tours, with the representatives of our project, she collected perspective case studies. The key training materials were developed during the project with the main part from FAO (project partner). The legal framework and interviews were generated and collected amongst the partners and led by a Hungarian partner who prepared the template and collected all the material.

The best practice case studies are very helpful for farmers, land managers, farmer networks to see how other people/organisations saw issues that were established by other networks – learning from best practices is always good. Our ToT material is also helpful, there is also participatory methodology...

- Which are the target users of these outputs? Are farmers, advisors, policy makers the end users of these outputs?

All of them, the main focus are farmers and land managers, farm networks and farmer organisations, on the other side policy makers, legal decision advisors, also researchers can be using these outputs.

- Were the practitioners also involved in the creation of these outputs?

Yes, the farmers were involved in interviews, we did some personal contacts, they were involved in study tours, roundtables, national workshops.

- On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs?

It was defined in the project how much case studies we have to collect, how much MOUs we have to make. We have overachieved a lot. We have planned 20 studies, now we have almost triple times. We have planned to have 8 MOUs, now we have 11, there will also be forthcoming. We were very successful.

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- In your opinion, which outputs of your project have reached/will reach the most impact and why?

The most impact – it is hard to measure - we have two kinds of measurements, one is our statistics of the website: we can see how many people from different countries visit different parts of the website, we can measure how much impact it might have. Then we have some questionnaires where we ask farmers and partners, what they feel, makes the most impact and two main points are the most valuable: best practice case studies are well reviewed on the webpage, also the ToTs – we always get a good feedback from the farmers how they really enjoyed and liked these ToT sessions, how they learned a lot of new things. The special events - interregional forum, national workshops, policy roundtables, study tours give them hints, ideas, show them something. All the events – the TOTs and the case studies will have the most impact. The farmers actually learn from these events? Yes, this is what our project contains - there are three parts: 1. See (learning from success (mobilisation, study tours), 2. Learn (overcoming constraints (self-analysis, capacity building)) and also 3. Tell (affirming a position in the policy landscape (gaming interface, best practice in regulation, lab experiment). You are focusing on underdeveloped countries (Moldova, Romania, Portugal)? Will these policy making decisions make the most impact in these countries? We have a mixture of well developed countries, e.g. France, Italy, Spain and we have also the eastern part (Poland, Romania, Moldova) where a lot of new development is coming, we have also the North (Norwegian partner, the Netherlands). We have reached each section of Europe. But the partners form the East learn more from the Western side, don't they? Yes, sure.

- Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?

We have our project Sharepoint at the Coventry University where all the documents are stored. The documents will have to be stored there for 5 years after the project ends. Of course we have our BOND webpage which will be secured for 3 years after the project. We are also currently checking with our partners who might be able, interested and willing to continue this webpage so that it can be available for a longer period. It is a well established webpage, and when you see the statistics how many countries are looking at this page and how many people on daily basis are checking out our content. It is stored for a longer time and we hope that we can save it for much more.

- Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant?

Yes, of course – it might increase the accessibility and to provide the knowledge to different aspects. The things with such platforms are that they are very well structured, have a very good research opportunity and they are continuously updated. There are a lot of platforms with knowledge articles which are well updated but nobody uses them – they die somehow, it is the sustaining process that is needed. The purpose of the Farmbook is to store not only all the outputs but also the raw data. Yes, it might be helpful but we haven't really created any raw data in our project – it is more collecting and learning. We also plan some publications but they won't be scientific, these publications are intended for wider audience, we plan to write six publication plus additional four. For six publication we are forced by the project, they are based on roundtables, there will also be a publication on land management, summary publications on the achievements of the roundtables, we plan a publication on the legal framework, and to have a publication on gaming we developed and also one on the case studies – the collection of all case studies we had, with nice pictures and additional information. We will also have a kind of a learning guide which is done by

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our partner FAO. It will summarize the ToT material and will give a clear structure how to reuse it – be a guide to doing it for the organisations and people.

- Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/operational groups, thematic networks?

Project partners shared the results amongst their organisations and networks, they also may reuse the outputs in other projects they are involved but we have no clear picture on that. Directly 1 to 1 transition we didn't exchange any results or outputs.

- On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10)? 10;

All the knowledge objects are openly accessible on our website.

- Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

As we learned in the project it is much easier to talk to people and get the feedback out of them by documenting them in a 1 to 1 interview. At the start we were approaching a lot of people by email or by common ways, but the most and the fastest results we get from the 1 to 1 and the phone interviews.

- Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation? Do you have any bad experiences?

To be honest, we don't have any bad experiences, sometimes we had some troubles with our milestones and deliverables because when the project was planned it was not fully considered that we have to work with farmers and some of our events were planned for the summer, and it caused some problems. It was not unresolvable, but it was also not as easy as we thought it will be. It is important to know also the work plan of the people you are approaching and consider that in your planning. We were also surprised how the farmers use the social media, we were not expecting that the farmers are so keen on. This is an advice – to use these opportunities more (with Twitter, Facebook, Facebook groups, Instagram). The farmers are using a lot of these new technologies. We will also do a lessons learnt session at the end of the project to get some more ideas from the partners.

Annex 6. Transcripts with DIVERFARMING

Interviewer 0:07 In your opinion which of the results or outputs of the project are or where the most valuable and why?

Interviewee 0:24 What I told you is that we are in the middle of the project so we don't have results yet. So I don't know you want me to speak about what I think we will have or you have to write here that we don't have results.

Interviewer 0:42 I think it's results you already have or had in the past so if you are expecting to have results I think it's not worth it.

Interviewee 0:53 We don't have results yet. We are in the middle, is five years project we are just in the middle. We have two years and a half left to finish, so we don't have results to share.

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Interviewer 1:06 Okay. So the second question is the same: How and why where did this output generated? You haven't produced any output.

The third question: Can you please specify all the intended target user types of your Multi Actor Project results?

Interviewee 1:29 Yes, this is the intended, what we want to address in our project. They are farmers for sure, advisors as well, researchers as well, policy makers, industry as well, professionals and also consumers.

Interviewer 1:56 Any other?

Interviewee 1:58 Yes, logistics.

Interviewer 2:04 By logistics you mean logistic enterprises?

Interviewee 2:09 Yes, because we are working with the value chain. So, you know in English they say the logistics or now it's logistics, how they call the transport based on the value chain. Yes, with industry I mean the agro industry, but and also we are working on machinery so also machinery, agrarian machinery manufacturers.

Interviewer 2:47 Any other wish to add?.

Interviewee 2:48 No, these are the focus target we have identified.

Interviewer 2:56 Which other outputs were intended for practitioners?

Interviewee 3:05 Since I didn't answer the first and the second one, I don't know what to say here.

Interviewer 3:17 Okay. So let's focus this in other way. Have you considered the target users to participate in the creation of the outputs?

Interviewee 3:32 Yes, we are having surveys, questionnaires, seminars with stakeholders. And we want to have them in some demonstrations and to have feedback with the outputs that we are developing.

Interviewer 3:56 Okay. Next question: How and why did different project actors and partners contributed to the creation of outputs?

Interviewee 4:22 In our project case, I mean the farmers are involved in our field studies. So, they are implementing our field case studies, where the different trials are established. So, they are working on the field, they are also interviewed to see their opinion or understand their options to select some choices that we will give.

And industry, we are having surveys and questionnaires with agro industry. So, they are involved also in the development of the outputs. Also within industry in agrarian machinery manufacturers, we have partners that they are agrarian machinery manufacturers and they are developing prototypes.

And researchers are getting the data and treating the data and writing the reports. They work in the fields together with the farmers and with industry but they are there ones to collect all the information, treat data and make the reports.

Interviewer 6:35 You said they also participate in the surveys?.

Interviewee 6:39 Researchers? Yes.

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Advisors and policymakers, they participate in the surveys and in the seminars, they invited.Consumers to surveys.

And the logistics they are working daily with different, among them to assess the different alternatives. So they are I mean, the logistics they are just working on the project and following an experimental design, so they are working by themselves in the project.

Interviewer 7:56 So do you track them with any device or just ask them with a survey?

Interviewee 8:03 I have a partner which is a logistics company, so they make surveys with other stakeholders, but not only your logistics also I mean the farmers, the warehouse, the industry, the supermarket just to assess the transportation and the routes and all these things. So they make their calculations to assess the different roads or how to optimize it. So I mean, they follow an experiment design to optimize the value chain.

Interviewer 9:09 Any other?

Interviewee 9:11 No, these are the ones that I told you in the previous question.

Interviewer 9:19 Sixth question: On a scale of one to 10, How well do you think your Multi Actor Project will achieve or achieved all the planned or anticipated results and outputs? Since you haven't produced any output, How would you rate these?

Interviewee 9:39 I, I hope we have a 10. I mean, we are in the middle but so far we are achieving in our partial resource despite the confinement and the lockdown that we will have some delay and we will have to request an extension for sure. But with this extension, I think we will achieve 10.

Interviewer 10:17 Seventh question: In your opinion, which outputs of your print have reached or will reach the most impact and why?

Interviewee 10:27 This is future, we don't have. The most important is the machinery prototypes we think because there are no machinery adapted to crop diversification which is the topic, the objective of our project. And they've got linesto give innovation in machinery industry.

Second output would be the decision support tool for decision makers to plan strategies for the configuration of the agroecosystems on the regions, depending on this tool if they want to implement the code diversification, they would know the benefits and disadvantages to plan how to deal with that.

Next, the white paper for policymakers to update the regulations based on the results of the project.

Last, the fact sheets for farmers, easy to understand, in case they want to implement crop diversification so they know the best alternatives and the benefits.

Interviewer 13:41 Any other you wish to add?

Interviewee 13:43 No, these are the most important ones.

Interviewer 13:49 Okay, you already answered the second question, all right.

Eigth question: Are all the outputs/knowledge objects of your project stored for the longterm or are you planning to store them?

Interviewee 14:01 Yes.

Interviewer 14:07

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Why yes?Interviewee 14:09

Why yes? Because when we applied we were under the pilot open access I don't remember the name of this. I don't know if it's open access or I don't remember so the pilot open access or data. And because we are concerned that data must be public. I mean, we are under a public framework, we are paid by by public budget and we need to give our results to society. So we are concerned and we are going to do it. So, we are going to publish openly all our results on a repository, zenodo, this is the European Commission, the repository that was created by a European project.

For how long? As long as zenodo is working. And we're gonna publish our all our data except for everything related to the machinery manufacturers since they are private companies and they are making their prototypes and machinery to introduce it in the market. So it's something protected, it will be protected. It is the only thing protected.

Interviewer 16:08 Ninth question: Do you think that the creation of a common agri platform as a knowledge repository for multi actor porjects is relevant?

Interviewee 16:17 Yes.

Interviewer 16:19 Why do you think so?

Interviewee 16:21 Because so far there are no specific repository for this topic. Most of them are very generalistic. And when you want to find information, you have to use keywords, but sometimes it's difficult to find what you need, because they are very general, any repositories I know. So, when people want to find data related to agriculture, it is easier if they have some specific platform where they can find it. Mostly, if it is collecting the results of previous projects, because it's something that we need, and if we want to go further to the state of the art or also to make proposals for the European Commission, we need to know the previous results to make sure that we go further beyond the state of the art and it would be easier if we had this platforms to check it and not to repeat experiments or generate data that was already assessed.

Interviewer 17:44 Any other thing you wish to add?

Interviewee 17:46 No. More or less this is why it is relevant because to be specific, just to go directly to a place where we know the information.

Interviewer 17:59 Tenth question: Did you transfer or exchanged any results or outputs with other projects or groups?

Interviewee 18:07 Yes.

Interviewer 18:11 What results?

Interviewee 18:16 We have exchanged with other projects some results of surveys and field case studies. And we also have received to increase the volume of data we have to have more robust results. We are collaborating with different projects. So, that was one of the objectives. To increase the accuracy of our outputs by increasing the sample number. And also we thought the project we have shared some methodology I mean one of the result was an update of protocols and procedures and we have shared also, so that they they follow the same procedures for harmonization and standardization.

Interviewer 19:48 Are you planning or have you done this?

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Interviewee 19:58 Very few of our results are already on zenodo so I send them the link or I send the data set or an Excel file to a coordinator.

Interviewer 20:21 Why do you consider this is important for you?

Interviewee 20:27 To increase the impact of the project and also to have more robust results for European policymakers just to gather more information to take advantage of the different projects network.

Interviewer 21:10 Next question, eleventh: On a scale of one to 10 how much of your data or knowledge objects of your multi actor project are openly accessible?

Interviewee 21:22 Now, at this moment? Because as I told you, we have very few results not definitive one. So, in this at this moment we I must say one.

Interviewer 21:39 And in the future?

Interviewee 21:41 In the future, I would say nine because I want to polish all of them except those outputs related to the manufacturers that they will be protected.

Interviewer 21:57 Okay, so, for this question which are and are not we refer to the previous question.

Interviewee 22:04 Yes, the one I told you before. Our objective is to make public all data except those related to the machinery manufacturers. Because I mean, they want to protect the product for sure. So, be competitive in the market. And the others will bepublic.

Interviewer 22:26 Okay. So, for the data that is public you will publish it in zenodo so thi is already answered.

Next question: Regarding the creation of knowledge objects in your multi actor project, what would you consider to be a good practice?Interviewee 22:44

Whith knowledge objects what you really mean? Because I didn't understand these knowledge objects.Interviewer 22:51

I think they refer to outputs in general.

Interviewee 23:08 A good communication strategy is very important with a good coordination strategy and to make sure that the knowledge from all the different stakeholders are considered because it is important to understand the different focus.

Interviewer 24:04 Anything else to add?

Interviewee 24:06 No, I mean, the main thing is coordination communication.

And also English, the English skills. Because sometimes in the projects, in the case of my some of my partners and other stakeholders and in another projects I know, not many, not all of them speak English. So, this makes it difficult to coordinate or to control. So it would be necessary or to select partners and stakeholders with good English skills or what we have because sometimes there is a lot of knowledge in the different country but they are not proficient in English. So to have like, national coordinators to act as translators and work in their own languages. So, I think the language is something important to take into account that the native language has to be used in many cases which is a disadvantage to understand and to coordinate. But it is essential to gather all of the knowledge and have good results.

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Interviewer 25:37 Are you publishing all your outputs in English?, I guess.

Interviewee 25:43 No, in different languages. Now, we're translating in the language of the partners.

Interviewer 26:02 Anything else?

So the last question: Any advice for future multi actor projects on the aspect of data or knowledge creation?Things to do and things not to do.

Interviewee 26:23 Okay. Do, as I said, use the native languages and you need like mentioned coordinators to deal with the gathering of the results in the different countries, otherwise there's a lot of knowledge that can be out of the of the project.

A proper coordination structure to control partners not used to research and innovation because there are many companies and farmers that never worked in this. So they are not used, we have to train them. They have to understand you. So this is you need a proper coordination structure.

So, these are what I would say with with these for knowledge creation.

Also to have a plan b, what I mean with plan b is to have some other farmers that are not in the project but do have contract to replace some other partner because in the actor approach project I have I am in two of them, with universities or research centers there is no problem because they continue. And with companies, depending on the markets, I have had the problem that they are bankrupt later they disappear so, you need to replace them. So it is good to have contacts with partners with the same expertise background, because sometimes you need to replace them because the dynamics of the companies is very intense. It's not the stability of a research center or university.

And don'ts?

Interviewer 29:30 Don'ts...

If you have them, if not there is no problem.

Interviewee 29:36 I don't have don'ts. In my experience, I cannot say don't do because I failed in this. Because I could say don't, just make it the opposite to get those.

Interviewer 29:59 Okay, So we are done with the interview. Thank you very much.

Interviewee 30:03 You're welcome.

Transcribed by https://otter.ai

Annex 7. Transcripts with EMPHASIS

1. You produced various types of outputs (datasets or knowledge objects) in your project (select from online checklist). Can you provide some examples and why that specific output/knowledge object was produced?

- Reports:
  - analytical framework report on Pest Management Challenges and Opportunities
  - Learning platform

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- Decision-taking analysis
- Pathway risk analysis
- Final evaluation
- Report on the most effective BCAs for the management of target pests
- Feasibility study for introducing resistance to stem rust into EU wheat material
- Screening of microbial BCAs candidate for Leptosphaeria maculans and Mycosphaerella graminicola control on debris
- Forecasting scheme to predict stem rust epidemics
- On-farm experiments
- Model business plan

- Guidelines
  - Guidelines for seedling insects containment in oilseed rape
  - Guidelines for sustainable IPM control of weeds
  - Guidelines for IPM strategies for vegetable crops
  - Guidelines for crop debris management in a wheat/oilseed rape rotation
  - Procedures for locally eradicating the alien Heterobasidion irregulare on conifers
- Other:
  - Automated result calling algorithms developed for LAMP assays implemented on the Genie platform
  - Protocol for metagenomic identification of mixed pathogens from traps containing pathogen spore
  - Ashes tree varieties resistant to Chalara fraxinea
  - User-friendly operational device for native Heterobasidion spp. containment in conifers
  - website and social media accounts
  - Dissemination material poster, leaflet, press release and newsletter, scientific workshop proceedings and white paper
  - HabiThreats education toolkit
  - Peer-reviewed technical and scientific papers
- Demonstrators:
  - Suite of validated LAMP kits available to provide species level detection and identification
  - “Early detector” network of sentinel crops
  - Pheromone puffer for semiochemical use in insect pest management

2. Do/Did you have specific target users in mind for these specific outputs?
Y
Can you explain which outputs for which target user types (select the ones that apply)? SEE Q68!!!!

- Farmers/Foresters (practitioners)
- Advisors
- Researchers
- Policy makers

3. Which outputs were intended for practitioners? _____ Did target users participate in the creation of these outputs? (Y/N) _____ Why? _____ How? _____
Guidelines.
Users were involved in a farm demonstration network

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4. Did your Multi-Actor Project (MAP) produce practice abstracts? (Y/N) _____ If Y, in you opinion what are the pros and cons of this type of knowledge object? _____
Yes we did. I do not think they are really useful for farmers. No evidence they consult them. In any case they would need help from advisors to apply them.

5. How did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? (specify according to the type that applies)
- Researchers
- Industry professionals
- Farmers/Foresters (practitioners)
- Advisors

6. On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10 – none to all) _____ Can you please elaborate which ones not and why?
10. All the planned results were achieved.

7. Are there any outputs that you consider missing in your MAP, for example ones that would have been relevant, but were not produced? (Y/N) _____ If Y, which ones? _____ If Y, what were the reasons for not producing them? ___
No. All outputs were produced.

8. In your opinion, which of the results/outputs of your project are/were the most valuable and why? _____ And which are the most valuable for practitioners? _____ How do/did you assess this? _____
An embedded evaluation of project results was carried out, which is available for consultation on the project website. The evaluation framework was developed based on a classical top-down evaluation approach, aiming to assess project deliverables (EMPHASIS outputs: technology or management solutions) in six broad areas of impact:
1. Relevance: are the project's outputs what is needed by end users?
2. Effectiveness: do the project's outputs have a positive impact in line with the original objectives of the project?
3. Efficiency: are the objectives being achieved cost-effectively?
4. Added value: what are the advantages of the project's outputs?
5. Coherence: how do the project's outputs fit with other relevant actions?
6. Sustainability: are positive impacts sustainable in the long term?

See: http://www.emphasisproject.eu/deliverables.php
You will find full replies to your questions in the above mentioned deliverable.

9. In your opinion, which outputs of your project have reached/will reach the most impact and why? _____ How do/did you assess this? _____

Paragraph 3.3 of the above mentioned deliverable fully replies to this query

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10. Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N) _____ Why Y, why N? _____ How is this done and for how long? _____
The project deliverables are stored on the project website, which is expected to be kept alive for at least 2 year after project completion, depending on its sustainability.

11. If your project has ended, does/did your MAP participate in the Data Pilot and did it prepare a Data Management Plan? (Y/N) _____ Why? _____
Yes we did
FarmBook
12. Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N) Why? _____
Yes I think so. It would help the agri community to have one repository were it is possible to find all information and knowledge generated by EU funded project, with one access point.

13. Did you transfer or exchange any of data or knowledge objects with other projects/groups? (Y/N) _____ If Y, what, how and why? _____

Yes. As said there was a close cooperation with EUCLID project. We also involved other project consortia in related field in our dissemination and knowledge transfer events and workshops.

14. On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible? (1 to 10 – none to all) _____ Which data/knowledge objects are, which not? Why? _____ For the data that are, how is this done? _____
I would say 9 . Most project deliverables are public and available on the project website.
The only confidential deliverables are:

- Automated result calling algorithms developed for LAMP assays implemented on the Genie platform (IPR owned by Optisense, for commercial expoitation)
- Business plans for industrial application. The model business plan is in the public domain. This deliverable applies the model business plan to 4 SMEs involved in the project. Of course those business plans are confidential.
- Other confidential deliverales are internal documents related to planning, management, ethics.

15. Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice? _____ Any advice for future MA projects? _____

Close interaction among project partners was our own best practice. No advice.

Annex 8. Transcripts with FAIRSHARE

May 18th, 2020

A short introduction about the objectives of EUREKA.

Q1: In your opinion which of the results of your project are the most valuable and why?

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A: okay, for FAIRShare we are in a position that it's a new project, we are going about 1,5 year so we haven't necessarily collected a lot of results and outputs at this moment in time purely because of the timeline of the project itself. But in terms of this moment in time the most important outputs have been and would be the inventory of digital advisory tools that we have collected on our website. So one the objectives of the project was to build an inventory of at least 200 digital tools that advisors use and at this moment in time we have collected maybe about 122, could be slightly higher haven't checked today. So that's been open since January and in the space of the months we have collected nearly 2/3 of what we need to collect over the 5 years, so that's been extremely good and it's been easy to validate as well. We have our target in the grant agreement and we are not too far of it even at this early stage.

The most important outputs have been and would be the inventory of digital advisory tools that we have collected on our website.

Other outputs that are probably more important are the user cases that are funded and most of these user cases will be funded to the tune up(?,2':15'') 2020 Europe and from these user cases we can get an insight of what works well when advisory services adopts digital tools, what doesn't work well, how can we help them etc. And we will build roadmaps around this as well so it will be good to asses how these user cases progress and how this could be translated into the broader advisory scene across Europe.

Q2: Can you tell us how and why these valuable outputs were generated?

A: So agriculture has been lacking in a lot of sectors?…(2':56'') , a lot of industries, globally and in Europe in terms of their adoption of digital technologies etc. because the age profile of farmers is higher than other industries, there is a digital.. gap(? 3':19'') in terms of infrastructure between urban and rural areas and of course you know most agriculture takes place in rural areas, the vast majorities of it and in order to increase digitalization in agriculture we need to get advisors on board. They are the intermediatry that will get farmers involved. You know if you have an advisor that uses digital tools as a farmer you are way more likely to adopt it yourself. So we think advisors has been really the cornerstone of getting farmers into digital tools.So instead of focusing all the attention on farmers we need to focus some attention or at least equal attention on advisors.

Q3: Can you please specify (4:12) all the intended target user types of your multi actor project results? For example farmers, advisors, researchers, etc.

A: The main targets/user types for FAIRShare would be advisors but we would still in our multi actor approach include farmers, researchers as well as policy makers but primarily advisors would be the targeting user but we have some involvement from farmers and researchers and policy makers as well.

Q4: Which other outputs where intended for practitioners? And which of them were the most valuable?

A: I suppose maybe I answer that kind of question with the other main outputs. Other outputs would be the information we get from the user cases that are huge kick-off later on this year. They will be highly valuable in terms of the knowledge that we will be able to generate in terms of what

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works well within a small advisory service or a small component of an advisory service when they adopt digital tools and we can use that information to increase the capacity of advisors and advisory services across Europe to increase their digital footprint.

Q5: How did different project actors contribute to the creation of multi actor project outputs? For example farmers, advisors, researchers etc. ?

A: we haven't done it yet but our plan later on in the project is a combination of surveys, questionnaires, workshops, focus groups and of course the user cases themselves which will very much adopt the living lab approach. So you have a multi actor group trying to incorporate digital tools into an advisory service.

Q6: Mr. John on a scale of 1-10 how well do you think your multi actor project will achieve all the planned or anticipated results and outputs.Can you please elaborate which ones not and why?

A: im gonna be a bit ambitious and say 9 out of 10. we are well on our course to achieve our objectives in terms of the inventory.as I said we haven't started our user cases yet but what we have done is we started developing a tender package so that we can asses each of the potential user cases to ensure that there are the right stakeholders and actors involved and that they are the right mix of sectors.We don't want every user case to focus on one agricultural sector,we want to mix and we want to mix the technologies that they use as well. So im thinking that in that sense we have been quite thorough even at this early stage to ensure us that the external funding of the project will extract the right type of advisory service, which I think is crucial and also we set certain strategies within the project to develop multi actor groups to ensure that the right people are involved. Farmers and advisors we call them expert groups, and these expert groups will be involved in user cases between countries as well, so we are maximizing the knowledge through the project and its dissemination.

Q7: In your opinion which outputs of your project will reach the most impact and why?

A: I think it's the user cases because there is 90.000 euro resources so its very attractive for advisory services across Europe. I think in that sense you are going to get external user cases that are extremely motivated because obviously they want to get the funding and identify the digital technologies they need and with the information and knowledge that we will generate in terms of the insights of what are the issues involved cause it's a very poorly resourced area at the moment, despite a lot of research I wouldn't say extensive research but there is a lot of research on farmers and they're engagement with technology but not so much for advisors so by using the user cases and using the living lab approach, you will really get an organic sense of how it develops, how it progresses, what are the barriers and everything else.So I think that will be incredibly valuable.

Q8: Are all the outputs/knowledge objects of your multi actor project stored for the long term?

A: At the moment the inventory you know is live and once the project finishes in 3,5 years that will be one of the legacies of the project. In terms of the knowledge generated from the user cases many of the knowledge created will be converted to EIP practice abstracts, that way the knowledge

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is stored, we will develop road maps as well for the industry and policy recommendations but there isn't a universal platform that, besides the projects website, the knowledge will be kept or can be accessed. Not at this moment in time.

Q9: Do you think that the creation of a common agri-platform as a knowledge repository for multi-actor projects is relevant? And why?

A: I definitely think its relevant in terms of, I know the EIP platform is there and you can get practice abstracts and get information on thematic networks but I don't really think it fits in terms of what you are trying to create. So I think it's definitely needed from an end users point of view if you're targeting farmers or advisors or policy makers across Europe. I think it's very handy to have a platform that can have all this information available in one place instead of trying to find a particular horizon 2020 projects that provide a particular thing. Instead you would go into this particular platform and all the information is there. I think its required, I think its needed.

Q10: Did you transfer or exchange any results/outputs with other projects?

A: Not at this moment in time. We are working with Smart Agri Hubs and we are planning to foster that relationship more and more as the projects progress but there hasn't necessarily been an exchange of results at this moment in time. The reason why, probably because we haven't got to the stage that have many outputs.most of our outputs will come in 2021-2022.we have identified projects that have similar themes, Smart Agri Hubs is one, and we do plan to work closely with them as the projects develop.

Q11: On a scale of 1-10 how much of your data or knowledge objects of your multi actor project are openly accessible and can you tell us which are and which are not?

A: The knowledge that we have created so far is the inventory and we opened it to the internal partners of the project in January and for the last couple of months it's been publicly available. So you don't need to sign up, it's there on the website and it's pretty accessible. So in that sense the data that we have collected so far, even though its not a whole lot, it is openly accessible. Other data that we have collected or have been generated from the project have been internal workshops, brainstorming project activities, not necessarily information that would be interesting to anyone outside of the project.

Q12: Regarding the creation of knowledge objects in your multi actor project what would you consider to be a good practice?

A: This is something i suppose we are trying to develop cause part of the project is, along with the inventory, along with the user cases, the collection of good practices in relation to digital tools that advisors use. We're building a template at the moment, and one of the things that we are trying to do is to target all the end users. So we collect all the information that we need and make it as accessible as possible. I think that kind of relates to the question. What I consider a good practice, I think it has to be engaging with the end user. I know a lot of people in MAPs particularly from the consortiums themselves, coming from an academic background and are more used to writing

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academically but I think the language that we use to engage with the farming community and the advisor community are different. I think we really have to be engaging and we have to be really cognizant as well at the needs of the end users. One of the things as well is we obviously co-designed a lot of things within the project and we are using different participatory approaches to do that. So I think that if you are creating knowledge objects it's really important to engage with the end-users as much as possible. In doing so those end user have to get a sense of ownership of the solutions that you create. I think that's far more powerful in terms of solutions.

Q13: Do you have any advice, (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

A: Again I would very much adopt participatory approaches when working with multi actor groups, I would ensure that whatever partners involved in the consortium are involved in particular multi actor tasks or activities, are trained in facilitation. That's crucially important otherwise some of the knowledge might be lost or it might be biased in a particular direction. That would be my main advise. Use of participatory approaches.

End of the interview

Annex 9. Transcripts with FEED-A-GENE

Short introductory input by interviewer (MCP) – according to our survey Feed-a-gene has created different outputs like videos, posters, newsletters, software, press releases, brochures …

JVM (steps in): yes, we had one deliverable with 6 factsheets to illustrate different WPs as a kind of substitute for practice abstracts (not demanded yet for our project); we also made brochure to present project as a whole

MCP: we could see that your project also produced deliverables (available at web site and CORDIS), book chapter, several theses and many scientific articles, but also technical papers, many conference presentations (abstracts). With regard to primary or raw data we could see two records of that at CORDIS

JVM: Feed-a-Gene didn't opt for preparing a Data management plan (DMP). So I do not have an overview on how the produced data is now managed. We decided not to do a DMP because it would be difficult at that time. We tried to have some "red line" about the data management during the annual project meetings but without obligation for partners to adopt a data management policy. At the beginning of the project, we invited an expert to talk about FAIR data. I think it was for the most of the people the first time that they heard about this term. Later on, we also invited experts to talk about repositories and ontologies. So we tried to inform participants to get acquainted with what will become mandatory in the future; to change their mind-set. We have produced data, but they were not organised centrally, only some data were put in repositories (along with publications).

MCP: what kind of raw data, e.g. automatic recording?

JVM: Yes, especially in precision livestock there is a lot of automatic recording (weighing, feed intake), but this data is not shared publicly (or only among partners). A lot of data has been

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recorded, collected, but it remains with partners. Raw data is there, somewhere (e.g., in institutional repositories or just on the computer of a partner). My opinion; I have doubt on the value of raw data for the Eureka platform. How useful these data can be? I think unless very well described these data are little useful. As editor of Animal we often discussed what we need to reuse the data? The most useful data is the probably data that is used to create tables; one level below what is published and on which the statistical analysis is based. Raw data are useful only in the context. Top down approach, one level below published table. E.g. if we have daily gain of animal, feed intake of animal, but not individual weight; plus the context. Usability of data is important aspect. What is the usefulness of knowing weight if you do not know what the animal was eating. A lot of meta-data would be needed to make raw data usable. Can we sufficiently well describe the context of the data to make it usable? I'm more in favour of starting data sharing where the scientists already derived something out of the data (i.e., described the context and interpreted the results). What is raw data? At which level does it start or end?

MCP: Which outputs (data and knowledge objects) are the most valuable (in general and according to end-users)?

JVM: What notion do you put behind "value"? I would say the most challenging was what we did in terms of precision livestock farming; feeding, genetics, how to manage animals. Bring together nutrition and genetics. Advanced technologies are coming but are they societally acceptable? Farmers will adopt technologies but is society ready to accept that? For crops, society accepts high technology (e.g. drones) to minimise the application of pesticides, but for animal science it is less acceptable. Animals being monitored by computers can be seen like a further industrialisation of animal production, resulting in less contact of humans with animals. Camera sensors around animals – most people would say no. But using these technologies, we can use less antibiotics and reduce emissions and consider the animal as an individual and not as "an average in group". In terms of value/challenge, this is the most valuable output. People accept technologies like smartphones, but not for animals. It gives the image of further industrialisation. But it is important as such technologies may allow to give the antibiotic only to animal that needs it, not all of them. Communication with society is important here. Who is in control (or: who do we give control)? The computer, the farmer or also the animal (intelligent creatures)? That is the biggest challenge and most valuable output.

MCP: Your answer was clear, outputs are important for all levels of actors, but still, EUREKA is interested in particular to identify which outputs have value for practitioners.

JVM: Society was not an actor in our project. Project worked mostly on TRL 3-4, most of actors were industrials. For few aspects, we went to TRL 7-8, but we didn't have policy makers either. *Tangible results – for which partners? Most of outputs were scientific. But with this project I became convinced of the value of videos. Scientific publications are specific and will not be used by practitioners, advisors. Videos can make scientific information more visible, accessible. We didn't have an obligation for practice abstracts but we had factsheets as deliverables.* It was difficult to mobilise people to do that, to ask them to try to summarise what their WP brings. It was very stimulating to make these factsheets, how to summarise the most important information out of research work. It is part of

Tangible results – for which partners? Most of outputs were scientific. But with this project I became convinced of the value of videos. Scientific publications are specific and will not be used by practitioners, advisors. Videos can make scientific information more visible, accessible. We didn't have an obligation for practice abstracts but we had factsheets as deliverables.

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the process, people need to get accustomed to do it. It is no longer acceptable to end a project with scientific publication; we need to go further. As editor of Animal, I usually see that the implications are the most difficult part to grasp by authors. Something we haven't done sufficiently. What does your work/result mean for practice? Practice abstracts (as they are now) are not good, but the idea behind is very good. Information must be useful and this is where scientists need to be stimulated further. To come back to raw data. That's where the multi-actor approach (MAA) is valuable. To think about the usefulness of the data that project generates. It is much more than just getting the scientific publication out of it.

MCP: Did you achieve what you wanted, planned? Fully? What you would like to be done better?

JVM: We did what we promised, yes, it was multi-actor and multi-disciplinary approach, which was very challenging. I'm satisfied with how we were open and interacted (e.g. geneticists with nutritionists), happy with results yes, also with the quality of work done. I would not give it a 10 as there is always room for improvement, but at least 9. Do it differently next time? We had a multi-disciplinary approach, but I'd say give more emphasis on value chain approach with focus on an object. For example, in Feed-a-Gene we worked on rapeseed (as feed). A value chain approach starting from agronomy, oil extraction, residues as animal feed, could be important to address a multidisciplinary approach through an object (rapeseed). Again in that respect MAA is more interesting, valuable, necessity of having actors at different levels

MCP: Which outputs of the project you think will have most impact?

JVM: precision livestock aspect; integrate observational information. Data is easily obtained, but how are we going to make use of it? Integrating the acquisition of data (breeding, feeding). Integrating the information into decision. I do not yet see how to organise, integrate that. The recent developments with open data in Europe is good, but how to do it? Each system works for itself, it is not integrated; the challenge is how to organise it. We come back to raw data – how you use it is the key. Actions are dependent on how we treat data. Data was created, but what about its sustainability? Linking to knowledge repository? Data is not knowledge, it serves to create knowledge. Data is easy to get, the challenge is not the acquisition of data, but what to do with it, the analysis. In the project we had a WP on modelling. Most of what we did was concept-driven (based on underlying knowledge, to improve our understand ding); but developing model using a data-driven approach is completely different and well-suited for prediction. What is needed is both, data-driven approaches with concept/knowledge-driven approaches. How can we improve knowledge based on data? Data and knowledge repositories are two different things. Phenotyping is often considered important. But phenotypic data by itself is not interesting, but what we do with this data is. Analysis.

MCP: Could a platform like EUREKA foresees serve as kind of info relay point?

JVM: What will happen after the project is finished? The project as a concept will disappear and this is a pity and that's where projects like EUREKA should step in trying to find solution. Sustainability (of knowledge) is the issue, not the repository by itself, but continuity, creating knowledge community. A repository is somewhat contradictory to the concept of project; a project means there's a beginning and there's an end. Knowledge, data, there is a need to structure that, but it still a long way. It is a process but is needed and projects like EUREKA are important for that. Project outputs/results bring the bricks, but not a house. Ten years ago, open data, multi-actor approach didn't exist, so this represents a progress. For some, there is a fear of open data, fear of missuse, misinterpretation of "my data". But I think this is responsibility of each scientist, even if

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sometimes this can happen. “Research that is not published is research that was not done”, it is a waste of money. So open access is our responsibility. But way to make data usable is challenging.

MCP: Exchange with other projects, initiatives

JVM: not so much the data although there was some reuse of the data from previous projects. It was mostly interaction for dissemination (e.g. EAAP conference), Also at every annual meeting we invited coordinators of other (similar) projects in different stages of the project’s lifetime. Interacting is very important, also a great opportunity for young scientists and to build up the community.

MCP: Evaluation of how much of the generated data is open, accessible?

JVM: publications by default, data mainly not (just some). So I would give a score 2-3 for data (data is with partners that generated it, not easily accessible, not preserved sustainably). Knowledge objects – practically all of it is made available, accessible – dispersed but can be found. The question is sustainability – in ten years?? Should we think in terms of FAIR knowledge (like FAIR data)?

MCP: With respect to creation of knowledge what would you consider a good practice?

JVM: that it has meaning, usability. How to ensure that the knowledge is accessible? Structured. When the project ends, the concept of why it was carried out will disappear, but bricks will stay, while the plan to make a house will disappear. It is also important to see the context of results, the context in which the results were produced; the historical perspective, why we did what we did (provides the example of efficiency and product quality in livestock production, the changes, importance of aspects that appears and disappears)

MCP: On the aspect of knowledge creation – could you share some do’s and don’ts?

JVM: For policy makers to understand that this is a process, it takes time to achieve things, a change in mind-set of scientists, actors, change in a way of working. We do with other people not for other people. There is a complexity of food production system and there are always trade-offs. That it should be multi-actor and multi-disciplinary approach. Smaller projects are more linear, more narrow, with multi-actor and multi-disciplinary you get a bigger picture, go beyond the comfort level.

Annex 10. Transcripts with INNOFOREST

Date: 08/06/2020

1. In your opinion, which (examples) of the results/outputs of your project are/were the most valuable and why? How do/did you assess/judge this?

As per the communication plan we have produced deliverable, fact sheets, holistic information database, maps and reference guideline. However, the most important output of the project is to build a network of the people and develop forest management policies and business process by enhancing network coordination. However, most of the

However, the most important output of the project is to build a network of the people and develop forest management policies and business process by enhancing network coordination. However, most of the project output were also meant to be used by project partner at various project case studies.

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project output were also meant to be used by project partner at various project case studies.
The output of the project was assessed based on the stakeholder network, co-ordination and participation. For example, how many project partner and stakeholder participated in the workshops and how they have discussed and assessed the objective of the project and have they able to relate their local issues with the overall project goal and objectives? How the transfer of the knowledge exchanged among the stakeholder and project network during and after the workshops?

2. How and why were these valuable outputs generated?

In the current project, knowledge objects were produced as per the project communication plan but some of the project objects were changed as per the stakeholder engagement during the project process. Some of the project outcome evolved during the project life cycle and needed change in the structure of the project outputs. For example, pre-defined project report and peer reviewed articles were part of the communication plan but after conducting stakeholder meeting and innovation workshops it became more important for the physical innovation platforms for collaborative action, and recommendations to navigate the design of policy and business models in the long run. These knowledge objects were also designed and developed during these workshops by partner and stakeholders.

3. Can you please specify all the intended target user types of your MAP results (select the ones that apply)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

In the initial stages of the project we have conducted the stakeholder analysis and identified stakeholder based on the project case study requirement. In the beginning of the project partners and institution and involved researcher were the stakeholders. In the later stage we have also identified stakeholder who come from local government department, policy makers, professional involved in forest and ecosystem services, farmers etc..

4. Which other outputs were intended for practitioners? Which were the most valuable? Did target users participate in the creation of these outputs? (Y/N)

There is no direct and straight forward answer to this question. There were number of planned outputs as per the project communication but apart from planned output number of diverse knowledge objects have been developed and produced during the project life cycle. For example, newsletter, scientific publications, project deliverable, conference events were part of the communication plane but the most valuable output of the project were stakeholder workshops and community workshops.
Yes, target users participated in the creation of output. During the stakeholder and community workshops there were direct and indirect exchange of knowledge and resource. They were involved in various stages of the project lifecycle at various project case studies.

5. How/why did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

The project partners are involved in various stage of the project. Partner carried various activities to develop case study and MAP output. They are involved in conducting workshops, community engagement meetings, collecting data from various department as per project defined

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responsibilities. They organized events and meeting and conducted wide range of innovation experiment and coordinating with regional and local government department.

6. On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10 _____). If not 10, can you please elaborate which ones not and why?
We don't have any scale to assess the achievement of the planned results and outputs. But we can tell you how we assess and the success of the project. It is very hard to access the innovation project performance based on few indicators and on a scale. Innovation project are very uncertain and risky. We start with some plan and we reassess them after having the opinion and consultation with various stakeholder. Every engagement and workshops with stakeholder keep on changing the innovation and value aspects of the projects. Innovation is quite a massy, unpredictable and complex process. However, these process are crucial for the success of the project and we will able to see the impacts of these process at the end of the project based on the transfer of the knowledge exchanged among the stakeholder and build stakeholder network for future issues.

7. In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you judge/assess this?
I see three output of the project important for my opinion and all of them assessed based on the stakeholder participation and knowledge exchange between the network:

- Network of the people and experience of mutual engagement
- Website as a knowledge hub which will have the legacy of the project and accessible to the wide range of stakeholder
- Training programme like workshops and summer school that have similar research problem

8. Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?
At this point all the output and knowledge objects of the project will store for next five years. We are not sure how long and who will maintain the website and knowledge objects after that. However, if any of the project partner plan to follow up project they might transfer the knowledge object to new project.

9. Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N)? Why?
It depends, my concern is loss of knowledge in the translation. Sometime knowledge repository loses the experience of the people involved in the knowledge creation. There is necessity of highlight the information of the creator of the knowledge objects in the knowledge repository. If somebody need more information on the how the knowledge objects have prepared and what was process, he or she should be able to reach out the concerned person.

10. Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups? (Y/N); If Y, what, how and why?
Yes, we are interacting with other MAP project at regional level and local level. At the project level, we are interacting with local stakeholder and their local project. However, there is no formal commitment and contract with the other MAP projects. We are creating common knowledge objects by writing paper, conducting workshops and building networks.

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11. On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10 ____)? Which are and which are not? Why? For the data that are, how is this done?
In our project it is hard to assign any scale to the openness of the data or knowledge objects We are dealing with lot of qualitative data which is not openly accessible to the people and lot of privacy is involved in the data collection process. So, we need to add the context to knowledge objects to metadata to the data. If anyone wants to analyze the data he or she can reach out to the concerned person.

12. Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?
As per my understanding, apart from creating knowledge objects if knowledge hub can become the mediator between the knowledge object creator and people who need to use knowledge objects. Majority of the time knowledge objects out of any MA Project only highlight the final output but what was the learning experience it stays with the knowledge object creator. If we able to fill in this gap that should be considered a good practice.

13. Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?
In my opinion, make data and knowledge object openly accessible to all the stakeholder. All the scientifically data need to explain in simplified way with metadata to the wide range of people. Any new knowledge object created on the past knowledge objects need to exchange the knowledge creation experience with relevant stakeholder. There is a need of constant exchange of new knowledge, its creation and experience among all the stakeholder. It should be shared among relevant network through workshops, conference and build a network of resources and people.

Annex 11.Transcripts with LIVERUR

May 7th 2020

An introductory talk: In the website there are scientific outputs, some colleagues have also collected some data, especially in WP2 – that was not under my responsibility, but we have also created a lot of data regarding existing business model in EU countries and regions, they also used a lot of data based on the data collection from partners (there are 23 partners involved in the project). All the partners are involved in WP2 and 3. I was responsible for circular rural business hub – the database for the pilot on the stakeholders involvement in WP5 that was my responsibility, so we are working all the time on the data, the data is in the middle of the project. So that we can use and reuse the data.

Are they all/or will be openly accessible? Yes, they are all openly accessible. I created 3 open surveys and everybody has the access.

So not just the project partners but also other public? Right now the project partners but if there is someone interested in the data it is not a problem to share. We have the data on the 3 online surveys.

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But you won't put the data on open repositories , e.g. Zenodo? Well yes, but the deliverables are open and everybody can have access to read the methodology and also what we achieved. In the annex of the deliverables there are databases and can be accessible to anyone.

1. In your opinion, which (examples) of the results/outputs of your project are/were the most valuable and why?

The real data are valuable, because in the first case we created a database regarding the rural living labs worldwide. In the literature the researchers are more and more working on the definition of the living lab, but this is a desk research and this kind of the real time data collection is a big part of the scientific research right now and also the innovative part of the project as well. The important data and the added value of the project is the real data and the real life collected data. And also the end user involvement. Because we are collecting the data with end-users and we are systematically organising the team works and workgroups who are collecting the specific data. One example: the first step was to make a large database related to 200 existing rural living labs all over the world, and then we went deeper to assess all the living labs based on the circularity and on the added value services. We checked all the 200 and finally assessed 82 rural living labs that have been identified and assessed by several criteria. And that has happened for the first time. The European network of living labs, which is the official authority of the living labs hasn't done this kind of data collection and doesn't have the overview on the number of the existing living labs worldwide.

The real data are valuable, because in the first case we created a database regarding the rural living labs worldwide. … The important data and the added value of the project is the real data and the real life collected data. And also the end user involvement. … The European network of living labs.

Already answered to the next question – 2. How and why were these valuable outputs generated?

3. Can you please specify all the intended target user types of your MAP results (select the ones that apply)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

The specific target group came from the rural community, we wanted to know which kind of the innovative or innovation oriented organizations (public and private) are involved in the open innovation at rural level. It is very important because most of the projects are focusing on the urban questions (not talking about urban farming). We work on 4 different pillars: 1. focusing on the nature, climate change, - to the global environment; 2. on the resources (land, raw material, specific questions on the sustainability but on the environmental aspect – raw material, resources); 3. to check all the criteria of the competitiveness of SMEs at rural level and who can be the driver of the rural economies; 4. focusing on ICT and digital technologies.1 is the global level, 2. is more concentrated to the resources (natural resources, raw materials), 3. Competitiveness – what are the main criteria of all the SMEs that are involved in the AGRITECH (activities, tourism, ecological and all the other types of rural actions) and the 4. related to digital technologies. How different environments – the living labs are using e.g. the advanced technologies that can be the driver of the future – the internet of things, artificial intelligence, robotics, block chain, big data, virtuality.

4. Which other outputs were intended for practitioners (farmers, advisors)?

One of the results of the project will be the platform called RAIN which will learn all the practitioners, advisors, farmers, rural communities to join and to be mentors, or to join and learn through the online courses. The training, trainer of trainers (the mentor of already existing rural or

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farming advisors) is also one of the main targets of the project. This is also the answer to the next question. Yes besides all the listed actors (Farmers, Advisors, Researchers, Policy makers, Industry professionals, Others) – the others are the citizens, because we are following the PPP (Public-Private-People partnership) model the citizens have the same importance as the other beneficiaries. So, all the civil society at rural level.

5. How/why did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? *Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others*

All the partners made data collection; a Living Lab represents a user-centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts. The Living Lab emphasizes the involvement of users in the early stages of research and development and innovation processes. In Living Labs, users contribute to product/service innovation actively and continuously, as based on their social and cultural experiences. It can be said that Living Labs facilitate regional innovation in a global framework. s. A Living Lab helps bridge the gap between the conception of a company and that of a current market, resulting in products more in line with the demands of end customer (from the deliverable)

6. On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs?

10 at the end of the project, at the moment around 7 or 8. The platform is under progress, but we contacted all the stakeholders at high or top level. The bottom up approach is followed by the consortium. In WP2,3 and 5 we are always following this top and down levels approach in the stakeholders and user communities. So we will achieve definitely 10.

7. In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you judge/assess this?

In the preceding rural project called Collaboration&Rural(C@R), it was the first FP6 where we developed the mapping based on the data and prepared the innovative business model, in the LIVERUR we are going forward - we are focusing on the Circular Economics/Circular Rural Open Innovation/Circular Rural Living Labs that will be created for the first time. At the moment we have 15 cases of Circular Rural Living Labs. We have three networks in Slovenia (check the website). We will develop the Circular Rural business model canvas. Such methodology was already used before but not in the aspect where we combine it with the methodology of the open innovation.

8. Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?

Yes, Sustainability is one of the key words in our project. At the meetings of LIVERUR consortium (May 15th and October 15th 2020) we have to assure that Living Labs will be sustainable, all the partners have to assure that after the project ends, the Circular Rural Living Labs will be sustainable and all the partners plan for the long term phase- we plan to keep them going for the next 10 to 15 year.

9. Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N)? Why?

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Yes, at the moment we are following what the DG Agri developed, a common Agri platform would be very relevant, not only as a knowledge repository, including best practices or data, accessible databases, but also to create community about specific questions – especially now after covid-19.

10. Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups? (Y/N); If Y, what, how and why?

Yes, with RUBIZMO, also with FOSTER (a research project between EU and Tunisia).

11. On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10 _10___)? Which are and which are not? Why?

For the data that are, how is this done? All the data will be accessible.

12. Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

Two folds: one is a circular business model dedicated to rural /periurban communities – the object itself is a circular business model canvas, on the other side the development of a specific platform (knowledge base) called RAIN. It is a platform where all the regional authorities or decision makers can access their rural regions and territories (involved in the national development plan – can involve several regions)

13. Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

If you are collecting the data from the territories, the desk job is not enough. You have to contact the person from the selected regions/territories. Don't always believe the data collected only by the internet search. We asked everyone to access to the provided data (e.g. company, regional authority, development agency, cooperative). It is important to assure that data providers have the access to the collected data in order to check and validate it.

Annex 12. Transcripts with LIVESEED

April 3rd, 2020

A short introduction of the purpose of EUREKA.

Q: You produced various types of outputs (datasets or knowledge objects) in your project (select from online checklist). Can you provide some examples and why that specific output/knowledge object was produced?

Datasets: have you created any raw data , e.g. automatic recording, field measurements?

We have developed a data management plan and are trying to follow it as much as possible (on a voluntary basis). We have defined what we expect, at the next meeting we will validate what has been done. We are collecting field data (cultivar trials together with partner organisations and farmers). We have developed templates that everyone knows how to do it. We are producing metadata, to make the data that are generated reusable. We are also collecting data on the governance - how cultivar trials are managed in different countries. We are developing new concepts how we can achieve that the cultivars are cost efficient and to fulfil the need of the farmers. We are also collecting info on who is financing trials, who is designing, who is conducting the measurements, what will come on the recommended list.

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What kind of data you are collecting (some examples)?

For the filed data: everything related to the yield (yield of different cultivars, pest and disease resistance:

Automatic recording: in some cases, but with the trials they are having with farmers. On FIBL we are having trials with mixed cropping, have special weather stations to record daily rainfall, temperature is recorded every 5 min, record data on soil type - so that they can interpret data.

Laboratory analysis: protein content in different cereals, legumes, alkaloid content in lupins, sensory testing to compare different cultivars.

Question about the interviews: LIVESEED project is very broad and we are collecting everything from economic trials, policy measures, statistic data, socio-economic analysis, big farmer survey with more than 800 participants (to find out what is the percentage of farmers that use organic seeds, what are the reasons for its use, what are the bottlenecks from the farmers' perspective, what research needs to be done), a survey with seed companies (mora than 1000 contents). We have almost 100 stakeholders in almost all European countries, we work with EU seed – an umbrella organisation. The results are being analysed at the moment. We have created the first deliverable on the farmers' survey and are preparing publications with these results. Raw data are not publically available because it is a sensitive data. We do the expert interviews (semi-structured or open).

Question about the open access of the data once the publications are published: In case when it makes sense we are trying to make them publically available, to have raw data as a supplement to the publication, but only after the results will be published. We have checked different repositories, we put all the LIVESEED outputs (records, presentations) on different repositories: Zenodo (peer reviewed publications, outputs get assigned with doi); everything is published on Organic e-print (a large repository of the organic sector), which is not restricted to peer reviewed publications but also other outputs can be uploaded (workshops, protocols, farmers' newspapers); the way to have raw data available is to attach it to the publication. We have prepared a DMP template for the metadata (field trials, socio-economic). For socio-economic data we checked AgMIP, ICPSR.

You have created a lot of different types of knowledge objects as seen from the website (book chapter, thesis, journal articles, conference papers, reports, abstracts, practice abstracts). Is there anything else that is not published on the website, Cordis, any IPR outputs – new varieties: for the moment we don't have new varieties yet. Other outputs are videos, posters, presentations, workshops (presentations, videos), practice abstracts, booklets.

Webinars? Yes, one was on the practice abstracts – how to produce them (internal). We don't have external webinars, but due to "corona" the activities planned for May will be performed as webinars.

On which platform do you plan to put it? Go to meeting, the videos are put on the website but also on Youtube. We have a lot of activities on social media (videos on Twitter, Facebook), we work with Farm knowledge platform (farmers are target group e.g. put practice abstracts on it, because we realised that no farmer will find P.A. on the EC platform but we wanted them to reach the targets).

Q: Did you have specific target users in mind for these outputs? We have a wide target groups, scientists, farmers, advisors, seed companies, policy makers (EU and national level). We have a plan for each target group.

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Farmers: practice abstracts, publications in farmer journals, the most direct are field days, "share shops" for direct exchange of the ideas, recommended list of cultivars for organic farming

Advisors: are interesting from their perspective, are good disseminators. We invite them to workshops, research focus workshops, conferences

Researchers: Sci papers, conferences

Policy makers: are quite active, policy part is important for them, are writing policy recommendations (DG Sante, DG Agri, for national authorities). One task of the project is to improve the amount of organic seed, to see how the organic seed regulation is implemented in different countries. National authorities certification bodies are important stakeholders in the project. Special workshop was designed, we have a booklet with the best examples - how they are implemented in different countries. They are also targeted in workshops (at different levels; national, European) and meetings. Together with "sister" projects BRESOV and ECOBREED direct interaction with DG Sante. There is an ongoing revision of the organic regulation, the EC is still developing implementing acts, they are asked by EC to give input. They are active on the text of the implementing regulation, they are contacted by phone, they have at least 4 meeting per year with policy makers. We organised a workshops for the working groups of EC together with the project INVITE (9 of the 19 members have attended it). Beside policy makers we also invited seed companies, organic breeders from different parts of Europe to discuss with them.

Do you prepare any materials from these workshops? Are outputs somewhere? The presentations are ready, the report has to be finalised then it will be put on the website (LIVESEED and INVITE, Organic e-print).

As a repository you use website and Organic e-print? Organic e-print is mandatory (in DMP). Sci publications are also uploaded on participant portal.

Are Sci publication stored anywhere else? Peer reviewed on Zenodo and Organic e-print, on participant portal (takes a lot of work). We have a high interest that outputs are disseminated. Some presentations are also available on the webpage. we also use Twitter, Facebook.

About the workshops – you make a report? For some, the reports are available at the webpage. Not for all – are also in local language. The reports on the workshops at the national level are not on the website (but are integrated in the deliverables – reports on what we do, some are also confidential).

Q: Regarding MAA – co-creation, how do you involve target users in the creation of outputs (are they and how they are involved? We have followed MAA from the beginning, have many different disciplines, we have 2 leaders for each WP, one from the Sci and one from the stakeholder site and they need to agree. The stakeholders get a newsletter, they are asked in which topics they want to be involved, they get included into newsletters, participate at workshops, they participated in individual interviews and in on-line surveys,

Were they involved in designing the field trials in designing the project? Organic breeders contributed with their ideas, what is important for them, in some cases they are working together with ITAB.

What about publishing results, are practitioners also co-authors? Depends on the situation, we have an editorial committee for the publications. For Sci publication it is reviewed by WP leader (the quality of the paper is checked, make sure that all the people who participated are co-authors).

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We work together in field trials together with farmer organisations and publications are co-authored.

Q on practice abstracts, what is your opinion about these outputs? What are pros and cons? The idea is nice – how to explain project results to farmers, advisors. The implementation is difficult, the format (Excel file) is very strict, too short, we started with an old template from another project, which was too strict, didn't leave enough freedom. The number of characters is limited, sometimes it is very challenging. The number of expected P.A. is very high – at start 100, but is reduced now to 75. Was it a demand of REA to produce 100 or did you put this goal in the proposal. It was not demanded but expected, so they put 100 to fulfil the expectations. We reduced it to 75, but it is still quite high. The implementation of P.A. is also annoying, at the beginning I was looking for a database, but there isn't any and is really difficult to find P.A. at the portal. They are put at individual projects on Cordis and is very difficult for the farmer to find them. The names of practice abstracts are also not good e.g. P-A. 1,2,3…, not by the title (topics it presents). We put P.A. on Organic Farm Knowledge platform, so that they reach the farmers. It is useless if it can't reach the group it is intended to. We have now a special topic on seed on Organic Farm Knowledge platform, we started with arable crops, (OK NET ARABLE that was a TN). Generally: the idea is good, but implementation needs improvements.

Q: Question that is a repetition on what has already been discussed - how did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? Tell just one example for each actor

Farmers: raw data, national workshops, the farmers are invited and give their input when it is needed, also to define breeding goals. The national workshops that talk about the use of organic seed, the farmers participate at these workshops to give their voice and to say what is important from their point of view.

Advisors: we are approaching the consultants to clarify what is the % of organic use in different regions. We have farmers' info but it needs to be validated with consultants. The advisors estimated the amount of the organic seed used. The advisors are contacting farmers to check on their seeding way, planting time. In the LIVESEED we have different kinds of crops (arable crops, cereals, legumes, food trees, forage crops, vegetables). Advisors are involved in the surveys – they ask questions about specific crops.

Researchers: research, writing papers, workshops, policy recommendations, writing booklets (is a combination of different types of partners (universities, research institutes, organic associations))

Policy makers: we have an Austrian agency that is a member of consortium What is their role – consultancy, validation of certain things? We have consulted all the national authorities how they implement the system in organic farm – we gathered the information. We work together with national authorities on the derogation on how to use non-organic seed on organic farms. Give direct input when they have to give opinions to DG Sante, DG Agri. CPVO (for variety release) have offices in different countries. We made a workshop at the annual meeting where they proposed what to do, where we have problems, how they can be overcome.

Industry professionals: seed companies (Freudenberger Feldsaaten, Vitalis, Sativa). They are partners, have tasks to do – they took trials themselves, are involved in policy recommendations, they developed European raw database, the companies are testing the pilot.

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Q: On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs – very well or do you think that you will encounter some problems? 9, there are some things where we were not able to fulfil what was planned, but sometimes we over fulfilled what we promised. It is still an ongoing project and we have many tasks that need to be done. We are challenged now due to corona outbreaks and put in danger the meetings, cross visits, field trials

Q: Are there any outputs that you consider missing in your MAP, for example ones that would have been relevant, but were not produced? We don't see anything that is missing so far. We were very critical from the beginning. It is more the type of the output that is considered, e.g. we didn't produce any videos but we should have. We have many experienced partners who work close with practitioners and it was clear from the beginning that we have to include different media to address different target groups. Remark from coordinator: we have many different types of outputs, are active on social media, so I don't miss anything, but I think that we could have been more structured in deliverables – some could be combined.

Q: In your opinion, which of the results/outputs of your project (in terms of knowledge objects) are/were the most valuable and why?

The project will evaluate the problems from different angles – to give this knowledge to policy makers that using organic seed is not a problem – they are good germinating. It it has more political aspects - if you want to promote it is important to know where to make the intervention. This is the biggest impact that we combine all the different aspects in one project and put it in a bigger perspective.

… knowledge to policy makers that using organic seed is not a problem – they are good germinating

- *different perspectives of using organic seeds,*
- *exchange of data on varieties*

For the practitioners? That it can be achieved that heterogeneous populations of seeds can be allowed, the release of organic varieties, business model for organic farming

Q: In your opinion, which outputs of your project have reached/will reach the most impact and why? European raw database, which can be implemented afterwards; it would be much easier for organic farmers to apply, to find where the organic seeds are available, to find derogations that can be done automatically, to produce automatic reports, to see that recommendations are implemented

Q: Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)?

At the moment they are at the webpage; a lot of partners, linked 3rd parties are a part of the Consortium of organic plant breeding so the outputs are also stored on their website (ECO-PB; existing since 2001), after the project ends we will move outputs to their webpage; outputs are available also on Organic e-print - no matter what happens with LIVESEED webpage the outputs will remain there; outputs for farmers, advisors will be put on Organic Farm Knowledge

Q: If your project has ended, does/did your MAP participate in the Data Pilot and did it prepare a Data Management Plan? We joined the data pilot because it is important to reuse the data in other projects, to be clear about the ownership and storage of data, not to get data lost, the data is also more openly accessible to other partners

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Q: Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? It is a good idea, since there is a lot of MA project and putting results together would be very good, however, organic sector already has its own solution (EU consortium on organic plant breeding

Q: Did you transfer or exchange any of data or knowledge objects with other projects/groups? Yes, with ECOBREED, BRESOV (a lot of sharing partners): the coordinators are in other projects' advisory boards, invited to workshops, organisation of common conferences, workshops; DIVERSIFY, DIVERIMPACTS, REMIX: organisation of conferences. Several partners are involved in other projects – the results can be shared. The actual data are exchanged between LIVESEED and ECOBREED (info on plant resistance), with BRESOV - results on on-farm variety trials.

Q: On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible? (1 to 10 – none to all) 8

Q: Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice – and what is your advice: it is important to plan properly - a couple of months before the deadline, we try to plan properly, we have a practice that other people are included in the validation of outputs.

Annex 13. Transcripts with MYCOKEY

Interview with project manager of the MycoKey; May 14th 2020

We are responsible for two tasks – one regarding multi actor approach and the other about data and knowledge objects that were created in the project. Today's interview will be about knowledge objects. I've seen on your webpage that you have created many scientific articles, some posters, presentations.

Perhaps I should present a list of knowledge object – and you confirm if they were created or not: Books, book chapters – no; but probably will be till the end of the project (note: the project lasted until March 2020 but they asked for a 6 months extension); we should organize a final conference in October where we should present the results of the project and probably gather them in a chapter or book. But we have done nothing so far. Project deliverables: Y, reports: Y, abstracts, summaries, conference papers: we have prepared a book of abstracts for two international conferences (Ghent and Wuhan); we have a printed copy of these abstracts. Are these abstracts (and other outputs) accessible somewhere, e.g. in some repositories? Yes they are, but the repository is not public. All the conference registered participants received the hard copy of book of abstracts, it is also available in a digital form and provided to the participants if they asked for it. Practice abstracts (an explanation what practice abstract is): Yes, but we call them lay summaries that contain simplified information for large public, at the moment we are preparing a lay of the results that were collected for the general public. We also prepared a sort of a newsletter and we distributed it through our mailing list. There we summarized the main results of the project. We also publish the results on our website and we will update it till the end of the project. The lay summaries should also be included in the app we are preparing. We will publish these lay summaries on the website. Software? Yes we prepared a MycoKey app (Wageningen Research) but we have several problems regarding the app. We have to include the weather data and the data regarding some crops in the field. These data are not publically available in most of the countries. In Netherlands it works well because they also have

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a public register of the fields. But the experiments were also executed in other countries? Yes, in Italy and in Belgium. On which crops? On maize and wheat. Did you perform any experiments in China since you have many Chinese partners? Yes, we have some scientific partners that have collected data in Serbia, Romania, China. They organised prediction model for maize and wheat. They also organised some geographical – risk maps. We have eleven Chinese partners and the experiments were very focused. The priority of our project is cooperation with China. The Chinese partners prepared/proposed parallel projects so that they get funded. Some of the activities are complementary and the others were very focused on Chinese problems. We created some videos that are already published on the internet (website), we also prepared a video which presents main results of the project. The Chinese partners have also prepared some videos. Some of these videos are available on the webpage that is linked to YouTube.

Which of these results do you consider the most valuable?

It depends on the target. The publications are meant for the scientific community, e.g special issues. For the companies, industry, farmers the lay summaries (public abstracts) are the most valuable, also short videos. May we also consider the trainings as knowledge objects? Such outputs will be evaluated in another task of EUREKA which is lead by University of Torino, and some of your partners will be contacted by them to discuss the issues on communication, dissemination, exploitation. We have a good feedback of the participants of the training courses. The people were very interested. Do you have any special knowledge objects intended for advisors? No. Policy makers? We created some contacts with the policy makers, till the end of the projects we should present some position papers to the authorities, also to the European Commission. This position paper is not ready at all, but it was recommended by our reviewers. The policy makers are also included in our mailing list so they received the newsletter with some relevant information. What about recommendations – will they be prepared as stated on the website? The recommendations should be done through the app and will be are available only for those who can access this app. Which partners were included in the creation of the outputs- only the researchers or were farmers/practitioners also involved in the creation? For the lay summaries – only scientific community. The lay summaries presented the work of some nominal working groups, in which the scientists discussed about the topics, the AGPM (association of maize producers) was also involved in the creation of these summaries. We also distributed them among our industrial partners, e.g. Syngenta, who provided some information and reviewed the summaries. What about the collection of data in the experiment, were farmers also involved or only the researchers? Only the scientific institutions.

It depends on the target. The publications are meant for the scientific community, e.g special issues. For the companies, industry, farmers the lay summaries (public abstracts) are the most valuable, also short videos. May we also consider the trainings as knowledge objects?

On a scale of 1 to 10, how well do you think your project will achieve/achieved all the planned or anticipated results and outputs?

Between 8 and 9. We have a list of results, we have classified 56 results of the project, we also classified them according to the level of innovation, we used the innovation radar provided by the EC in order to define in which level we can position our results. Do you think there is something missing – that you didn't achieve as prosed? We didn't fully achieve the application. Will you be able to achieve it till the end of the project? No, because of the technical problems (the access to the

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European weather data is costing 30.000 EUR per year). The format of the data that had to be collected also didn't apply with the app. So that I suppose we won't be able to achieve it.

Which outputs will make the most impact?

Probably the cooperation with China, some practical tools for prevention, intervention, remediation. Very important impact will be made in terms of application because they provide some practical solutions for industry and farmers (i.e. detection kits for mycotoxins, additives for feed that will be patented).

Are these outputs stored in the repositories, are they openly accessible?

All the presentations are public, some results of the researches are confidential and will also be patented. We have an internal repository, otherwise we use Zenodo, the outputs are also stored on the project website.

Do you think that the creation of a common agri-platform as a knowledge repository for MA projects is relevant?

Yes, sharing information is important, we also need easy access for the data, not only for scientific institutions, and sharing the results would be helpful and useful. But of course it depends on the partners if they are willing to share the results.

Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups?

We have the cooperation with MyToolBox project, it is a MA project funded by the same call.

How many of the results are openly accessible?

All the publication are accessible – 10: the lay summaries – 8; other data – 6 – some data are not openly accessible but can potentially become.

What do you consider to be a good practice?

The lay summaries are really helpful for the farmers, the app could be a good practice. The integration of knowledge objects in a friendly tool – it could be very good practice.

Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

According to my experience, we always say that all the scientific publication should are openly accessible, but the exploitation should also be mandatory and should also be checked. There should be some indicators for the projects which should help the project to use the results and to make it available for a larger public. For example we have five industrial partners – we have a large consortium consisting of 32 partners including 11 from China. All the research communities are ready to make open and available results. The problem is a transfer and providing the easy tools for farmers/practitioners. You have to push communication and provide some easy digital tools. The problem is also in time, every time we have to organize some open days, they have success but it is only limited to the moment the event was organized. After the meeting, e.g. the demonstration of a solution or a tool, we didn't have any other or additional feedback. The action is limited to itself. The problem of the MA projects is that in the beginning you have a commitment from all the partners, but during the project when you have to make closer collaborations it isn't always easy especially with the industry partners. You should also include in the project the innovation part. In the project,

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both, the research and the industry, look mostly at the research part, but the innovation part should also be emphasised!

Annex 14. Transcripts with NEFERTITI

Short introductory input by interviewer (MCP) – according to our survey Nefertiti has created different outputs like videos, presentations, webinar, newsletters, project deliverables, conference papers, also raw (survey) data …

AG: yes, a lot of videos, different communications, even if our aim is to have all deliverables public and we will put at disposal at web page.

MCP: you prepared a data management plan?

AG: yes

MCP: any raw data

AG: personal data on farmers, type of farmers, demonstration farms are registred as demo farms at platform, they feed in their data on farm etc.

MCP: any recordings, measurements on the farm?

AG: No. As you know it is a specific project is to connect people, organise demonstration events 367 last year. So our aim is connect people rather than producing knowledge. We make use of knowledge produced in other projects but not producing in ourselves.

MCP: expected results/outputs that are the most valuable?

AG: good transfer through demonstration, high quality demonstration in all countries. To engage moe farmers into demonstration activities. From average to demo farmer. Recruit farmers to be demo farmer. And network of farmers on certain area (7 thematic areas). And keep connecting them after the project. Main outputs are not publications factsheets etc. but more the human, social dimension of people uptaking innovation coming from everywhere, other projects. That people farmers, advisors, could stay connected in the time. Our main output is not tangible, you can't touch it. That's why it is particular.

So our aim is to connect people rather than to produce knowledge. We make use of knowledge produced in other projects.

- *Good transfer by demonstration.*
- *Network of farmers on 7 thematic areas.*
- *To keep connecting them after the project.*

Main outputs are not publications factsheets etc. but more the human, social dimension of people uptaking innovation coming from everywhere, from other projects.

MCP: How do you assess, judge that these outputs are the most important? The basis for that.

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AG: Our key objective from the start. To assess, it is difficult. Uptake of innovation – we measure the level of satisfaction by surveys, we make reports on demonstration events (also in journals). Number of farmers that want to make demo is also indicator. Our objective is to sustain the network. Establishing links with policy makers that our demonstration hubs could be funded in CAP funds.

MCP: Intended target users?

Practitioners, we've got farmers as main target, then advisors as second target and technicians and researchers. Policy makers also – priority number 2. Priority number 1 are practitioners.

MCP: Message to researchers?

To make them participate in multi-actor scheme, hub. They learn about the needs of farmers. How farmers are learning knowledge. If researchers are more aware of needs and how they are learning their research will be better oriented. How to better interact with farmers for their benefit.

MCP: You say that you don't produce so tangible outputs, but you have many videos. Video can be considered as raw primary data. So did you foresee a specific output for specific target user?

We targeted video for practitioners, workshops for policy makers; to show that demo is key for farmers. Some trainings, guidelines for advisors that are organising demonstrations. Some educational materials for students. Yes, we setup one output based on the target.

MCP: all tangible outputs will be available on the web page?

Yes, everything, all tangible outputs, deliverables, milestones will be public. We are also producing farm demo training kit – how to train people for farnm demonstration ppt, videos, documents on different aspects of demonstration.

MCP: Are different actors involved in different outputs? How do they contribute to outputs?

AG: yes, some outputs are produced by social scientists, videos by specialists in cooperation with advisors who validates the message, who organised the event (monitoring). Level of satisfaction as well is measured by social scientists, then there are experts in networking, each kind of skills have responsibility for specific output and in cooperation with everybody – we hold one executive committee per month and WP leaders are revising all production in all categories.

MCP: Anticipated results, expectations – what is your evaluation of your success? Have you forgotten something that you see now would be good to include?

AG: Difficult to say. Level of satisfaction, perhaps too early. I believe we are at 60% advancement. Now situation with crisis is difficult. To build trust between people it takes time. Level of innovation uptake increases with time. I would say to do more training on facilitation. Capacity for soft skills; to animate groups and to share knowledge. Training kit is important, we are reflecting to make a huge training campaign, internal training in the

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project and also for external people. Project IoF2020 – we were supposed to do joint event with them; Nefertiti would bring best practices, aim to improve on technological side and demonstration side, but covid19 stopped us. We provide guidelines, framework and then people are let to do, communicate within this frame. Difficult to have a global view on everything done.

MCP: Your opinion, which outputs of the project you think will have most impact, and why?

AG: this is always related to the objectives. Best practices on farm demonstration, every organisation could have access to this training kit and best practices. This is footprint we want to leave. And that people keep connected in demonstration. Demonstration cross-visits are very important, though now not possible. To learn about how people do in other countries on thematic area.

MCP: Is language a barrier?

Yes of course. It is impossible to organise translations – so we are obliged to select also on the knowledge of language. It's a barrier but we can overcome it through different measures.

MCP: Are you supposed to produce practice abstracts?

Yes, and we already produced 45 practice abstracts. They are not yet at web site, available at EIP-AGRI platform but we are turning them into communicational way and will be soon ready (this month).

MCP: Idea of EUREKA for a common platform?

AG: split feelings. Everything produced should be stored, for sure. To be available, accessible. The project is important for that. I have doubts about the access to the knowledge. I doubt that European farmer will go to such platform. We have a similar at French level and it's difficult to reach the farmers. Only low % of farmers chase the knowledge. Some national access would be better. I doubt that many farmers would go to huge English database. Principle is nice, but to ease the access and knowledge is used by expected targets, I have doubts.

MCP: Platform structuring the info according to language/country?

AG: Depends. Farmers of different countries, age sectors will be different and how to target them. It would need to consider the country, age, sector. Make people move from their habits is not easy. In Nefertiti, videos in German are viewed much more than in other countries. It could be a good database but it should be like a spider – to reach different targets.

MCP: Exchange/transfer the outputs with other projects? with IoF2020 already mentioned. Others?

AG: Others – one deliverable is an analysis of project funded in agricultural regional funds. Each partners needs to invite OG, Interreg or other regionally done projects to events. These are on our mailing list – systematically identified and invited to local events. The leaders of

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thematic areas in our project are also leaders of thematic networks. We did it on purpose, theycan spread the knowledge in both directions. So to mention InnoforGrass, OKnet Arable, Winenetwork, Fertinova …

MCP: How much of your outputs are openly accessible (score), or will be?

Is not presently, but will be 100%. Amendment to make deliverables public.

MCP: Your opinion, regarding creation of knowledge what would you consider a good practice in MAP?

AG: basically to make exercise for whom, to use most relevant channel to reach them, to pay attention to contextualise the knowledge, to pay attention to language not only national but adapted speaking to target user, accessibility. MA approach changes behaviour of people and in such setting for example researchers also become more practice oriented.

MCP: What do you consider, with regard to outputs, to be innovative in your project?

AG: Videos on farm demo channel is not very common, training kit should be interactive, human/social aspect which is the pillar of project (again less tangible).

MCP: What is not stored in a sustainable way; after the end of project?

AG: We have a sustainability strategy, on several pillars e.g. for tangible outputs, video channel should be accessible (you tube), practice abstracts, deliverables on the platform, farm demo cluster, we are working on new project to re-use platform of Nefertiti. At the origin of the project we thought about that. It is still challenging, but we have a set of measures for high sustainability. One WP is devoted to that.

MCP: On the aspect of knowledge creation – could you share some do's and don'ts?

AG: I believe in interoperability. Map of demo farms on our platform will be open for re-use. I believe in open data, interoperability for efficient re-use. Knowledge strategy – I believe in open data. Digital strategy.

MCP: Final words for Eureka

AG: Good luck. It's a challenging project. I hope that it will be successful. I fully believe in repository mind-set, but is really challenging. It's a massive project.

Annex 15. Transcripts with NoAW

A transcript of the EUREKA (T1.2) Interview with Patrice Buche, (NoAW project); June 4th, 2020

Which of these results are the most valuable (Q1) – and how do you assess that? Some answers already in the sent .doc file: "*Preferences and justification about LCA criteria. It permits to propose an extended LCA and cost MCDA (multi-criteria*

- *Preferences and justification about LCA criteria*
- *an extended LCA and multi-criteria decision assessment*

… three types of outputs: sci papers, data, software everybody should try to publish the results … and esp. the data; … it is also written in a DMP. … is difficult to convince partners to publish the data …

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decision assessment) method combining TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) and argumentation. This work has been published in Sustainability journal."

This is one output of your project, if you look the whole project – do you have other examples of outputs? You have many sci. papers and other outputs (we did a desk analysis and we can see that you have different outputs created in the project). There is another task in the project where we collected the preferences and associated justification on different stakeholders about current and innovative routes to valorise the biomass of agricultural waste. We don't have a sci. paper on that but have a report/deliverable. We have a software where these preferences were aggregated. We also have a conference paper on these results.

What is the form of these outputs, e.g. LCA criteria. We have three different types of outputs: sci papers, the data, the software. Were the data published as well? The data were published on INRAE dataverse as also indicated in a DMP. INRAE dataverse is a kind of a repository? Yes. Is it an open access repository? Yes, it is an institutional repository and is also used for articles. Is the repository also accessible through your webpage? Is it also accessible for the people who are not familiar with it? For this particular work – when you publish the data in INRAE dataverse you create a data set and you can reach the data through data site. We could do a datapaper to increase the visibility of the data (but is not done at the moment). When we prepared this particular paper we didn't mention the data. INRAE dataverse is crawled by OpenAire. So we will find this info when checking the webpage and Cordis? Yes Is this a common approach for the whole project? Yes, everybody should at least try to publish the results. And the data as well? Especially the data and it is also written in a DMP. To be honest, it is difficult to convince partners to publish the data, we have a person at INRAE who is responsible to review the deliverables and has a responsibility to check that there is a section about the fairness management. If the management of the fairness of the data is not mentioned, the deliverable is transmitted to the EC officer. So the people are obliged to ask the question about the data management. You didn't have any protected data? In this section people can also mention that it was not possible to publish the data - you can explain why you can't publish the data. It is a more technological project so we didn't have many cases like that. Did you have any IPR? I am not responsible for this part of the project, but I think that some partners have designed a patent.

How and why were these valuable outputs generated? Already explained in the file: *To compare alternative scenario on two use cases (energy production and polyphenol extraction) using preference/justification elicitation during two meetings: H2020 NOAW and AGROCYCLE stakeholder advisory board in Beijin (Oct 2018) and NOAW annual meeting in Taipei (Oct 2018) and analysis.*

Do you have smth to add? Our project was about getting some knowledge from the experts, it was not experiment based. We had to ask people what is their opinion on different aspects, on the preferences they have on criteria. A colleague of ours collected the data at two different meetings. The survey that was designed together – that was the way we generated the data – a basic survey. Then we had to implement these data in the article language which we can use with our software.

Which are the target users of these outputs? All the listed, because the work was done to extend the multicriteria decision assessment tool which takes into account the opinion of different stakeholders of a chain in order to make a decision which makes a consensus. All different targets can be users when you want to take the decision about the kind of routes you will take to valorise waste. All the different people can be involved – farmers, foresters, also advisors and policy decision makers at the regional level, it is also in the interest of the researchers and also the industrial partners who will

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implement some factories to make new valorisation of agricultural waste. All the different target users can be users of this tool.

Do you have any specific results for specific users? We tested the methodology of the software on specific use cases: 1. different alternative to produce energy and 2. about polyphenol extraction from waste. A typical user for these outputs would be policy makers and industry professionals but it can be used by any target user.

Did the users participate in the creation of these outputs? How were they involved? The methodology was to get the justification of all the different users and to compare them somehow. This piece of opinion is confronted to the other one. We benefited from the help of the users from getting those opinions. All the different types of actors were involved, besides we are computer scientists and we also work with researchers specialised in waste transformation in order to design the questions. A Hungarian partner CBHU was in charge of the report.

On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? 8 – compared to the planned results, there were some delays and we couldn't make some milestones of the project, e.g. a delay on the deliverable D1.5 which contains stakeholders' preferences about current and innovative routes to valorise agricultural wastes which prevented WP2 LCA partners to use it to refine the assessed scenario.

Do you think that you will be able to compensate it until the end of the project? No, our colleagues couldn't use this information because it wasn't published.

In your opinion, which outputs of your project have reached/will reach the most impact and why? We have two kinds of outputs that we hope will have some impact: 1: two papers, one in Sustainability that was already mentioned and another one about the aggregation of preferences. We hope these papers will be cited. 2. We will reuse the software – the PAPOW software which implements aggregation of preferences and DAMN software which deals with argumentations. Both cases of software are already used in another EU and national projects.

Are all the outputs/knowledge objects of your MAP stored sustainably?

Yes, all the data is stored on INRAE dataverse. The software are published on git-help, all the sources are available. The software is accessible like a tool

Do you have any outputs that won't be stored sustainably? Referring to sustainable we have two problems: 1. Accessibility – we are covered, we plan to be online for a long time (at least 10 or 20 years), 2. Maintenance – it is different, you have to have people who are working on, that is harder.

Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant?

Yes, for two reasons: 1. Dissemination, 2. Collaboration (with other people, partners)

Do you see any advantages/disadvantages? The main advantage is to get new ideas, we could use our methodology on the data that were produced by other people, the problem may be pushing people to publish and it may not be so easy.

What about the data? Would such repository be useful for knowledge objects or also for the data? We work in computer science and we need data to manage. The platform will manage both – the papers and the data - that is the objective? Yes. Papers are interesting but data is even more interesting. There is a lot of discussion on data because it needs to be prepared in a way that other

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person can reuse it. Yes, that is very important. It is important not only to put datasets but also to have a review on the way you published the data. To be sure that you have provided all the metadata in order to facilitate the reuse of the datasets. It is very nice when you publish a primary paper to automatically think that you will also publish a datapaper in order to have an external review to be sure that you didn't forget some important metadata.

Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/operational groups, thematic networks? It is us reusing the data/metadata in other projects. In the Glopack project we are reapplying to what we did here – reusing the tools we developed in some other context. Did you use some data or results from other projects? Not directly. The platform where we could access the data from other projects would be super useful for us. It would save us a lot of time. However, our software requires that data are stored in a given format. Should we always publish the data along with the paper when we publish it – in the same journal or independently? We make an independent datapaper (or data in brief). It is a short paper where you describe the data and the methodology in which you make no analysis of the data. You have to make sure the reusability of the data. We want to implement the triangular architecture: a scientific paper, datapaper and a dataset. You have more chances that your work will be noted because the outputs are connected.

On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10)? 10; Everything is available. It is mandatory to put publications in open access, we have this French storage called HAL and we have to put papers on this repository. We also did this with the data on the Dataverse and with the software.

Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice? To publish datapaper so that people can actually use that, to make an external review, to use some standards.

Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation? Do you have any bad experiences?

Time management is super important, we didn't have enough time in the beginning to do it properly – for the data that were produced. To allow people to collaborate, so that everybody can participate (in the survey, in designing). You have to have a good basis which allows the production of the data that can be used later.

In EU project a coordination is a huge deal, we had to design a questionnaire to be sure that the format was convenient with an input of the software and to implement it in different countries with different important ??? It requires a lot of coordination effort.

Annex 16. Transcripts with OPTIMA

Minutes of the meeting of the interview with OPTIMA coordinator, March 30th, 2020

Interviewer: You will produce various types of outputs (datasets or knowledge objects) in your project. Can you provide some examples and why that specific output/knowledge object is or will be produced?

Interviewee: We will produce a publically available website with disease alerts for the farmers; it is a very useful output for farmers since it is able to give an insight into the current situation; we will

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produce IPM (integrated pest management) protocols for 3 diseases (one for each of the investigated crops - carrots, apple trees, vine).

Interviewer: Do you have specific target users in mind for these specific outputs?

Interviewee: Yes. We will produce the website with disease alerts, IPM protocols and bio-based pesticides for the 3 diseases for farmers and advisors, IPM protocols also for policy makes. We will produce guidelines for the use of sprayers for industry professionals.

Interviewer: Which outputs were intended for practitioners?

Interviewee: The website with disease alerts, and IPM protocols are intended for practitioners

Interviewer: Did target users participate in the creation of these outputs?

Interviewee: Yes, they will because the trials were not conducted, but we expect some delays due to the current corona situation

Interviewer: Why?

Interviewee: Farmers are important actors in the project – the project is intended to help the farmers cope with the diseases

Interviewer: How?

Interviewee: They are involved in 3 pilot trials with apple trees in Spain, carrots in France and vine in Italy

Interviewer: Did your Multi-Actor Project (MAP) produce practice abstracts?

Interviewee: No, but we are planning to

Interviewer: How did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)?

Interviewee: Farmers are involved in pilot trials to act in co-creation of results

Advisors are involved in pilot trials, they represent a link between farmers and researchers

Researchers are planning the execution of the trials, are responsible for data processing and the preparation of documents

Policy makers provide an insight into current situation

Industry professionals are also involved in pilot trials

We have focus groups every year where we discuss multi actor approach.

Interviewer: On a scale of 1 to 10, how well do you think your MAP will achieve all the planned or anticipated results and outputs?

Interviewee: I would give a score of 8 to 9

Interviewer: Can you please elaborate which ones not and why?

Interviewee: We will more or less achieve the planned results but it may come to some delays due to the current corona situation

Interviewer: Are there any outputs that you consider missing in your MAP, for example ones that would have been relevant, but were not produced?

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Interviewee: Yes

Interviewer If Y, which ones?

Interviewee: I miss videos in which we could practically present the results of the project (e.g. guidelines how to use sprayers).

Interviewer: In your opinion, which of the results/outputs of your project are the most valuable and why?

Interviewee: The most valuable will be IPM protocols, bio-based pesticides that will be produced, the website with disease alerts.

The most valuable will be IPM (integrated pest management) protocols, bio-based pesticides that will be produced, the website with disease alerts.

Interviewer: And which are the most valuable for practitioners?

Interviewee: The website with disease alerts.

Interviewer: How do you assess this?

Interviewee: We have 3 pilot trials involving farmers, advisors, research, policy makers and industry professional for the assessment of the whole system.

Interviewer: In your opinion, which outputs of your project have reached/will reach the most impact and why?

Interviewee: IPM protocols (1 per each crop), website with disease alerts, videos to demonstrate the use of sprayers

Interviewer: How will you assess this?

Interviewee: We will perform 3 field trials, we use hyperspectral camera measurements for disease assessment, that will be used the disease alert website, we also assess the whole system from the socio-economic point of view

Interviewer: Will all the outputs/knowledge objects of your MAP be stored for the long-term (post-project phase)?

Interviewee: No

Interviewer: Why not?

Interviewee: Some results are confidential (e.g., development of new technologies with industry partners)

Interviewer: How is this done and for how long?

Interviewee: The results that will be openly accessible will be stored on Zenodo, we also use LinkedIn for internal users

Interviewer: If your project has ended, does/did your MAP participate in the Data Pilot and did it prepare a Data Management Plan?

Interviewee: The project hasn't ended but we have prepared a DMP

Interviewer: Why?

Interviewee: We have prepared it on a voluntary basis; I find it useful because it is clear where the data is stored, who has the access, how it is accessible

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Interviewer: Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? Why?

Interviewee: Yes, after the project ends not much work is done to keep it updated, the website is often not functioning – the project/results would make a bigger value if put on common knowledge repository.

Interviewer: Did you transfer or exchange any of data or knowledge objects with other projects/groups?

Interviewee: Not yet, but we plan to link with operational groups.

Interviewer: On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible?

Interviewee: 6

Interviewer: Which data/knowledge objects are, which not?

Interviewee: Scientific articles, conference papers will be put on Zenodo, data sets are not planned to be openly accessible, some are confidential.

Interviewer: For the data that are, how is this done?

Interviewee: Maybe we will publish some data – I don't know yet, has to discuss it with other partners

Interviewer: Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

Interviewee: Ready to use advice for farmers/practitioner (creation of IPM for diseases, a website with disease alerts, videos on how to use the sprayers)

Interviewer: Any advice for future MA projects?

Interviewee: Be clear about datasets (the ones that are not confidential), be clear about what to offer to the practitioners.

Annex 17. Transcripts with RUSTWATCH

Interviewer: In your opinion, which (examples) of the results/outputs of your project are/were the most valuable and why? How do/did you assess/judge this?

Interviewee: Alignment of six specialised labs doing pathogen diagnostics, genotyping and race phenotyping (GRRC, JIC, NIAB, INRAE, JKI and IHAR) – obtaining comparable results that can be shown in maps tools and charts for all Europe and beyond

Interviewer: Are the laboratories (referring to 1.A) that are listed also the partners of the project?

Interviewee: No, not all – this project builds on collaboration that has been going on for some

- alignment of six specialised labs doing pathogen diagnostics, genotyping and race phenotyping
- obtaining comparable results that can be shown in maps tools and charts
- network of labs
- training courses (train the trainers), alignment studies, shared facilities wheat-rust-toolbox

Publications are open, data are as open as possible and as closed as necessary.

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years. There are some labs around Europe and we have to be sure that the data we show on maps and charts are comparable. In this project we put even more emphasis on alignment studies, that means if you sent an isolate to all the labs, we should get same result. Otherwise we have a problem. One important thing is that we build a network of labs that know each other very well, we have training courses, we do alignment studies. And we have added more labs, e.g. IHAR in Poland – one of the biggest research institutions in Poland. This is a prerequisite for building a warning system in Europe, that we work together and we share the data. We built some shared facilities – one of them is known as a Wheat Rust Toolbox. Each of the labs, some that come from specific countries- NIAB from UK, INRAE from France – they also have national programs. They have money for monitoring rust in their own countries. They also contribute the national data to the Wheat Rust Toolbox. We have an agreement to share the data, they can upload the data to the toolbox and use all the facilities. There are some quality control procedures and they can see their data before publishing. We also have the rule that when they see that the data is ok, then they push the data to the level "public for the experts." Then we have a committee – the teams from the labs look at the data and discuss if they are ok or are there any controversial results, e.g. some new races that have not been in their country before. We have to be sure that it is ok. We have internal quality control procedures where we use these IT systems. This is a very nice tool and what we call in our project - the development of shared facilities. This is an example of one that will probably continue after the end of the project.

Engagement of stakeholders in six case study regions (CSR) – contributing and gaining from the project in the most excellent way.

Interviewer: Do you also engage farmers into these case studies.

Interviewee: Our general approach is train the trainers because some farmers e.g. in Italy and Spain are not very good in foreign language. The oral presentations in the workshop that was organised in Spain were in Spanish. We also invite farmers there. We mainly train- the extension service, the breeders, the chemical industry people. We can not have the direct contact to the farmers from the project. The farmers can upload the data using this smartphone app – the photos and descriptions and then everything is available on your platform? We have different versions of this dashboard the disease distribution and level of disease. We started to make it as a crowdsource and because we ask these questions - is it realistic to upload such data from the crowd source (that everybody can use it actually). Questions are: Is it a reliable information we show and can we activate the stakeholders into using it. It was a kind of an experiment. We also have other apps for registered users. This was actually a quite nice exercise. Then we have focus on which varieties were affected early in the season. Last year was one of the most extreme conditions for rust and for example in my own county, Denmark, we had the worst affect of yellow rust in 30 years. One reason was that we were not aware that rust was very early widespread. Normally we spray also according to some other diseases but these diseases were absent. So many farmers didn't do the first spraying. And then we saw there was a lot of rust coming. So that we would not like to be in the same situation as last year, we use this crowdsource App and we go to the field already in February and March and look at the very young plants to see what is on the way, which cultivars are affected and which not. Host resistance is not a stable thing, it can be overcome by the pathogen. For the cereals varieties are shifted every 3-5 years because the pathogens learn to overcome their resistances. So it is a nice way to go out and look very early in the season. Are some varieties known as more resistant still effective or not? If not, then you have to inform the agricultural community, the farmers, that you have to change your control strategy.

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- Development and operational use of SmartPhone Aps for disease surveillance
- Engagement of the official variety testing in Europe on wheat – contributing by hosting a differential set for sampling isolates and reporting disease scoring on these and reference susceptible cultivars as well from 109 trials across Europe. They gain that we genotype and race phenotype the sampled isolates and they will know the race type and genotype of rust that was in each trial – improving the interpretation of their results.

All stakeholders contribute and they respond very positive e.g. via yearly workshops in the Case study regions. Many uploads to our Crowdsource App that was tested in the case study regions

Interviewer: How and why were these valuable outputs generated?

Interviewee:

- Exchanging of differential sets, ring test of the same isolates, Training courses and exchange of staff and students
- Work and planned activities in the 6 case study regions and engaging all stakeholders. One coordinator in each region is partner in the project and are payed for coordination. All activities are also coordinated by one responsible partner. The regions want to learn from each other – exchange of ideas and best practices. All material from the workshops ae available on the website and the material are analysed and summarized in a report and will also be published.
- We developed three different smartphone Apps. We obtain more data with a higher quality – tis result in more robust conclusions and also in stakeholder engagement, and dissemination and exploitation of results.
- We developed a Trap Nursery data management system to support the VCU network holding all data, analysing the data and displaying the data on maps tools and charts. Some results are public and some are available for the VCU after login to the wheat rust toolbox Interviewer: Can you please specify all the intended target user types of your MAP results (select the ones that apply)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

Breeding contribute to test of cultivars in the Field Nursery network and gain from analysing their cultivars and breeding material at 6 different locations in Europe exposed to different populations of the rust pathogen. Gain in monitoring and understanding evolution of the pathogen populations in Europe

Extensions contribute with disease surveillance, test the tools and services we develop and give feedback. They are included right from the beginning. Gain in optimizing choice of varieties and adopting their IPM strategies at a reginal level.

Farmers. Contribute by attending our CSR workshops and open field days and they use our crowdsource App for rust surveillance

VCU contributing by hosting a differential set for sampling isolates and reporting disease scoring on these and reference susceptible cultivars as well from 109 trials across Europe. They gain that we genotype and race phenotype the sampled isolates and they will know the race type and genotype of rust that was in each trial – improving the interpretation of their results.

Interviewer: Can you please explain this network because I'm not familiar with it.

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Interviewee: It is an official organisation in the EU – if the breeders want to have a variety on the market, it must be tested by this organisation. They have a lot of trials with these new varieties (baking quality, yield). They also have scores for different diseases/insects. Every country has 4-5 locations where they test new varieties. It has to be done before it is sold on the market. So, this is a governmental institution.

Interviewer: What about the involvement of researchers?

Interviewee: In this project we said that we will include actors and stakeholders right from the beginning of the project, we have the stakeholder representative in the Project executive committee and when I developed this system for VCU (a Trap Nursery data management system), I invited the coordinator of the network to take part right from the beginning of developing it. Because it should be driven by the needs of the network. And how can we build this in the best way. This multi actor approach has been very successful. We have many different actors in the project taking part in the tasks and some are very active right from the beginning. This is also the way we seek to obtain sustainability. If they don't feel there is something useful for them, they don't claim it will possible to continue after the project has ended. I tried to explain in the sentences that I wrote how can an actor/stakeholder contribute and gain from (what we call win-win). If we don't obtain win-win situations it will not be sustainable.

Interviewer: Which other outputs were intended for practitioners? Which were the most valuable? Did target users participate in the creation of these outputs? (Y/N)

Interviewee: News stories, Twitter account, development of tools and services in the wheat rust toolbox

Interviewer: How/why did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others (Already explained)

Interviewer: On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10). If not 10, can you please elaborate which ones not and why?

Interviewee: Score = 9. It might be that monitoring and surveillance in some countries are privates and a common system for Europe will compromise their business model.

Interviewer: In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you judge/assess this?

Interviewee: The integation of all tools and services into one stakeholder driven early warning system for Europe – enabling to see the big picture and engaging huge stakeholder groups.

Interviewer: Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?

Interviewee: Most data are stored in the Wheat Rust toolbox that started in 2010 and at the same time support the Global Rust Reference centre at Aarhus University. All other results will stay at our web site at least five years after the project has ended

Interviewer: How is it done for the raw data? Is there an existing system where anyone can reach the data and use it or is it closed for the consortium?

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Interviewee: For the long term data -all our data when we analyse the isolates of rust - we do genotyping (DNA profile) and we do race genotyping to know their resistances - this is important for the breeders. All this kind of raw data are stored in the toolbox. This is also for the disease surveillance data because they are in the common format – also for the apps and from the webpages. All data are structured. We have data from the field nurseries where we test a lot of cultivars from many breeding companies. The Danish breeding companies are interested in test of their cultivars in the south Europe – stem rust is mainly present now in south Europe because it requires warmer temperatures. We do not know what will happen with climate change. If those diseases go north, we will be interested to see how will the varieties that are normally produced in the northern Europe react if you plant them in the area with a lot of stem rust. And it turned out that only 5% of the varieties in Europe are resistant to stem rust. Those data are also in the database. For other data that are not structured and longterm then we would just store the data in Excel files and right now they are on our intranet. So, we have structured data in our toolbox and those data coming from specific trials which are not structured on our intranet.

Interviewer: Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N)? Why?

Interviewee: Yes if it is a meta data platform guiding people to the knowledge and data

Interviewer: What do you think about the publications – do you think it is necessary since there many existing repositories?

Interviewee: If you have an open source publication then it is free for everybody and we do not need more repositories for that. But if you put publications on other open repositories then it is relevant to approach those who can not have access to those. You can put a preprint version of the article. But for the raw data they should always stay in one place. Because if you update those you have to keep things updated all the time. If you build a metadata platform- that is the other thing – that is a link to the original knowledge. That is very good if you put that in your Farmbook. Because many people will not know where they can find those different kinds of data and who can have access. Nowadays the journals often ask you to upload also the data that was used for building the publication. We have in our Wheat Rust toolbox the data coming from the national labs – but we do not owe that data. We store the data in the database, but all the maps and tools are actually public. You can say that data is public on maps and tools. But if you want to work with the raw data then you can ask for example UK – can I use your data for another kind of analysis. Then they can download their own data and deliver it to the third party. But we can not deliver the data to the third party because we do not owe the data. But, you can say that the data are freely available because you can just ask the data owners. In many situations this works fine, but data providers should feel comfortable that they deliver data to our system and we do not give them to third party. This is very important that they feel comfortable and they trust the system. On the other hand when we do early warning – some universities say, OK we will give you the data we have publisher – but then it is not the early warning. So what we do in our project, we analyse all the data and put them on web chart so they can be used as early warning. We have discussed with many journals if it is OK that the data has been published before we publish them in a journal, so we publish the data in journal afterwards. Otherwise we can not claim it is early warning.

Interviewer: Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups? (Y/N); If Y, what, how and why?

Interviewee: No not yet

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Interviewer: On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10)? Which are and which are not? Why? For the data that are, how is this done?

Interviewee: All results are openly accessible on maps tools and charts on several platforms

Interviewer: Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

Interviewee: Database driven tools and services, a good website and intranet, use of social media and a good data management plan and a good Plan for Exploitation and dissemination of results

Interviewer: Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

Interviewee: I can give you some point from my own experience. It is really hard to get the scientists involved in generating the data management plan and update it. This is actually a barrier. You have to make a DMP already before you make the proposal. Then you have to deliver the first version in month 6. It is really hard to write about the data when you do not have the data yet, but it is really necessary. You should put attention on the DMP and you should also be good to follow up on it. This is my advice: put attention on DMP and be aware that this is a barrier for researchers because they are not interested in writing all this. You need to do some nursing all the time. And you should also spend a lot of time on plan for exploitation and dissemination (PED). This is also very important. A lot of information related to your questions are in our PED.

Interviewer: Was DMP produced as a deliverable?

Interviewee: In month 6 it was produced as a deliverable and then you need to deliver an updated version it month 42– what kind of data have you actually produced in the project and what are the plans for curation and what about the FAIR data management. You have to specify this in the DMP at the end of the project.

Interviewer: The FAIR principle is already implemented for the publication, but for the raw the data it is not obligatory but the EU is going into this direction.

Interviewee: Normally we say for the raw data as open as possible and as closed as necessary. If you think about the early warning – the ones who could use this are extension farmers. They can see all the data on maps, tools and charts but they don't need the raw data. For us we see no problem in not giving them the raw data. If they get the data, they need to take action. In our project all the data are available for the scientists in the project because they can log into the toolbox and have the access. In this way the data are available for those who are going to use it. As regards the multi actor approach, we are not too cross-disciplinary, e.g. we do not have partners working on social science issues. But I can not give that as an advice because in other EU projects where we really had problems to communicate if the project is too crossed disciplinary. But this is not an advice, just a reflection from our project. If you are very cross disciplinary, you can have problems about understanding each other.

Annex 18. Transcripts with SmartAgriHubs

Date: 13/05/2020

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In your opinion, which (examples) of the results/outputs of your project are/were the most valuable and why? How do/did you assess/judge this?

- *Agri-Tech Network and Innovation Portal - a network of Digital Innovation Hubs based on regional clusters*
- *an environment for ideas, concepts, prototypes*
- *covers different agricultural sectors and application areas*

The most of valuable output of SamartAgriHub project will be the Agri-Tech Network and Innovation Portal. Agri-tech Network will connect the the digital transformation of the European agri-food sector. It will consolidate, activate and extend the current ecosystem by building a network of Digital Innovation Hubs (DIHs) in Europe that will boost the uptake of digital solutions by the agriculture sector.

The success of the Agri-Tech Network and Innovation Portal deepened upon the number of organization and digital innovation hubs has joined the Agri-Tech Network at the end. Presently more then 200 digital innovation hubs registered on the SamartAgriHub Network.

How and why were these valuable outputs generated?

SmartAgriHubs project is still in her early stage. SmartAgriHubs project focus on five objectives and the main objectives of this project is to build an Agri-Tech Network and Innovation Portal. Looking into the spatial scale of the project SmartAgriHubs is using a regional cluster approach, where each cluster represents a group of DIHs within a region. The project covers all 28 Member States who have been divided into 9 Regional Clusters. SmartAgriHubs also has a wide sectorial outreach, covering a variety of agricultural sectors and application areas which have been organized into 5 groups: livestock, vegetables, fruit, arable farming and aquaculture. These DIH will provide an environment in which the innovation experiments like ideas, concepts, prototypes, along with others are further developed, tested and finally introduced into the market as well as to another stakeholder.

Can you please specify all the intended target user types of your MAP results (select the ones that apply)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

The outcome of SmartAgriHubs is tailored according to the key target group identified in each phase and at every ecosystem level. At present the target user are everyone. However, as per the project outline two type of user has been identified direct and indirect user.

Direct user represents the partners of the consortium, European Institutions, pan-European NGOs, and European Associations or Organizations. Whereas, Indirect stakeholders are identified at a local level by DIHs like local knowledge institutions, SMEs, start-ups, mid-caps, financial service providers and end user like individual farmers, farmers advisors and cooperatives.

Which other outputs were intended for practitioners? Which were the most valuable? Did target users participate in the creation of these outputs? (Y/N)

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There are number of planned outputs in the form of newsletter, scientific publications, e-learning tools, innovation portal, newsletter, press, webinar, conference, events, and community building tools etc. Innovation portal is the most valuable output.

Yes, target users are participating in the creation of outputs of the project at various stages of the project.

How/why did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

The project actor and partner are involved in various stage of project to develop MAP output. They are involved in conducting survey, collecting data from various regional cluster, organizing events and meeting, and running wide range of innovation experiment. One of the main reasons of participating these actors to test their innovation and experiment on ground and their usability.

On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10 _____). If not 10, can you please elaborate which ones not and why?

SamartAgriHub project is still in her stage of project lifecycle. At this point it is too early to say anything about the project achievement. As per project work plan SamartAgriHub project is meeting all the planned goals as it was intended.

In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you judge/assess this?

The most of valuable output of SamartAgriHub project will be the Agri-Tech Network and Innovation Portal. Project outputs have KPI and each output will be assessed based on outcome specific KPI.

Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?

At present it is too early to say anything about this. It is in the agenda to discuss the outputs/knowledge objects of MAP stored for the long-term.

Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N)? Why?

Presently, the data collected at project level like survey and farmer information are with the survey center or innovation hubs and have been stored locally. We prepared the inventory of collected information but to need check and assess them. We will make digital innovation hubs mature to have data management plan but it is not in the project priority at this point. We are not so far in it and people are not interested at this point.

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Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups? (Y/N); If Y, what, how and why?

Yes, We are interacting with 11 MA projects (iFishIENCi , agROBOfood , IoF, INNOSETA , SMARTCHAIN , open dei, ATLAS, FAIRshare, DEMETER, DESIRA, NEFERTITI) funded under H2020. We are meeting the coordinator and partner of various MAP in wide range of settings like conference and workshops on agriculture sector to work together and make synergy in common knowledge.

We are interested to make use of the network they have and use their connection to grow Agri-Tech Network and innovation platform. At the same time communicate and disseminated the outcome of our project to them as well.

On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10 ____)? Which are and which are not? Why? For the data that are, how is this done?

Our goal is to open as possible. However, at this point data and knowledge objects of our project has limited accessibility to others. Our work is to build a network and innovation hubs. However, these innovation hub and network are designing new experiments and results and they might not be open to share their experiment and cannot force them do so. However scientific paper will be open to share with other and information on events and workshops are available on the website.

At this stage of the project it is hard to assign any scale to the openness of the data or knowledge objects of your MA project.

Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

As a coordinator of the project we can only make people and stakeholder aware about the policies of open accessibility of knowledge objects or data of European Commission and ask them to provide reason to do so.

Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

In my opinion, as a coordinator of the project we need to inform and spread awareness about the benefit of the open accessibility of data/knowledge creation. Share the policies of EU about data creation, management, and openness of the data. At the same time, we need to involve project manager at each stage of the project and develop simple governance of project output within the project and keep them separate from other administrative task like contracting, legal and finance work.

Annex 19. Transcripts with TomRes

Date: 15/05/2020

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- In your opinion, which (examples) of the results/outputs of your project are/were the most valuable and why? How do/did you assess/judge this?

We try to produce innovation and disseminate it as much as possible. Also many demonstration activities, but here the outputs are not so tangible. We produced also practice abstracts, a technical way to communicate the scientific innovation. Opinion on practice abstract – not very positive. A bit complicated to write them. But main problem, nobody uses them. It is for farmers, practitioners, but it is not easy for them to find them. We had no direct collaboration with OG; there should be some action to facilitate such collaboration with different platforms to reach practitioners. Outputs are not so effective as they should be. Regarding raw data; we complied with open data request. We will publish open access our data. Now all the data are in local repository of one partner and not open yet. And we don't make data open before we published. Mostly this means scientific data – measurements of plant growth, gene expression, water use. These are Excel files. Also some media data pictures, and social and economical surveys. We decided for a DMP pilot. The EC is keen about open access to data but the question remains how to manage it – and this is something Eureka deals with.

Regarding tangible outputs – scientific outputs will be the most relevant, because it is difficult to produce outputs that can reach farmers and reviewers. Reviewers were very precise on scientific and technical outputs/aspects, while MA story was not a priority in their review.
For practitioners demonstration activities, practical abstracts and publications in technical journals, some tools like precision agriculture protocols are outputs.

- How and why were these valuable outputs generated?

Technical and scientific outputs of the project will be the most important; as this is a RIA project; and innovation goes mainly to those channels. Reviewers were very precise on scientific and technical outputs/aspects, while MA story was not a priority in their review. Reviewers are scientists and they seek that, but perhaps other reviewers could see it differently.

- Can you please specify all the intended target user types of your MAP results (select the ones that apply)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

Knowledge that we produced besides scientific research will be also for farmers as we do also tools, protocols for use of farmers. But regarding tangible outputs – scientific outputs will be the most relevant, because it is difficult to produce outputs that can reach farmers. Practical abstracts and publications in technical journals, some tools like precision agriculture protocols are outputs for practitioners. But to answer the question, I think the most important will still be the scientific outputs. We involved different actors in the project, but generally non-academic partners tend to leave this to research institutes and main activities were done by research partners.

- Which other outputs were intended for practitioners? Which were the most valuable? Did target users participate in the creation of these outputs? (Y/N)

Practitioners were involved in the discussions; we have a stakeholders board, we involve farmers associations; for exchange of opinions, discussions on many aspects of the project.

How/why did different project actors/partners contribute to the creation of MAP outputs (data and knowledge objects)? Farmers/Foresters (practitioners), Advisors, Researchers, Policy makers, Industry professionals, Others

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We discussed with practitioners also on research questions. The idea was shared with them from the start. But it is difficult to engage them in the activities, they can give you advice but they do not like the reporting and the way projects "work". We exchanged on that matter on joint activities with similar projects and their opinion/experience was the same.

- On a scale of 1 to 10, how well do you think your MAP will achieve/achieved all the planned or anticipated results and outputs? (1 to 10 _____). If not 10, can you please elaborate which ones not and why?

Satisfied with results, despite some problems. A lot of work, sometimes not completely captured by formal planning. I would say 8. Limited on partners, field experiments – better planning with different countries. Not everybody is ready to perform at the same level. So nothing critical but it is always that something could be done better.

- In your opinion, which outputs of your project have reached/will reach the most impact and why? How do/did you judge/assess this?

I hope scientific technological results will have important impact. Also as concern the agronomic tools we developed.

For example; biological research is quite novel – working on plant hormones, the memory of stress – epigenetic considerations behind memory of stress. Interest novel root crops? for tomatoes, breeding companies are interested; also for precision techniques (consumption of water).

- Are all the outputs/knowledge objects of your MAP stored for the long-term (post-project phase)? (Y/N)? Why Y, why N? How is this done and for how long?

Depends how long. Up to two years after the project yes; safely stored in the system of research institutions. After that we will have to decide how we manage that. This is an open question. The institution may not be available due to storage cost; we'll have to look for repository, like Zenodo. I'm in favor for EU data repository, several platforms also exist already, they should merge somehow.

- Do you think that the creation of a common agri-platform as a knowledge repository (KR) for MA projects is relevant? (Y/N)? Why?

Yes, it would be. I have not worked with meta-data analysis – but should be easier if not many platforms exist, but one or few platforms. Software and data storage possibilities for complex and big data is definitely interesting possibility. Genetic and transcriptomic sequences that are published in genetic repositories are typical examples; without such data you couldn't work today. What is written in the papers is less as if data is available. Meta-data associated with the data is very important for potential reuse.

- Did you transfer or exchange any results/outputs (data or knowledge objects) with other projects/groups? (Y/N); If Y, what, how and why?

Exchanges with some projects; on tomato biology/agronomy; not of data of material. And on approaches, like MA, C/D.

- On a scale of 1 to 10, how much of your data or knowledge objects of your MA project are openly accessible (1 to 10 ____)? Which are and which are not? Why? For the data that are, how is this done?

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Quite a lot. Papers are all open. Data not yet. But will be. Information for farmers as well. Practice abstracts as well. So highly accessible.

- Regarding the creation of knowledge objects in your MA project, what would you consider to be a good practice?

One area is favoring collaboration between projects and OG or focus groups. In these groups there is a high farmers participation. Agri-summit meetings organized by DG Agri is also important for wide communication. Problem is engagement of farmers, it is very difficult; not so much to engage the companies (they do not like reports but otherwise yes). OG gather farmers interested in innovation so this could be a good channel for RIA projects to communicate the results.

- Any advice (do's and don'ts) for future MA projects on the aspect of data/knowledge creation?

Let's say what could be done within project – improve participation of practitioners with dedicated sessions for them within projects. You can have farmers and companies only at project meetings. But the risk is of having then too long meetings which is not viable either. Perhaps on-line tools could be better used. In TomRes they are involved in field experiments – and they co-create in that sense. But is rather passive; they mainly follow. We would have to think about how to involve them more in "designing" the project.

Annex 20. Transcripts with TREASURE

Interviewer: You filled in a short survey on the topic that we're going to discuss now. The outputs and the data that you generated more related to the raw data, the primary data and data inputs that you collected or gathered, elected and processed into meaningful results. I don't know whether everything was clear there. For the survey, because maybe I might have some follow up questions.

Interviewee: I think so. I don't remember having a problem answering.

Interviewer: Just summarize that survey again. It was more focused on primary data you collected, whether some of this data is currently being made accessible for reuse, whether it has potential for reuse. And, whether you think that's in the repository that we are building, a such data should also be included. More specifically, one of the questions was: What is the reason that you think that this data can be reused, because in the survey you highlighted it. Yes, that you produced a lot of raw data that can be reused. It's not fully clear for me what the reason is? Why you think that data can be reused? For example, in which case, or what kind of potential it has?

Interviewee: You are referring to all data in general? Now we are speaking about the survey? We will discuss the interview later? I just think that I mentioned that some data could be interested.

Interviewer: Is there something specific you had in mind?

Interviewee: Yes, for example, I gave an example genetic data that we collected, could be of interest. But anyway such data demand specific technical or scientific knowledge. That you are able to process it, so it's not really usable for anyone. You need to have a good knowledge of bioinformatics in order to be able to treat the data. Characteristics of varieties or perhaps productive traits of certain breeds. It might be interesting for end users, practitioners. Similarly like the FAO. It publishes data at their webpage. They are publishing data that is normally understandable to average citizens.

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Interviewer: Exactly, so the raw data with respect to genetic information is more a bioinformatics that's more for specialists that need special software also to be able to do something with that data. Is that correct?

Interviewee: Yes, and there are also data that might be usable or of interest also for practitioners if this KR to be. How to say, made especially for this people.

Interviewer: OK, great. That's maybe a nice set way to the actual interview, you were able to look at the questions in advance. So, just briefly summarizing the intention. We have about 12 questions so from now I definitely plan to do the interview under one hour so that gives us about 5 minutes per question. I'm here to guide you through the interview but I already did some homework on your project Treasure, check the websites. Actually we did a light touch review. That's in the case of Treasure was nicely done. I think there are some interesting outputs that you produced that I would like to have information on. We were already discussing a bit on some of the data, more the raw data that you produced. But now looking at the outputs so the final results of your project. If you think back about all these results. We have them, there were many, books, newsletters. A lot of scientific publications, I think even more than 40. But in your opinion, which results are most valuable? If you would have to choose one.

- Tangible and intangible (network)
- Data – genotyping
- Data – breed characterisation in a form of book with productive traits data and literature available for breed
- IPR – trademark for local pig breeds products
- Software for meat quality data for breeding organisations
- Scientific and technical papers

Interviewee: It is difficult to choose just one. Several ones that are tangible but also intangible results are important. From the tangible, first of all, all the genetic information that was collected. Because this was the first time for many breeds that it was systematically collected. Now this represents a kind of a base for 20 European breeds. Which is a lot - probably 3 quarters of the local breeds existing in Europe. So I think that it is very important that we have a collection of data, genetic data for these breeds. Then, it is important that we worked with microbiota, we collected microbiota for the breeds in various production systems. As you know microbiota is scientifically at the top. Actually we could prove strong impact of production system on microbiota.

Interviewer: And did you see a lot of difference between these microbiotas and local breeds?

Interviewee: It's not so much the breed, it was breeds in different production systems that we were comparing, and we could see the strong impact of production system on microbiota. So the micro production system affects microbiota strongly.

Interviewer: So, these genetic data, these were transformed in a tool or a database?

Interviewee: You mean the first genetic data? The one who are not these meta. But the first one, not microbiota. You refer to genetic date for the breeds?

Interviewer: I thought that the microbiota data was also genetic data.

Interviewee: It is, but is of microbes that are present in the gut.

Interviewer: Exactly, these were 2 different things?

Interviewee: Yes 2 different things.

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Interviewer: So, talking first about the genetic data, the first output that you said was most valuable for the project. What was the endpoint?

Interviewee: I didn't say it was the most important, it's just one of the outputs that I would put forward. Not just this one. So, then you say how it is available now?

Interviewer: What is the format? Is it a tool that I can use when I am interested in genetic information of local breeds. For example, I am a big breeder in the Danube region, what is than the resource. Is that something for me, or again is it more for genetic/specialisist?

Interviewee: Again it is more for geneticists.

Interviewer: So for scientists.

Interviewee: It also for breeders' organization. Of course, this might be of interest, but basically for scientists. Of course it is of interest, it was a consortium that generated these data. But other geneticists across Europe might be interested to use this data as well.

Interviewer: If I understand you correctly. You have the genetic information that you collected for the first time for these 20 local breeds across Europe.

Interviewee: Not all 20 for the first time but more than a half for sure.

Interviewer: Exactly, these are more for scientists, as the target use?

Interviewee: For scientists or engineers, specialized in these breeding organizations.

Interviewer: And did you somehow assess the impact or how valuable it was for these target groups?

Interviewee: No, but we didn't assess it, but we collected For sure it is interesting because during the project we were for example approached by people asking us to give them some samples. There are many projects of Horizon and others where people want to reuse these data. And there are 2 calls, one Prima, classical Horizon where we wanted to reuse these data. If you have these data, to demonstrate the exploitation of these data. This is an impact which was not targeted/measured, it is something that we see now, and we also saw along the project. We didn't measure that, there was nothing planned in our description of work. We usually have problems, finalizing what we promised to do, and every extra work then is of course, extra work that you need extra time for it.

Interviewer: Yes exactly, you just want to be efficient with the time of resources you have. You mentioned it a bit in the beginning when we were discussing your primary data that you think that also some of the things you produced are valuable for practitioners, so farmers or breeders. Can you talk a bit more about that, so which of the outputs you generated are most valuable?

Interviewee: For instance we promised in the description of action to make a database of productive meat traits. We created a database that would be put on the web platform, but we to did the book, which consist of chapters per breed, that are organized in a way to provide a description of the breed, but also a review of the literature. So it is the review of the literature that is available for the breed and this book is openly accessible. And is kind of a database, although it is in form in the book. It is at the same time an online database. Everyone interested can go there and find the information for the breed.

Interviewer: That is interesting. And do you know how many people went to the online database or how many copies of the book were spread? Was there a way to assess this?

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Interviewee: It was quite successful. I can check right now. I go there from time to time. I received from the publisher the information about the citation, it was published in 2019. I can check if you want.

Interviewer: So, it's both a hard copy that is published and you can access a digitally open source.

Interviewee: Yes, because the publisher has only open access. Of course we all ordered a hard copy, it is a kind of a souvenir of the project. But in the same time it is a database that is accessible on the internet.

Interviewer: For that book, how did these different actors, for example you already mentioned scientists and researchers contribute? I don't know whether you have any other actors, like probably the breeders themselves. Maybe also some advisors or some people from industry, because I can assume that linked to the probiota, feeding companies were maybe involved. So, for example in the book, how many of these kind of actors contributed in the creation of?

Interviewee: You can imagine that for the work like this, especially these type of publications, you need a group of people , maybe scientists, or these who are more interested, or have more habits to do it, but in each chapter it was not only the scientific partners that were responsible, but also the breeders association. The main philosophy of MAA was to have breeders association of each to be part of the project. And they were also involved in the creation of the chapters for each breed. Because they contributed with data, sometimes there were very few for some breeds. It was impossible to get the data. In some cases the first data were produced during the project. And so actually these breeders association helped us. So, they were part of the preparations, though of course you can guess the major purpose was on scientific partners. For the book there were 5627 chapter downloads in google this year. The citation are not that many. There are 14 dimensions citations, 9 cross references and 3 web of science citations.

Interviewer: That already sounds good, I think looking at the number of downloads that's indeed valuable output you produced with the project. Were there other actors involved? You already mentioned scientists and those breeder organizations for deciding on each chapter.

Interviewee: Of course there are also other partners like we had an SME which is a technical institute that was important in the French case. Specific Slovenian case was that we have an advisory service connected with this work. So depending a little bit on the country it can vary a little bit.

Interviewer: Were there any policy makers involved?

Interviewee: No, not in our project. Not actively. Of course, we were communicating a lot. Actually, we involved policy makers only at the end, when we conducted we conducted 4P analysis, so we conducted "world caffe technique" approach technics for analyzing the market potential or partly for the market potential of the products of the local breeds. And in that panel that was used to make that we always invited people from the government as well. And others. For me these are not the real actors in the project. These are more stakeholders. They were invited and participated, but are not true actors of the project.

Interviewer: I can understand, very interesting. So, we have the book specifically as one example of a valuable output that you produced for practitioners. Are there any other examples of output you produced for practitioners?

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Interviewee: We produced software. One task produced software for recording data on carcass and meat quality for breeder purposes. Software was developed and now it is made available to breeders'associations, to start recording these productive traits.

Interviewer: And what does the software do?

Interviewee: Tool that helps you create a database for these traits. It helps you enter the data, so you are collecting certain data, so it is the software where you can enter the data and then you can connect these data with e.g. pedigree. So, it can be a part of a bigger system. When breeders' association collects these data, they can enter these data and then connect these data to other.

Interviewer: Why was the software developed? Why was there a need for the software? Do you know?

Interviewee: Recording meat quality, it is not only the software, it is also the fact that once you are interested to do the software it means you are interested to record these type of data for the breed. You are motivated to record these types of data. There are not so many breeders associations in world, I think 4 or 5 in this task. I'm sure that in some cases this will actually be used. Not just for the project, but in real life. It's just that of course we would have liked to have even have more interest in that. As I said only 4 or 5, but that's nice.

Interviewer: To understand it correctly, there was a need amongst these 4 or 5 breeding organizations that they said I want to record these data. I want to become part of this project however I have problem with recording my data on meat quality. There is no good sofware tool available, so I would like that the project Treasure develops one as an output? Or how did that come to be?

Interviewee: You mean if this was a bottom up idea. Truthfully in many projects there are few bottom up ideas. Technical advisors consultant services brought the idea to the project. Not really the breeders'associations themselves.

Interviewer: So it was an advisory service that came up with the idea?

Interviewee: I would say consultancy.

Interviewer: Those 4 or 5 breeding organizations were involved in the development of the software?

Interviewee: Those breeding organizations were first of all interested and that's why they participated in the work. Because we needed to discuss a lot, how to create, for which data, which are of interest, you need to know that there has to be a lot of harmonization among the 5 different breeders associations. Because each productive trade, how do you take it, somebody takes it like this, somebody like that, do you take this data or not.

Interviewer: You need a standard.

Interviewee: You need to standardize in a way, harmonize in a way. Although it's apriori a simple software - more or less for entering the data into the database. But it needed a lot of discussion, we usually did those meetings by skype, discussing how and which data, which productive traits are of interest, what to include of no. Because some breeders organizations may be interested in that data, others in that type of data. It needs standardization or harmonization to put it better.

Interviewer: I get that. That's a good point. Looking at, so we were discussing some of what you thought were the most valuable outputs.

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Interviewee: I would like to add an other one that is important. But I'm afraid it will not be so successful as we would had wished for. We developed a trade mark. And these could have.

Interviewer: This is one of the intangible outputs then?

Interviewee: No, this is tangible output. Intangible for me would be the strong connections between people that were created. We are a consortium that, you know my director went once with me to a meeting, he was watching us, and he said, but you are like a one big happy family. Actually we are still very good friends. That is very nice, even after the end of the project, we keep the mailing list, connections and so on. And this is for me an intangible result, but is very important that the network.

Interviewer: And with respect to the trademark then?

Interviewee: With respect to the trade mark. This was something that could have been the best result. But I'm afraid that it will not be put in life as is should be. Actually we developed a trade mark, it was a responsibility one partner that left the consortium and didn't do anything on it and we had to catch up the work with that, and it was impossible - it was very difficult because there was no partner that would. You need a strong partner that people trust. If you don't have that, it is very difficult to build a trademark. And it's not logical, I could have done it, but it is not for a scientific partner to do it. And people want it, like let the coordinator do it, but it is not our job to protect the trademark. But, somebody from the real sector. So, in the end, we had a partner in the project that was at the same time sitting in an international association. So actually what we did with this trademark we enlarged this association, which initially was composed of Portugal, Spain, and then at the end of the project there was France and Italy and Slovenia also becoming partners of this association and hopefully it will grow further. This association which stand for what they will do, because trademark needs, you know..., it is not something that will work...

Interviewer: It needs support. What was the goal of the trademark?

Interviewee: The goal was, you know the moto of the project was, to preserve the breeds through better utilization. So because this was a genetic resources project, the main goal was conserving the breeds, but through enhanced stills. And if you have products that sell well, it's the best way you preserve the breed. It's not the logical guide that will preserve it or the gene banks that the country's need to finance. It is the consumer interests. That will preserve the breed. Everything in the project was built around that.

Interviewer: And that was also to address the specific need for the breeding organizations?

Interviewee: Well here the problem with trademark was actually because it was a lot of discussions during the project about that. Because it was a little bit in collision with existing geographical denominations. The problem is that the interests were quite variable for instance for Iberian breed in Spain where you have well developed brands, and protected products already. Of course, they were not really so interested but still they showed interest because they have this for the products but not for the fresh meat. But in some other countries, for instance Croatia there was a small producer that was really interested to be able to use it only on the products because his SME was starting a collaboration during the project, they were not really part of the project but later on they became interested and they because all the experiments all the pigs that were in the experiments they were transforming them to the products then also for the needs of the project because we had to do consumer analyzes and things like that and at the end they became very interested to develop a line based on the local breed, a special line and also to use the brand. Also in Serbia there was a producer

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interested in that. The problem is, a lot of interest, but if there is not now somebody to do the business with that, I don't know what will happen.

Interviewer: Exactly so that's actually a good example of something of a planned and anticipated results that maybe did not achieve the impacts that you had originally envisioned for it. Looking at the entire project again, if you would give a number on a scale of 1 to 10 how much do you think that you were able to achieve all your planned and anticipated results with one of being done.

Interviewee: We achieved all the results that we planned, looking at the description of work we achieved everything that we planned, and even more. We did more than that we promised in the description of actions.

Interviewer: So, if you would put a score on it from one to 10?

Interviewee: I would say 10 quantitatively, but qualitatively in terms of quality of results I would give less.

Interviewer: How much?

Interviewee: 7 to 8, I'm not satisfied with the quality of outputs.

Interviewer: Maybe too strict for yourself. OK well, were there any other ones besides the trademark that you were less satisfied with?

Interviewee: Well, quality of scientific papers. I mean the quality of scientific papers related to quality of the experimental work done could be better. So some of the partners were not able to perform the experiments on good or high level and these results of course then have no potential to go into very good journals, scientific journals.

Interviewer: What was the reason for that?

Interviewee: The reason is the state of the development in the region of countries. You don't have the same possibilities in Serbia as in France or in Belgium.

Interviewer: I can understand that. Maybe then, thinking a bit more about, because you already mentioned a lot of outputs. Thinking about the value and the impact you can also look at it from a time perspective so in terms of the sustainability, so the long term storage of the outputs that you produced, are all objects that you produced and outputs are they stored for the long term so also after the project?

Interviewee: Yes, majority yes. We have only genetic data that is presently still being used, analyzed. Of course people that generated this data are not interested to put it open before they exploit it for their own career advancement. It's logical. So first they want to publish some papers themselves and then of course it is foreseen that the data would be available Open Access. I'm talking about genetic data of course. All the secondary data, if you're talking about the processed data at or knowledge objects or whatever you call that. Of course in that case everything is openly accessible. Because we need to respect the 29 article of grant agreement. So all scientific outputs are available accessible in the green or gold Open Access.

Interviewer: Yeah, open repositories. So is it than the case that only for this subset of the genetic information that's currently still being exploited, that will be made accessible and open at a later stage, besides that everything is stored for the long term.

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Interviewee: Yes secondary , not primary. Secondary yes, but not primary because we initially prepared for data management plan. The problem is that this is quite an exercise to do and it is a good exercise, but the motivation is not the same at the beginning of the project and at the end of the project. If people if they are not forced by publication to put the data open they don't do it because it is an extra effort. So we don't have the experimental data for the publications that were made by many partners on their own experiments. Of course papers are open but not the data that could be exploited, it's not.

Interviewer: Exactly. So if you would have to put a score on that from one to 10 how much of your data or knowledge objects are openly accessible?

Interviewee: All knowledge objects are openly accessible but not all primary data. Primary data 10%, 10 - 20% if you consider book, but even book itself at the end what we show is derived data, because we collected 10 data for this breeds, 100 for this breeds, 70 for this, but at the end we provide an average of a certain characteristic. 10 to 20 % for the primary data and everything all 100% for publications. Because this is an obligation.

Interviewer: No that's great. I saw that there was some interaction between your project and the multi actor project Image, did you also exchange any data or knowledge objects?

Interviewee: No, we didn't exchange, we also didn't ask. We were just invited to the meeting and to get to know each other. That's important, because the next project that we that we applied for we already collaborated.

Interviewer: That's how it goes. Did you exchange any other data or knowledge objects with other projects or initiatives? Outside from the consortium?

Interviewee: Our project was built out of the network on Mediterranean pig - a symposium that is organized every 3 year. Of course for the project, this network was enlarged, not just Mediterranean, but majority of the partners were from this network. There are two other initiatives that are very important. One initiative is "Fatty Pig" which is a more global initiative Also the Japanese, people from Africa also come. Japanese are very interesting in Fatty Pigs. They probably like this extra kind of meat, you know for the "Wagyu cattle". So they're really interested in that and this is more global network, so we interacted with them because the same partners they organized the Congress and we were participating with Treasure. And of course also with Congress Del Jamon. Because many of these breeds search for special products. This were the collaborations, and then of course you need to take into account also internal collaborations, because, this project was a quite as strong booster for cooperation at regional level between science and practice in all of the countries perhaps with the exception of Italy and Spain. And what is also important is for instance in Slovenian case. From the Treasure we have directly continued into two operational groups project. We have 2 operational groups running in Slovenia that are outcomes of Treasure.

Interviewer: That's very interesting. Transferring a bit the idea coming back to the Eureka project and what we intend to do with respect to trying to give advice also to future MA projects. What they can learn from Treasure. Do you have any advice for future projects? Or is there anything that you consider that was like a best practice or good practice with respect to the creation of your outputs?

Interviewee: It's very difficult to say what is best practice. We don't have the same situation as somebody else has, it's not in the same topic. It's like if you go out and see case studies and you can not transfer it. It's very difficult for me to say what was best practice. I think that what is important in multi actor project is first of all that something that I still see when I look at, I recently reviewed the

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proposals. And my perception of MA projects is something different. I still see people more as a stakeholder approach rather than a multi actor. For me multi actor, it means that you give a specific role to each partner. So if you don't do that, it's a stakeholder. The partner can be motivated to work only if they have a budget and responsibility.

Interviewer: Exactly. Talking about is that something that you did quite well in Treasure, involving all these actors and involving them in the creation of all these outputs.

Interviewee: We could have done better. I mean, we did many things well and also it was "well thought", but sometimes you just don't succeed. Probably it was also due to the finances. Because this was one of the calls that were not how to say, the budget was not very big. And we involved many partners. We could not give the partners efficient budget they would need. Also, to the breeders organizations. Then we decided it would be better to meet twice a year. It' something that could be done much better, so I think that the impact would be better. We did what we could with the resources that we had.

Interviewer: The connection was a bit bad at the end. So just to paraphrase. What you said is that, if I understood you correctly, due to the fact that the budget was not that high and you had to involve a lot of different partners. The budget was a bit to spread out, and there were not enough resources per partner and then also in terms of the interaction, - meetings were organized at a certain frequency and moments to see each other, but looking back, having a higher frequency, so seeing each other at a more frequent basis would have been better.

Interviewee: I think that not to exaggerate with that of course. But perhaps a little bit more than we had. Especially connecting also at the regional level, although, I must say that in this respect we did a huge advance. But it's not perfect, it could be better. The time will show, I hope.In some cases less, in some cases more than we expected.

Interviewer: Do you have any tips or advice or things that really went well with respect to the data collection, or generation?

Interviewee: Well in our project data collection was organized with breeders association. Without them, without their cooperation, we could not get this data. Basically, it's kind of they're allowing you to come into their home. Because they let you take the genetic material from their animals. So this this was crucial to make this work, and so to say, developing this trust and not only collaboration across countries, but also within countries, within regions is important.

Interviewer: Yeah, I fully agree with that and I think trust is maybe the keyword and I am going to have another interesting conversation tomorrow on that, on trust and involving various actors, not as stakeholders but really having them to act and do something in the project.

Interviewee: The problem of multi actor is for sure that we're living in different worlds. And there is always the scientists that are not...And it was always a problem of the project that. In the work package that was devoted to measures for maximizing the impact. The scientific partners were not interested to really devote themselves. Scientific paper - that interests me and how to manipulate with data, this yes. But this is your problem. This is the problem of coordinator, the problem of WP leader and so on.

Interviewer: The difference between the fundamental and the applied mindset. Something needs to be useful or something needs to be novel to be able to publish it. I fully understand that. With respect to the idea of Eureka to build a common repository. A common agri-platform as a knowledge

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repository to store all the multi active project outputs that are relevant for practitioners. Do you think that the creation of such a platform is a good idea or not?

Interviewee: It depends. For instance, if I look at our project. We were already struggling during the project to fill 3 free platforms. First was our web page, to keep it updated with publications. The second was the “Zenodo”. Because I didn’t want as coordinator to type every publication manually, but at one point you need to do it. So actually what we did, we put it in the “Zenodo” repository and then open Aire participant portal extract it. And I just accept it. And then these were two: Web page and Zenodo. And then you have a third one, we decided also for Research gate to create the project group at Research gate. So that's the third one. So if this becomes a fourth one, while we were fed up with feeling three. And then we were not systematic. Research gate was then how to say voluntary and was left to the partners. But it was in the interest of partners and they did it themselves. For the project reporting we were interested to put the publications into “Zenodo”. So basically, we needed a specific person to do for everybody entering the data in “Zenodo”. And then it's not the same it's based on the interests. It must be systematic for every output. So a Web page is similar. So as a coordinator, I was feeding the Web page. Another colleague was feeding the “Zenodo”. And then partners were feeding the Research gate. There is no coherence. You can not be sure that everything is everywhere. We tried to at least the Web page and “Zenodo” that it matched. But at the end for the last report, I know that we worked a lot with a colleague from Portugal who was responsible for that to align both repositories. So saying that, yes, it could be useful if it is only one where you deposit. So it must become an open aire repository. So that the participant portal takes from their reservoir. So you need then this doi things like. So this is my opinion about. Of course, it is interesting because it's specialized. But, and of course, it's also how to say, difficult to in table to design what needs to be put there. Because I'm listening from the start - raw data is not interesting for our repository, which I disagree. I think that certain data might be interesting.

Interviewer: You know that I also disagree.

Interviewee: All the fields of agriculture. I don't know all the fields of agriculture. And then, of course, also if you have a book or a paper that is published somewhere and then you need to redo it - how to. But it's possible to do just connection. You don't need to re-enter everything. So you just need to extract.

Interviewer: Exactly if I understood you correctly. Well, it depends of it. It's not necessarily the case, but it's indeed a very important challenge that we are going to try to solve in the project where we still have to answer the question, how interoperable? So that's a bit the concept you were referring to with other platforms and other databases so you can extract information or exchange information. So that you only have to put it in one place. And also feeding or putting your data in the system with the right kind of identifiers. That's also something that we're looking into now. So how we best structure the data and also to see how the current data of multi actor projects are structured. So how much of them do carry some kind of descriptors that could be used to also then if you aggregate all the information to make it findable and searchable for potential users. Because, of course, if they can't find the information on pig breeding, genetics compared to if you are interested in crop health, that is, of course, an issue that we're trying to solve. But if I understood you correctly, that's if we are able to solve these issues, then you think, yes, such a common agri platform as a knowledge repository is relevant.

Interviewee: And also, for instance, if the multi actor projects are to be feeding them with outputs. Of course, they don't need to feed several platforms, just one.

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Interviewer: Exactly. That should be the goal. But I think that's very good advice to end on, maybe. I don't know whether because I want to be respectful for your time. And we've been going at it for about one hour now. I don't know whether you have any parting advice or anything that you still wish to say before we end the interview?

Interviewee: Well, you forgot to ask me if there are any missing output types.

Interviewer: Yes. I actually referred to that a bit with the intended and not intended. When we were talking about the trademark and then we said whether you produced any other outputs that you intended to produce and that you mentioned that you produced everything that you wanted quantity wise. But however quality wise, some things could have been better, like some publications and the trademark, unless I misunderstood you.

Interviewee: For instance, we didn't produce - and I think this was a pitty. And also the reviewers remarked that it is a pity that we didn't make any film. Or video. And actually, we didn't. We were not as wise as some other project were they filmed the presentations at the congresses and so on.

Interviewer: But in the end, if you make a movie like that. So I kind of disagree because if you make a movie like that and nobody's looking at it like you do see for a lot of projects. So actually, yes, we did a light touch review and I saw that you did not make a video. But I think it's better not to spend any time to make a bad video. And make no video at all then to make it bad video.

Interviewee: Yeah, but actually we didn't plan it. We didn't have the budget for it because costs money to do a good. It could be a very nice film. But, we just didn't plan it and have the resources for it. But some partners did quite a lot of promotion on the television, for instance. At the beginning of project, even in Slovenia, we had a little bit on our local breed, but it was not, how to say, across the project. A lot, project wise was very, how to say, focused on the breeds of this region, for instance. And although it was an emission on agriculture. For instance, on Serbian television and there was an interview, 10 minutes about the focus on the project, for instance, and what the Serbian partners do in the project as an example.

Interviewer: And that's also on the Web site? No.

Interviewee: Oh, yes, it is. But you need to know how to find it.

Interviewer: Exactly. Because I think, in our online analysis at the light touch review, I don't think it's included actually.

Interviewee: I don't know who did Treasure. Did I do it?

Interviewer: Yes.

Interviewee: Then it should be. I think it should be somewhere. But it's true that our Web page is not very well organized. I'm aware of that. It is due to not having the best partner to do the job. And after two years, you can't remake everything from scratch. You just continue with what you have. So you really need to know it is there, but you need to know to find it. It's under news or media, something like this. And you need to dig because there are four years. So you need to go more to the beginning of the project.

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