



Open Research Data Pilot

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Executive Summary

This deliverable reports on the results of the shemakes.eu partner actions to comply with the provisions of the Open Research Data Pilot (ORDP). This was introduced by the European Commission to enable open access to research data generated by Horizon 2020 projects. The following report is based on Deliverable 7.1 – the Data Management Plan – published on September 30, 2021, and includes an updated version of the Data Management Plan for the end of the project.

When the first Data Management Plan for the project was created, it included only a suggestion of the possible data outcomes. Therefore, D6.2 will present a summary of gathered data in the second project phase. The compilation has been narrowed down and limited to those data sets that are relevant to the general public or the academic community.

The FAIR principles (findable, accessible, interoperable, and re-usable) defined for open research data from Horizon 2020 projects are acknowledged by shemakes and implemented throughout. This report provides further explanation about how the principles were put into practice during the project duration. The shemakes Open Toolkit is a centralised open-access online repository provided for all project activities and oriented to knowledge transfer. It is a key product of the project and consists of tools, result collections and activity descriptions, specially designed for replication purposes. Due to its importance, the long-term maintenance of the Open Toolkit (beyond the contractual five years) is discussed as a key issue for post-project sustainability in D1.2 and as agreed by all the consortium, the Fabricademy co-founders will maintain it and keep it public.

Finally, the dissemination plan of research data and scientific publications is outlined and the data repositories used are listed.



Table of Contents

Executive Summary	3
Table of Contents.....	4
1. Introduction.....	5
2. Open Research Data Pilot.....	6
2.1. Data Management Plan Updates	6
Data Summary.....	7
2.2. Implementation of FAIR data principles.....	10
3. Open Access requirements	12
3.1. Open access to research data	12
3.2. Open access to scientific publications.....	13
3.3. Data Repositories	14
4. Conclusion	15
Document information	16
References	17



1. Introduction

This deliverable reports on the Open Research Data Pilot (ORDP) as defined by the European Commission to enable open access to research data generated by Horizon 2020 projects. The following report is based on Deliverable 7.1 – the Data Management Plan published on September 30, 2021 and includes an updated version of the Data Management Plan for the termination of the project.

The Horizon 2020 Manual defines the scope of the ORDP and the contents of the Data Management Plan. For Horizon 2020 projects open access is described as:

“[...] the practice of providing on-line access to scientific information that is free of charge to the reader. In the context of R&D, open access typically focuses on access to 'scientific information' or 'research results', which refers to two main categories:

- *Peer-reviewed scientific research articles (primarily published in academic journals)*
- *Research data.*¹

The two main pillars of the ORDP are 1) developing a Data Management Plan and 2) providing open access to the research data of the project.

Therefore, for adhering with the ORDP the following activities must be completed:

- Development of a Data Management Plan with regular updates
- Uploading the project data in a research data repository
- Ensuring that third parties can freely access, mine, exploit, reproduce and disseminate the data
- Providing instructions on how to use the raw data and validate research findings of the project².

Every data collected, stored, distributed, and published in the project shemakes is handled according to the ethical principles and guidelines of the project in line with WP8 “Ethical requirements”.

¹ European Commission (accessed 2022) Horizon 2020 Online Manual: Open access & Data management, https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm#

² European Commission (2016) H2020 Programme Guidelines on FAIR Data Management in Horizon 2020
https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf



2. Open Research Data Pilot

The ORDP includes 1) the Data Management Plan (DMP) as a key element of good data management, and 2) the requirement of making research data *findable, accessible, interoperable and re-usable* (FAIR) in promoting the responsible generation, publication and use of the data for the benefit and further research during and after the project.

In the following chapter, the Data Management updates and the measures taken to implement the FAIR principles in the activities of the shemakes project are outlined.

2.1. Data Management Plan Updates

As mentioned in the introduction of this report, the Data Management Plan for the shemakes.eu project was first issued as Deliverable 7.1 on September 30, 2021. With the publication of the present deliverable, that document is being updated. The initial DMP included a summary of datasets to be created and general information about how the ORDP would be put into practice. Datasets generated during the project are now included in the updated plan.

The European Commission lays down what the Data Management Plan must include:

“A Data Management Plan describes the data management life cycle for the data to be collected, processed and/or generated by a Horizon 2020 project. As part of making research data findable, accessible, interoperable, and re-usable (FAIR), a Data Management Plan should include information on:

- *the handling of research data during & after the end of the project*
- *what data will be collected, processed and/or generated*
- *which methodology & standards will be applied*
- *whether data will be shared/made open access and*
- *how data will be curated & preserved (including after the end of the project).³”*

³ European Commission (accessed 2022) Horizon 2020 Online Manual: Open access & Data management https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm#



When the first Data Management Plan for the project was created, it was not clear which datasets would be relevant by the end of the project. That is why the summary of data was narrowed down in this document and only limited to the datasets with a relevance for the general public or the academic community.

The list of such datasets is presented in the next section.

Data Summary

This subchapter provides a summary of all relevant raw data sets with scientific relevance that have been created during the project. By the European Commission, it is requested that all data needed to validate the results presented in scientific publications should be included in the Open Research Data Pilot. Other data in addition to the scientific data can be provided on a voluntary basis⁴.

Table 1 includes all data collected during the project duration of shemakes. All datasets published by shemakes.eu either include no personal data or only data that has been previously anonymised.

Table 1. List of datasets

N	Content of the dataset	Lead partner	Related WP(s)	Usage	Public yes/no	Link to dataset	Wider (scientific) relevance?
1	shemakes activities: record of activities and participation in the learning paths and innovation services	MATRIX	WP2 & WP3	Evaluation and impact assessment	Yes	https://doi.org/10.5281/zenodo.7418423	Yes
2	18 interviews and testimonial videos	FLOD	WP6/D6.3	Communication and Dissemination	Yes	http://www.youtube.com/channel/UCITCBbydmT5wqEVHIYBDVtQ	No
3	Survey for female	WAAG	WP2.4	Learning paths	Yes	http://fabricademmy.fabclou	Yes

⁴ European Commission (accessed 2022) Horizon 2020 Online Manual: Open access & Data management https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm#



N	Content of the dataset	Lead partner	Related WP(s)	Usage	Public yes/no	Link to dataset	Wider (scientific) relevance?
	innovators of the community and alumni (job routes and paths)					d.io/shemakes/handbook/1.-learning-paths/innovation-path/a.Grouping_Activities/Survey/#shemakes-first-survey-results	
4	Shemakes questionnaires exploring gender equality with local communities	REDU	WP3/D3.3	Community Engagement	Yes	http://fabricademy.fabcloud.io/shemakes/handbook/2.-innovation-services/Community-Activities/QUESTIONNAIRES/	Yes

The following descriptions provide further explanation on the respective columns of the table:

- *Usage*: when this data is relevant for aspects inherent with the project fields specifying the type of usage.
- *Public yes/no*: yes, if fully public;
- *Wider (scientific) relevance*: if the dataset is (or could be) of interest to the general public or for societal, regulative, or standardisation aspects.

In total six relevant datasets could be identified for the project.

The *first dataset* with all participants of shemakes project activities, contains the shemakes activities record of activities and participation in the learning paths and innovation services for each event or activity during the project duration collected mainly from the WP2 learning paths and WP3 innovation services, which are the working packages with a high number of activities and events related to the shemakes development. It does not contain personal or sensitive data, as it is focused on the event's typology. Participants are aggregated per activity. Moreover, the dataset includes information about the country of the organisation conducting



the activity, the type of activity and its title. The data about participants comprises the number of females, whether the females were adults or minors and the percentage of female participants. This dataset is uploaded to an open-access repository so future researchers can use it. For example, further research could analyse the correlation between the type of activity and the share of female participants statistically.

Open access: Cabrera Adriana. (2022). shemakes activities: record of activities and participation in the learning paths and innovation services. (Version 1) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7418423>

It is observable that in the activities for minors, more boys than girls participated in the events compared to the share of men in the activities offered for adults. Despite the shemakes project being designed for women, men could also join as project ambassadors or gurus. One man participating in shemakes activities reported that he often feels underrepresented in the textile sector, although men carry out many high-level technical jobs in the textile industry. Many boys of a younger age were very interested in exploring the world of textiles in the workshops offered by the project.

The *second dataset* includes evidence from recorded interviews and testimonial videos of women innovators. It can be relevant for researchers studying women's career paths and their backgrounds in the textile sector. The videos can be retrieved for free on the YouTube channel of shemakes (see youtube.com/channel/UCITCBbydmT5wqEVHIYBDVtQ). The interviews were produced to raise awareness about female innovators in the textile industry. They have not been used for scientific publications yet.

The *third dataset* contains the results of a survey of female innovators answered by alumni and active community members of shemakes.eu. The objective of the survey of task 2.4 was to explore women's career paths in the textile sector. The outputs of the survey informed further project activities. Interested researchers can access the results at the link provided.

The *fourth dataset* includes the results from two digital questionnaires exploring the perception of gender equality in two local communities. The two labs REDU (Romania) and RogLab (Slovenia) surveyed their local communities and invited many participants from their ecosystems. The questionnaire design and its results are available on shemakes Open Toolkit⁵ on GitLab. The data can be useful for further explorative research about the perception of gender inequality in different regional settings.

⁵ <http://fabricademy.fabcloud.io/shemakes/handbook/>



After the end of the project, the datasets uploaded on open-access repositories will stay available and can be used by third parties. Due to its importance, the long-term maintenance of the Open Toolkit (beyond the contractual five years) is discussed as a key issue for post-project sustainability in D1.2 and as agreed by all the consortium, the Fabricademy co-founders will maintain it and keep it public.

2.2. Implementation of FAIR data principles

The FAIR principles defined for Horizon 2020 projects are acknowledged by shemakes and implemented throughout the data management process.

FAIRness includes:

- Making data findable, including provisions for metadata
- Making data openly accessible
- Making data interoperable
- Increasing data reuse (through clarifying licences)⁶.

Making data **findable** means that research data is provided together with effective tags to allow other researchers to find it. This can mean assigning keywords to an article or a dataset and using Digital Object Identifiers (DOI) for publications. In shemakes, data repositories and platforms to publish on were screened based on these points. Consequently, platforms such as Zenodo and Open Research Europe were selected for potential publications.

For the second item about making data openly accessible, **open-access** publication was considered for any scientific publication during the project. How open access to research data is implemented in the project is explained in chapter 3. The shemakes Open Toolkit is the central open-access repository provided for all project activities and knowledge transfer. It is a central product of the project and consists of tools, results, and activity designs for replication.

To create data **interoperability**, data exchange and re-use between researchers, institutions and other stakeholders must be enabled. This can be enhanced by using standard formats for data that is compatible with many applications. Open access data of shemakes is being provided in standard formats. It can be extracted from Table 1 in subchapter 2.3.

⁶ European Commission (accessed 2022) Horizon 2020 Online Manual: Data Management https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm



Finally, **data re-use** should be made possible as early as possible and continue after the end of the project. The datasets generated in the shemakes project are made available for re-use if they have relevance for third parties and other researchers. The re-use of that data is not restricted. Further information about interesting cases for data re-use of the datasets is provided in subchapter 2.1.1.



3. Open Access requirements

3.1. Open access to research data

According to the ORDP, research data must be made available in open-access repositories to allow other researchers to verify the results of any publication. Digital research data can consist of statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images. Horizon 2020 projects can opt out of the ORDP if their research data needs to be protected for various reasons, e.g. by a patent. This condition does not apply to shemakes.

In the shemakes project, all research datasets are derived from surveys, interviews and literature reviews. Most evidence is qualitative and exploratory and was collected during activities and actions for WP2, 3, 4 and 6. The results of the surveys were analysed through basic statistical methods. In the specific case of lab-to-lab research, the topic of wool was researched by several labs participating in the project. Collaborative research was used to study sustainable methods of producing, treating and processing wool.

Figure 1 illustrates the different pathways when it comes to disseminating research data.

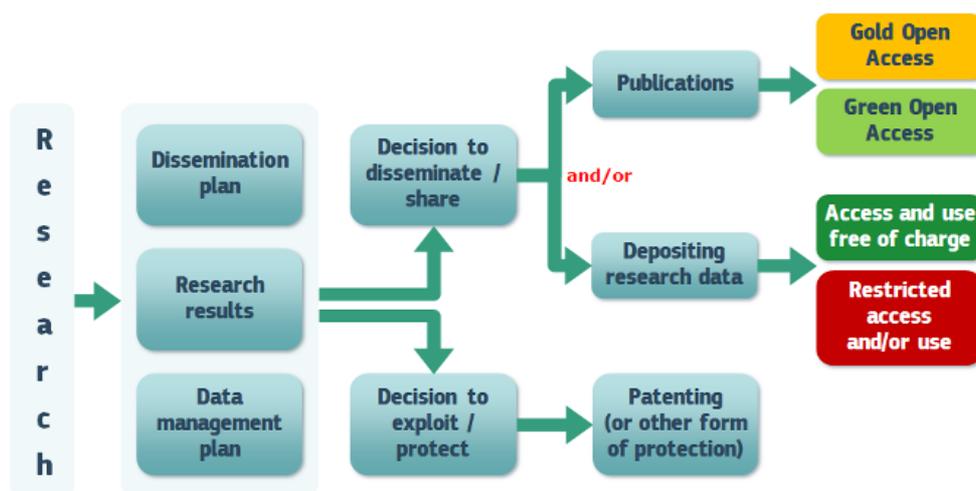


Figure 1 Figure 1. Open Access to Research Data⁷

⁷ European Commission (accessed 2022) Horizon 2020 Online Manual: Open access https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm



All datasets of the project are listed in Table 1 above.

3.2. Open access to scientific publications

Open access to scientific publications “[...] refers to the practice of providing online access to scientific information that is free of charge to the end-user and reusable. ‘Scientific’ refers to all academic disciplines.”⁸

In the shemakes project it was taken mostly the Green Open Access. It means the scientific article is made open access in a repository before, after or at the same time as the publication.

As mentioned in the DoA, three scientific publications were planned to be published. Due to the project duration of two years and many outcomes occurring in the final months, part of the scientific dissemination will happen after the end of the project, particularly in Evaluation and Impact assessment.

List of scientific publications

1. Cabrera, Adriana; Pistofidou, Anastasia; Real, Marion; Sykes, Shannon; Czeschik, Anna; Marsh, Jesse (2021). "Innovation Ecosystem for women makers through textiles labs and the shemakes.eu approach" in *Proceedings of the Fab 16 Research Papers Stream*, Hogeschool Rotterdam, Rotterdam, The Netherlands, pp. 221-239.
Available on Zenodo <https://zenodo.org/record/5169852#.YhZnr98o-Cf>
2. Cabrera, Adriana & Chambers, Lily (2022). "Actuated Materials and Soft Robotics Strategies for Human-Computer Interaction Design" at *CHI Conference on Human Factors in Computing Systems 2022* (CHI '22)
Available at: <https://www.softrobotics.io/chi22>
3. Cabrera, Adriana; Chambers, Lilly & Pistofidou, Anastasia (2022). "From Textiles to Soft Robotics and the Emergent Approaches in STEAM and Textile Labs" in *Conferences, P. I. The Future of Education International Conference 2022*. https://doi.org/10.26352/G630_2384-9509
Available at <https://conference.pixel-online.net/FOE/files/foe/ed0012/FP/7865-ADU5593-FP-FOE12.pdf>

⁸ European Commission (accessed 2022) Horizon 2020 Online Manual: Open access https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm



3.3. Data Repositories

A data repository is the place, platform, or database where research data is uploaded and made available for open access.

The shemakes Open Toolkit is a digital handbook consisting of all manuals for activities and workshops implemented during the project in the timespan of two years and has been created for knowledge sharing. It also includes other raw data as described in Table 1 of the data summary. The Open Toolkit is available on GitLab, see <http://fabricademy.fabcloud.io/shemakes/handbook/>.

The platform Zenodo is used for the publication of research articles and research data connected to scientific publications. Zenodo is operated by OpenAIRE. It is suggested for Horizon 2020 projects to use the platform for publications and depositing research data.



4. Conclusion

The purpose of this deliverable is to update the Data Management Plan from September 2021 and to deliver a summary of all datasets in the project shemakes.eu. The project consortium ensured that all research datasets were made available for open access and re-use by interested third parties. The shemakes Open Toolkit provides open access to additional material for activities, workshops, and surveys in the field of sustainable textiles and digital production. Therefore, in this project not only was scientific data made ready for sharing with other parties, but knowledge transfer was actively promoted by the provision of any materials generated by the partners on the topics of the project.

In the next steps, it is expected that the production of data, in particular any quantitative data produced in the impact assessment of the project, will be documented in an open access format and can be made publicly available for the dissemination and benefit of the research.



Document information

Revision History

Revision	Date	Author	partner	Description
V 0.1	08.12.2022	Adriana Cabrera	MATRIX	First draft and table of contents
V 0.2	14.12.2022	Adriana Cabrera	MATRIX	Draft after IAAC and WAAG reviews
V 0.3	23.12.2022	Francesco Molinari	Ethics advisor	Suggested changes and edits
V 1.0	23.12.2022	Adriana Cabrera	MATRIX	Incorporation of comments and final layout.

Statement of Originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation, or both.

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4. European Commission (2016) H2020 Programme Guidelines on FAIR Data Management in Horizon 2020. https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

