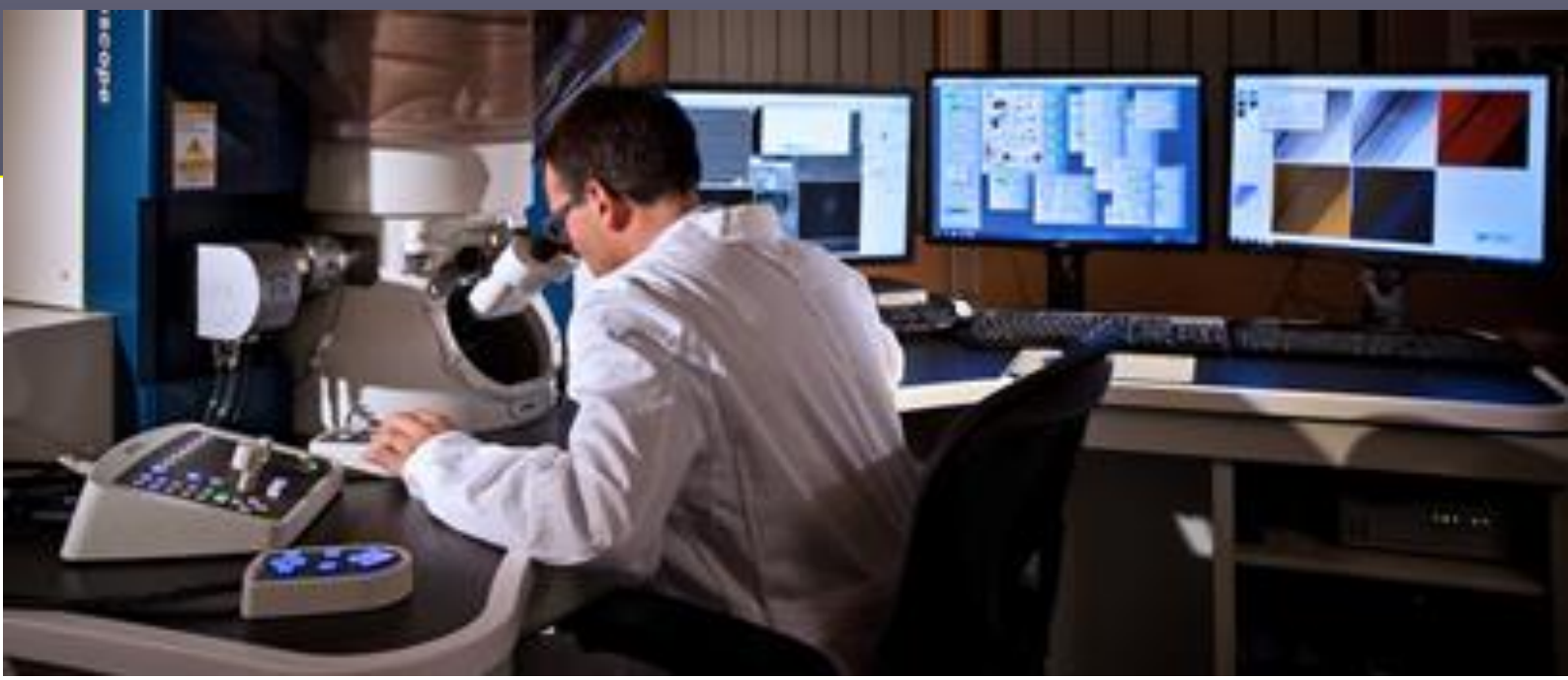
esteem3

Enabling Science through European Electron Microscopy

Data Management Plan

Deliverable D13.2 – version 1

Estimated delivery date:	30th June 2019
Actual delivery date:	DD/MM/YYYY
Lead beneficiary:	MPG
Person responsible:	Peter van Aken
Deliverable type:	☒ R ☐ DEM ☐ DEC ☐ OTHER ☐ ETHICS ☐ ORDP
Dissemination level:	☒ PU ☐ CO ☐ EU-RES ☐ EU-CON ☐



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO **823717**

Grant Agreement No:	823802
Funding Instrument:	Research and Innovation Actions (RIA)
Funded under:	H2020-INFRAIA-2018-1: Integrating Activities for Advanced Communities
Starting date:	01.01.2019
Duration:	48 months

Revision history log

Version number	Date of release	Author	Summary of changes
V0.1	13/06/2019	Paul Bersans	First draft
V0.2	24/06/2019	Peter van Aken	Review of the first draft
V0.3	25/06/2019	Paul Bersans	Finalisation of draft
V1	25/06/2019	Paul Bersans	Document sent to partners for validation

Table of contents

List of Figures

List of Tables

List of acronyms and abbreviations

Acronym/abbreviation	Meaning/full text
API	**A**pplication **P**rogramming **I**nterface
ASCII	**A**merican **S**tandard **C**ode for **I**nformation **I**nterchange
CC	Extension for **C**++, a programming language
CERIF	**C**ommon **E**uropean **R**esearch **I**nformation **F**ormat
CSV	**C**omma-**S**eparated **V**alues
D	**D**eliverable
DM3 / DM4	**D**igital **M**icrograph files
DMP	**D**ata **M**anagement **P**lan
DOC	**Doc**ument Microsoft text proprietary format
DOCX	**Doc**ument Microsoft text in Open**X**ML standard
DOI	**D**igital **O**bject **I**dentifier
DTD	**D**ocument **T**ype **D**efinition
ELF	**E**xecutable and **L**inkable **F**ormat, open standard for executable files, functions, libraries
EPS	**E**ncapsulated **P**ost-**S**cript
EU	**E**uropean **U**nion
EXE	**Exe**cutable file
FAIR	**F**indable, **A**ccessible, **I**nteroperable, **R**eusable
GB	**G**iga**B**it (10^9 bit)
GDPR	**G**eneral **D**ata **P**rotection **R**egulation
HDF	**H**ierarchical **D**ata **F**ormat
HTTP	**H**yper**T**ext **T**ransfer **P**rotocol
ISO	**I**nternational **S**tandards **O**rganization
JPEG	**J**oint **P**hotographic **E**xperts **G**roup
JRA	**J**oint **R**esearch **A**ctivity
JSON	**J**ava**S**cript **O**bject **N**otation
KB	**K**ilo**B**it (10^3 bit)
M	Mathworks (Matlab) proprietary format for command file
MARCXML	**Ma**chine-**R**eadable **C**ataloging in e**X**tensible **M**arkup **L**anguage
MAT	Mathworks (Matlab) proprietary format for data file
MB	**M**ega**B**it (10^6 bit)
MPG	**M**ax **P**lanck **G**esellschaft
OAI-PMH	**O**pen **A**rchives **I**nitiative **- P**rotocol for **M**etadata **H**arvesting
OASIS	**O**rganization for the **A**dvancement of **S**tructured **I**nformation **S**tandards
OpenXML	**Open** e**X**tensible **M**arkup **L**anguage
ORA	**O**pen**Ra**ster (open format for graphical files using OpenXML standard)
PDF	**P**ortable **D**ocument **F**ormat
PNG	**P**ortable **N**etwork **G**raphic
PU	**Pu**blic
RAR	**R**oshal **Ar**chive, closed file format for archiving of compressed data
RAW	**RAW** image format
REST	**Re**presentational **S**tate **T**ransfer protocol
RTF	**R**ich **T**ext **F**ormat
SGML	**S**tandard **G**eneralized **M**arkup **L**anguage
TB	**T**era**B**yte
TEM	**T**ransmission **E**lectron **M**icroscopy
TIFF	**T**agged **I**mage **F**ile **F**ormat

TXT	**Te**x**t**
WP	**W**ork **P**ackage
WSGI	**W**eb **S**erver **G**ateway **I**nterface (software application)
XLS	Document Microsoft E**x**ce**l** proprietary format
XLSX	Document Microsoft E**x**ce**l** in Open**X**ML standard
XML	e**X**tensible **M**arkup **L**anguage
ZIP	PKZIP (Phil Katz ZIP), open format for archiving of compressed data

1. Introduction

This deliverable presents the Data management Plan (DMP) ruling data management within the H2020 EU funded project "Enabling Science Through European Electron Microscopy" (ESTEEM3 – 823717). The aim of the document is to describe the data management life cycle for all datasets to be collected, generated and processed within the research activities of the ESTEEM3 project. Among other, the document sets out:

- the handling of research data during and after the end of the project,
- the list of data collected, processed and generated,
- the methodology and standards to be applied,
- the data that will be made openly available and the procedure(s),
- the measures undertaken or to apply in order to facilitate the interoperability and reuse of the research data, and
- the rules of data curation and preservation.

In the frame of ESTEEM3, various types of research data are expected to be collected, processed and/or generated: data collected in previous scientific publications/patents, measuring data observed, design data created in the frame of the project, numerical simulation and processing tools, etc. As participants in the Open Research Data Pilot, for each one of those research data, the ESTEEM3 partners will carefully study the possibility and pertinence to make them findable, accessible, interoperable and reusable, to the extent possible (FAIR).

The DMP will be regularly updated. This document has been prepared following the guidelines on FAIR data management in Horizon 2020.

The Common European Research Information Format (CERIF) will be used as standard to build the database of the project results (data and metadata) in order to make them easy to find and to interoperate. The results will be preserved and made available in the repository Zenodo[1], which is refered to in the European network OpenAIRE[2].

This DMP is created and will be updated with the respect of all national and European legal requirements, such as the General Data Protection Regulation (GDPR, Regulation (EU) 2016/679)[3]. It also complies with the requirements of the article 29 of the Grant Agreement, specifically, in terms of obligation to disseminate results (art. 29.1 of GA), open access to scientific publications (art. 29.2 of GA) and open access to research data (art. 29.3 of GA). It also respects the IPR protection framework applicable to the project, potential conflicts of commercialization and dissemination of own results, as defined in the article 8.3 of the project Consortium Agreement signed by the beneficiaries.

The objective is to put useful information and recommendations on the management of the project results into a prospective, descriptive and upgradeable single document.

[1] https://about.zenodo.org/
[2] OpenAIRE is a network of Open Access repositories, archives and journals that support Open Access policies. https://www.openaire.eu
[3] http://data.europa.eu/eli/reg/2016/679/oj

2. Data summary

2.1 Purpose of the data collection/generation

ESTEEM3 will produce several datasets during the lifetime of the project. The nature of the data will be both quantitative and qualitative and will be analysed from a range of perspectives for project development and scientific purposes.

The completion of the work plans associated to the 8 Joint Research Activities (JRA) Work-Packages (WP) of ESTEEM3 will generate new and original scientific and technical data. Some of these data will be created by a group of participants as a result of collaborative work, while others will be created by one specific partner in individual work. Data will also be collected in previous scientific publications or patents and will serve as reference cases, results or knowledge for new research developments.

The data collection, selection, classification and preservation is a critical action which will be maintained and carefully monitored all along the execution of the project. It will enable to exchange relevant technical information among the beneficiaries and therefore increase the efficiency of the collaborative research work for the achievement of the objectives of the project. The preservation of the data after the completion of the project will permit to continue some research by providing useful and re-usable information to the partners engaged in the long-term development of similar technologies. Technical specifications of instruments, components or processes, design of new components, lessons learned from observations and experimental operation will serve for conceptual improvements and future testing procedures without repeating the same work.

Finally, the data management aims at sharing public results with communities of professors, students, researchers, engineers, managers and policy makers, during and after the end of the project. This will contribute to increase the impact of the project in the short, mid and long-term.

2.2 Partners' data management plans

Five academic partners (the Universities of Oxford and Cambridge, NTNU, CNR, and CSIC as 3rd party of UNIZAR) already have in place institutional Data Management Plans. These partners are bound to this deliverable only to the extent that it is line with their own institutional requirements.

Should any other partner adopt a specific policy for data management, it will also be bound to this deliverable only to the extent that it is line with their own institutional requirements.

2.3 Shared data and confidential data

The consortium will provide access to the data necessary to validate research publications resulting from the work carried out in the Joint Research Activities. As a general rule, data will be provided upon written request by the authors of the publication. Research data will be published on the open repository Zenodo on a voluntary basis.

Commercially sensitive data, data owned by the TA users, and data resulting form the Networking Activities are excluded from the Open Research Data Pilot.

2.4 Categories, types, formats and sizes of data generated or collected

2.4.1 Categories

Data generated in the ESTEEM3 JRAs can be classified in two categories:

1. **Text data** such as scientific and technical reports, scientific articles, conference proceedings, technical protocols, standards, scientific presentations, illustrations…
2. **TEM data** such as (S)TEM images, EDS, EELS and CL spectra, electron diffraction patterns, electron tomograms, electron holograms …
3. **Software data** such as scripts, executable codes or source codes

2.4.2 Types

There are 2 types of electronic files: binary and ASCII (or Unicode).

A binary file is a series of bits with logical values 0 or 1 (or other derived logical values like True/False, etc…).

An ASCII file is made of series of characters encoded on 7 bits with the rules of the ASCII standard (ISO 646). Original ASCII standard is restricted to Latin characters (letters, numbers and signs), Unicode standard is used to extend ASCII to worldwide utilization.

2.4.3 Format

The format of a file is determined by the encoding system, or standard, used by the original software to generate the file. Proprietary formats (or closed formats) can only be read using the original software (or similar software) which are usually commercial products. Open formats can be read by both proprietary and free and open-source software. Open formats are also called free file formats if they are not encumbered by any copyrights, patents, trademarks or other restrictions so that anyone may use them at no monetary cost for any desired purpose.

In ESTEEM3, the formats used to produce the data will tend to respect the international standards as they are defined by the International Standard for Archival Description (ISAD). Open formats will be preferred, to the possible extent, because they make the data more easily accessible and re-usable.

Each format is identified through an extension at the end of the filename. Extensions respect international standards and are presented in the form of 3 or 4-letters acronyms.

2.4.4 Size

The size of the datasets depends on the category of data: from few KB for text data up to several TB for TEM data.

2.4.5 Summary: Document Type Definition

The basic parameters of the Document Type Definition (DTD) are summarized in the following table.

Table 1: Summary of the document type definition (categories and formats of the datasets)

Category	Type	Open Format/extension	Closed Format/extension
Text based data	ASCII, Unicode	.odt, .docx, .rtf, .ods, .xlsx, .txt, .sgml, .xml, .csv	.doc, .xls
	binary	.pdf, .eps	
TEM Data	binary	.emi, .ser, .dm3, .dm4, .bcf, .mrc, .hdf5, .msa, .rpl, .raw	.tif, .png, .jpeg, .rec
Software data	binary		.cc, .mat, .python
Archives (compressed datasets)	binary	.zip	.rar

2.5 Re-use of data

The consortium of the ESTEEM3 project already agreed on the access to data, ruled by the terms of section 9 of the Consortium Agreement.

(9.3- Access rights for implementation) *"Access rights to results […] needed for the performance of the own work of a Party under the Project shall be granted on a royalty-free basis […]."*

Specific terms have been agreed for the access to software (section 9.8.3 of the CA)

"Access rights to software that is results shall comprise access to the object code; and, where normal use of such an object code requires an application programming interface (hereafter API), access to the object code and such an API; and, if a Party can show that the execution of its tasks under the Project or the exploitation of its own results is technically or legally impossible without access to the source code, access to the source code to the extent necessary."

The consortium of the ESTEEM3 project is encouraged to make existing data available for research. In general, the data (in total or in part), when it is made accessible to the public, could be re-used by partners of ESTEEM3 during and after the project, or by external researchers, for the following aims:

- Implementation of the work programme of the project (execution of the tasks by the partners).
- Training of students, researchers, engineers by partners or by external academic institutions.
- Implementation of other research works on TEM by partners or by external bodies.

2.6 Origin of data

Most of the data will be created by the ESTEEM3 participants. Experimental results will be generated from TEM operation and subsequent analysis. Other data will be generated through the utilization of software tools for simulation. Text-based data will be produced by the partners in activities such as processing of raw data.

2.7 Data utility

In general, the audience who might use data generated or collected in the project ESTEEM3 are:

- The ESTEEM3 Consortium;
- European Commission services, European Agencies, EU and national policy makers;
- Research institutions, universities, institutes, training centers across the Europe and worldwide;
- TEM manufacturers;
- Industrial end-users of TEM services.

Open research data from ESTEEM3 will be useful to other researchers to underpin scientific publications by referring to the ESTEEM3 results in surveys or by incorporating the ESTEEM3 results in comparative analysis with their own project results.

More detailed description of the data and whom they might be useful to will be given later in updated versions of the Data Management Plan, since data collection and creation is an ongoing process.

3. FAIR Data

3.1 Making data findable, including provisions for metadata

The Common European Research Information Format (CERIF) will be used as standard to build the database of the project results (data and metadata) in order to make them easy to find and to interoperate. The results will be preserved and made available in the repository **Zenodo**[4] which is referred to in the European network **OpenAIRE**[5].

The diagram presented in figure 1 shows the principle of the data delivery, conservation and restitution using standards at each step of the data management process.

[4] https://about.zenodo.org/
[5] OpenAIRE is a network of Open Access repositories, archives and journals that support Open Access policies. https://www.openaire.eu

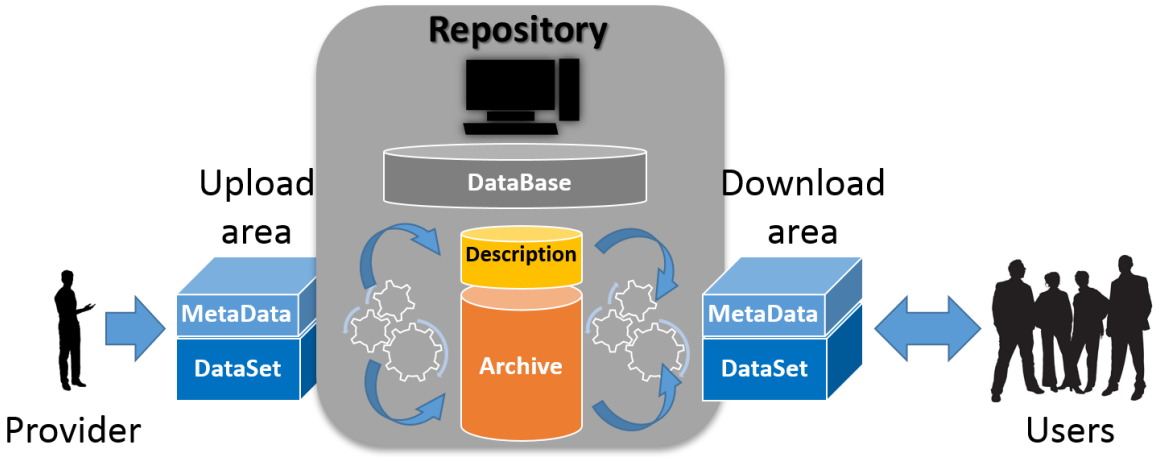


Figure 1: Scheme of the Data Management principle followed in ESTEEM3

Data will be stored in an ESTEEM3 community which is available on Zenodo with the following URLs:

Name of the community: ESTEEM3 PROJECT(H2020)

Identifier: ESTEEM3

Collection URL (this address links directly to the ESTEEM3 community collection): https://zenodo.org/communities/esteem3/

Upload URL (this address will automatically ensure people who use it will have their record added to the ESTEEM3 community collection): https://zenodo.org/deposit/new?c=esteem3

3.1.1. Discoverability: metadata provision

The repository Zenodo complies with the principles of FAIR data. The best practices are implemented to make data findable (see http://about.zenodo.org/principles/):

"(Meta)data are assigned a globally unique and persistent identifier: A DOI is issued to every published record on Zenodo."

"Data are described with rich metadata […]: Zenodo's metadata is compliant with DataCite's Metadata Scheme[6] minimum and recommended terms, with a few additional enrichments."

"Metadata clearly and explicitly include the identifier of the data it describes: The DOI is a top-level and a mandatory field in the metadata of each record."

[6] DataCite is an international consortium of libraries and services specialized in digital sciences, aiming at facilitating numerical archives and access to numerical resources on internet. See: https://www.datacite.org/

"(Meta)data are registered or indexed in a searchable resource: Metadata of each record is indexed and searchable directly in Zenodo's search engine immediately after publishing. Metadata of each record is sent to DataCite servers during DOI registration and indexed there."

A metadata template has been created for the ESTEEM3 consortium on the basis of the compulsory requirements of Zenodo in order to better describe, easily discover and trace the data collected and generated by the ESTEEM3 project during the life and after the end of the action. The template includes the basic mandatory metadata required by the repository and additional metadata that could be additionally provided by the project consortium depending on the type and/or version of the research data uploaded, if appropriate. The template has been sent to the relevant partners to be filled in and stored at the Zenodo repository.

Table 1: template of metadata for archiving the ESTEEM3 datasets

Metadata	**Category**	**Additional comments**
Type of data	Mandatory	
DOI	Mandatory	If not filled, Zenodo will assign an automatic DOI. Please keep the same DOI if the document is already identified with a DOI.
Responsible / author(s)	Mandatory	
Title	Mandatory	
Publication date	Mandatory	
Date of repository submission	Mandatory	
Version	Mandatory	
Description	Mandatory	
Keywords	Mandatory	Frequently used keywords.
Size	Mandatory	The approximate size.
Access rights	Mandatory	Open Access. Other permissions can be applied, when appropriate.
Terms of Access Rights	Optional	Description of the Creative Common Licenses[7]. ESTEEM3 will open the data under Attribution, ShareAlike and Non Commercial Licenses.
Communities	Mandatory	
Funding	Mandatory	European Union (EU), Horizon 2020, grant agreement No 823717.

3.1.2. Identification of data

If the Digital Object Identifier (DOI) of the publications has been already identified, the ESTEEM3 consortium will maintain it to facilitate the identification of the data. In case of no DOI has been attributed to the publication or research outputs firstly, the partners comply to reserve the DOI generated by the repository.

[7] Creative Commons licenses, set by the organization Creative Commons, rule the conditions of distribution and reuse of original documents/data. https://creativecommons.org/

3.1.3. Naming convention

No naming convention is foreseen in the ESTEEM3 data management.

Version numbers will be provided in the metadata table accompanying the updated version of the file uploaded.

3.1.4. Search keywords

The keywords search option will be provided to optimize the possibility of data re-use and facilitate the discoverability of the data in the Zenodo repository.

3.2. Making data openly accessible

3.2.1. Types of data made openly available

According to the article 26 of the GA, the partners who have generated the research outputs are the owners of the generated data and have right to disseminate its results as long as there is no legitimate purpose or need to protect the results.

The underlying data of the scientific publications should be uploaded not later than the relevant publication (Art.29.3 of GA). However, the consortium has the right not to make research results public in order to protect it.

3.2.2. Deposition of data

The created data and accompanying metadata will be deposited at the Zenodo repository and stored in JSON-format according to a defined JSON-schema[8]. Metadata is exported in several standard formats such as MARCXML[9], Dublin Core[10], and DataCite Metadata Scheme (according to the OpenAIRE Guidelines). Zenodo's policies are described in the web-page http://about.zenodo.org/policies/.

Several communities already exist in Zenodo. The ESTEEM3 consortium have created in Zenodo an additional community identified as potential users of the data generated or collected in the project.

3.2.3. Methods needed to access the data

All metadata is openly available in Zenodo under Creative Commons licenses, and all open content is openly accessible through open APIs (Application Programming Interface). In line with the FAIR data guidelines, Zenodo does its best effort to make data accessible (see http://about.zenodo.org/principles/):

« (Meta)data are retrievable by their identifier using a standardized communications protocol: Metadata for individual records as well as record collections are harvestable using the OAI-PMH

[8] JSON Schema is a vocabulary that allows to annotate and validate JSON documents
[9] Machine-Readable Cataloging in eXtensible Markup Language
[10] The Dublin Core Metadata Initiative is an open organization supporting innovation in metadata design and best practices across the metadata ecology. http://dublincore.org/

protocol by the record identifier and the collection name. Metadata is also retrievable through the public REST API. »

« The protocol is open, free, and universally implementable: […] OAI-PMH and REST are open, free and universal protocols for information retrieval on the web. »

« The protocol allows for an authentication and authorization procedure, where necessary: Metadata are publicly accessible and licensed under public domain. No authorization is ever necessary to retrieve it. »

« Metadata are accessible, even when the data are no longer available: Data and metadata will be retained for the lifetime of the repository. This is currently the lifetime of the host laboratory CERN, which currently has an experimental programme defined for the next 20 years at least. Metadata are stored in high-availability database servers at CERN, which are separate to the data itself. »

3.3. Making data interoperable

In order to make the research outputs and underlying data generated within the ESTEEM3 project interoperable, the consortium will use data in the standard formats and prioritize the available (open) software, whenever possible. The consortium will also respect the common standards officially applied to the various formats that will be used for the data.

The repository Zenodo is organized and managed in order to make data interoperable, to the maximum extent, in agreement with the FAIR data rules and recommendations (see http://about.zenodo.org/principles/):

« (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation: Zenodo uses JSON Schema as internal representation of metadata and offers export to other popular formats such as Dublin Core or MARCXML. »

« (Meta)data use vocabularies that follow FAIR principles: For certain terms we refer to open, external vocabularies, e.g.: license (Open Definition[11]), funders (FundRef[12]) and grants (OpenAIRE). »

« (*Meta)data include qualified references to other (meta)data: Each referenced external piece of metadata is qualified by a resolvable URL. »*

3.4. Increase data re-use (through clarifying licenses)

All the openly accessible data and corresponding metadata uploaded on Zenodo will be available for re-use, including after the end of the project. The publication and underlying data will be also uploaded in compliance with the 6-month embargo allowed by the EC. Moreover, the ESTEEM3 research data uploaded on Zenodo will be in open access under the Creative Common Licenses: Attribution, ShareAlike, Non Commercial, and No Derivatives. For the ESTEEM3 data, only three first license types will be applied:

[11] The Open Definition sets out principles that define "openness" in relation to data and content. https://opendefinition.org/
[12] https://www.crossref.org/services/funder-registry/

Table 2: Creative Commons licenses used for the diffusion and re-use of ESTEEM3 data

Chosen Licenses	Icon	Meaning	Abbreviation
		Attribution: Permits all uses of the original work, as long as it is attributed to the original author.	BY
		Non-commercial: License does not permit any commercial use of the original work.	NC
		Share Alike: Any derivative work should use the same license as the original work.	SA

Although the consortium is encouraged to extend the open access to the data and will contribute to this to the extent possible, it reserves the right of upload data in the repository under justified restricted access as well as to keep it as such after the end of the project.

In this regard, during the lifetime of the project, the sharing of the files under restricted access will be possible only with the consent of the depositor or author of their original version. The description of the potential "restricted" data as well as reasons explaining this choice of the consortium will be detailed in the next versions of the DMP clarified by the particularities of the implemented project research activities and evaluation of the potential impact of the open status of the results by the partners.

According to the Zenodo policy, the files under the closed access will be protected against any unauthorised access at all levels.

As for the files under embargo status, the end data of the embargo will be compulsorily provided. The allowed 6-month embargo period for the publications and underlying data will be respected. The access to the embargoed data will be restricted until the end of embargo period and will be open automatically after the end of the embargo period.

After the end of the project, uploaded data will be preserved in the repository regardless the access mode. The responsible partner(s) reserve the possibility to make the "closed" and "restricted" data openly accessible after the end of the project on the consent of the relevant partners if their confidentiality considerations change.

Zenodo contributes to make the data reusable through the following rules and practices (see http://about.zenodo.org/principles/):

« (Meta)data are richly described with a plurality of accurate and relevant attributes : Each record contains a minimum of DataCite's mandatory terms, with optionally additional DataCite recommended terms and Zenodo's enrichments. »

« (Meta)data are released with a clear and accessible data usage license : License is one of the mandatory terms in Zenodo's metadata, and is referring to a Open Definition license : Data downloaded by the users is subject to the license specified in the metadata by the uploader. »

« (Meta)data are associated with detailed provenance : All data and metadata uploaded is traceable to a registered Zenodo user. Metadata can optionally describe the original authors of the published work. »

« (Meta)data meet domain-relevant community standards : Zenodo is not a domain-specific repository, yet through compliance with DataCite's Metadata Schema, metadata meets one of the broadest cross-domain standards available. »

4. Allocation of resources

The research data collected, generated and/or processed and project research outputs will be uploaded and preserved during and after the end of the project in the Zenodo repository. The repository allows uploading data free of charge with the size limited to up to 50 GB per record. The data will be stored indefinitely (minimum 5 years). Currently there are no costs for preserving data in this repository and, thus, no costs have been foreseen to these matters by the project. If any unforeseen costs related to the open access of research data occur, it is possible to be charged on the Program given its eligibility status for reimbursement, according to the articles 6 and 6.2 of GA.

Moreover, each partner will devote its own human resources to respect the prescriptions set out in this deliverable. MPG, as coordinator, remains the partner responsible for the management and supervision of the data within the ESTEEM3 project.

Also, as required by the article 18 of the GA, all the records and data will be preserved internally by the consortium during five years after the project. The openly accessible, restricted and closed data shared through the repository will be preserved after the end of the project. The access for the restricted and closed data status will be possible through the express request of access addressed to the ESTEEM3 project coordinator.

5. Data security

The public repository Zenodo has been selected as a long-term secure storage of the ESTEEM3 project research outputs given its features fulfilling technical and legal data security requirements and long term preservation, which can be consulted at http://about.zenodo.org/infrastructure/ and repository's features at https://help.zenodo.org/features/.

6. Ethical aspects

There are no ethical issues linked with the ESTEEM3 project research activities. Thus, no specific ethical considerations should be applied to the data sharing within the project.

However, while sharing any openly accessible data, the ESTEEM3 consortium will respect the relevant requirements described in the deliverable D14.1 "POPD – Requirement No.1". Moreover, the consortium will respect the obligations mentioned in the article 34.1 of the GA "Ethics and Research Integrity", in particular those related to the compliance with:

- Ethical principles (including the highest standards of research integrity), and
- Applicable national, EU and international law.