

**EGI-Engage**

Data Management Plan

D2.4

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Abstract

This document describes the initial data management plan for the research data that will be generated within EGI-Engage. For each dataset, it describes the type of data and their origin, the related metadata standards, the approach to sharing and target groups, and the approach to archival and preservation.

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**TERMINOLOGY**

A complete project glossary is provided at the following page: <http://www.egi.eu/about/glossary/>

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# Introduction

The project EGI-Engage participates in the pilot action on open access to research data. Research data is defined asinformation, in particular facts or numbers, collected to be examined and considered and as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images. The focus of the open research data pilot in Horizon 2020 is on research data that is available in digital form [R1].

The Open Research Data Pilot applies to two types of data: 1) the data, including associated metadata18, needed to validate the results presented in scientific publications as soon as possible; 2) other data (e.g., curated data not directly attributable to a publication, or raw data), including associated metadata.

The obligations arising from the Grant Agreement of the projects are (see article 29.3): Regarding the digital research data generated in the action (‘data’), the beneficiaries must: 1) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following: the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible; other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan'; 2) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

This document describes the initial data management plan[[1]](#footnote-1) for the research data that will be generated within EGI-Engage. For each dataset, it describes the type of data and their origin, the related metadata standards, the approach to sharing and target groups, and the approach to archival and preservation.

# Datasets

## ELIXIR Competence Centre

Data management plan contact: kimmo.mattila@csc.fi

No scientific data will be generated within the EGI ELIXIR Competence centre, however ELIXIR as infrastructure does manage life science data produced by life scientists. Thus this section will focus on the data managed by ELIXIR instead of the data produced by ELIXIR.

### Data description

#### Types of data

The ELIXIR CC will focus on services working with life science data. More specifically it will provide technical solutions to use cases proposed in the EXCELERATE grant on the management of genomics data: Marine metagenomics, Plan genomics and phenotype and Human sensitive data.

#### Origin of data

The data managed by ELIXIR is produced and submitted by scientists. ELIXIR repositories do collect, integrate and provide access to the data.

#### Scale of data

The biggest data collections in life sciences  are PB scale, however it is likely that  ELIXIR CC will work with somewhat smaller data sets . A single human whole genome raw data is roughly 200 GB. However, there are also lots of fairly small files. More information can be found in [R2].

### Standards and metadata

Some standards like the standard formats in the marine or the plain domain are still under development. Some of the standards for capturing and exchanging genomic data that might be used in the use cases are described in BioSharing [R3]. Part of the data may be stored be stored to public data repositories (e.g. ENA) that have clearly defines metadata models.

### Data sharing

#### Target groups

The target audience would be users interested to submit or use Metagenomics, Plant and Human data.

#### Scientific Impact

Sharing data is essential to get data for scientific discoveries such as comparative environmental metagenomic analyses or finding genes related to a disease.

#### Approach to sharing

ELIXIR promotes open data access [R4], but naturally human data might be sensitive that it requires authorised access.  On the web page there is also a statement from BioMedBridges project on “commonly agreed principles of data management and sharing”.

### Archiving and preservation

Services for archiving and preservation within ELIXIR are listed in <https://www.elixir-europe.org/services>.

## LifeWatch Competence Centre

Data management plan contact: Jesus Marco de Lucas (marco@ifca.unican.es)

### Data description

#### Types of data

The competence centre will generate/collect mainly test datasets as part of larger datasets, to analyze the LW-EGI CC framework. For example, one month of data collected at a water reservoir, or six different simulation outcomes related to it.

#### Origin of data

Instruments in water reservoir

#### Scale of data

Gigabytes of data in a database that can be exported in the csv file format.

### Standards and metadata

Under investigation.

### Data sharing

#### Target groups

The data can be interesting for other research teams that make similar analysis at other water reservoirs.

#### Scientific Impact

The data can potentially underpin scientific publications.

#### Approach to sharing

The embargo period is usually two years as the data is exploited by an SME. The datasets released are usually limited in scope (1/10th of total data for example). The repository is at the IFCA data center freely accessible via web, but registration is needed (URL: doriiie.ifca.es).

### Archiving and preservation

Copies are kept in WORM tapes, and in a separate server (400 km away) of the company. Main repository uses RAID technology and has not lost any data in the last 10 years. The data are automatically synchronized across the servers.

## Disaster Mitigation Competence Centre

Data management plan contact: Eric Yen (Eric.Yen@twgrid.org)

### Data description

#### Types of data

There are two main types of data:

* Observation data from tidal gauge, weather station, rainfall, radar data, satellite data and images, bathymetry, historical records of earthquake and tsunami, etc.
* Waveform at any target site, potential source of a historical tsunami event, changes of rainfall, wind field and path of typhoon or any special weather event, dispersion path of aerosol or volcano ashes, are the primary simulation results.

#### Origin of data

Government agency of weather, earthquake, tsunami, and volcano; or research institutes that own the data needed by the CC.

#### Scale of data

Data scale of the whole collection and generated data would be few TB to 10s TB. Variation is possible due to the resolution of the generated output.

### Standards and metadata

ISO 19156 standard for Observation and Measurement data model. For weather and climate data, the Climate and Forecast convention (CF) (e.g., NetCDF) is used. Both the above are included in the new metadata model, ADAGUC Data format standard.

### Data sharing

#### Target groups

The data can potentially underpin scientific publications. Scientists of tsunami, earthquake, volcano, weather, and climate changes; scientists, policy maker of disaster mitigation strategy and studies.

#### Scientific Impact

Yes. As new discoveries such as the sources and characteristics of potential tsunami sources which is not known well before; new ways of hazards simulation and analysis; the support of new modelling scheme; and the change processes of climate and disaster events, etc.

#### Approach to sharing

Almost every government has strict regulation for announcement of weather and natural hazards, so we are focusing on research instead of releasing results to public. Moreover, the sharing is still up to the clearance of right for dissemination from the original agency. At least during the project years, the data we collected or generated would be shared in a restricted way and for academic purposes only.

### Archiving and preservation

The data will be organised and management in repository over the distributed infrastructure. We plan to have no more than three copies of the data set at different sites. Academia Sinica (Taiwan) is in charge of the long-term data preservation.

## EISCAT\_3D Competence Centre

Data management plan contact: Ingemar Häggström (ingemar.haggstrom@eiscat.se)

### Data description

#### Types of data

Development of value-added products (e.g., processes, combined data, plots).

#### Origin of data

EISCAT Incoherent Scatter radar low level data.

#### Scale of data

A few TB/year will be produced within EGI-Engage. The input EISCAT data are orders of magnitude larger.

### Standards and metadata

A mixture of standards depending on type. For long-term preservation, the format hdf5 will be used.

### Data sharing

#### Target groups

Mainly, space and environmental researchers.

#### Scientific Impact

This research data can underpin scientific publications.

#### Approach to sharing

Current value-added products are open to all from day zero, but low-level data is not. Discussions on the new products are still on-going.

### Archiving and preservation

Data are stored at a few e-Infrastructures, mirrored and synchronized. There are two levels of storage: a large short-term, and a reduced long-term.

## MoBrain Competence Centre

Data management plan contact: Alexandre Bonvin (a.m.j.j.bonvin@uu.nl)

### Data description

#### Types of data

There is research data involved in the activity, but this is not produced with EGI-Engage resources, but from other EU projects (e.g. the I3 iNext infrastructure project for which a data management plan has been drafted). The type of data produced by those other projects are experimental NMR, Xray, SAXS and cryo-EM data.

#### Origin of data

Biological samples (owned by the end users of the facilities)

### Standards and metadata

The end results are typically deposited into public databases like the PDB (www.pdbe.org) or EMDB for cryo-EM data.

### Data sharing

#### Target groups

The raw data are usually so complex that they are only of use to expert users in structural biology that have been trained in a specific technique. The processed and derived data typically deposited in public databases (see 2.5.2) are of use to researchers in life sciences in general and for biotech and pharmaceutical companies .

#### Scientific Impact

This research data can underpin scientific publications.

#### Approach to sharing

Data are shared via databases (e.g. again PDB, EMDB), with possibly an embargo period until publication. Other datasets (e.g. the results of computations) can be shared via EUDAT or other repositories like SBGRID for structural biology. For such an example see: https://data.sbgrid.org/dataset/131/

### Archiving and preservation

From a university perspective, we are supposed to keep data for 10 years (which is not simple). Currently there is no proper archiving mechanism in place at our particular site (Utrecht University). At the moment, we rely on policies and services as provided by the database service providers where data are deposited.

## DARIAH Competence Centre

Data management plan contact: Davor Davidović (davor.davidovic@irb.hr)

### Data description

#### Types of data

During the project, we will generate/collect data that come from the research activities in the fields of Arts and Humanities. Common types of research data generated and collected in A&H are books, letters, emails, paintings, photographs, manuscripts, various digital collections, audio/video materials, etc. However, in our research activities the focus is on digitized data, i.e. the information/data stored in different digital formats, such as plain files (text, photo, audio and video), metadata, collections, and annotations. The collected data are very heterogeneous, both in source (origin) and the format and metadata used for their digital preservation.

#### Origin of data

The digitized data used in our research activities originates from the physical objects/artefacts used in the research activities connected to A&H, for example, books, audio and video materials, paintings, archeological artefacts, etc. that can be found in museums, libraries, etc. However, we are focused on existing digitized collections of these physical artefacts that are generated, operated and managed by the members of the DARIAH community. Thus, the main source of data for our research are those digitized data provided by various DARIAH members. Some of DARIAH members already operate their own digital repositories, which will be used as a data source.

#### Scale of data

It is hard to estimate the scale of the research data because of a large number of different sources and the amount of information that are stored. A more detailed information of the size of data generated/collected (in terms of GB/TB) will be available when the survey on e-Infrastructure needs of DARIAH community is finished and inputs analyzed (end September). For example, a pilot-project that creates a database of Bavarian dialects in Austria using gLibrary collects data from an existing database of Bavarian dialects that contains about 50,000 headwords and approximately 70,000 records plus 3,000 multimedia files.

### Standards and metadata

Currently, the DARIAH community does not promote any specific metadata standard. The adopted metadata formats depend from case to case. Also, there is no recommendation about any long-term preservation format and thus no domain-specific data format is used or recommended. Thus, an individual approach for each use case is required.

### Data sharing

#### Target groups

The data collected during the DARIAH Competence Centre will be useful primarily to the members of the DARIAH community. In addition, we believe that the wider audience having strong interests in exploiting A&H data can benefits in using these data. For example, the data can be used in education (e.g. digital books, newspapers, other educational materials), museums (e.g. presenting their exhibits in digital format or long-term archiving of digital copies of their entire collections), libraries, or archives.

#### Scientific Impact

This research data can underpin scientific publications.

#### Approach to sharing

For now, we do not have any further information on how data will be shared and accessed. A concrete answer to that question will be possible upon the completion of our e-Infrastructure survey. As far we know, the majority of data are stored and shared via various data repositories that can be widely access. The repositories are mostly institutional (i.e. DARIAH member institutions such as computing/storage centres or research organizations).

### Archiving and preservation

Since the data are highly diverse and heterogeneous with no recommended standard, it is impossible to answer on that question. The implementation of the repositories, safe guarantee, number of copies, etc. are on individual data/repository providers. We plan to implement several digital repositories for a specific DARIAH use cases (e.g. Bavarian dialects) using gLibrary framework that allows storing the data on different storage elements (local, grid and cloud storage elements). The partners in the Task 6.6 plan to provide a part of their EGI storage resources for the VO that will be established for the research purposes of DARIAH community.

# References

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| --- | --- |
| ***No*** | ***Description/Link*** |
| R1 | Guidelines on Data Management in Horizon 2020 http://ec.europa.eu/research/participants/data/ref/h2020/grants\_manual/hi/oa\_pilot/h2020-hi-oa-data-mgt\_en.pdf |
| R2 | BioMedBridges workshop on e-Infrastructure support for the life sciences – Preparing for the data deluge http://zenodo.org/record/13942#.Vcy8kBNVhHw |
| R3 | BioSharing https://www.biosharing.org/search/?q=genomics&content=standards |
| R4 | <https://www.elixir-europe.org/open-access> |
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1. Data management plan: document detailing what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved.  [↑](#footnote-ref-1)