Data Management Plan

D14.1

Authors: Stephan Gross (FhG), Gianluca Lipari (FhG)

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About OneNet

OneNet will provide a seamless integration of all the actors in the electricity network across Europe to create the conditions for a synergistic operation that optimizes the overall energy system while creating an open and fair market structure.

The project OneNet (One Network for Europe) is funded through the EU's eighth Framework Programme Horizon 2020. It is titled "TSO – DSO Consumer: Large-scale demonstrations of innovative grid services through demand response, storage and small-scale (RES) generation" and responds to the call "Building a low-carbon, climate resilient future (LC)".

While the electrical grid is moving from being a fully centralized to a highly decentralized system, grid operators have to adapt to this changing environment and adjust their current business model to accommodate faster reactions and adaptive flexibility. This is an unprecedented challenge requiring an unprecedented solution. For this reason, the two major associations of grid operators in Europe, ENTSO-E and EDSO, have activated their members to put together a unique consortium.

OneNet will see the participation of a consortium of over 70 partners. Key partners in the consortium include already mentioned ENTSO-E and EDSO, Elering, EDP Distribution, RWTH Aachen University, University of Comillas, VITO, European Dynamics, Ubitech, Engineering, and the EUI's Florence School of Regulation (Energy).

The key elements of the project are:

1. Definition of a common market design for Europe: this means standardized products and key parameters for grid services which aim at the coordination of all actors, from grid operators to customers;
2. Definition of a Common IT Architecture and Common IT Interfaces: this means not trying to create a single IT platform for all the products but enabling an open architecture of interactions among several platforms so that anybody can join any market across Europe; and
3. Large-scale demonstrators to implement and showcase the scalable solutions developed throughout the project. These demonstrators are organized in four clusters coming to include countries in every region of Europe and testing innovative use cases never validated before.

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List of Abbreviations and Acronyms

Acronym	Meaning
DMP	Data Management Plan
DM	Data Manager
FAIR	Findable, Accessible, Interoperable and Re-usable
ORDP	Open Research Data Pilot

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Executive Summary

This document is the first early version of OneNet data management plan. This document is a living document, and we will constantly update/revise it during the project duration. In later version, this document will contain all information concerning the data handling of the OneNet project. The current document contains an introduction to the topic of data management and references to best practices from other H2020 project, which we will apply for our data management plan. The data manager will be responsible for the implementation of data management and ORDP. The position of data manager has not yet been filled but will be filled until the next general assembly in February 2021. In the second half of the document, we present a preliminary list of categories of data, which will be processed during the work on the OneNet project.

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1 Introduction

Well-structured data management is an important task of every modern research project. A key element of data management is a well-defined process for the handling of research data. For transparency reasons, this process needs to be clearly defined and accessible for all potential stakeholders of the data. Therefore, it is today's common practice to maintain a data management plan (DMP). The DMP describes how a research project processes research data. The DMP provides answers to all important questions about the data processing, including data security, licensing, origin of data, format and so on. Since these answers may change during the runtime of a project, the DMP is usually regularly updated and revised. This document is the initial version of OneNet's DMP. It provides a first draft that needs further development during the project duration. OneNet acknowledge the importance of a well-maintained DMP. Therefore, we define a revision cycle in chapter 2.

OneNet will implement an Open Research Data Pilot (ORDP). An ORDP strives to publish scientific information according to the FAIR principle in publicly accessible research data repositories. The FAIR principle is explained in detail in chapter 3. How OneNet plans to publish its data will be defined in one of the early revisions of this document.

OneNet's grant agreement defines the Data Manager (DM) but it does not define who will take the role. This topic has been discussed in a Project Management Team meeting. A call for volunteers has been issued within the consortium. If no-one from the partners will take over this role, a member of the Coordination team within Fraunhofer will take this responsibility.

The first version of OneNet's DMP oriented itself on best practices identified from other H2020 projects and material provided by the EU commission. We refer to these sources here at a central location. Material from these sources was used throughout the following document. More precisely, the proposed approach is based on the following documents:

- Data Management Plan (initial release) deliverable 9.1 v1.0, "Platform for Operation of Distribution Networks" (PLATONE) H2020 project funded from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no 864300
- Data Management Plan v0.9 deliverable 7.11, CoordiNet H2020 project funded from the European Union's Horizon 2020 research and innovation programme under grant agreement no 824414
- OpenAIRE Website, OpenAIRE-Advance receives funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement no 777541
- Horizon 2020 Online Manual

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1.1 Methodology

Data management is an important task in every research project. The EU commission provides a comprehensive DMP template. Many H2020 projects used this template in its original form or in slightly modified versions. Many project partners gathered more experience with the maintenance of such documents. The OneNet project will identify best practices for a DMP following the work of other H2020 projects. In the first revision of the DMP, we will present a clearly defined structured process for our DMP and OneNet's ORDP.

1.2 Data Manager (DM)

The grant agreement defined in section 3.2.1.2 the detailed responsibilities and duties of the Data Manager (DM). The DM ensures that an appropriate data management is developed and used within the project. This responsibility includes the necessary steps to protect the privacy of personal data. The DM will gather the needed information from the consortium to establish a comprehensive data management. Additionally, the DM will implement OneNet's Open Research Data Pilot (ORDP).

The implementation of the ORDP has two main pillars: the constantly updated und published DMP and providing open access to research data whenever possible. The conditions for a ORDP are:

- Maintenance of the DMP over the entire project duration
- Identifying a suitable research data repository and deposition of OneNet's data in it
- Enable the access of third parties to our data
- Document the related information and identify, if necessary, provide the tools needed to use the raw data to validate our research.
- Publish the data and metadata in scientific publications

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2 Update schedule of OneNet's DMP

The size of the OneNet project requires a clearly defined update schedule for the DMP. The DM coordinate the update of the DMP with the help of the whole project consortium. The DMP requires constant maintenance over the runtime of the project. Since the DMP is an important document for the evaluation of the research concept in the OneNet project, we plan to publish a revised version of the DMP every six months starting from this initial version. This results in the deadlines presented in Table 1 for the revised version of the DMP.

Table 1 Revision cycle of the DMP

Deliverable	WP number	Due month	Due Date
D14.1 initial version	WP14	2	30.11.2020
D14.1 first revision	WP14	8	31.05.2021
D14.1 second revision	WP14	14	30.11.2021
D14.1 third revision	WP14	20	31.05.2022
D14.1 fourth revision	WP14	26	30.11.2022
D14.1 final revision of the DMP	WP14	32	31.05.2023

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3 FAIR data

The FAIR data principle is required to be used in EU-Projects by the "Guidelines on FAIR Data Management in Horizon 2020" (EC, 2016). It should support the exchange of scientific data and lead to knowledge discovery and innovation. The FAIR data approach is described by the acronym:

- **F**indable data: Clear naming and versioning of (meta-) data, easy to find by both humans and computers
- **A**ccessible data: It is clearly specified how the data is made available, including needed tools, protocols, authentication, and authorization
- **I**nteroperable data: The published data uses standards and vocabularies that allow interoperability with applications and workflows for analysis, storage, and processing
- **R**e-usable data: The goal of the FAIR is reusability; therefore, it is clearly defined when and for which duration data is made available and under which licensing the data was published

The OneNet consortium will publish data whenever possible under the FAIR principle. The FAIR data management approach enables the exchange of scientific data which fosters knowledge discovery and innovation.

3.1 Making data findable

OneNet is committed to publish project results during the project period and plans to make them available after the end of the project when possiblew. Making data findable is realized by choosing the proper platform/repository for storing and publishing as well as assigning the relevant metadata.

3.2 Making data openly accessible

OneNet will publish processed data as well as project results. By being only at month 2 of the project, the respective repository or repositories are not yet finally selected. Right now, both the numerous and emerging general-purpose data repositories, such as Zenodo, GitLab or Figshare, or well-curated special-purpose repositories are taken into account.

3.3 Making data interoperable

Interoperability is a crucial aspect in the OneNet project and will be extensively addressed through the scope of the project with dedicated workflows in different Work Packages. In general, interoperability of OneNet data will be realized through the use of popular and suitable data formats and written explanation. The data category

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two “Network topology and asset description” for example is planned to be extractable in formats like CSV or XML. Plain descriptions will be probably a text file. For the other data categories, the current stage of planning does not yet allow a precise statement of the used formats.

3.4 Increase data re-use

Re-use of data can be encouraged through clear licensing, prompt dissemination, archiving, and quality assurance. At the time of writing, licensing schema for OneNet data has not yet been selected. Depending on the data, the licencing might differ per data set or publication.

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4 Data summary

The OneNet consortium did not identify, at the time of writing, data that should be published within the Open Data Pilot yet. We expect that we will publish first data sets, following the FAIR approach, at the end of the first project year. A preliminary classification of project datasets is described in the following sections. According to the Platone project, it can be assumed that the data processed in the OneNet project can be classified into one of the following categories:

1. Topology and asset description
2. Measurements
3. Market
4. Prediction and planning
5. Customers' personal data

The following sub-chapters provide a first brief description of the data categories by reporting a dedicated factsheet for each identified dataset.

As already specified in Chapter 2, the Data Management Plan is a living document which will be updated constantly through the whole duration of the project. Following the revision schedule reported in Table 1, the specific datasets to be used or produced in the OneNet project will be continuously updated and added to the relevant main data category and the specific information regarding such datasets will be included in the related factsheet.

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4.1 Data category 1 – Topology and asset description

Factsheet	
Dataset name	Topology and asset description
Dataset description	The topology and asset description includes plans and documentation about assets and equipment. These data include: • Technical data (like topology and technical features of network's components); • geographical data to locate the grid elements
Source of the data	
Re-use of historical data	Yes, whenever possible
Data from live trial measurements, sensors	Topology and asset data are time invariant, therefore not applicable.
Origin of data	Demonstration clusters, public data repositories
Format of the open datasets	
Format of the data	Appropriate industry standards
Metadata and documentation	Appropriate metadata and documentation will be provided together with the DMP for each data set
Data security and privacy	
Classification level of data	Needs to be defined
Data privacy	Needs to be defined
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	The data will be needed for state estimation and monitoring of the grid state
Data utility, usefulness to external parties	Data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies.
Availability (long-term storage)	Grid topology and asset data, including geographical information are commercially confidential, sensitive grid information. The data will properly not be provided as open data

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4.2 Measurements

Factsheet	
Dataset name	Measurements
Dataset description	The dataset includes: • Generators: installed capacity, generation (P, Q), • Loads: installed capacities, voltage level, power demand (P,Q), • Battery storages (P,Q,V, Phi)): state of charge (SOC)/State of Energy (SOE) • Electrical Measurements acquired from the sensors installed on the grid (like busbar voltage in primary substations and in several secondary substations, currents on MV lines)
Source of the data	
Re-use of historical data	Yes, depending on demonstration cluster
Data from live trial measurements, sensors	Yes for all demonstration cluster
Origin of data	Demonstration clusters and public data sources like the ENTSO-E Transparency platform.
Format of the open datasets	
Format of the data	Appropriate industry standards
Metadata and documentation	Appropriate metadata and documentation will be provided together with the DMP for each data set
Data security and privacy	
Classification level of data	Needs to be identified for each dataset individually
Data privacy	Potentially data will be anonymized if necessary
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	Constant measurement data is needed for all gird operations, market interactions and customers integration.
Data utility, usefulness to external parties	Data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies, and also DSOs, TSOs and aggregators (customers and balance responsible providers - BRPs) who are not OneNet's partners.
Availability (long-term storage)	Some data will be published in an open research data repository which still needs to be identified.

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4.3 Market

Factsheet	
Dataset name	Market
Dataset description	The following will be used for market exchange: • TSO flexibility requests • DSO flexibility requests • Service specifications (like ramp, duration, volumes, and grid nodes) • Aggregator bids
Source of the data	
Re-use of historical data	If needed yes.
Data from live trial measurements, sensors	Yes, for all demonstration clusters
Origin of data	Demonstration cluster, further details need to be identified.
Format of the open datasets	
Format of the data	Appropriate industry standards
Metadata and documentation	Appropriate metadata and documentation will be provided together with the DMP for each data set
Data security and privacy	
Classification level of data	Needs to be identified for each dataset individually
Data privacy	Data will be anonymized if necessary
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	
Data utility, usefulness to external parties	Data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies, and also DSOs, TSOs and aggregators (customers and balance responsible providers - BRPs) who are not OneNet's partners.
Availability (long-term storage)	Some data will be published in an open research data repository which still needs to be identified

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4.4 Prediction and planning

Factsheet	
Dataset name	Prediction and planning
Dataset description	• Weather forecasts • Energy consumption forecasts • Energy production forecasts • Schedules for controllable energy resources (baseline)
Source of the data	
Re-use of historical data	If necessary, yes.
Data from live trial measurements, sensors	Needs to be clarified
Origin of data	The demonstration clusters
Format of the open datasets	
Format of the data	Appropriate industry standards
Metadata and documentation	Appropriate metadata and documentation will be provided together with the DMP for each data set
Data security and privacy	
Classification level of data	Needs to be identified for each dataset individually
Data privacy	Data will be anonymized if necessary
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	Data will be used for forecasting generation and consumption patterns, and will be integrated into the development of new market products
Data utility, usefulness to external parties	Data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies, and also DSOs, TSOs and aggregators (customers and balance responsible providers - BRPs) who are not OneNet's partners.
Availability (long-term storage)	Some data will be published in an open research data repository which still needs to be identified

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4.5 Customers' personal data

Factsheet	
Dataset name	Customers' personal data
Dataset description	These data will be collected during the recruitment of customers into the project. It includes customers': • Name • Address • Point of Delivery (POD) • Bank account details
Source of the data	
Re-use of historical data	Not applicable.
Data from live trial measurements, sensors	Not applicable.
Origin of data	Needs to be defined, if necessary at all
Format of the open datasets	
Format of the data	Not applicable.
Metadata and documentation	Not applicable.
Data security and privacy	
Classification level of data	These data are strictly confidential and will be treated as personal data under European and national laws for personal data protection.
Data privacy	The data are strictly guarded under personal data protection (European and national laws).
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	Needs to be defined per demonstration cluster
Data utility, usefulness to external parties	Not applicable.
Availability (long-term storage)	No

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5 Conclusions

Comprehensive research data management is a constant task that needs to be well-defined. This document provides an early first structure for a DMP, which is the key element of every data management today. Regularly updated, this document will develop into an extensive knowledge base addressing all aspect of OneNet's research data management handling and publishing.

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6 References

[1] Data Management Plan, deliverable 9.1 of the Platone H2020 Project no 864300, 27.02.2020.

[2] Data Management Plan, deliverable 7.11 of the CoordiNet H2020 Project no 824414, 22.04.2020.

[3] H2020 Programme, Guidelines on FAIR Data Management in Horizon 2020 version 3.0, 26 July 2016.

[4] OpenAIRE H2020 Project no 777541, Website, https://www.openaire.eu/, accessed on 28.11.2020.

[5] Data management, H2020 Online Manual, https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm accessed on 28.11.2020

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