Platone

PLATFORM FOR OPERATION
OF DISTRIBUTION NETWORKS

Platone

PLATform for Operation of distribution NEtworks

D9.2 v1.0

Data Management Plan (final)

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Abstract

The Platone Data Management Plan (DMP) describes how the data in project will be processed and shared to support Open Research Data during the Platone project's development and after the project's conclusion. It identifies and characterises the datasets that will be provided by each of Platone's three demos (Italy, Greece and Germany).

Keyword list

Data Management, open data, renewable energy, power grid

Executive Summary

This deliverable identifies the datasets which are applied in Platone project. It describes how these datasets will be processed and shared to support the H2020 Open Research Data Pilot during the project's development and after the project's conclusion.

Four datasets are identified for Platone, containing technical data from trial sites, related to the headings of Topology and asset description; Measurements; Market; Prediction and planning. The datasets will be made openly available on Zenodo [1].

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1 Introduction

The Platone project [2] aims to develop an architecture for testing and implementing a data acquisitions system based on a two-layer approach (an access layer for customers and distribution system operator (DSO) observability layer) that will allow greater stakeholder involvement and will enable an efficient and smart network management. The tools used for this purpose will be based on platforms able to receive data from different sources, such as weather forecasting systems or distributed smart devices spread all over the urban area. These platforms, by talking to each other and exchanging data, will allow collecting and elaborating information useful for DSOs, transmission system operators (TSOs), Market, customers and aggregators. In particular, the DSO will invest in a standard, open, non-discriminating, economic dispute settlement blockchain-based infrastructure, to give to both the customers and to the aggregator the possibility to more easily become flexibility market players. This solution will see the DSO evolve into a new form: a market enabler for end users and a smarter observer of the distribution network. By defining this innovative two-layer architecture, Platone removes technical barriers to the achievement of a carbon-free society by 2050 [3], creating the ecosystem for new market mechanisms for a rapid roll out among DSOs and for a large involvement of customers in the active management of grids and in the flexibility markets. The Platone platform will be tested in 3 European trials (Greece, Germany and Italy) and the consortium aims to go for a commercial exploitation of the results after the project is finished.

The Data Management Plan (DMP) is a formal description of the procedures of data handling during and after a project. A DMP describes the data management life cycle for the data to be collected, processed and/or generated. By providing an assessment of data used in a project and a structured approach for aspects as naming conventions, metadata and versioning, the DMP should also support data quality, efficient processing and sharing of data and to ensure it is soundly managed. It is required for projects in the Horizon 2020 framework programme that have not opted out of the Open Research Data Pilot (ORDP) [4].

As part of making research data findable, accessible, interoperable and re-usable (FAIR), the DMP should include information on:

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

Naturally, not all questions regarding the handling and type of data can be answered at the start of a project, as procedures must be coordinated and implemented and the data management infrastructure has to be set up. To meet this lack of knowledge, the DMP is meant to be a living document which should be adapted and completed during the project lifetime whenever significant changes arise, such as (but not limited to):

- new data
- changes in consortium policies (e.g. new innovation potential, decision to file for a patent)
- changes in consortium composition and external factors (e.g. new consortium members joining or old members leaving).

All data will be treated according to the EU legislation governing the unbundling of DSOs [5] [6] and market operators (traders, aggregators, resellers, etc.).

1.1 Task 9.1

The task associated with the D9.2 deliverable is task 9.1. This task covers the Platone contractual, operational and administrative management. The task leader is RWTH Aachen University.

1.2 Objectives of the Work Reported in this Deliverable

The objective of this deliverable is to identify the datasets which are applied in Platone project and describes how these datasets will be processed and shared to support the H2020 Open Research Data Pilot during the project's development and after the project's conclusion.

1.3 Outline of the Deliverable

This document is structured according to Annex 1 of the “Guidelines on Fair data management in Horizon 2020” [4]. In Chapter 2, the methods and tools to be used in Platone approach to making data “FAIR” (findable, accessible, interoperable, re-usable) are described. The data appearing in the Platone project is assessed in Chapter 2 and structured in datasets. The allocation of resources for making the data “FAIR” is explained in Chapter 4. Chapter 5 and chapter 6 are dedicated to data security and ethical aspects defined in the project.

1.4 How to Read this Document

For background to Platone, please refer to the Platone Grant Agreement [2]. This document can be read independently of other Platone deliverables.

2 FAIR data

The FAIR data principle is required to be used in EU-Projects by the “Guidelines on FAIR Data Management in Horizon 2020” [4]. 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, use of search keywords and Digital Object Identifiers (DOI)
- **A**ccessible data: Specification how data is made available, what tools are needed to access data
- **I**nteroperable data: Use of standards and vocabularies for (meta-) data and datatypes
- **R**e-usable data: Specification when and for which duration data is made available, licensing of data

2.1 Making data findable, including provisions for metadata

The datasets will be published on the Zenodo repository [1]. Zenodo is a general-purpose open-access repository developed under the European OpenAIRE [7] programme and operated by CERN. Zenodo is free of charge to upload and access. It allows researchers to deposit research papers, data sets, research software, reports, and any other research related digital artefacts.

The datasets will be stored under the Smart Energy Data tag.

In Platone, the datasets will be produced and published by the three partners who run the trial site infrastructures in Italy, Greece and Germany, who are respectively areti, HEDNO and Avacon.

Datasets will be structured under the heading of the trial site partner (areti, HEDNO and Avacon), the overarching datasets (described in sub sections 1 to 4 in Ch. 3 below) and the data object. For example, power consumption measurements from customers in Germany (such as measurements of power, voltage current) will be labelled as Smart Energy Data: Avacon Energy Consumption Profile. Within this profile, there will be data sets for each customer. Hence the data resources will be labelled like:

avacon_energy_consumption_customer_1

avaconenergy_consumption_customer_2, etc.

These data resources will link to the actual data, which could for example in the case of measurements, be a .csv file containing the date and time for each measurement, as well as the measurement itself. Additionally, each data resource will contain a metadata file describing the resource and explaining the meaning of the data.

The individual data resources in the datasets will be given version numbers, to distinguish different versions of the dataset produced during the project.

Digital Object Identifiers will be used to give the data resources persistent and unique identifiers.

The following search keywords, amongst others, will be used:

smart; energy; market; flexibility; profile; consumption; temperature; electric; grid; production; PV; demand; time; heat pump; photovoltaic; forecast; weather; load; generation; network tariffs; battery.

Details of the naming conventions for data and meta-data are specified in Chapter 3 .

2.2 Making data openly accessible

Platone will publish datasets of historical trial site data as open data on the Zenodo repository [1]. External entities, e.g., researchers, can use the interface of the Zenodo repository to search for and download the Platone data, The Zenodo platform is freely available to be used by the public, without the need to register or open an account for browsing or downloading data. The data will be stored in standard formats (such as .csv files) to be freely accessible for all external entities to download.

2.3 Making data interoperable

Making data interoperable mainly depends on the use of suitable standards for the creation of metadata along with an appropriate associated vocabulary (e.g. search keywords).

The data produced by Platone will be published with full explanations of the meaning of the data and its context in the accompanying metadata documentation. The use of a text format for the data and the provision of full explanatory metadata will facilitate interoperability.

2.4 Increase data re-use (through clarifying licences)

The current intention is that Platone datasets will be published as open data under the Creative Commons CC-BY-SA 4.0 license [8]. This license allows the datasets to be used if the data source is accredited and if the same licensing conditions (CC-BY-SA 4.0) are applied to its derivative use.

3 Data Summary

Platone purposes an innovative approach to data management to increase the level of observability of the electricity grid at distribution level and exploit the flexibilities in electricity production and consumption. Platone puts the electricity end-users at the centre of its solutions, and will test these in three large pilots in Italy, Greece and Germany.

This chapter is structured with sub-sections for each of the four datasets, which allows a detailed assessment of the data collection and generation as well as issues of data privacy and security for each dataset.

The following datasets have been identified to appear in the Platone project:

1. Topology and asset description
2. Measurements
3. Market
4. Prediction and planning.

All datasets appear in every trial site.

To assess the data, each dataset is described in a factsheet presented in the following sub-chapters.

The datasets are technical datasets, related to the management by the DSOs of the Platone infrastructures in the DSOs' distribution grids in the pilot sites.

These technical datasets are curated versions of the raw technical datasets which are generated through the execution of the Platone grid management functions and consist mainly of time-series data. These curated versions of these raw datasets will be made openly available in the Zenodo repository [1].

In case there are differences among the three trial sites (areti- Italy, HEDNO- Greece and Avacon-Germany) it will be clearly stated in the factsheet. If the information is not split up for each trial site answer it means that it is valid for all the trial sites.

3.1 Dataset 1 – Topology and asset description

Table 1: Factsheet for Dataset 1

Dataset 1	
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); **particular to Italian Demo:** Technical data of storage systems and PV generators installed at flexible customers' sites.
Source of the data	
Re-use of historical data	**German Demo:** Yes, number of substations and lines. **Greek Demo:** Yes, network topology and assets' characteristics. **Italian Demo:** N.A.
Data from live trial measurements, sensors	This dataset concerns static topology and asset data, not time-series data.
Origin of data	**German Demo:** The data will come from: - The software managed by the DSO: - Geographic Information System (GIS) - Asset data plate, product sheets provided by vendors or customers. **Greek Demo:** The data will come from: - Geographic Information System (GIS), - Enterprise Resource Planning (ERP) **Italian Demo:** The data will come from: - Manufacturers' technical datasheets
Format of the open datasets	
Format of the data	The geographical data are provided in shape files (.shp), the network data is stored in a database, and can be extracted in formats like .csv, .xml, .dbs, .txt, .json among others. **German Demo:** Data will be provided as picture (.jpeg, .png), the network data is stored in a database, and can be extracted in formats like *.csv, *.xls, .dbs among others. **Greek Demo:** Network data is stored in a database, and can be extracted in formats like *.csv, *.xls, .dbs, .json among others. **Italian Demo:** Data will be provide in formats like .csv, .xml, .dbs, .txt, .json or others open formats.

Metadata and documentation	The date and origin of the data will be included as part of the metadata. **German Demo:** Datapoints (format provided in (*.csv): - 1 of Large Scale Battery Energy Storage System: • Installed Power - P [kW] • Maximum Apparent Power - S [kVA] • Nominal Storage Capacity – E [kWh] • Rated Voltage – U [V] • Rated Current – I [A]) - 1 of Transformer at MV/LV-Grid Connection Point: • Rated Power – P [kW] • Rated Reactive Power – Q [kvar] • Rated Apparent Power – S [kVA] • Rated Voltage – U [V], Rated Current – I [A] - 1 - 5 of Household Battery Storages (incl. Inverter): • Rated Power – P [kW] • Rated Reactive Power – Q [kvar] • Rated Apparent Power – S [kVA] • Rated Voltage – U [V] • Rated Current – I [A] • 1 - 5 of Household Photovoltaic System: • Rated Capacity – P [kW] **Greek Demo:** The files to be provided as open datasets will include details of the network examined, such as but not exclusively: - conductor type, diameter, characteristics - nodes ([kVA], how they are interconnected in the network examined) - Length, resistance (R), reactance (X), susceptance (B) of the lines - PV Rated Power (peak) [W] **Italian Demo:** - Household Battery Storages (incl. inverter): • Rated Power (charging) [kVA] • Rated Power (discharging) [kVA] • Max Rated Power (charging) [kVA] • Max Rated Power (discharging) [kVA] • Rated Voltage [V] • Max capacity [kWh] • DoD [kWh] • Setting Power Factor Range [p.u.] - PV systems: • Rated Power (peak) [W] • Rated Voltage [V]

Dataset Naming Convention	**German Demo:** The dataset naming convention contains following information: - Company of origin (avacon) - Physical size (e.g. energy consumption, active power generation, reactive power) - point of measurement (e.g. customer 1 battery) - date (date or timestamp) → Example: avacon_energy_consumption_customer_1_date **Greek Demo:** - hedno_asset_rating_Greek_suburban_MV_network - hedno_PV_customer_1 **Italian Demo:** - areti_production_PV_customer - areti_storage_customer
Data security and privacy	
Classification level of data	In general, the datasets can be made openly available (Public). **particular to German Demo:** Data of Large Scale Battery Energy Storage System and MV/LV-Transformer will be published. Asset Data of customers will not be published.
Data privacy	This dataset does not contain any personal data. The dataset will be anonymized to protect the commercial confidentiality of the identities of the technical assets underlying the datasets.
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	The data will be used for analysis/simulation regarding tools and services developed and used in Platone.
Data utility, usefulness to external parties	Such data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies, as well as DSOs and TSOs who are not Platone partners.
Availability (long-term storage)	All the technical data will be available without the confidential information (like supplier; model, brand, owner, etc.). Versions of the datasets will be made available as open data on the Zenodo [1] platform.

3.2 Dataset 2 – Measurements

Table 2: Factsheet for Dataset 2

Dataset 2	
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). **German Demo:** • The dataset includes: • Large Scale Battery Storage: P+- [kW], Q+- [Vvar], SOC [%], SOE [kWh]) Electrical Measurements acquired from the sensors installed on the MV/LV grid connection point: P+- [kW], Q+-[Vvar], S+- [kVA], U[kV], I+-[A], Power Factor) • Household Photovoltaic Generation: P to Battery [kW], P to Grid [kW] • Household Battery Storages: P to Grid [kW], SOC [%], SOE [kWh] • Weather Data (Temperature, Windspeed) **Greek Demo:** The dataset includes: - PVs: generation (P, Q), - Loads: power demand (P,Q), - Electrical Measurements acquired from the sensors installed on the grid (like busbar voltage in primary substations, currents on MV lines) **Italian Demo:** The dataset includes: - Flexible PoD measures - Grid electrical measures - Historical PoD measures
Source of the data	
Re-use of historical data	**German Demo:** Historic measured data collected before the field test, e.g. measurements from installed sensors located at low voltage busbar in secondary substation. **Greek Demo:** - Load data anonymised - Generation data (PV) anonymised - Measurements acquired through SCADA (e.g. busbar voltage in primary substations, currents on MV lines) **Italian Demo:** Historical measurements data will be defined and collected during the field tests.

Data from live trial measurements, sensors	**German Demo:** Yes. **Greek Demo:** Yes. **Italian Demo:** Yes. For all 3 demos: bulk datasets derived from live trials will be released as open datasets.
Origin of data	**German Demo:** Data will be collected by own developed Energy Management System(ALF-C) from: • sensors integrated in large scale battery energy storage system (CBES) • measurements devices (PIMulti2 and PMU) located at busbar of MV/LV grid connection point, • weather station located at secondary substation, • Sensor integrated in inverters and household battery storages, **Greek Demo:** HEDNO's AMR system, SCADA system, PMUs. **Italian Demo:** - Flexible PoD measures by Light-Node - Historical PoD measures by DSO's Advance Metering Infrastructure (AMI); - Grid electrical measures by Supervisory Control and Data Acquisition (SCADA); Some data could be elaborated (i.e. not raw) data (e.g. for some PoD, kvar values could be calculated/estimated using available kvarh measures). In this case, no raw data will be indicated in the metadata documentation.
Format of the open datasets	
Format of the data	The measurements are information stored in Database, so they can be extracted in format like .csv, .xml, .dbs or other type of format **Italian Demo:** Data will be provide in formats like .csv, .xml, .dbs, .txt, .json or others open formats.
Metadata and documentation	**German Demonstrator:** Datapoint (format provided in (*.csv) in intervals of 60 Sec. to 15 Minutes: - 1 x Large Scale Battery Energy Storage System: • Power - P [kW] • Apparent Power - S [kVA] • State of Charge – SOC [%] • State of Energy - SOE [kWh] • Voltage – U [V] • Current – I [A]) • Setpoint – P(t) [kW] - 1 x Sensor (PMU/PIMulti2) located at busbar of MV/LV-Grid Connection Point (transformer) intervals of 60 Sec. to 15 Minutes: • Power - P [kW] • Apparent Power - S [kVA] • Reactive Power - Q [kvar] • Voltage – U [V]Current – I [A]) • Frequency – F(Hz] • Power factor [%] - 1 x weather station (Temperature, Global Radiation) 60 Sec. to 15 Minutes • Windspeed – V [m/s] • Temperature – T [°C]

	-1 to 5 x Household battery storages or loads (SOC, U, I, P) • Power - P [kW] • Apparent Power - S [kVA] • State of Charge – SOC [%]State of Energy - SOE [kWh] • Voltage – U [V] • Current – I [A]) • Setpoint – P(t) [kW] **Greek Demo:** The files to be provided as open datasets subject to customers' confidentiality will include, but not exclusively, anonymised measurements of: - Loads - Generation (PV) - Busbar voltage in primary substations and currents on MV lines - PMU s **Italian Demo:** - Flexible PoD measures: • Active Power exchange with the grid [kW] • Reactive Power exchange with the grid [kvar] • Active Energy exchange with the grid [kWh] • Reactive Energy exchange with the grid [kvarh] • Active Power Setpoints [kW] • Reactive Power Setpoint [kvar] - Grid electrical measures: • Busbar voltage [kV] • MV lines current [A] - Historical PoD measures: - Historical measurements data will be defined and collected during the field tests. Preliminarily, it is guessed that the measurements will include PoD consumption in kWh (LV PoD: customers' total monthly; MV PoD: customers' total hourly consumption).
Dataset Naming Convention	**German Demo:** • avacon_active_power_CBES_date • avacon_reactive power_CBES_date • avacon_active_power_MV/LV_grid_connection_point_date • avacon_reactive_power_MV/LV_grid_connection_point_date • avacon_voltage_MV/LV_grid_connection_point_date • avacon_energy_PV_generation_customer_1_date • avacon_energy_PV_generation_customer_2_date • avacon_energy_PV_generation_customer_1_date **Greek Demo:** - hedno_PV_generation_customer_1_DateFrom_DateTo - hedno_Load_profile_MV_customer_1_DateFrom_DateTo - hedno_suburban_MV_busbar_V - hedno_suburban_MV_busbar_I - hedno_PMU_suburban_network_nodeX_V - hedno_PMU_suburban_network_nodeX_I **Italian Demo:** - areti_profile_flexibility_customer - areti_electric_grid - areti_profile_historical_customer - areti_profile_historical_production_customer

Data security and privacy	
Classification level of data	In general, the datasets will be made openly available (Public). **particular to German Demo:** Large Scale Battery Energy Storage System - public Transformer (busbar MV/LV-grid connection point) – public Weather station – public Household battery storage or loads – not public
Data privacy	This dataset does not contain any personal data. The dataset will be anonymized to protect the commercial confidentiality of the identities of the technical assets underlying the datasets.
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	This data will be used to monitor local power generation and demand, state of systems and estimate available used flexibility. To increase the grid observability and to involve the users in the market flexibility.
Data utility, usefulness to external parties	The data, coming from real grid infrastructures, is expected to be useful for simulations and product development purposes to research institutions, private companies, as well as DSOs, TSOs and aggregators who are not Platone partners.
Availability (long-term storage)	Versions of the datasets will be made available as open data on the Zenodo [1] platform.

3.3 Dataset 3 – Market

Table 3: Factsheet for Dataset 3

Dataset 3	
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 - Variable Network Tariffs **particular to Italian demo:** - TSO flexibility requests; - DSO flexibility requests; - Aggregator bids; - Settlement data; - Market Outcomes
Source of the data	
Re-use of historical data	**German Demo:** No. **Greek Demo:** No. **Italian Demo:** No.
Data from live trial measurements, sensors	Yes. For all 3 demos: Bulk datasets derived from live trials will be released as open datasets.
Origin of data	**German Demo:** - Simulation of Market request via ALF-C GUI - GUI Settings (Use Case-Type, time, P) **Greek Demo:** DSO Technical Platform, from flexibility tools and services. **Italian Demo:** - DSO Technical Platform, TSO Simulator for flexibility requests; - Aggregator Platform for bids.
Format of the open datasets	
Format of the data	The measurements are information stored in Database, so they can be extracted in format like .csv, .xml, .dbs or other type of format. **German Demo:** *.csv **Greek Demo:** Data will be provided in formats like .csv, .txt or other type of format. **Italian Demo:** Data will be provide in formats like .csv, .xml, .dbs, .txt, .json or others open formats.
Metadata and documentation	**German Demo:** DSO ALF-C GUI Setting (flexibility request): The Avacon Local Flex Controller (ALF-C) is the developed decentral energy management that collect measurements from sensors located in the field and sends setpoint for the activation of flexibilities in the field

	based on forecasts and optimization algorithms. The system provides a Graphical Use Interface (GUI) for the setting of relevant parameters, e.g. set Use Cases. The parameter setting includes: • Active Use Case – Number [1,2,3,4]; Simulates the Use Case triggered by Market, community, DSO or TSO. • Start/End of Use Case – t [e.g. 3. March 20021; 14:33:05] • Triggered Setpoint – P [kW]; Setpoint Triggered via the GUI is a simulation of market request. • Determined active power setpoint or setpoint schedule for activation of assets determined by ALF-C – P [kW]; P(t) [kW]. **Greek Demo:** Timeseries of Variable Network Tariffs. There might be a locational characteristic attached to them. This dataset is produced by the DSOTP at Step 1 in the Use Case 3 of the Greek demo as described in Ch. 3.3.3 of D4.1. Please refer to the Table 5 of the Ch. 3.3.3 for details and the context of the use case. **Italian demo:** - TSO flexibility requests: • Starting Time • Duration • Market Type • Market Session • Flexibility Service Type • Volumes • Grid Area - DSO flexibility requests: • Starting Time • Duration • Market Type • Market Session • Flexibility Service Type • Volumes, Grid Area - Aggregator bids: • Starting Time • Duration • Market Type • Market Session • Flexibility Service Type • Volumes • PoDs List - Settlement data: • PoD • Requested Active Power • Measured Active Power • Requested Reactive Power • Measured Reactive Power - Market Outcomes: • Market Outcome Id • Market Type • Market Session • Flexibility Service Type

	Except for TSO flexibility requests, to test the demo, other data could be simulated. In this case, it will be indicated in the metadata documentation.
Dataset Naming Convention	**German Demo:** • avacon_market_Active Use Case_number • avacon_market_request_point_of_time_start • avacon_market_request_ point_of_time_end • avacon_market_active_power_setpoint_UC2 • avacon_market_flexibility_outcome **Greek Demo:** • hedno_network_tariffs_DateFrom_DateTo **Italian Demo:** • areti_market_flexibility_TSO_requests • areti_market_flexibility_DSO_requests • areti_market_flexibility_Aggregator_bids • areti_market_flexibility_settlement • areti_market_flexibility_outcomes
Data security and privacy	
Classification level of data	In general, the datasets can be made openly available (Public).
Data privacy	This dataset does not contain any personal data. The dataset will be anonymized to protect the commercial confidentiality of the identities of the technical assets underlying the datasets.
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	Data enables the communication with Platone market and exchange of flexibility located within the field test region
Data utility, usefulness to external parties	Such data, derived from real (or simulated when indicated) market transactions, 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 Platone partners.
Availability (long-term storage)	Versions of the datasets will be made available as open data on the Zenodo [1] platform.

3.4 Dataset 4 – Prediction and planning

Table 4: Factsheet for Dataset 4

Dataset 4	
Dataset name	Prediction and planning
Dataset description	- Weather forecasts; - Community Energy consumption forecasts (aggregated to busbar of MV/LV grid connection point) - Community Energy production forecasts; - Community Energy residual consumption forecasts; - Schedules for controllable and non-controllable energy resources (baseline). **German Demo:** - Weather forecasts - Input (..); - Energy consumption forecasts - Output, - Energy production forecasts - Output; - Schedules for controllable energy resources (baseline) (aggregated & disaggregated) – Output **Greek Demo:** Energy consumption forecast as used by the State Estimation Tool **Italian Demo:** - PoD power exchange forecasts - Flexible PoD power exchange baseline
Source of the data	
Re-use of historical data	**German Demo:** Historic weather forecast will be used to predict generation and demand of individual devices and of the total field test network. **Greek Demo:** Historical energy consumption data would be re-used. **Italian Demo:** Some aggregated data could be reused. It is assumed that in the first phases of demo deployment, PoD power exchange measures (obtained by AMI system) are used to estimate the PoDs' baseline.
Data from live trial measurements, sensors	Not Applicable
Origin of data	**German Demo:** Weather forecasts will be provided by commercial weather forecasting institutions. Avacon Local Flex Controller (forecast module, balancing module, and dispatcher). **Greek Demo:** Within State Estimation Tool a one-day-ahead Load Forecasting technique is deployed based on a simple autoregressive model for the estimation of load consumption per individual MV consumer, on an hourly basis. Also Load Allocation procedure is executed to obtain load estimates for the rest of load buses. **Italian Demo:** - PoD power exchange baseline, dedicated tools integrated in the DSO TP will be used. - Flexible PoD power exchange baseline, algorithms implemented on the Aggregator Platform will be used.

Format of the open datasets	
Format of the data	Typical database format like .csv, .xml, .dbs or other type of format. **particular to Italian Demo:** Data will be provided in formats like .csv, .xml, .dbs, .txt, .json or others open formats.
Metadata and documentation	**German Demo:** Temperature – T [°C] Solar Radiation – SR [W/m²] Cloud Cover – GR [%] PV Generation (PV-Pro) – P (t) [kW] Community total generation (busbar/MV-LV-node) – P [kW] Community total consumption (busbar/MV-LV-node) – P [kW] Community residual load demand (busbar/MV-LV-node) – P [kW] **Greek Demo:** -Busbar/node identifier -P(t) [kW] -Q(t) [kvar] -Timestamp **Italian Demo:** - PoD power exchange forecasts [kW, kvar] - Flexible PoD power exchange baseline [kW, kvar]
Dataset Naming Convention	**German Demo:** avacon_community_power_consumption date avacon_community_power_generation date avacon_community_residual_consumption_date **Greek Demo:** -hedno_energy_consumption_node_X -hedno_energy_consumption_MV_customer_1_DateFrom_DateTo **Italian Demo:** - areti_forecast_profile_flexibility_customer - areti_forecast_profile_customer
Data security and privacy	
Classification level of data	In general, the datasets can be made openly available (Public).
Data privacy	This dataset does not contain any personal data. The dataset will be anonymized to protect the commercial confidentiality of the identities of the technical assets underlying the datasets.
Exploitation and dissemination	
Purpose of data collection/generation, relation to project objectives	The data can be used for forecasting of generation and demand, for derivation of advanced control strategies, and for optimizing the local consumptions of energy, for foreseeing and predicting grid status and eventual criticalities, as well as for customizing commercial offers towards clients/users by profiling consumption
Data utility, usefulness to external parties	The data, which comes from real operational platforms, 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 Platone partners.
Availability (long-term storage)	Versions of the datasets will be made available as open data on the Zenodo [1] platform.

4 Allocation of resources

Each of the demo leaders (areti, HEDNO, Avacon) will be responsible for the preparation of the datasets and their storage on the Zenodo platform.

The partner responsible for the Data Management Plan is RWTH.

Long-term preservation of the project data will be performed by publishing the datasets on the Zenodo [1] platform, which will provide storage of the datasets. In addition, RWTH will store a long-term backup of the datasets using its data archiving service (https://doc.itc.rwth-aachen.de/display/ARC/Home).

The Platone demos will each register on the Zenodo platform and will upload their own datasets.

Avacon will prepare open datasets and publish them regularly in bulk every 6 month on the Zenodo platform after registration. All data will be made available with the beginning of August 2021.

HEDNO plans to prepare the open datasets and upload them on the Zenodo on a yearly basis. Effort will be made to upload the datasets as they become available, with M48 (last project month) being the latest that all data will be uploaded. By that time, all datasets used in the demo will be available.

areti plans to prepare the open datasets and upload them periodically (at least yearly) on the Zenodo platform as soon as they will be available for publication.

5 Data security

Each partner is responsible for the security, recoverability, and storage of their own generated data (according to their institution or company practice).

As seen in Ch. 3, the datasets that will be published by Platone partners do not contain any data which is considered sensitive, i.e. the datasets are suitable for publication as open data.

The long-term preservation of the Platone technical datasets will be achieved by publishing them on an open data platform, while retaining a long-term copy at RWTH, as described in Ch. 4.

6 Ethical aspects

The reference for ethical and legal issues in Platone is the EU General Data Protection Regulation (EU) 2016/679 (GDPR) [9].

The considerations of Platone related to sharing and long term preservation of customers' personal data is detailed in the D10.2 deliverable.

However, as seen in Ch. 3, the datasets that are defined in this report relate to technical data and not personal data, so that no ethical considerations arise concerning the publication of these technical data as open data.

7 List of Tables

8 List of References

[1] Zenodo https://zenodo.org/

[2] Grant Agreement No. 864300 – PLATONE

[3] European Commission, “2050 long-term strategy”, [Online]. Available: https://ec.europa.eu/clima/policies/strategies/2050_en

[4] Guidelines on FAIR Data Management in Horizon 2020, European Commission, 2016

[5] Electricity Directive 2009/72/ec - Third Energy Package https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0072&from=EN

[6] Testo Integrato Unbundling Contabile – TIUC, [Online]. Available: https://www.arera.it/allegati/docs/16/137-16all_ti.pdf

[7] OpenAIRE https://openaire.eu

[8] Creative Commons, „About The Licenses,“ [Online]. Available: https://creativecommons.org/licenses/

[9] Guide to General Data Protection Regulation (GDPR), ico. (information commissioner's office), 2018.

9 List of Abbreviations

Abbreviation	Term
AMI	Advance Metering Infrastructure
AMR	Automatic Meter Reading
CBES	Large-scale Community Battery Energy Storage System
CRM	Customer Relationship Management
DMP	Data Management Plan
DSO	Distribution System Operator
ERP	Enterprise Resource Planning
FAIR	Findable, Accessible, Interoperable, Re-usable
GIS	Geographic Information System
LV	Low Voltage
MV	Medium Voltage
ORDP	Open Research Data Pilot
P	Active Power (measured in (kilo)Watts (kW))
Q	Reactive Power (measured in (kilo)volt-ampere reactive (kvar))
PoD	Point of Delivery
RES	Renewable Energy Source
S	Apparent Power (measured in (kilo)Volt-Amps (kVA))
SOC	State of Charge
SOE	State of Energy, describes the maximum available storage capacity of a battery.
SCADA	Supervisory Control and Data Acquisition
TSO	Transmission System Operator