MARKET ENABLING INTERFACE TO UNLOCK FLEXIBILITY SOLUTIONS FOR COST-EFFECTIVE MANAGEMENT OF SMARTER DISTRIBUTION GRIDS

Deliverable: D12.3

[Data Management Plan]

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Document
D12.3 [Data Management Plan]

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Table of Contents

1. Executive Summary

This document presents the Data Management Plan (DMP) of EUniversal project that received funding from the European Union (EU) under the Grant Agreement (GA) number 864334.

The purpose of this document is to establish the main elements of the data management policy of EUniversal project that will be used by all Partners of the consortium with regard to all the datasets that will be generated by the project. The application of this document is the responsibility of all EUniversal project Partners.

The DMP of EUniversal project is a living document, which will be updated during the execution of project as more detail will be fixed and consolidated by all Partners.

The first version of this deliverable will be produced in month 6th as D12.3 and will be updated in months 16th, 28th and 40th.

2. Introduction

As stated in "A European strategy on the data value chain", the intelligent use of data enables the creation of new products and services and has the potential to transform Europe's service industries and significantly increase their efficiency. In the public sector, this can lead to cost reduction of operations, increase of efficiency and better and more personalised services for citizens [4].

Thus, EUniversal Data Management Plan (DMP) aims to provide an analysis of the main elements of the data management policy that are going to be used by all Partners in the consortium.

With the input from all EUniversal Parners, this DMP pretends to record the types of data that will be generated and/or gathered during the execution of the project, the standards that will be used, the ways in which data will be exploited and eventually shared, and in which way some data will be preserved.

The DMP will be a living document throughout the project, and this initial version will evolve during the EUniversal lifespan according to the progress of project activities.

The DMP has been structured by following the Guidelines on FAIR Data Management in Horizon 2020[1] provided by the European Commission in July 2016. For this purpose, all EUniversal Partners were asked to fill an individual template that addresses all data issues identification that each Partner at this point envisage that will occur (Annex I).

This report describes the procedures of data collection, storing and processing, with a final overview on EUniversal security protection strategy.

EUniversal DMP does not cover all issues concerned with ethics and data protection, as they are the focus of dedicated deliverable (EUniversal D13.1).

3. Data summary

3.1. Purpose of data collection/generation

EUniversal will generate and collect technical, commercial and personal data in compliance with all national, EU ethics and legal requirements in the frame of the following activities:

- observatory of research and demonstration initiatives on future electricity grids and markets;
- Interface development, testing and API management;
- large-scale demonstrators;
- dissemination of business solutions to the electricity grid and market projects as well as learnings and methodologies to the business model projects, exploitation of results and communication.

3.2. Data description

For the purposes of proof of concept of the UMEI interface, including flexibility services, grid tools and market mechanisms, several data from different stakeholders will be gathered:

- Personal data from LV and MV consumers, such as load and generation diagram, consumptions and comfort preferences, identifications of grid connection point;
- Electric grid information such as: topology, electric measurements for voltage and current, equipment status and configurations and future operation scenarios for planning purposes;
- Flexibility needs from DSO (identification of technical problems or other needs in specific areas of the network);
- Market data (bids, prices, ….).

As stated in Deliverable D13.1 "Ethics requirements" all data collected and processed will be strictly compliance with GDPR Regulation (Regulation 2016/679 of the European Parliament and of the Council, 27th April 2016) and, when applicable, also with national laws of the origin of the data gathered.

When personal data is involved the local Partner DSOs of each DEMO site (Germany, Poland and Portugal) will be the responsible entity ('Controller') for the data collected in its country.

With the contributions gathered in Annex I it will be easier to manage if there is a possible harmonization between all data sets across EUniversal in order to facilitate its identification and storage. This exercise will also stand out:

- What kind of data are subject to IP rights;
- Identify personal data;
- Identify data that falls under business secrecy;
- …

All collected data take into account EU laws and standards as well when applicable with national laws.

At this point, the level of detail regarding the data collection strategy is still limited for the three demo pilots as it will depend on the all kind of data needs that proves to be necessary for testing UMEI concept and flexibility services. Nevertheless, all requested Partners contribution are detail in AnnexI.

As this DMP is a living document the body of this deliverable and its templates, namely Annex I, will be continuously updated by all Partners as more precise information will be closed and available. An updated version to be shared will at least be produced in months 16th, 28th and 40th of the project.

4. Fair data

FAIR data is not necessary equals to open data but: "open just enough in order to be fair".

In this context, concerns relating to intellectual property rights, personal data protection and confidentiality, security and legitimate commercial interests, shall be taken into account in accordance with the principle of "as open as possible, as closed as necessary".

Accordingly, to PSI Directive fair data principles seeks the reuse of data and other digital research output and objects (algorithms, tools and workflows that led to that data) making them Findable, Accessible, Interoperable, and Reusable. The principles consider applications and computational agents as stakeholders with the capacity to find, access, interoperate and reuse data with none or minimal human intervention and recognize the importance of automated process to do that because humans increasingly rely on computational support to deal with intensive data processes.

As such the Open Science ecosystem ideally strives for institutes, researchers and citizens to have immediate access to published articles, data, software and other research products under FAIR principles. This, ideally without cost and with the possibility of reusing everything as deemed convenient.

Under the GDPR, 'Controllers' must comply with, and demonstrate compliance with, all the data protection principles as well as the other GDPR requirements. They are also responsible for the compliance of the its 'Processor' [3].

In EUniversal project all personal data that will be collected and processed will take into consideration the seven key principles of the GDPR:

- Lawfulness, fairness and transparency
- Purpose limitation
- Data minimisation
- Accuracy
- Storage limitation
- Integrity and confidentiality (security)
- Accountability

Under the GDPR 'Controllers' must comply with, and demonstrate compliance with, all the data protection principles as well as the other GDPR requirements namely address "data subject rights" and the evaluation of if processor activities comply with the contract establish between them.

In order to access eventual property rights, personal data protection and confidentiality, security and legitimate commercial interests all potential scientific publications should circulated among all Partners for a period of time agreed before any action to present and/or submit in any scientific paper or presentation in open Platforms.

Data exchange securities between EUniversal Partners to exchange data will be establish and implemented in order to maximize the security needed for each case.

5. INTEROPERABILITY

Interoperability is the ability of information systems to exchange data and enable sharing of information keeping, at the same time, all security aspects in order to maintain trust of "data subjects" foreseen in the Charter of the fundamental rights of the European Union.

In order to implement data protection principles and safeguard individual rights a "data protection by design and by default" is needed, meaning that it is necessary to implement from the design stage right through the lifecycle adequate security measures.

The data share within the project by Partners must take into account rights of the data subject and obligations of the assign responsible entities for each process.

In order to address this issue all partners were asked to fill template in Annex I, mentioning all types of data that will be exchanged in the Project. With the available information EUniversal Partners will make effort to standardized as far as possible information gather (making easily to identify, when possible).

EUniversal Project will to extend possible make data (scientific papers, Project presentations,…) produced within the Project easily interoperable and shareable (Annex I).

No international transfer to third countries is envisaged [3].

6. Allocation of resources

The resources dedicated to implement data management within the EUniversal project are foreseen to be in line with what is planed under Grant Agreement (GA) and they associated to the WPs where data collection may take place.

EUniversal designated coordinator will implement all the necessary measures to ensure continues updates and coordination with what is establish in this DMP among all EUniversal Partners.

7. Data security & ethics

7.1. Protection of personal data

In line with the GDPR regulation personal data protection will be a responsibility at the designated Controller:

> According article 4 of the GDPR:
>
> "Controller" means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of such processing are determined by Union or Member State law, the controller or the specific criteria for its nomination may be provided for by Union or Member State law;
>
> and
>
> "Processor" means a natural or legal person, public authority, agency or other body which processes personal data on behalf of the controller;

Accordingly, to article 24 of the GDPR it is a Controllers responsibility to "implement appropriate technical and organisational measures to ensure and to be able to demonstrate that processing is performed in accordance with GDPR Regulation" taken "into account the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for the rights and freedoms of natural persons".

As defined in D13.1 of EUniversal project and according artcle 4 of the GDPR:

> "**'Personal data" - means any information relating to an identified or identifiable natural person** ('data subject'); **an identifiable natural person is one who can be identified, directly or indirectly**, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person."

7.2. Sharing data with confidential access

Data sharing across stakeholders from different countries of the EU should always guarantee security and the trust between them.

Several instruments like cybersecurity certification scheme for cloud services taking into account existing and relevant schemes and standards will be carried out at a European level. Trust in secure cloud infrastructures and services is an essential requirement to make data mobility a reality in Europe, as aimed at by the Free Flow of non-personal Data Regulation.

In EUniversal Project data sharing with confidential access will take the necessary measures of Protection establish by each Controller.

Each Controller will establish, as part of its responsibilities, security measures needed in order to maintain integrity and confidentiality of data gathered and will establish the necessary orientations and measures required regarding transmission of the confidential data.

7.3. Archiving confidential information

Regarding personal data and in accordance to article 5 of GDPR Regulation Personal data shall be "kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed; personal data may be stored for longer periods insofar as the personal data will be processed solely for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) subject to implementation of the appropriate technical and organisational measures required by this Regulation in order to safeguard the rights and freedoms of the data subject ('storage limitation')" and "processed in a manner that ensures appropriate security of the personal data, including protection against unauthorised or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organisational measures ('integrity and confidentiality')."

EUniversal project Controllers will be responsible to define storage retention periods and to respond by any breach regarding personal data.

Other confidential data will be in line with EU laws and when applicable national laws.

8. Summary Table

FAIR Data Management at a glance: issues to cover in EUniversal DMP

This table provides a summary of the Data Management Plan (DMP) issues to be addressed by each Partner is the following.

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	•
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	•
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	•
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	•
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	•
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	•
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	•

9. External Documents

[1] Guidelines on Fair data Management in H2020, July 2016
[2] EC Annotated Model of Grant Agreement 2019
[3] Regulation (EU) 2016/679 of the European Parliament and of the Council, 27th April 2016
[4] A European strategy for data, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

Annex I – Data identification from EUniversal Parners

This annex gathers the identification of data issues carried out by the project partners using the template table presented in 8 of this document.

Annex IV – Table template

1. E-REDES (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• LV customers data collection will be gathered, in compliance with GDPR Regulation (Load curve diagram, location (if necessary) and appliances assets). • MV customers are protected under commercial sensitive data or exclusive data from grid network and individual customers location will not be made available to EUniversal Partners. • If data this falls under a) of n. º 1 of article 6 a freely, specific, informed and unambiguous consent from each LV participant/customers stating its agreement for processing its personal data for the stated purposes will be gathered and will be in effect only duration of the Project. • MV customers will be voluntary and subject to a validated consent and will in principle be in effect for the all duration of the Project. • All data gathered will be strictly in compliance GDPR and National laws (Portuguese) and Company data requirements. • When data is shared , partners involved in this exchange will sign an NDA. • , There will not be a re-use of data. Only public accessible data may be reused. • Data provided in EUniversal Project will be useful to develop flexibility schemes among different stakeholders, with interest to the development of agnostic and data compliant mechanism to interface system operators with active customers.

2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Not possible to identify at this stage.

1. E-REDES

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• Data will be made available to partners via different protocols, API's or via FTP folder with the necessary security procedures fill adequate to be in compliance with the GDPR regulation. • Website, papers accepted to conferences will be open for most cases and E-REDES as Coordinator will always encourage this practice • Major outcomes from the development of UMEI will be available through EUniversal project website
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Data that will be shared among partners either pseudonymiised or anonymous and will fill standards agreed within project Partners and be in compliance with the GDPR regulation. Anonymous data can be made available in order to adapt APIs developments or system adaptation/developments (in order to avoid delays)
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Data from Clients will be shared to Partners according to informed Consent that will be signed by all project Participants. This personal data will not be re-used, due to its nature, by all Partners (informed Consent will state as purpose EUniversal Project and will set a date for usadge purposes); • During EUniversal, privacy management and monitoring will occur on a regular basis • Grid data subject to secrecy due to national law will be made available under the necessary Privacy contracts and/or NDAs to be made.
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project	• This issue is not closed yet (due to the nature of the data sharing concerned the data made available by

	• Describe costs and potential value of long term preservation	E-REDES will not be maintained after what will be established in Consents NDAs and Contracts). • All roles such data controller, data processor and owner of data will be clearly identified and will be transparent in all legal documents.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• Data inventories and data assessments will be done in the beginning and will be reviewed periodically. • if necessary a DPIA will be conducted. • All data secure measures will be taken into account in order to ensure trust among all participants. • Confidentially, Integrity and Availability will be addressed accordingly to actual and foreseen best practices. • Data will be stored in E-REDES cloud environment with adequate security techniques. • Role base management access will be implemented. • Sensitive data is not foreseen to be used.
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Any possible ethical, data protection and privacy issues shall be identified and assessed in accordance with regulation and transmitted to the Consortium via project coordinator/manager.

6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• All data procedures will be made strictly in compliance with GDPR Regulation and when necessary with national regulation.

1. ENERGA-Operator (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• Data collection will be gathered, in compliance with GDPR Regulation, from LV customers (Load curve diagram, and location). • MV customers are protected under commercial data • Sensitive or exclusive data from grid network and individual customers location will not be (foreseen) made available to EUniversal Partners. • MV customers will be voluntary and subject to a validated consent and will in principle be in effect for the all duration of the Project. • All data gathered will be strictly in compliance GDPR and National laws (Portuguese) and Company data requirements. • If necessary Partners involved in this exchange will sign an NDA.
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning	• Not possible to identify at this stage;

	• Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	

1. ENERGA-Operator

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• In principle data might be made available to partners via different protocols, API's or via FTP folder with the necessary security procedures fill adequate to be in compliance with the GDPR regulation. • Website, papers accepted to conferences
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Not available
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• In principle, no data will be re-used
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• In principle as planned in demos WP

4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• It is not foreseen at the moment disclosure of sensitive data • All data secure measures will be taken into account in order to ensure trust among all participants
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Not identified so far
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• Not identified so far

Annex IV – Table template

1. COMILLAS (update templateAgreement)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	Data collection is necessary to carry out the scalability and replicability analysis in Task 10.3. Types and formats of data to be generated/collected: • Grid topology indicators and standard network components • Synthetic distribution grids • Averaged or representative load and generation profiles
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Not defined • Task 10.3 started in M18; therefore, at this point, data requirements are still under discussion • No personal data is expected to be collected
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data	• Not defined

	included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Not defined
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Not defined
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• Not applicable
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• Not applicable
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Not applicable
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• Not applicable

1. VITO (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	VITO will collect data to be able to do the work targeted in: T4.1 (development of smart grid tools), T5.2 (simulation of dynamic distribution grid tariffs), T5.3 (simulation of P2P market concepts), WP8 (application of grid tools and analysis of demo results) From WP5 perspective, the following types of data are collected from the German and Portuguese demo: • Grid data • Grid user data (e.g. 15 minute profiles) • Other (to be defined) The exact type, format and size of the data is currently not yet known. The data will be complemented with publicly available data where appropriate. Further data is collected within WP4/WP8; In the context of WP4/WP8 VITO collects the following data from the German demo: • LV grid topology and electrical characteristics; • Quarter hour measurements on MVLV transformers, street boxes and grid connections; • Historic quarter hour measurements connection profile data set; • Meteorological data and forecasts; • Flex device parameters All data used by VITO in the context of the German demo is under full and exclusive control of Mitnetz Strom. As such, VITO acts as a data processor on behalf of Mitnetz Strom. • As task leader of task 8.3 VITO will analyse the demo results and data to evaluate the performance of the grid tools.

2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	At this stage no naming convention or versioning of data has been set.
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• At this stage it is not foreseen to make data openly available. • Project deliverables which are public related to the VITO work (D5.2, 5.3, 8.3) will be available at the project website. These deliverables won't contain any confidential data. For the WP4/8 work for the German demo: • Any publications that expose data are up front presented to the data owner (Mitnetz Strom) for approval
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	In the context of the German demo related WP4/WP8 work: • Grid topology data is exchanged using the DIgSILENT format; • The data exchange will as much as possible be via JSON over HTTPS REST API's.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible	• All data used by VITO in the context of the WP4/8 work for the German demo is under full and exclusive control of Mitnetz Strom. As such, VITO acts as a data processor on behalf of Mitnetz Strom.

	• Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• All costs related to data collection and processes are covered within the VITO project budget.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• VITO will only receive anonymized data from the demonstrators. • Data provided by the demonstrators will be dealt with confidentially. • All data gathered will only be shared between task partners with consent of the data owner. For the WP4/8 work for the German demo: • Access to the data is on a need to know basis. • No backups of the data are created, to ensure that the data can be fully deleted at the simple request of the data owner (Mitnetz Strom).
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• No ethical aspects have been identified
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• N/A

2. E.ON / MITNETZ (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• All data gathered will be strictly in compliance with GDPR, National laws of Germany and Company data requirements • LV customers can voluntary share LV customers load curve diagrams, location and appliances assets • Topology Data of LV grids and measurement data set up especially for EUniversal will be anonymized and shared for the development and testing of Smart grid tools in WP4 • For customer related aggregation task a NDA was signed between CENTRICA and MITNETZ • Other sensitive or exclusive data of the grid and individual customers location will not be made available to EUniversal Partners due to the safety-related internal company specifications • In principle, there will not be a re-use of data • Data provided in EUniversal Project will be useful to develop enabling flexibility schemes among different stakeholders, with interest to the development of agnostic and data compliant mechanism to interface system operators with active customers
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Findable data is only foreseen in the framework of public deliverables, which will be published on the website

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• In principle data might be made available to partners via different protocols, API's or via FTP folder with the necessary security procedures fill adequate to be in compliance with the GDPR regulation • Major outcomes from the German demonstration will be made available through EUniversal project website, papers, deliverables
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Standard protocols are used to exchange data, e.g. REST-API • In addition, the UMEI standard developed in the project will be tested
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Data re-use is only foreseen in the framework of public deliverables
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• as planned in demo WP8

4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• The company's data security guidelines must be respected, which are also in line with European or national laws.
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Possible ethical, data protection and privacy issues shall be identified and assessed in accordance with regulation and transmitted to the Consortium via project coordinator/manager • Conducted work is in line with European or national laws.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• All data procedures will be made strictly in compliance with GDPR regulation and when necessary with European and national regulation

3. IEn (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and State formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• Data collection will be gathered from the SCADA system and refer to the distribution network parameters and weather parameters • One of the objectives of the project is to calculate the power flow • Data base format (to be defined) • The data can be used by project partners given interdependencies between activities • The expected data will be approximatively several Gb.
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	It is assumed that all data will be defined according to the dedicated CIM model used within ENERGA DSO
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited	• Data will be available on the basis of NDA agreement • Only the generic data in the plain format will be available. • Tools for serving CIM data model

	• Specify how access will be provided in case there are any restrictions	
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Public data of the project for this thematic are interoperable by nature. • Standard vocabulary for all data types should be enough
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Data will be made available for re-use only will be possible following publication as the outcome of the project. • Data quality will be granted by the technical verification within the project procedures • The data will be stored for 5 years after finalising EUniversal project
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• All costs related to the data collection and processing are covered by the project budget under project budget.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• IEN ensures safety of data storage for long-term preservation and curation
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• No ethical aspects.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• N/A

4. VLERICK Update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	Personal data (name, company, e-mail, phone,..) could be collected in • T10.1 Business models and cost benefit analysis methodologies (M12-M18). For this analysis, separate semi-structured interviews were conducted with 11 DSOs . After the interviews, a workshop was organized to debrief the current practices on distribution planning methodologies and to check to which extent DSOs are aligned and can come to a target model in the future. In order to ensure secure operation of the personal data of the participants, all invitations and communication was send out using bcc and no personal data was shared among the participants. • T5.4 Evaluation of market mechanisms: challenges and opportunities (M18-M30) . At this moment, the workshop is planned to be replaced by separate, semi-structured interviews to ensure secure operation of the personal data of the participants. If the format would be changed to a workshop, secure operation of the personal data of the participants will be ensured by sending out all invitations and communication using bcc and by not sharing any personal data among the participants.
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used	Not applied.

	• Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• Not applied.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Not applied.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Not applied.

3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• Not applied.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• Not applied.
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Not applied.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• Not applied.

5. UCY (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• Data collection is necessary for the development and validation of smart grid operation and resilience planning tools in WP4, that will then be demonstrated in the project demos • Types and formats of data generated/collected: - Smart meter data namely energy consumption and voltage magnitude - Grid topology and electric characteristics - SCADA real-time measurements, switch status, event and alarm historical data - Asset reliability data - Historical database of actions taken by the dispatch centres operators - Asset costs for planning purposes
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	Not possible at this stage to define

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available	• Not possible at this stage to define • Dependable on mutual agreements with data providers (DSOs)

	• Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Not possible at this stage to define • Dependable on mutual agreements with data providers (DSOs)
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Licencing will follow the CA • Not defined at this stage of the project • Data could be used by other research institutions. • However, it might contain personal and commercially sensitive data for the DSO • Not defined at this stage of the project
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• Costs are included in WP4, WP7 and WP8 • UCY will be involved whenever the work involves personal data • Not defined at this stage of the project
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• Data security will be ensured to keep confidential document strictly confidential (including concepts, data sources, data sets, etc) with redundant and fault-tolerant mechanisms; • Data handling will follow the CA terms as well as UCY internal policies

5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Not identified so far
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• Not identified so far

Centrica Business Solutions (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• All data gathered will be strictly in compliance with GDPR, National laws of Germany, Portugal and Company data requirements. • Data and information of LV customers can be accessible via third parties API. • The data of MV customers are provided by smart meter in Portugal and they are protected under commercial data. • For customer related aggregation task an NDA was signed between CENTRICA and DSOs. • there will not be a re-use of data. • Data provided in EUniversal Project will be useful to develop enabling flexibility schemes among different stakeholders, with interest to the development of agnostic and data compliant mechanism to interface system operators with active customers
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Findable data is only foreseen in the framework of public deliverables, which will be published on the website

Centrica Business Solutions

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• In principle data is available to Centrica via different protocols, API's or via FTP folder with the necessary security procedures fill adequate to follow the GDPR regulation for each demo. • Major outcomes from the demos' demonstration will be made available through EUniversal project website, papers, deliverables with respecting the demo regulation and GDPR regulation.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Standard protocols are used to exchange data, e.g. REST-API. • In addition, the UMEI standard developed in the project will be tested.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Data re-use is only foreseen in the framework of public deliverables
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project	• According to demos in WP7 and WP8

	• Describe costs and potential value of long term preservation	
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• The company's data security guidelines must be respected, which are also in line with European or national laws, assigned GDPR and NDA.
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Possible ethical, data protection and privacy issues shall be identified and assessed in accordance with regulation and transmitted to the Consortium via project coordinator/manager. • Conducted work is in line with European or national laws.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• All data procedures will be made strictly in compliance with GDPR regulation and when necessary, with European and national regulation

1. KU Leuven (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	All data that is collected or generated during the project has the sole purpose of modelling power networks low voltage networks in an accurate way. This is important for obtaining credible project results for the demonstrations envisaged in the project. The data used in the project consists mostly of power system data. Public databases of such data will be used, for instance as available on the following websites: https://data.open-power-system-data.org/ and http://www.ee.washington.edu/research/pstca. This data consists of network data (impedances, topologies) and generation and load scenarios/time series. Although network impedance data is not large in size, usually a few kB, generation and demand time series can require significant data storage capacity in the order of GBs. This type of open-source data is most important in the research community and for scientific publications. As for dedicated industrial research (as being used in the demonstration cases); specific network and time-series data is required for the analysis at hand which is usually provided by industrial project partners under NDA. Data generated within the project, e.g., to support the results of scientific publications, and for the research community, can be made available as described in the following points.
2. FAIR Data	• Outline the discoverability of data (metadata provision)	Open data supporting the results of scientific publications will be made available using software repositories, e.g., https://github.com/Electa-Git. The use of software

2.1. Making data findable, including provisions for metadata	• Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	repositories also allows to automatically version the data, such that all changes, improvements are kept track of. All publications referring to data made available will contain the URLs to the respective data repository. The repository is clearly marked with the name of the publication as well as the data that it is containing, such that it can be located easily by other members of the research community.

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• Data related to demonstration cases will be kept closed as this data is obtained form system operators (and other industrial partner) and are per definition confidential. As standard practise, this data is potentially stored on KU Leuven internal servers and deleted after the project, and a proof of deletion is sent to the data providing parties. • Generic data as used in scientific publications will be made available using data/software repositories, e.g., https://github.com/Electa-Git • If deemed necessary, software code to replicate results of scientific publications will be made open-source. Some past examples of these can be found under: https://github.com/Electa-Git/PowerModelsDistributionStateEstimation.jl , https://github.com/Electa-Git/PowerModelsACDC.jl • The open-source toolboxes developed by KU Leuven / electa include online documentation and/or dedicated jupyter notebooks of the software tools and are licenced under the BSD-3 clause.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• As the data is specifically used for power system modelling, at this stage, no interoperability issues are considered.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed	• Data (and software) made available is licenced under the BSD-3 clause, which permits reusability for research and commercial applications, using a copyright notice without any liability. (see https://github.com/Electa-

	• Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	Git/PowerModelsACDC.jl/blob/master/LICENSE for example). • Generally, there is no specified expiration period for the open data.
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• There are no additional costs foreseen for making data openly available, as the github environment is free for open repositories. • The responsible for data management is the IT responsible at KU Leuven, Veronica Lucero Ortega. She manages the IT system and guarantees the IT security.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• All KU Leuven internal data storage is backed-up both by physical means (by means of multiple back-up hard drives) as well as making use of cloud storage, e.g., box, and one drive. • All data published via github can be backed-up and archived for longer periods as described in https://docs.github.com/en/repositories/archiving-a-github-repository/backing-up-a-repository
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• No further additions to previous points, as no personal data is being used in the context of this project.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• In general, KU Leuven guidelines on research data management are followed as described in: https://www.kuleuven.be/rdm

1. NODES AS (update template)

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	All data collected is exclusively used for the purpose of the service offered by NODES as market operator. Data collection/generation occurs upon **registration** of platform users and role-specific information, which includes: 1. Organization name a. Name and email of users b. Country c. Organization Role (DSO/FSP/TSO etc.) 2. Asset information a. Asset Type b. Location/Coordinates c. MPID d. BRP of Asset Location 3. Grid information a. Grid Nodes b. Grid Links When operating on the NODES market platform, the following information is required in addition to the above: 4. Baselines for Portfolios or Assets 5. Meter Readings from Assets 6. Email/phone for Trade/Dispatch Notification (optional) 7. Order and trade information (price, volume, location) All data can be generated in or collected from .csv – format
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision)	• Data collected or generated by NODES is currently not following FAIR

	• Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Naming conventions, keyword usage and versioning convention can be defined through EUniversal

1. NODES AS

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• All data created during EUniversal can be shared with the project participants for internal analyses and reporting • Logs of bids/offers per platform user can be downloaded by registered users when operating on NODES platform (.csv format). • Data is accessible through the API, provided correct access rights. An SDK supports the operation.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	As of today, we are not using a standard ontology, but we are looking at the possibility to utilize CIM where appropriate ontology is defined. We will also align with UMEI when standardised.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• All data created during EUniversal can be shared with the project participants for internal analyses and reporting • Logs of bids/offers per platform user can be downloaded by registered users when operating on NODES platform • Data produced by NODES that shall be published in reports or public articles must be anonymized or pseudonymised. • Critical data is manually validated by NODES. • As of now, we have not implemented a retention policy. The team intend to establish a policy in collaboration with partners' and customers' preferences and requirements. Currently, historical data, which is not subject to long-term storage requirement, will be deleted after 2 years.

3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	Data management follows structured internal practises. Procedures related to FAIR compliance will be considered based on market requirements and as the initiative progresses.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	At NODES we have an OpenID token-based authentication leveraging Azure B2C. We have deployed native cloud-based solutions in order to maintain a secure platform eco system. We achieve this by using JWT tokens across different applications. We have integrated with Azure B2C as our authorisation server so that we can keep the authentication logic and relevant across various parts of our system. By integrating with Azure B2C any client can login using OpenID connect towards our B2C instance. The client will receive a secure token which can be used to authenticate requests to any of our APIs until a set expiration time. This enables NODES to use industry standards to ensure the security and integrity of our client's data. To put this into context, our services and applications never need to store or even see any of our users' passwords. Information transportation over internet is only allowed through encrypted channels. **System security, design and architecture** • Systems and services are developed and configured in accordance with best practice safety standards and guidelines. • Encryption is used to protect all sensitive information, data and services. • NODES implemented cloud/software solutions ensure sufficient robustness and resilience to ensure accessibility to critical functions and deliveries as well as secure storage and recovery of data. **User accounts** • All user accounts are personal.

		• Administrator privileges is minimized and used only when required. • All user databases shall be revised at least every 3 months. • Access to services and information is based on service needs, and users only have access to data and functionality according to their user role. **Data and channel protection:** • Encryption is used to encrypt media that contain sensitive data. • Authentication mechanisms are used to ensure that users only have access to data and services according to user role. • Encryption is used when transmitting confidential or personal information. • Encryption is used when using communication channels with low trust or that can be easily intercepted or manipulated. **System Monitoring and incident handling** • All systems and services are monitored to ensure fast response in case a system or service is down. • Automatic abnormality detection and alerting for system, services, attacks and data breach • NODES has established procedure for how to handle incidents involving NODES IT systems.
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	Procedures related to ethics section of DoA and ethics deliverables will be established as the initiative progresses and in line with market requirements.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	**Cloud Services** The following basic principles apply to all cloud services used in NODES AS, including operating services, Proof of Concepts, pilots, tests and development:

		• The cloud services used must be in the EU/EEA. If used elsewhere, they must be approved by NODES responsible parties. • Data at rest should be encrypted. • NODES must have full control of encryption keys, and these keys must be stored in protected facilities (e.g., HSM) that NODES controls. • All data transfer must be encrypted. • Access control mechanisms must be used. Users and services must have access to data or services based on roles and the need for insight or use. • Cloud suppliers with relevant safety certifications should be preferred. • Comply with cloud supplier security baselines and best practises

EASE

By collecting, processing and generating data EASE complies with relevant Horizon 2020 FAIR Data management guidance, but also supportive rules as described in EUniversal Grant and Consortium agreements. EASE is also aware of sensitive data protection from inappropriate access, if any relevant case, Intellectual Property Rules will be respected while processing any data.

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	EASE is the leader of T3.1 Flexibility Toolbox. The data is collected and provided in order to reach main objectives of EUniversal and specific objectives of the WP3. The data collected will include mainly publicly available scientific data via literature review, desk research and some data coming from EASE repository. The data format will be potentially under docx, xlsx, jpg and png. The expected data will be approximatively several Gb. The data can be used by project partners given interdependencies between activities, but also by scientific community, independent experts and private industrial actors in the relevant energy sector.
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	Naming will be EUniversal_WP3_YYYYMMDD_<EASE>_03_Flexibiity Toolbox. TBC (The use of a standard identification mechanism for the datasets of EUniversal is decided by the project coordinator and consortium. Keywords structure with possible search terms (flexibility, storage technologies, criteria, etc) will be provided at the beginning of the document along with other identifiers. Clear versions will follow up each time document's first drafts are confirmed by the WP and project partners. Versioning timetable will be provided at the beginning of the document.

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	The data will be made public. It will be made openly available via EUniversal website, social media (tbd) and EASE website. There is no need to use any specific software to access the data. Regular office software will be sufficient to access to them.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	Public data of the project for this thematic are interoperable by nature. Terminologies can be slightly different but this would not have major impact on interoperability.
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	Data reuse before publication is only possible to the project partners for project purposes. Widest reuse will be possible following D3.1 official publication. There will be no other restrictions to reuse. The data will be stored for 5 years after finalising EUniversal project.
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	All costs related to the data collection and processing are covered by the project budget under WP3 and EASE project budget.
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	EASE activities under EUniversal do not involve sensible and non-public data, if this would be the case then such data will be stored on projects repository, for EUniversal it was decided on SharePoint, or relevant folder available only for the consortium members. Overall, EASE ensures safety of data storage for long-term preservation and curation.

5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	No ethical aspects.
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	N/A.

INESC TEC

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	• Data collection is necessary for the development and validation of smart grid operation and planning tools in WP4, that will then be demonstrated in Portuguese and German pilot (WP7 and WP8) • Types and formats of data generated/collected: - Smart meter data namely energy consumption and voltage magnitude - Grid topology and electric characteristics - SCADA real-time measurements, switch status, event and alarm historical data - Historical database of actions taken by the dispatch centres operators - Application of standardized data format such as CIM
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	• Not possible at this stage • Metadata will conform to either ontology specific recommendations and/or industry relevant ICT standards
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?	• Not defined at this stage • Data exchange for the inputs/outputs of smart grid tools will be ensured internally by the utility's ICT infrastructure. • Project documentation and reports will be available in the project repository and website, which could

	• Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	be opened or not according to the consortium decisions.
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• Not defined at this stage • Data formats will be based on the most important standards in the field
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• Licencing will follow the CA • Not defined at this stage of the project • Data could be used by other research institutions. However, it might contain personal and commercially sensitive data for the DSO • Not defined at this stage of the project
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• Cost are included in WP4, WP7 and WP8 • INESC TEC DPO will be involved whenever the work involves personal data • Not defined at this stage of the project
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• Data security will be ensured to keep confidential document strictly confidential (including concepts, data sources, data sets, etc) with redundant and fault-tolerant mechanisms; • Data handling will follow the CA terms as well as INESC TEC internal policies
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• Not identified so far
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• Not identified so far

N-SIDE

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	As market platform provider, N-SIDE is not expected to be at the origin of data, but rather to receive market data inputs and to deliver market outputs to relevant parties. In particular, in WP7 and WP8 demonstrations, data are expected to be provided to N-SIDE market platform by the following entities: - the aggregator will send flexibility orders to N-SIDE market platform through the UMEI interface; - the DSO will send its flexibility needs to N-SIDE market platform through the UMEI interface; whereas N-SIDE market platform is expected to provide market results to the aggregator and to the DSO, using the UMEI. At this stage of the project, the precise type, format, size and origin of the data is unknown to N-SIDE. Software development will likely be required in order for N-SIDE to adapt their market platform to EUniversal use cases (to be defined in WP2, WP7, WP8) and market design choices (to be defined in WP5, WP7, WP8). Furthermore, N-SIDE will contribute to the implementation of the UMEI interface. It is thus expected that data similar to demonstrations data will be made available to N-SIDE in order to allow implementation and testing. Precise content of such data is to be defined.
2. FAIR Data 2.1. Making data findable, including provisions for metadata	• Outline the discoverability of data (metadata provision) • Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	To be defined

	• Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	

N-Side

2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	• To be defined
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	• To be defined
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes • Specify the length of time for which the data will remain re-usable	• To be defined
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	• To be defined
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	• To be defined

5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	• To be defined
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	• To be defined

DMP component	Issues to be addressed	Explanation/Description
1. Data summary	• State the purpose of the data collection/generation • Explain the relation to the objectives of the project • Specify the types and formats of data generated/collected • Specify if existing data is being re-used (if any) • Specify the origin of the data • State the expected size of the data (if known) • Outline the data utility: to whom will it be useful	Under the subtask 11.4, a participatory process will be carried out with the aim of co-defining how consumers would like to participate in the construction of the Universal Market Enabling Interface (UMEI). In addition, the selected stakeholders participating in the process will have the opportunity to express their views about the set of market-oriented flexibility management services proposed. The data collection under this task will be both qualitative and quantitative and will pursue the consumer engagement through participatory processes with the aim of increasing the social awareness and acceptance of EUniversal innovative solutions fostering the future energy transition. Existing public data on the energy consumer insights gathered by the main European energy consumers associations, as well as public authorities and energy companies will be collected with the purpose of feeding the discussion that will be held in the participatory process. In addition to these public data, quantitative data published by the main European energy consumer associations will be collected. Finally, the participatory processes will serve to collect qualitative data from the main representatives of European energy consumers as well as from other key stakeholders in the European energy market. These data will be useful to elaborate the Consumer-centric model training foreseen within the subtask 11.4.2, as well as designing bonus measures to encourage and reinforce consumers' environmentally friendly consumption behaviours and defining social benefits in order to protect vulnerable consumers within energy market
2. FAIR Data	• Outline the discoverability of data (metadata provision)	N/A

2.1. Making data findable, including provisions for metadata	• Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers? • Outline naming conventions used • Outline the approach towards search keyword • Outline the approach for clear versioning • Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how	
2.2 Making data openly accessible	• Specify which data will be made openly available? If some data is kept closed provide rationale for doing so • Specify how the data will be made available • Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)? • Specify where the data and associated metadata, documentation and code are deposited • Specify how access will be provided in case there are any restrictions	All the data collected and produced under the subtask 11.4 will be made openly available with the aim of raising awareness and increasing social acceptance to encourage and reinforce consumers' environmentally friendly consumption behaviours. The data will be made available through the EUniversal website, the participatory workshops and training sessions, the social media and, finally, the guidelines on social awareness elaborated as part of the subtask 11.4
2.3. Making data interoperable	• Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability. • Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	N/A
2.4. Increase data re-use (through clarifying licences)	• Specify how the data will be licenced to permit the widest reuse possible • Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed • Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why • Describe data quality assurance processes	N/A

	• Specify the length of time for which the data will remain re-usable	
3. Allocation of resources	• Estimate the costs for making your data FAIR. Describe how you intend to cover these costs • Clearly identify responsibilities for data management in your project • Describe costs and potential value of long term preservation	N/A
4. Data security	• Address data recovery as well as secure storage and transfer of sensitive data	If personal data was used, the data controller of the project, if necessary, will execute a DPIA (Data Protection Impact Assessment) in an early stage and then take the necessary measures in a prioritise way in order to mitigate and avoid risks, in line with the General Data Protection Regulation (GDPR) The storage of all information gathered from the participatory processes participants will be in accordance with article 25 of the Regulation forcing the controller of such information to implement appropriate technical and organisational measures for ensuring that, by default, only personal data that is necessary for the purpose of the subtask 11.4
5. Ethical aspects	• To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	The ethical aspects of the data collection and management within the subtask 11.4 will be aligned with the deliverable 13.1 Ethics Requirements
6. Other	• Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	N/A