D8.3 Data Management Plan
WP8 Project Management
FDEUSTO
ORDP: Open Research Data Pilot
PUBLIC
Reviewers: ARS, EMAC, SOFTLINE

Version	Date	Description of main changes	Author
V1	12/09/2016	Draft	FDEUSTO/ZABALA
V2	13/01/2017	Glossary, links and clarification on costs have been included	FDEUSTO
V3	25/05/2018	Licensing options and Zenodo as selected repository included in the management procedure	FDEUSTO/ZABALA

Table of Contents:

1. Introduction.

Each project in the EC's Horizon 2020 program must define what kind of results are generated or collected during the project's runtime and when and how they are published openly. The Data Management Plan (DMP) has been structured by following the guidelines provided by the European Commission in 2016.

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, it will lead to cost reduction of operations, increase of efficiency and better and more personalised services for citizens.

The aim of WASTE4THINK´s Data Management Plan is to provide an analysis of the main elements of the data management policy that are going to be used by the consortium.

The results of the project waste4think It will produce an improvement in the management of public services which address the citizens and other stakeholders´ needs. These services are expected to be based on the combination of Open Government Datasets with user-generated data though social networks and third party data to give place to added value datasets.

The Waste4think project’s partners are committed to offer as much information as possible generated by the project through Open Access. Such information includes: scientific publications issued by the project consortium, white papers published, open source code generated, anonymous interview results, or datasets used for gathering stakeholders´ feedback.

The present document constitutes the first version of WASTE4THINK`s Data Management Plan (DMP). The main objective of this DMP is to provide an analysis of the main elements of the data management policy that are going to be used by the consortium. It has the following characteristics:

- It is a document outlining how all the research data generated will be handled during the project life, and even after it is completed, describing, whether and how these datasets will be shared or allowed data re-use and also allow validation of results presented in scientific publications generated by the project.
- It is also a document outlining how all the research data and non-scientific documents generated during the lifetime of the project will be handled in terms of sharing policies, archiving and storage and preserving time.

- It is not a fixed document; it evolves and gains more precision and substance during the lifespan of the project therefore other updated versions will be prepared for M18, M30 and M36.

The figure below shows a diagram of the steps of the DMP and the possible uses of the data sets generated once and was managed from the Plan.

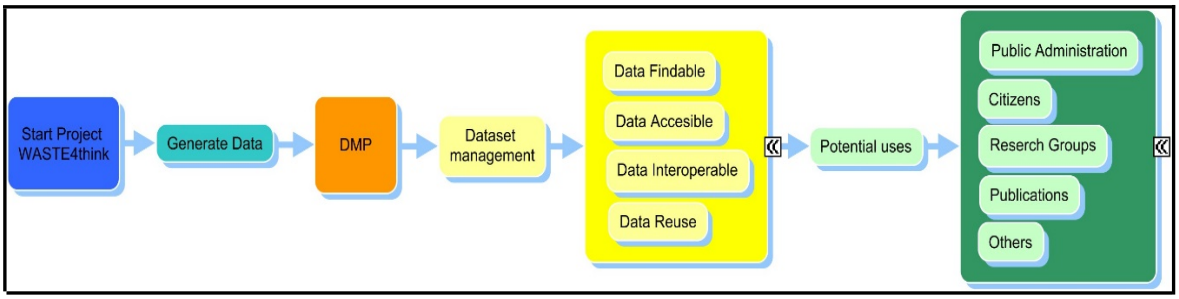

Figure 1. DMP Stages. Source: Own elaboration.

2. Management procedure.

Data generation is a complex and prolonged process that requires multi-stakeholder bodies to work together, including the responsible for the DMP (a responsible per partner) who will be responsible for management and control of the data sets, as well as the different partners involved in the production of information generated during the course of the Project.

Partners and external experts who support the project Waste4Think should complete a template for each of data sets generated. This template is included in Annex I, Template dataset to the present document.

The Annex II is formed by the sum of all templates generated throughout the Waste4think project.

A complete procedure has been defined in the template in order to report on how the data sets collected and documents generated during the course of the Project are archived, stored, shared, retained, etc. These templates are in editable PDF format to facilitate its edition and to complete the data fields which are defined.

Each partner shall send the full templates for each data set generated to their responsible for the DMP. Besides, and provided that the licensing is possible, each partner will be responsible of choosing the best licensing option for their generated data sets, among the diiferent options for Creative Commons (CC) licenses:

✓ Freeing content globally without restrictions
✓ Attribution alone
✓ Attribution + ShareAlike

- ✓ Attribution + Noncommercial
- ✓ Attribution + NoDerivatives
- ✓ Attribution + Noncommercial + ShareAlike
- ✓ Attribution + Noncommercial + NoDerivatives

Also, each data set responsible will be in charge of uploading them to Zenodo (the common repository chosen by the consortium). This does not preclude to upload it to any other repository where the information fits.

The responsible of DMP shall inform to each of the partners the need to be kept up to date their templates so as to incorporate regular changes and updates. This updating of data process shall be carried out within six-month periods, if there have been modifications.

The person responsible of DMP shall collect all templates generated during the course of the Project, which are stored in a Redbooth until the final version is incorporated in the latest version of the DMP deliverable.

This latest version, before being stored, should be reviewed from the defined procedures in the deliverable D 9.7 Ethics requirements.

The responsible for carrying out updates for each template stored by responsible of DMP will be the partners, who should link their updates to each template.

A descriptive synthesis for the procedure which explains the DMP generation in the Waste4Think project is included below:

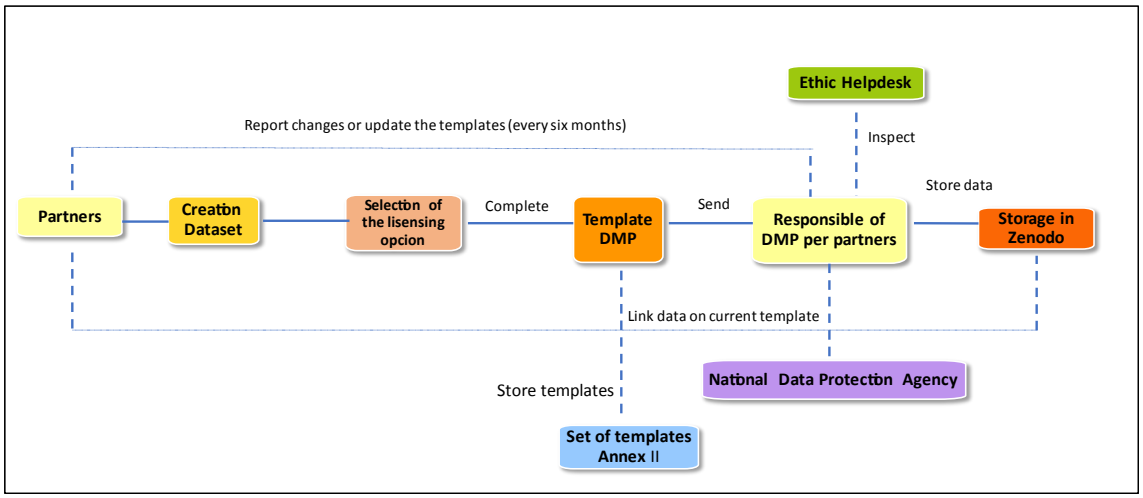

Figure 2. DMP Procedure. Source: Own elaboration.

3. Description of the templates.

The following template has been prepared to answer to all the questions regarding the use of research data. It is a set of questions to know in detail the type of data that will be generated in each case, and the way that will be managed.

The elements of the template for the research data management template are the following ones:

1. Data Summary.
2. Fair Data (Data Findable, Accessible, Interoperable and reuse).
   - 2.1. Data Findable.
   - 2.2. Data Accessible.
   - 2.3. Data Interoperable.
   - 2.4. Data Reuse.
3. Data Management and allocation of resources.
4. Ethical and Legal Aspects.
5. Other Aspects.

Template has been designed for the purpose to enable future users to:

- ✓ build on top of existing research results,
- ✓ avoid redundancy,
- ✓ participate in open innovation, and
- ✓ read about the results of a project or inform citizens.
- ✓ understand and reconstruct scientific conclusions, and
- ✓ build on top of existing research data.

The first part recognizes a brief description of the project Waste4think, the funding, the project leader, the consortium members and the duration of the project.

Template of Dataset

Data Summary

The first section of the template is designed to obtain an overall synthesis from the dataset generated, specifying the data set name and the work package to which belongs it.

Furthermore, in order to complete this general description, it is necessary to include the typology of data, with a short description as well as the data source and the methodology followed.

In addition, it is relevant that the dataset can be linked with the Project's objectives and results.

Within this first section, it seems appropriate that data could be contextualized in order to understand the need for generating this information to achieve the objectives pursued.

Finally, it is relevant that it could be provided a brief description of the external data sources which are to be used in its generation process. For example, the origin of the data, its relevance, license for use, date, etc.

Fair data

Data Findable

The concept of findability refers to the viability of the information to be located by other users. Therefore, in this section a number of subsections have been designed to deal with the ease of access to data.

Those paragraphs concern the type of linked data, based in the Tim Berners-L classification. On the other hand, several aspects of data related to the standard and metadata formats used have to be fulfilled, specifying the metadata type as well as the identification of the process for storing documents. A link has been provided to help partners select a metadata standard.

On the other hand, it is necessary to define the ontology. The Ontologies is a formal naming and definition of the types, properties, and interrelationships of the entities. Indicating if it is a has been defined its own or has been used a defined one. A link has been provided to help partners select ontologies models.

In addition, information about the existing and potential data users must be collected and it is necessary to specify search channels which could be used by the different users to get them.

Data Accessibility

In this section, it is necessary that the accessibility of date is provided. It is for this reason that a number of subsections have been devised to provide information about the nature of the data, whether they are public or private, or whether the owner of the data intends to publish or share. In this sense, if the data owner has the intention to publish it must specify when it is going to be.

Lastly, possible problems that may exist to the sharing of data must be identified. For example, the confidentiality of data collected, the file size, etc.

Data Interoperability

Interoperability is the ability of two (or more) systems or components to exchange information and use the information exchanged.

A number of subsections have been included in this section to indicate the type of data format in order to their possible exchange, as well as methods or software that are necessary to access and manipulate them.

Data Reuse

In response to questions referring to the reuse of data, three subsections have been defined:

In the first one, the licensing terms and possible license restrictions must be made.

In the second subsection, a list of copyright holders and creations protected by the laws on Intellectual Property must be defined.

Finally, the third subsection shall contain a list with restrictions or permits that could be defined to reuse the data, indicating the list roles/individuals (internal and external) with any limitations to access, including who has authority to grant additional access.

Data Management and allocation of resources

Regarding data management, a number of sub-sections concerning the data curation, understood as maintaining, preserving and adding value to digital research data throughout its lifecycle, from creation and initial storage to the time when it is archived for posterity or becomes obsolete and is deleted. The main purpose of data curation is to ensure that data is reliably retrievable for future research purposes or reuse.

Furthermore, there are also two key aspects: to specify the main data storage medium and the location of the data, including where they are going to be stored. A link has been provided to help partners select an open data infrastructure.

Another important part in the management of the data is related to backups, which are the total or partial copies of relevant information as support for possible eventualities. In this sense, it should be detailed how these backups will be performed, as well as, if there will be replicas, etc.

Finally, it shall indicate, if necessary, how to manage the data versions generated during the course of the Project.

Ethical and Legal Aspects

Aspects regarding informed consent in data collection and information protection in data storage and access. Fulfilment of Ethical requirements are detailed in D9.1-D9.7

Finally, a section is included to identify the legal aspects that affect the data

Other Aspects

In this last section, it shall provide some other aspects which are considered to be significant in the dataset, and which have not been included in this template.

Finally, Annex II consists of the sum of all completed templates throughout the Waste4think project.

4. List of datasets.

The DMP aims to provide both a detailed list and description of all the datasets that will be generated and used during the lifetime of the WASTE4THINK project.

4.1 Waste Generation Models
4.2 Best Practices
4.3 Economic Instruments
4.4 Incidences
4.5 Containers
4.6 Users
4.7 Business
4.8 Garbage Trucks
4.9 Waste Treatments
4.10 Waste Recollection
4.11 Waste Disposal
4.12 Survey Results

The following table shows the data to be a collect and / or generate. This list is by completing and expanding as the project develops. The data sets are further divided into data structures and unstructured data.

Non-Structures-Data		
Dataset reference	**Dataset Name**	**Description**
W4T_WasteModelsData	Waste generation models	A collection of socio-economic models and the data that support those models
W4T_BestPracticesData	Best Practices	A collection of descriptions of best practices on waste prevention and circular economy solution
W4T_EconomicInstrumentsData	Economic Instruments	A collection of descriptions of the economic instruments used in different European cities

W4T_IncidencesData	Incidences	A record of incidences in the waste collection system of a city
Structured Data		
Dataset reference	**Dataset Name**	**Description**
W4T_ContainersData	Containers	Data regarding the available waste containers • Id • Container type (paper, plastic, organic, etc.) • Volume • Geolocalization • Filing threshold
W4T_UsersData	Users	Data regarding the users of the platform • Id • Name and surname • Address • Telephone
W4T_BusinessData	Business	Data regarding the users of the platform • Id • Corporate name
W4T_Garbage TrucksData	Garbage trucks	Data regarding the available garbage trucks as well as their characteristics • Id • Vehicle type • Vehicle technology • Year of manufacture
W4T_WasteTreatmentsData	Waste Treatments	Data regarding the different kinds of waste treatment in terms of classification • Id • Timestamp • Weight • Amount of improper waste • Procedence
W4T_WasteRecollectionData	Waste Recollection	Data regarding the process of retrieving the waste content of each available container • Id • Timestamp • Geolocalization • Weight • Amount of improper waste
W4T_WasteDisposalData	Waste Disposal	Data regarding the event of placing waste inside a container. This information will later be used as input to the economical instruments • Id • Amount of waste generated • User
W4T_SurveyResults	Citizen Behaviour	Identify habit (consume, generation, separation…) and monitoring of the impact of the social action

5. Annexes:

5.1 Annex I

5.1.1 Template dataset:

Project	**WASTE4think** Moving towards Life Cycle Thinking by integrating Advanced Waste Management Systems
Description	The main objective of this project is to move forward the current waste management practices into a circular economy motto, demonstrating the value of integrating and validating a set of 20 eco-innovative solutions that cover all the waste value chain. The benefits of these solutions will be enhanced by a holistic waste data management methodology, and will be demonstrated in 4 complementary urban areas in Europe. The ecoinnovative solutions include technological and non-technological tools such as: 1) IT tools to support the daily operation and long-term planning, 2) Apps for citizens empowerment and engagement, 3) Educational materials based on innovative teaching units and serious games, 4) Tools for citizen science for the co-creation of novel solutions, 5) Mechanisms to boost behavioral changes based on economic instruments and social actions, and 6) Decentralized solutions for valorization and reuse of high value resources. The different solutions will be implemented in 4 complementary European areas: a) Zamudio (ES) is a highly-industrialized area with a spread population that uses a separated kerbside collection; b) Halandri (GR) is a large suburban city with a wide range of business that has a very basic waste management system; c) Seveso (IT) is a residential town that uses a door-to-door system; d) And Cascais (PT) is an extensive and high touristic coastal town that implements an advanced collection system. The project includes a consortium of 19 partners with 4 public agencies and administrations, 3 research centres and universities, 8 SMEs, 2 LEs, 1 cluster and 1 NGO, that will work together during 36 months with an overall contribution from the EC of €9M. The most relevant expected impacts are: a 20% increase in waste sorting, 10% saving of management costs, and 10% reduction of GHG emissions. The experience gained, and the synergies among the partners describe the best possible scenario to launch new governance and business models.
Funding	Supported by H2020 Union European. The Grant Agreement number 688995
Project leader	Fundación Deusto. Deusto Tech Energy.

Consortium members	▪ Asociación Clúster de Industrias de Medioambiente de Euskadi (ACLIMA). ▪ ARS Ambiente Srl. ▪ Ayuntamiento de Zamudio. ▪ Agencia d'Ecologia Urbana de Barcelona (BCNecología). ▪ Comune di Seveso. ▪ Empresa Municipal de Ambiente de Cascais EM SA (EMAC). ▪ Environmental Biotechnologies (EnBio EPE). ▪ Green Technologies. ▪ ΔΗΜΟΣ ΧΑΛΑΝΔΡΙΟΥ (Halandri). ▪ Legambiente Lombardia. ▪ Moba Mobile Automation AG. ▪ National Technical University of Athens (NTUA). ▪ Serious Games Interactive. ▪ Softline. ▪ University of Patras. ▪ Zabala Innovation Consulting, S.A.
Duration	2016-2019.

1. DATA SUMMARY

Reference number	Name of the dataset	Work Package (Task)

Principal type of data contained in the data set

☐ Quantitative ☐ Qualitative ☐ Numeric ☐ Text ☐ Images ☐ Audio ☐ Video	☐ Databases ☐ Non-structured data ☐ Source code ☐ Computational models ☐ Time series ☐ Other (please specify):

Data description

Please, describe the data to be collected. Please specify the type and provide a short description of every field contained in the data. Moreover, add information about the size of the data set, format, etc.

What is the source of the data?

☐ Field work ☐ Direct measurements ☐ Surveys ☐ Simulations	☐ Expert Knowledge, ☐ Model Output ☐ Other (please specify):

Methodology used to collect this data

Please briefly describe the processes or methods which have been used to get the data.

Relation to the data with the objectives of the project

☐ Reduce the generation of RSU. ☐ Increase the management of waste in favour of reusing and recycling. ☐ Reduce the waste to landfill. ☐ Reduce the management cost. ☐ Reduce the generation of GHG emissions. ☐ Other (please specify):

Relation to the data with the results of the project	
Operation and Planning: ☐ Operation and Management Module. ☐ Collection Module. ☐ Planning Module. ☐ Circular Economy Module. APPs: ☐ Food App. ☐ Local Trade App. ☐ Citizen App. Educational Materials: ☐ Innovative Teaching Units. ☐ Sorting Game. ☐ Eco-design Game. ☐ Planning Game. ☐ Virtual City Game.	Citizen Science: ☐ Eco-design solutions. ☐ Planning solutions. ☐ Circular economy solutions. Prevention and Best Practices: ☐ Economic instruments: New Pay-As-you-Throw (PAYT) schemes and incentives. ☐ Innovative awareness actions including web-based tools for dissemination. ☐ Best Practice Book. New Treatments: ☐ Pre-dried and shredded bio-waste. ☐ Bio-fuel and compost production plant.

Why is this data collected?
Please, contextualize the information collected.

Please, provide a brief description of any external dataset used
For every external data set used please explain its origin, relevance and license.

2. FAIR DATA (DATA FINDABLE, ACCESSIBLE, INTEROPERABLE AND REUSE)

2.1. DATA FINDABLE

Tim's 5-star classification of the dataset
☐ Data is available under an open license ☐ Use a structured data (e.g., Excel instead of image scan of a table) ☐ Is available in a non-proprietary open format (e.g., CSV as well as of Excel) ☐ Use URIs to denote things ☐ The data is linked to other data to provide context
Metadata standards
Please cite the standard and format use for the date. If any this data set does not follow any standardized format, please provide a formal specification. For example, the Dublin Core Metadata Initiative, Inspire Initiative, ISO, etc. Link regarding to metadata standard: http://rd-alliance.github.io/metadata-directory/
Documentation stored in the data

☐ Information of the origin of the data ☐ Codebook ☐ List of abbreviations	☐ Description of variables ☐ Technical information about files ☐ Other (please specify):
Ontologies	
☐ FIWARE Link regarding to fiware https://www.fiware.org/data-models	☐ Other external ontology Link regarding to ontologies https://www.w3.org/wiki/Lists_of_ontologies

	☐ Our defined ontology (please specify):
Whom might it be useful?	
☐ Public Administrations ☐ Research groups ☐ Citizens	☐ Private sector ☐ Other (please specify):
Channels to reach potential users	
☐ Personal/research group web page ☐ Well-known specialist database ☐ Search Administration database ☐ Email of corresponding author	☐ Data access statement in published articles ☐ Personal networking ☐ Citation of data sets ☐ Other (please specify):

2.2. DATA ACCESSIBLE

Accessibility	
☐ Public data	☐ Confidential data
Obligation or intention to publish/share data	
☐ Yes	☐ No
When will the data be published?	
☐ Immediately on collection ☐ Within sometime after the ends of the project (please specify): ☐ Within sometime after its collection (please specify):	☐ To coincide with publication of main results ☐ Other (please specify):
Expected difficulties file sharing	
☐ Confidentiality ☐ Large file size ☐ Ownership/licensing	☐ Intended commercialisation ☐ Other (please specify):

2.3. DATA INTEROPERABLE

File format			
Spreadsheet: ☐ ODS ☐ XLS ☐ CSV Documentation ☐ DOC ☐ PDF ☐ TXT ☐ HTML	Structured data ☐ XML ☐ JSON Geographical data ☐ DXF ☐ SHP ☐ GEOJSON	Image: ☐ JPG ☐ TIFF ☐ PNG Video: ☐ WEBM ☐ MP4 ☐ MKZ	Other (please specify):
Methods or software tools needed to access the data			
Please detail any necessary software to manipulate the information (if not standard).			

2.4. DATA REUSE

License conditions and restrictions

☐ Copyright ☐ Creative Commons (please specify)	☐ Open Licence (please specify): ☐ Other (please specify):
Please, list the owners of the copyright and intellectual property involved	
Access permissions and restrictions	
List roles/individuals (internal & external) with any limitations to access (e.g. scope, actions permitted), including who has authority to grant additional access.	

3. DATA MANAGEMENT AND ALLOCATION OF RESOURCES

Partners	Collection	Curation	Preservation
Foundation Deusto.	☐	☐	☐
Zabala Innovation Consulting S.A.	☐	☐	☐
Town hall of Zamudio	☐	☐	☐
Association of industries cluster environment Euskadi	☐	☐	☐
Green Technologies	☐	☐	☐
Enbio Epe	☐	☐	☐
National Technical University of Athens-NTUA	☐	☐	☐
University of Patras	☐	☐	☐
Dimos Chalandriou	☐	☐	☐
Serious Games Interactive APS	☐	☐	☐
Ars Ambiente SRL	☐	☐	☐
Comune di Seveso	☐	☐	☐
Legambiente Lombardia Onlus	☐	☐	☐
Softline SRL	☐	☐	☐
Moba Mobile Automation AG	☐	☐	☐
EMAC Municipal enterprise environment Cascais	☐	☐	☐
Urban Ecology Agency of Barcelona	☐	☐	☐
Other (please specify):	☐	☐	☐
What are the costs for making data FAIR in your project?			
How will these be covered?			
Primary storage medium and location			
☐ University shared or research storage ☐ Secure facility from a data provider ☐ Physical storage ☐ Cloud platforms (e.g. Github) ☐ Last resort platforms (e.g. Zenodo)	☐ Academic research network platforms (e.g. ResearchGate). ☐ Institutional open data repositories (e.g. CKAN based) ☐ Other (please specify):		
link regarding to data repositories: http://www.re3data.org/			
Data curation processes			
Please briefly describe the management of data throughout its life cycle.			

How will long-term preservation and access be assured?
Please briefly describe how the data will be preserver after the end of the project.
Regularity of backups and data performed. Replicas in other different places (if any)
File management versioning

☐ Unnecessary (i.e. overwrite original file) ☐ Control version software (e.g. Git, please specify):	☐ Date/version number in filename/folder ☐ Other (please specify):

4. ETHICAL AND LEGAL ASPECTS

Ethical aspect (If know)
☐ No ☐ Yes (briefly describe): Aspects regarding informed consent in data collection and information protection in data storage and access. (Fulfilment of Ethical requirements are detailed in D9.1 – D9.7).
Legal aspect (If know)
☐ No ☐ Yes (briefly describe):

5. OTHER ASPECTS

5.2 Annex II

5.2.1 Set of fulfilled templates

6. Glossary

B

Backups

It is the total or partial copy of important information for being restored in case of eventualities. The backup should be stored on a storage medium other than the original one. The aim is to ensure a rapid and reliable retrieval of the data if necessary. The process of recovering data files from backup is known as file restoration.....8

C

Cloud platforms

Information is permanently stored on Internet servers and sent to caches. Cloud computing are servers from the Internet responsible for handling requests at any time. You can access your information or service, via an internet connection from any mobile or fixed device located anywhere.....15

Copyright

Exclusive right of an author, publisher or licensee to exploit a literary, scientific or artistic work for a certain period of time.....14

Creative Commons

These licenses allow creators to communicate which rights they reserve, and which rights they waive for the benefit of recipients or other creators. An easy-to-understand one-page explanation of rights, with associated visual symbols, explains the specifics of each Creative Commons license. Creative Commons licenses do not replace copyright, but are based upon it.....14

CSV

Comma Separated Values. Format used in many database programs, spreadsheets and contact managers to store lists of information. As a text file, the format is widely supported.....14

Curation

Understood as the conservation of data to add value to the data, maximize access and ensure long-term preservation. The healing of data is similar to the work done by an art curator or museum. Through the healing process, the data are organized, described, cleaned, improved and preserved for public use. 8

D

Data Accessibility

Regarding the nature of public or private data.....7

Data Findable

Refers to the viability of the information to be located by other users.....7

Data Interoperability

Interoperability is the ability of two (or more) systems or components to exchange information and use the information exchanged.....7

Data Management Plan (DMP)

Is a written document that describes the data you expect to acquire or generate during the course of a research project, how you will manage, describe, analyze, and store those data, and what mechanisms you will use at the end of your project to share and preserve your data.....3

Data Reuse

Reuse the data for the same or different purpose.....8

DXF

Drawing exchange format. Extension of files that belong to the AutoCAD program group.....14

F

FAIR DATA

Findable, Accesible, Interoperable and Reuse data.....13

FIWARE

Is a middleware platform, driven by the European Union, for the development and global deployment of applications for Future Internet. The API specification of FIWARE is open and royalty-free, where the involvement of users and developers is critical for this platform to become a standard and reusable solution. The objective of FIWARE is to facilitate a cost-effective creation and delivery of Future Internet applications and services in a variety of areas, including smart cities, sustainable transport, logistics, renewable energy, and environmental sustainability.....13

G

GEOJSON

It is an open standard format designed to represent simple geographic elements, along with its non-spatial attributes, based on JavaScript Object Notation 14

Git

Is a version control system for keepin track of changes in files and coordinating work among several working on the same files.....16

Github

Is a web-based Git repository hosting service. It offers all of the distributed version control and source code management (SCM) functionality of Git as well as adding its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management, and wikis for every project.GitHub offers both plans for private repositories, and free repositories on the same account which are commonly used to host open-source software projects.....15

I

Intellectual property

Is the set of rights that correspond to the authors and other owners (artists, producers, broadcasters ...) with respect to the works and benefits resulting from their creation. Legislation protects the IP, for example, through patents, law and trademarks, which allow to obtain recognition or profits for inventions or creations.....14

J

JSON

JavaScript Object Notation. Is an open standard format that uses readable text to transmit data objects consisting of attribute-value pairs. The JSON file format is used to transmit structured data across multiple network connections.....14

M

Metadata

Is “data [information] that provides information about other data”. They serve to provide information on the data produced. Metadata consists of information that characterizes data, describes the content, quality, conditions, history, availability, and other characteristics of the data.....7

O

ODS

The ODS file extension is given to files that are created with the Calc program - a spreadsheet application that is XML-based but contains spreadsheets, tables, and other graphical elements organized in rows and columns similarly to Microsoft Excel.....14

Ontologies

7. References

1. European Commission. Guidelines on FAIR Data Management in Horizon 2020. Version 3.0. 26 July 2016.