Grant Agreement No.: 779606

Project acronym: EVERYWH2ERE

Project title: Making Hydrogen affordable to sustainably operate Everywhere in European cities

Call (part) identifier: H2020-JTI-FCH-2017-1

Thematic Priority: FHC-02-10-2017, Transportable FC gensets for temporary power supply in urban applications

Starting date of project: 1st February, 2018

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Project URL: www.everywh2ere.eu

WP8 – "Project Coordination and Management"
D8.2 – "Data Management Plan"

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Dissemination Level		
CO	Confidential	
PU	Public	**X**

Clean Hydrogen Partnership

Co-funded by the European Union

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Executive Summary

EVERYWH2ERE aims to demonstrate the reliability of using FC technologies in temporary power gensets replacing current state-of-the-art solutions mostly based on diesel engines, thus opening a niche but relevant market for FC technologies. During the whole project 7 PEMFC (4x25 kw and 3x100 kW) equipped, containerized, “plug and play” gensets are expected to be realized and tested through a pan-European demonstration campaign in a demonstration to market approach. The target is to test the prototypes in construction sites, music festivals and urban public events all around Europe, demonstrating their flexibility and their enlarged lifetime. Demonstration results are widely promoted and they are expected to promote the replicability studies (for the use of gensets in further end-user contexts) and for the definition of a commercial roadmap and suitable business model for the complete marketability of the gensets within 2025.

EVERYWH2ERE “D8.2 Data Management Plan” has the aim of presenting project research data to be provided to Open Access, highlighting which kind of data are generated in the project research and how to make them Open Access.

This is a significant issue for a project like EVERYWH2ERE driven by an industrial consortium and aiming to realize a TRL8 prototype, with a relevant industrial Intellectual Property (IP) to be protected.

As agreed with the PO, the DMP has been updated at the end of each RP in accordance to new data that could be generated by the project

Table of Contents

List of Figures

1. Introduction

The present deliverable "D8.2: Data Management Plan" has been developed in the framework of WP8 activities ("Project Coordination and Management") under the responsibility of RINA Consulting.

The purpose of the present document is to outline a preliminary strategy for the management of the data generated in the framework of EVERYWH2ERE project activities. Procedures for the management of research data, technological databases, demonstration monitoring data, demonstration related activities data, business modeling/market analysis data and scientific publication data will be addressed. The management policy will be defined fully in compliance with the open access principles adopted by the European Commission and enforced through the Grant Agreement.

The project recognizes the value of regulating research data management issues.

Accordingly, in line with the rules laid down in the Model Grant Agreement, the beneficiaries will deposit the underlying research data needed to validate the results presented in the deposited scientific publications in a clear and transparent manner. Furthermore, the beneficiaries have agreed, after a careful assessment of the types of data that will be collected or become available within the project, to take part to the Pilot Action on Open Research Data.

An overview on Open Access and in particular on the Open Research Data Pilot will be given and different repositories will be investigated in order to find the most appropriate modality for ensuring open access to discoverable data and scientific publications generated throughout the project lifecycle.

Even if the document is due at M6 and project activities are at the beginning, a tentative description of the expected dataset generated will be carried out, trying to predict what data will be kept confidential and what data will be instead made available during project development.

It is important to highlight that this Data Management Plan will be updated at each reporting period as agreed by the whole Consortium.

The DMP has been updated at the end of RP3 in parallel with the starting of the demonstration campaign.

2. Open Access

Open access can be defined as the practice of providing on-line free of charge access to scientific information related to project outcomes. In the context of R&D "scientific information" mainly refers to:

- peer-reviewed scientific research articles, if projects results are going to be disseminated in academic journals (as with EVERYWH2ERE project)
- scientific research data, that means not only data underlying the aforementioned scientific publications, but also any other data related to project activities, both processed or raw. (Not extensively applicable for EVERYWH2ERE project particularly for what it concerns some industrial confidential data)

Although there are no legally binding definitions of open access, authoritative definitions appear in key political declaration such as the *2002 Budapest Declaration* and the *2003 Berlin Declaration*. Under these definitions, *"access"* includes the right to read, download and print, but also to copy, distribute, search, link, crawl and mine the former data, provided that obligations to confidentiality, security and protection of personal data are ensured and the achievements of EVERYWH2ERE objectives, including the future exploitability of results, are not jeopardized.

Open access is not a requirement to publish, but it is seen by the European Commission as an approach to facilitate and improve the circulation of information in the European research area and beyond. Open access to some data generated in projects funded by the European commission is the key to lower barriers to accessing publicly-funded research, as well as to demonstrate and share the potential of research activities supported with the help of public funding.

In the framework of the EVERYWH2ERE project giving Open Access to a significant number of public deliverables (38), project outcomes, open the demosites for dissemination visits (construction sites), wide promotion of demonstration activities in festivals and temporary events etc. could enlarge the possibility of researchers to enhance the development of new knowledge and foster the opportunity for potential gensets' end users (construction companies, festivals and events organizers etc.), technology manufacturers and energy utility to facilitate their analysis towards the promotion of FC based gensets and hydrogen technologies more generically as a fundamental step for a structured development of the future hydrogen economy.

2.1 Open Access in Model Grant Agreement

The importance given by the European Commission to the open access issue is clearly outlined in the EVERYWH2ERE Grant Agreement. Particularly, Article 29.2 states the responsibilities of beneficiaries and the actions to be undertaken in order to ensure open access to scientific publications and to research data respectively. The text of the aforementioned articles is reported below.

Article 29.2: *Open access to scientific publications*

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

In particular, it must:

(a) as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

(b) ensure open access to the deposited publication — via the repository — at the latest:

(i) on publication, if an electronic version is available for free via the publisher, or

(ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

(c) ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms "European Union (EU)" and "Horizon 2020";

- the name of the action, acronym and grant number;

- the publication date, and length of embargo period if applicable, and

- a persistent identifier.

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action's main objective, as described in Annex 1, would be jeopardized by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access.

The confidentiality aspects have been duly taken into account in the preparation of this document in order do not compromise the protection of project results and legitimate interests of project partners.

2.2 Open Access Research Data Pilot

Horizon2020 has launched an **Open Research Data Pilot (ORDP)** aiming at improving and maximising access to and re-use of research data generated by projects (eg. from experiments, simulations and surveys). These data are typically small sets, scattered across repositories and hard drives throughout Europe. The success of the EC's Open Data Pilot is therefore dependent on support and infrastructures that acknowledge disciplinary approaches on institutional, national, and European levels. The pilot is an excellent opportunity to stimulate and nurture the data-sharing ecosystem and has the potential to connect researchers interested in sharing and re-using data with the relevant services within their institutions (library, IT services), data centres and data scientists. The pilot should serve to promote the value of data sharing to both researchers and funders, as well as to forge connections between the various players in the ecosystem.

Projects starting from January 2017 are by default part of the Open Data Pilot. Projects started before but belonging to one of the following Horizon 2020 areas are automatically part of the pilot as well:

- Future and Emerging Technologies
- Research infrastructures (including e-Infrastructures)
- Leadership in enabling and industrial technologies – Information and Communication Technologies
- Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology: 'nanosafety' and 'modelling' topics
- Societal Challenge: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio economy - selected topics in the calls H2020-

SFS-2016/2017, H2020-BG-2016/2017, H2020-RUR-2016/2017 and H2020-BB-2016/2017, as specified in the work programme

- Societal Challenge: Climate Action, Environment, Resource Efficiency and Raw materials – except raw materials
- Societal Challenge: Energy Efficiency
- Science with and for Society
- Cross-cutting activities - focus areas – part Smart and Sustainable Cities.

The EVERYWH2ERE project recognizes the value of regulating research data management issues in a proper way to avoid disclosure of confidential industrial data, particularly considering that EVERYWH2ERE is a high TRL project that include intrinsically industrial relevant intellectual properly. Accordingly, in line with the rules laid down in the Model Grant Agreement, the beneficiaries will deposit relevant project outcomes data (results and numbers published in papers and public deliverables) while more specific research data will be publicly released only after the approval of the whole Demonstrator and Steering Committee considering the industrial confidentiality of some demonstration (ACC, IR, IRE, D1) and enabling technologies (PCS, LINDE, GENP, SHSA, MAHY,) related data.

In case of specific bilateral requests of research data received from one of the partners, the consortium agreed that a formal notification has to be required to the GA and to the data owner for sharing any kind of data bilaterally (even for public available data.)

Furthermore, the beneficiaries have agreed, after this careful assessment of the types of data that will be collected or become available within the project, to take part to the Pilot Action on Open Research Data.

2.2.1 Enabling projects to register, discover, access and re-use research data

Open Research Data Pilot project aims at supporting researchers in the management of research data throughout their whole lifecycle, providing answers to key issues such as "what", "where", "when", "how" and "who" [1].

WHAT: The Open Data Pilot covers all research data and associated metadata resulting from EC-funded projects, if they serve as evidence for publicly available project reports and deliverables and/or peer reviewed publications. To support discovery and monitoring of research outputs, metadata have to be made available for all datasets, regardless of whether the dataset itself will be available in Open Access. Data repositories might consider supporting the storage of related project deliverables and reports, in addition to research data.

WHERE: All public released research data has to be registered and deposited into at least one open data repository. This repository should: provide public access to the research data, where necessary after user registration; enable data citation through persistent identifiers; link research data to related publications (eg. journals, data journals, reports, working papers); support acknowledgement of research funding within metadata elements; offer the possibility to link to software archives; provide its metadata in a technically and legally open format for European and global re-use by data catalogues and third-party service providers based on wide-spread metadata standards and interoperability guidelines. Data should be deposited in trusted data repositories, if available. These repositories should provide reliable long-term access to managed digital resources and be endorsed by the respective disciplinary community and/or the journal(s) in which related results will be published (e.g., Data Seal of Approval, ISO Trusted Digital Repository Checklist).

[1] http://sito.entecra.it/portale/public/documenti/horizon_2020_open_data_pilot.pdf

WHEN: Research data related to research publications should be made available to the reviewers in the peer review process. In parallel to the release of the publication, the underlying research data should be made accessible through an Open Data repository. If the project has produced further research datasets (i.e. not necessarily related to publications) these should be registered and deposited as soon as possible, and made openly accessible as soon as possible, at least at the point in time when used as evidence in the context of publications.

HOW: The use of appropriate licenses for Open Data is highly recommended (e.g. Creative Commons CC0, Open Data Commons Open Database License).

WHO: Responsibility for the deposit of research data resulting from the project lies with the project coordinator (delegated to project partners where appropriate).

2.3 Research Data Repositories

All data collected during the project will be in the first instance stored and preserved in an online data repository/cloud platform linked to the project website with access limited to the EVERYWH2ERE Consortium, managed by RINA-C and intended for internal uses. Particular attention will be paid to the confidential and/or sensitive data and the consortium will not disclose or share this information to third parties.

Furthermore, as stated in D8.1 and considering the nature of project demonstration, no risk of incidental findings of personal data or other ethical issues related to personal data are foreseen, nevertheless the consortium is committed to handle and store data (even for internal purposes) in the most anonymous way as possible.

In the internal EVERYWH2ERE Consortium Repository a specific folder will be dedicated for the collection of data to be included in the future EVERYWH2ERE Open Research Data Platform.

This Data Management Plan is expected to be updated at each reporting period (M12-M30-M50-M69).

Concerning the open access of discoverable data, different online public repository possibilities will be investigated in subsequent stages of the project. Some examples of suitable repositories under evaluation are shown below:

- ZENODO (http://www.zenodo.org/) is the open access repository of OpenAIRE (the Open Access Infrastructure for Research in Europe, https://www.openaire.eu/). The goal of OpenAIRE portal is to make as much European funded research output as possible available to all. Institutional repositories are typically linked to it. Moreover, dedicated pages per project are visible on the OpenAIRE portal, making research output (whether it is publications, datasets or project information) accessible through the portal. This is possible due to the bibliographic metadata that must accompany each publication.

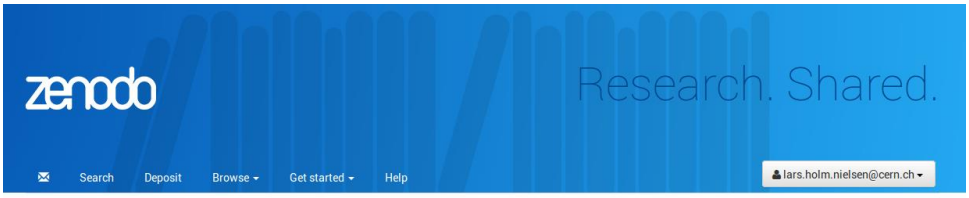

Figure 1 ***Zenodo homepage***

- LIBER (www.libereurope.eu) supports libraries in the development of institutional research data management policies and services. It also enables the exchange of experiences and good practices across Europe. Institutional infrastructures and support services are an emerging area and will be linked to national and international

infrastructure and funder policies. Building capacities and skills, as well as creating a culture of incentives for collaboration on research data, management are the core targets of LIBER.

Figure 2 ***Liber homepage***

EVERYWH2ERE consortium is also already in contact with other FCH projects currently working on some relevant research aspects of the project (i.e. permitting, regulation etc.), in order to stimulate a mutual benefit sharing of data useful to strengthen the future exploitation of the results of the project.

In case of availability of institutional (i.e. academic or National Energy agency or National energy service regulation agency)/industrial repositories, and depending on the particular institutional policies for their use (e.g. it might be the practice of the company that all open access publications must be deposited in there), the research data and scientific publications by EVERYWH2ERE might be deposited and made openly accessible even on institutional/industrial repositories.

3. Scientific Publications

As reported in the DoA, a dissemination and communication plan has been set up in order to raise awareness on the project outcomes among specialized audience. In this framework, the consortium commits itself to perform publications in peer reviewed international journals , in order to make the outcomes available to the scientific community. The partner in charge of dissemination activities are responsible for the scientific publications as well as for the selection of the publishers considered as more relevant for the subject matter.

Further details on dissemination activities are enclosed in D7.3 "*Dissemination and Communication Plan*" and D7.8 *"Interim report on dissemination and communication activities"* delivered at M6, M48 respectively, while a comprehensive report of the D&C activities conducted during the whole project implementation will be reported in D7.11 *"Final Report on dissemination and communication activities"*, due by M69.

Fully in line with the rules laid down in the EVERYWH2ERE Grant Agreement and reported in section 2.2, each beneficiary will promote open access to all peer reviewed scientific publications relating to its results.

The project will make use of a mix of the three different possibilities for open access, namely:

1. **Open access publishing** (without author processing charges): partners may opt for publishing directly in open access journals, i.e. journals which provide open access immediately, by default without any charges.

2. **Gold open access publishing:** partners may also decide to publish in journals that sell subscriptions, offering the possibility of making individual articles open accessible (hybrid journals). In such case, authors will pay the fee to publish the material for open access, whereby highest level journals offer this option.

3. **Self-archiving/ "green" open access publishing**: alternatively, beneficiaries may deposit the final peer reviewed article or manuscript in an online disciplinary, institutional or public repository of their choice, ensuring open access to the publication within a maximum of six months.

Moreover, the relevant beneficiary will deposit at the same time the research data presented in the deposited scientific publication into a data repository. The consortium will evaluate which of these data will be part of the data to be published on the EVERYWH2ERE Open Research Data Platform mainly according to Ethics and confidentiality reasons.

3.1 Selection of suitable publishers

Each publisher has its own policy on self-archiving (i.e, the act of the author's depositing a free copy of an electronic document online in order to provide open access to it). Since publishing conditions of some publishers might not fix to open access requirements applying to EVERYWH2ERE on the basis of the Grant Agreement, each partner in charge of dissemination activities will identify the most suitable repository. Particularly, beneficiaries will not choose a repository which claims rights over deposited publications and precludes access.

At this stage any specific journal has been identified each beneficiary, in collaboration with the project coordinator, will evaluate if the identified journal and it article sharing policy can respect the consortium agreement in terms of Open Access. According to consortium partners' previous Open Access experience, ELSEVIER journals could be considered a good option.

As example, ELSEVIER article sharing policy is summarized in the table below[2]

	Share
Pre submission	Preprints[1] can be shared anywhere at any time PLEASE NOTE: Cell Press, The Lancet, and some society-owned titles have different preprint policies. Information of these is available on the journal homepage.
After acceptance	Accepted manuscripts[2] can be shared: • Privately with students or colleagues for their personal use. • Privately on institutional repositories. • On personal websites or blogs. • To refresh preprints on arXiv and RePEc. • Privately on commercial partner sites.
After publication	Gold open access articles can be shared: • Anytime, anywhere on non-commercial platforms. • Via commercial platforms if the author has chosen a CC-BY license, or the platform has an agreement with us. Subscription articles can be shared: • As a link anywhere at any time. • Privately with students or colleagues for their personal use. • Privately on commercial partner sites.
After embargo	Author manuscripts can be shared: • Publicly on non-commercial platforms. • Publicly on commercial partner sites[3].
[1] Preprint is the initial write up of author results and analysis that have not yet been peer reviewed or submitted to a journal. **[2]Accepted manuscript is a version of author manuscript which typically includes any changes you have incorporated through the process of submission, peer review and in your communications with the editor** **[3]For an overview of how and where author can share his article, it is possible to check Elsevier.com/sharing-articles**	

At the current stage it is worth to underline that VTT has declared funding for an OA in its budget prevision.

3.2 Bibliographic Metadata

As mentioned in the Grant Agreement, metadata for scientific peer reviewed publications must be provided. The purpose is to maximize the discoverability of publications and to ensure EU funding acknowledgment.

The inclusion of information relating to EU funding as part of the bibliographic metadata is necessary also for adequate monitoring, production of statistics and assessment of the impact of Horizon 2020.

All the following information must be included in the metadata associated to each EVERYWH2ERE publication.

[2]https://www.publishingcampus.elsevier.com/websites/elsevier_publishingcampus/files/Guides/Brochure_OpenAccess_1_web.pdf

Information about the grant number, name and acronym of the action:

- Fuel Cell and Hydrogen Joint Undertaking (FCH JU)
- European Union (UE)
- Horizon 2020 (H2020)
- Innovation Action (RIA)
- EVERYWH2ERE[Acronym]
- Grant Agreement: GA N° 779606

Information about the publication date and embargo period if applicable:

- Publication date
- (eventual) Length of embargo period

Information about the persistent identifier:

- Persistent identifier, if any, provided by the publisher (for example an ISSN number)

4. Research Data

Research data refers to data that is collected, observed, or created within a project for purposes of analysis and to produce original research results. Data are plain facts. When they are processed, organized, structured and interpreted to determine their true meaning, they become useful and they are called information.

In a research context, research data can be divided into different categories, depending on their purpose and on the process through which they are generated. It is possible to have:

- **Observational** data, which are captured in real-time, for example, sensor data, survey data, sample data.
- **Experimental** data, which derive from lab equipment, gensets' demonstration campaign, manufacturing process campaing…
- **Simulation** data, generated from test or numerical models

Research data may include all of the following formats:

- Text or word documents, spreadsheets
- Laboratory notebooks, field notebooks, diaries
- Questionnaire, transcripts, codebooks
- Audiotapes, videotapes
- Photographs, films,
- Test responses
- Slides, artifacts, specimen, samples
- Collection of digital objects acquired and generated during the research process
- Data files
- Database contents
- Models, algorithms, scripts
- Contents of software application such as input, output, log files, simulations
- Methodologies and workflows
- Text of normative and standards
- Outcomes of stakeholders events and questionnaire/surveys
- Standard operating procedures and protocols

4.1 Key principles for open access to research data

It is important to remark that, due to its industrial driven nature and the fact that some excellences to be further studied in the project are not yet robustly explored and IP preserved, EVERYWH2ERE will give open access only to a part of properly identified research data. Nevertheless it is worth to underline that several components (i.e. PCS stack or LINDE devices or MAHY bottles) are already patented and trademarked.

According to the "*Guidelines on FAIR Data Management in Horizon 2020*", research data that will be released as Open Access must be *findable*, *accessible*, *interoperable*, *re-usable* [5].

The FAIR guiding principles are reported in the following table[3].

FINDABLE	**F1** (meta)data are assigned a globally unique and eternally persistent identifier

[3] http://www.nature.com/articles/sdata201618

	F2 data are described with rich metadata **F3** (meta)data are registered or indexed in a searchable resource **F4** metadata specify the data identifier
ACCESSIBLE	**A1** (meta)data are retrievable by their identifier using a standardized communications protocol **A1.1** the protocol is open, free, and universally implementable **A1.2** the protocol allows for an authentication and authorization procedure, where necessary. **A2** metadata are accessible, even when the data are no longer available
INTEROPERABLE	**I1** (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation **I2** (meta)data use vocabularies that follow FAIR principles **I3** (meta)data include qualified references to other (meta)data.
RE-USABLE	**R1** meta(data) have a plurality of accurate and relevant attributes. **R1.1** (meta)data are released with a clear and accessible data usage license **R1.2** (meta)data are associated with their provenance **R1.3** (meta)data meet domain-relevant community standards.

4.2 Roadmap and procedures for Data Sharing

EVERYWH2ERE will generate a relevant amount of data (i.e. gensets' validation campaign, demonstration campaign data, LCA questionnaire collection data, logistic analysis data, optimal sizing of the components etc.): as already introduced a part of these data (properly selected by the Demonstrator and Steering Committee) could be made available not only for the purposes of the project but also for other tools and studies and presented in a specific section of the project website.

To facilitate the project data publication and in parallel guarantee confidentiality of the data and the linking with the open research data, a repository will be developed in order to share the selected project data towards external communities.

The access to this repository (section of project website) will be given after end-user registration and approval from the Project coordinator, as well as to a signature of a letter of engagement and participation to stakeholders' activities. The website provides a source catalogue, metadata and description of all the resourced to be shared with external.

According to the aforementioned principles (Section 4.1), information on data management is disclosed by detailing the next elements:

- **Data set reference and name**: Identifier for the data set to be produced.
- **Data set description**: its origin (in case it is collected), nature and scale and to whom it could be useful, whether it underpins a scientific publication. Information on the existence (or not) of similar data and the possibilities for integration and reuse will be also included.
- **Standards and metadata**: reference to existing suitable standards of the discipline. If these do not exist, an outline on how and what metadata will be created has to be given.

- **Data sharing**: Description of how data will be shared, including access procedures, embargo periods (if any), outlines of technical mechanisms for dissemination and necessary software and other tools for enabling re-use, and definition of whether access will be widely open or restricted to specific groups. The repository where data will be stored will be identified, if already existing, indicating in particular the type of repository (institutional, standard repository for the discipline, etc.). In case the dataset cannot be shared, the reasons for this should be mentioned (e.g. ethical, IP, privacy related, security-related etc.).
- **Archiving and preservation** (including storage and backup): Procedures that will be put in place for long-term preservation of the data. Indication of how long the data should be preserved, what is its approximated end volume, what the associated costs are and how these are planned to be covered.

Since at M6, data set has not been generated yet, the previous list has to be intended as a guideline for data generated in the future. Obviously, the sharing of data will be strictly linked to the level of confidentiality of the data itself. In particular, the level of confidentiality of gathered data will be checked by the partner responsible for the activity (task leader) in which data has been collected, with the data owners (such as public event organizer, energy/gas utility/authority, technical committees for current or future normative, equipment manufacturers, energy provider, industry, associations, etc...) in order to verify if data can be disclosed or not. For the purpose, a written confirmation to publish data in the EVERYWH2ERE Open Access Repository will be asked via e-mail by the task leader to the data owner. It will be possible to make such data available only following the received confirmation provided by the data owner.

No confidential data generated within the project will be made available in digital form[4]**.**

4.3 Expected Dataset

During the project will be collected several types of data about gensets design and realization (WP1-2-3), demonstration campaign (WP4), logistic and environmental analysis (WP5), market promotion and replication (WP6).

Research data of this type will primarily consist of information such as facts and numbers (especially statistics as well as factual data, such as those related to National energy market conditions/prices/ tariffs etc.), which will be collected to be examined and considered as basis for reasoning, discussion, and calculation, as well as results of interviews and surveys (especially those aimed at characterising festival and event organizers' needs for gensets).

Among the data generated within the project and that could be shared within the open repository:

- Specific Data from construction sites and festival/events if the partner are the direct owner of the data and agree to make them publish (or the local responsible accepted to share them) and no personal information/industrial confidential information are present: fuel consumption, currently used genset specifications, local site energy demand profiles in aggregated forms compliant to confidentiality issues..
- Database including local energy prices, energy utility tariffs, gas/hydrogen/fuel prices, cost of BOP components, all data if explicitly anonymized.
- Other Databases already publicly shared: i.e. hydrogen refuelling stations mapping
- Database on cost and costing functions useful for thermos-economic analysis

- Database of emissions, technology and costs for the EU-28 countries: coming from already public databases.
- LCA/LCC useful databases for analysis is already public

Accordingly, the beneficiaries will:

- Verify with the data owners the level of confidentiality of the gathered data;
- Deposit the agreed and approved by DSC publicly disclosable data produced within or collected for the purposes of the project (including associated metadata) in an open research data repository;
- Check if the shared data could be stored and how long they could be stored;
- Take measures to allow any user to access, mine, exploit, reproduce and disseminate free of charge the data;
- Provide information about tools and instruments necessary for validating the results (providing the tools and instruments themselves whenever possible, or alternatively providing at least information, via the chosen repository, about the tools and instruments necessary for validating the results, such as specialized software or software code, algorithms, analysis protocols, etc.)

Beyond input data listed above, the following outputs will be made publicly available during the project lifetime, mainly distributing public deliverables on the website and other data/information such as:

- Results from stakeholders surveys properly anonymized and after informed consent signature
- Dissemination event materials
- KPIs and demonstration tracking tool calculation models (public deliverable)
- Reference of submitted patents
- Techno-economic framework initial assessment for replication and business model promotion

It is also important to consider that the EVERYWH2ERE demosites will be open for dissemination visits (particularly public events one) and specific dissemination campaign will be organized via the easy recognizable "H2Corner".

5. Potential Exceptions to Open Access

The EVERYWH2ERE gensets will be properly studied, realized and demonstrated designing a proper BoP, gas management and power control system. These prototypes will be kept confidential until the final release of the prototype will be ready (according to what is reported in the DoA) and demonstrated.

As already reported in Chapter 4, the level of confidentiality of data will be verified with the data owners/technology manufacturers in order to disclose only the information for which the consortium has received a written permission to publish from the data owners themselves.

It is foreseen that some data may be kept confidential and/or subject to restriction in the diffusion.

One potential exception to open access could be represented by the individual specifications of gensets components that are already on the market or patented and have been described as Background and Foreground of project partners in the consortium agreement. Some of the partners have already indeed asked to keep these data as confidential. Therefore, data could be only partially available.

Additional data could be represented by ACC Demosite energy/fuel consumption for gensets, local demand and working data. These data will be used for demonstrating the gensets and it is reasonable to assume that part of such data will be kept confidential.

Data subject to confidentiality restrictions would be provided by the participants themselves, industries, local DSOs, rental companies, cities, etc..., and they will be stored and protected with state-of-the-art security measures on the private project cloud platform managed by RINA-C as project coordinator, accessed only by selected and restricted personnel of partners, and will be used to validate the performances of the EVERYWH2ERE innovations.

This list of potential exceptions to open access must be considered provisional. As reported above the data management plant will be updated at each reporting period in order to update it based on the project's evolution.

Furthermore, data collection will be performed fully in compliance with European Standard and Regulations about Protection of Personal Data.

6. Update of the Data Management Plan

Special attention during the reference period was paid to the definition of a plan for the management of data coming from the genset demonstration activities.

While operating, the genset generates data that can be classified within the following clusters:

- Measures and Operation Variables
- Events and Alarms

Measures include all the power/energy physics like voltage, current, power, energy, flow, pressure of the Genset components, while operation variables are all the tags utilized for the control action of the genset.

For memory saving purposes, only the most relevant data are stored within the Human Machine Interface. They can be downloaded on site, either through USB key or through web server, using a PC connected with the Genset LAN; they can also be remotely accessed via VPN.

For debugging purposes, it is possible to connect to the genset via LAN and receive the complete stream of Measures and Operation Variables.

Events are generated when a condition is generated externally (end user) or internally (State Machine).

Alarms are triggered in response to the detection of potential dangers and can prevent the genset from starting or cause its immediate shut-down by disconnecting the load. The End-User can check the alarm status though the HMI and reset (if possible).

Both events and alarms are codified and logged chronologically, to facilitate supervision and debugging.

A remote streaming of the most relevant Measures/Operation variables/Event/Alarm can be performed from the gensets to a server. The protocol chosen for the data streaming is MQTT (Message Queue Telemetry Transport), widely used in IOT field.

Collected data are stored in a database to keep trace of the overall demonstration campaign, from its beginning till the end of the project. They will be used as well to calculate genset performances KPIs.

In particular, a Decision Supporting Tool is under development for the management of the demo data.

6.1 Decision Supporting Tool

The tool will be a web application, where authorized users can analyze and use the data. The tool will include three main functionalities:

- Event management
- Data Acquisition
- Decision Support

6.1.1 Event Management

The Event management functionalities permit the planning of events where the gensets will be demonstrated/employed.

The definition of the event requires filling out an online form with information about the location of the event, the period and the requirements in terms of the number of Gensets and

Battery Packs. For each event, the gensets used and their geographic coordinates are indicated. They are displayed on a map.

More in detail, the specific event is characterized by the following data to be inserted in the web-based platform form:

- Name
- Description
- Location
- Start date
- End date

Figure 3 shows the section, under development, related to the events, while *Figure 4* is a screenshot illustrating the section, under development, related to the Gensets.

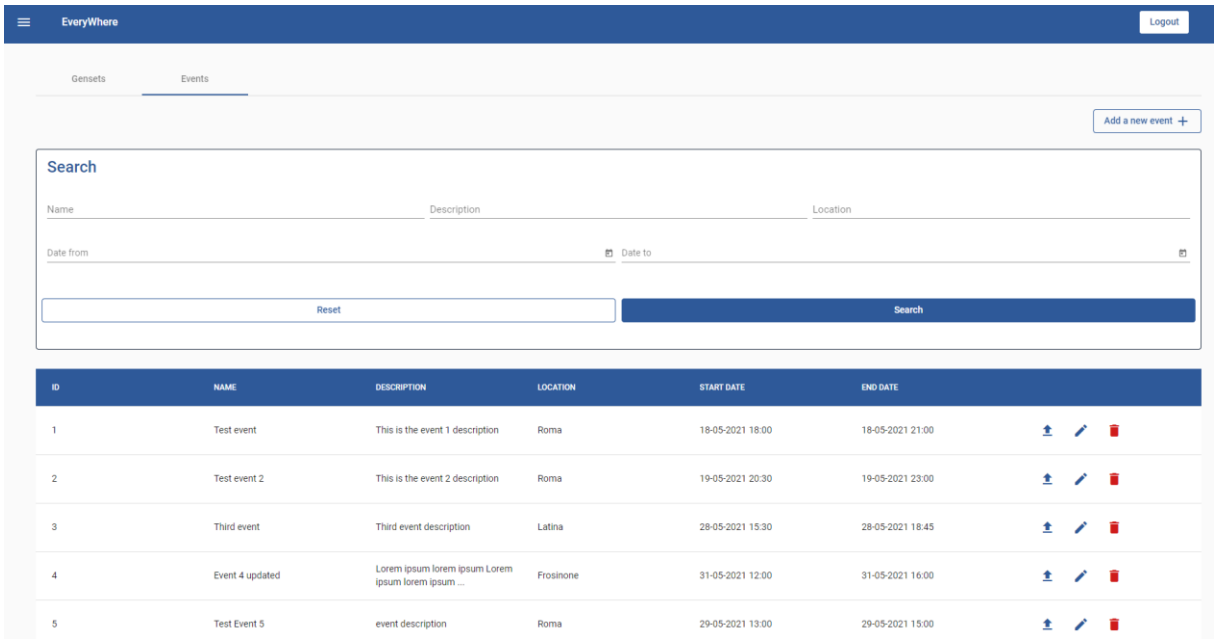

Figure 3 ***Section for the creation of the events***

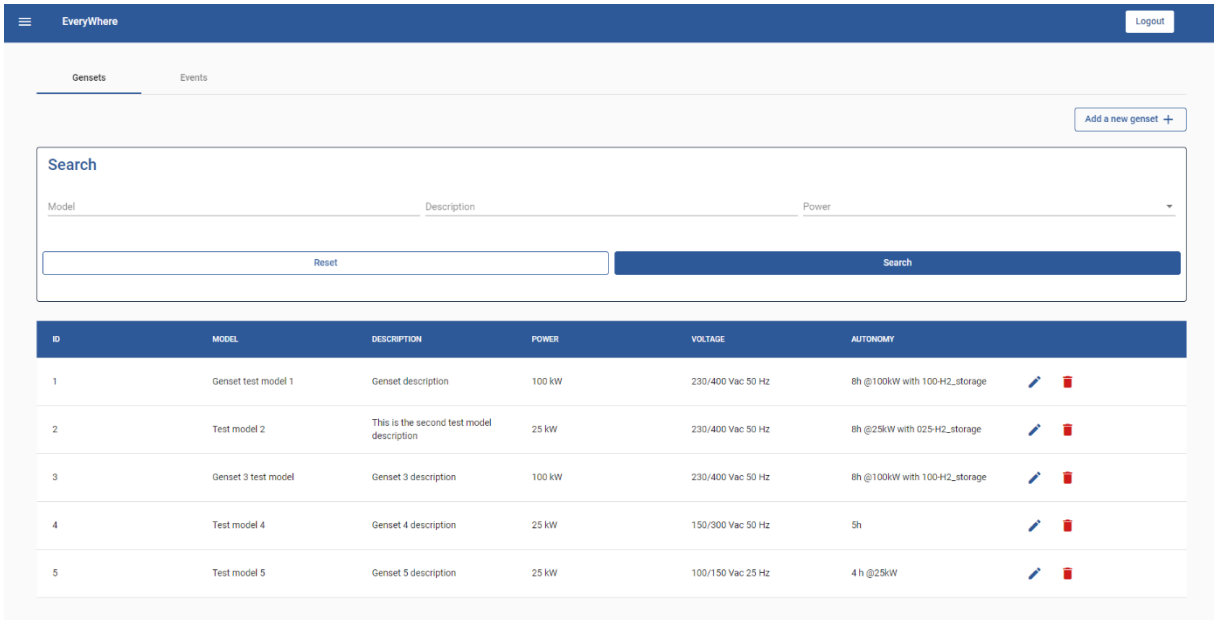

Figure 4 ***Section related to Gensets to be monitored***

The gensets will be selected from a database where all the information (id of the genset, kW of power, characteristics of the genset, height, width, weight) are stored.

Creation, modification, and cancellation functionalities are available for the management of the Events and Genset archive.

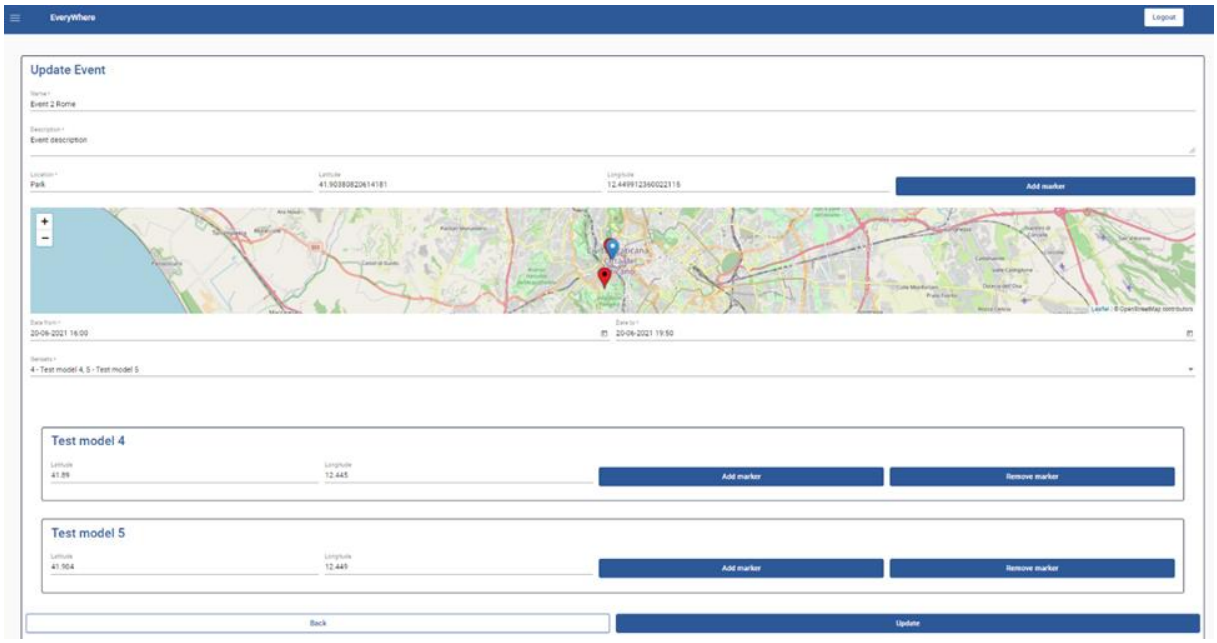

Figure 5 ***Visualization of the event as well as the gensets used on a map***

6.1.2 Data Acquisition

Data acquisition is dedicated to both real-time and batch modecollection of the information generated by the Genset.

The collected information is linked to the defined event by the used Genset (identified by the unique Genset ID) and the timestamp of the acquisition.

The real-time data collection is based on the MQTT protocol. The Genset sends the generated information over a topic in the defined MQTT broker, this information is stored in a database.

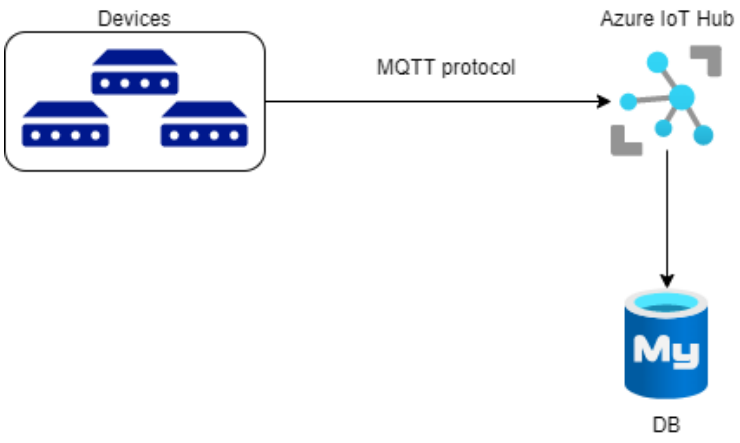

Figure 6 ***Scheme of the data collection process***

The batch information can be assigned to an event by using a function defined in the Event Management. Once an event is selected, a button is activated to allow data uploading;updated data can either be integrated with the existing data, previously loaded, or replace them.

Collected information is used to calculate the KPIs identified for the monitoring and evaluation of the Genset. These parameters are stored and linked to the events as well.

Figure 7 shows a screenshot of the readme file accompanying the gathered data.

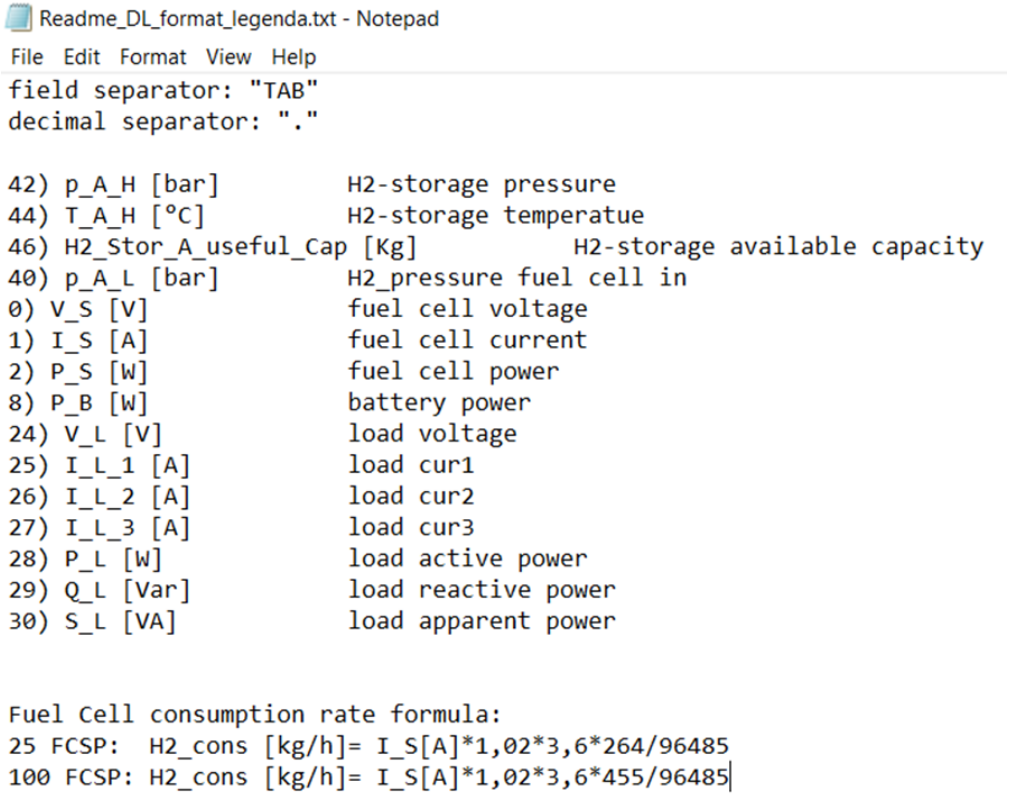

Figure 7 ***Readme file accompanying the gathered data***

Once of the platform is finalized at M63 (July 2022), the data will be acquired directly thanks to the connectivity of the Genset and the defined MQTT protocol. In the meanwhile, data acquired during the initial demonstration campaign are being manually downloaded weekly and they could be stored in the web-based platform, as soon as it is available.

6.1.3 Decision Support

The decision support functionality has been designed as a wizard where the user provides some required inputs to be evaluated. As an output, the system returns a comparison, in terms of impact and costs, of different typologies of generators.

In detail the decision support tool will provide a guided procedure to collect information about:

- location of the event where the genset will be used

- power needs (KW/h) for the event

- duration of the event

The second step of the wizard will provide a configuration area where the user can define and select the genset that matches the event's needs and the location of the nearest available genset.

In the last step, the system will evaluate a rate in terms of cost and impact of the genset compared to standard diesel generators.

7. Conclusions and next steps

The present document has intended to outline a preliminary strategy for the management of data generated throughout EVERYWH2ERE project. Considering that this deliverable is due at month six, few dataset has been generated yet, so it is possible that in the future some aspects outlined in the present document will need to be refined or adjusted.

This initial data management plan has however demonstrated that the consortium fully commits itself to comply with open access requirements, even referring to the main fact that the EVERYWH2ERE consortium is an industry driven group that has to maintain confidentiality of some industrial data. Moreover, a tentative list of dataset has been generated, showing the soundness of the concepts that the projects aims to develop and demonstrate.

A dedicated Excel tracking sheet will be set up for the evaluation of the disclosure of project data. The results of this monitoring process (RINA-C) will be progressively presented and discussed during the Consortium General Assembly meetings along project life also discussing with the DSC which kind of data (except for those ones present on OA publications and public deliverables) would be published on the EVERYWH2ERE website repository.

The update of the data management plan will be reported in the different periodic reports at the end of each reporting period.

In particular, the DMP has been updated at the end of RP3 in parallel with the starting of the demonstration campaign.

8. References

- European Commission. *Fact Sheet*: Open Access in Horizon 2020; retrieved from: https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/FactSheet_Open_Access.pdf
- European Commission Directorate-General for Research & Innovation (2016) "Guidelines on Open Access to scientific publications and research data in Horizon 2020"
- https://www.openaire.eu/opendatapilot, *"What is the Open Research Data Pilot?"*
- Research Data Management; retrieved from: http://www.bu.edu/datamanagement/background/whatisdata/
- European Commission Directorate-General for Research & Innovation (2016) *"H2020 Programme – Guidelines on FAIR Data Management in Horizon 2020"*