

## D 6.1 Data Management Plan

### CATCHER

***Creation of innovative “humidity to electricity” renewable energy conversion technology towards sustainable energy challenge***



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## Project factsheet

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## Executive Summary

This deliverable compiles the CATCHER project's DATA MANAGEMENT PLAN. As such, it puts together a synopsis of all measures that will be adopted to reach the overall goals and objectives of the data management plan. All these measures shall ensure the high visibility, accessibility, and promotion of the project and its outputs. The deliverable's development was led by ULusofona, Coordination team, with contributions for the report and strategy implementation from all project partners. The deliverable is structured as follows:

- After a general introduction as background to the data management activities, the second chapter of the report is giving an overview of the task and deliverable descriptions which are provided in the project proposal / description of action.
- The third chapter describes the outline and core elements of the data management strategy. It will give an overview on strategy for knowledge management and protection, internal gathering, planning, monitoring and tracking tools for knowledge management and protection and data access.
- The forth chapter describes setup of the Research Data Management Plan with discussion in details the followed aspects: objectives of the RDMP, responsible persons/partners; data summary, data process, fair data and ethics aspects.
- Then the conclusions are given, and the references are provided

The overall knowledge management and protection strategy aims at laying the foundation for a regular flow of information within the consortium partners, and the use of highly established networks in order to set out how the members of Consortium CATCHER will deal with research data, both during the research and once the research project has been completed. Moreover, this Data Management Strategy will serve as a framework reference to evaluate the progress through constantly monitoring project activities and keeping a track record of the achievements.

The Data Management Plan is a living document, which will be updated annually throughout the project. In this regard, all the information in this report is subject to update, based on new developments in the project, feedback received and/or new decisions taken by the project committee.

## Table of Contents

Executive Summary .....	5
1. Project introduction as background to the Data Management Plan .....	8
2. About the Data Management Plan Setup .....	9
2.1 Tasks and Deliverables.....	99
2.2 Definition and goals.....	9
3. About the Data Management Strategy .....	90
3.1 Strategy for knowledge Management and Protections .....	90
3.2 Data Access.....	90
3.3. Internal Knowledge Management and Protection	11
4. Setup of the Research Data Management Plan .....	13
4.1 Objectives of the Research Data Management Plan .....	13
4.2 Responsible persons /partners.....	13
4.3 Data Summary .....	13
4.4 Data Processing .....	16
4.5 Fair Data.....	17
4.6 Ethics Aspects.....	18
5. Conclusion .....	19
6. References.....	20

## Table of Figures and Tables

Scheme 1.1: Scheme 1.1. Pathways for the project results access.....	10
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## Acronyms and Abbreviations

Term	Description
D	Deliverable
DMP	Data Management Plan
EC	European Commission
RDMP	Research Data Management Plan
ORDI	Open Research Data initiative
FAIR	The principles of findable, accessible, interoperable and re-usable defined for Horizon 2020
EU	European Union

## 1. Project introduction as background to the Data Management Plan

CATCHER will develop a highly innovative “atmospheric humidity to electricity” technological solution for direct conversion of the humidity adsorption energy to electrical energy. The project will promote, disseminate, communicate and exploit the elaborated & technically demonstrated on the concept of the “humidity to electricity” for further successful introduction and preparation to the renewable energy market.

CATCHER will gain a new sustainable source of renewable energy to contribute to implementing the specific priorities for strengthening EU leadership on renewables. The successful realization of the project is assured by implementation of knowledge sharing in material science, physics, nanoelectronics, green chemistry, nanoengineering, sustainability and research marketing via international and intersectoral collaboration of highly qualified research and business from Portugal, Belgium, Austria, Spain, Poland and Ukraine.

The Research Data Management Plan (RDMP) is elaborated as an official document for the internal consortium use that sets out how the members of Consortium CATCHER will deal with research data, both during the research and once the research project has been completed. Drawing up an RDMP before the data is collected ensures that the data is generated in the correct format and is categorized properly.

## 2. About the Data Management Plan Setup

### 2.1 Tasks and Deliverables

This deliverable **D 6.1 Data Management Plan** represents the groundwork for **WP6 Project Management** as it is the outcome of the first task in the work package. The main objective of this task is to prepare a project management handbook summarising all the required knowledge for the good management of the project (in terms of administrative forms, financial aspects, quality process, etc.).

ULusofona (PT) Coordination team is leading this task together with project Partners. In the initial stage, the project will elaborate and provide the Data Management Plan (DMP) document [D6.1 due in M6], which will concern all the respective data, metadata and ways to manage this data, during and after the project duration. The DMP will include the following information: Data description, Data handling, Standards and metadata; Data sharing and Archiving and preservation. For each data set that is produced during the project, the responsible partner will have to ensure that the data is: findable; accessible, interoperable and usable. Furthermore, other aspects related to the provision of data security (including data recovery as well as secure storage and transfer of sensitive data) will be addressed.

Since the communication strategy affects the whole project, the most important connections to other tasks are described briefly. Synergies exist especially with Technological WPs 1-3 and WP4 on Operation Research and Integrated Sustainability Analysis tasks. Furthermore, this deliverable is closely linked to the tasks in WP5, in particular **T5.2 Setting up a communication and dissemination plan** and **T5.3 Exploitation, application strategy and open access**. Based on the identification, the Data Management Plan defines the rules for the internal consortium use that sets out how the members of Consortium CATCHER will deal with research data, both during the research and once the research project has been completed.

### 2.2 Definition and goals

The Data Management Plan is prepared to distinguish between potentially sensitive or confidential information derived from the Prototype fabrication/testing/ specification and open access data.

The project Data Management Plan (DMP) is established within the principles of findable, accessible, interoperable and re-usable (FAIR) defined for Horizon 2020, i.e. in agreement with the Guidelines on FAIR Data Management in Horizon 2020 (version from July 2016); also taking into account the Consortium Agreement content previously approved and Intellectual Property Rights (IPR) signed by all Participating Parties.

The DMP will be updated over the course of the project as planned (M6, M30, M48) and/or also whenever significant changes arise.

### 3. About the Data Management Strategy

#### 3.1. Strategy for knowledge Management and Protection

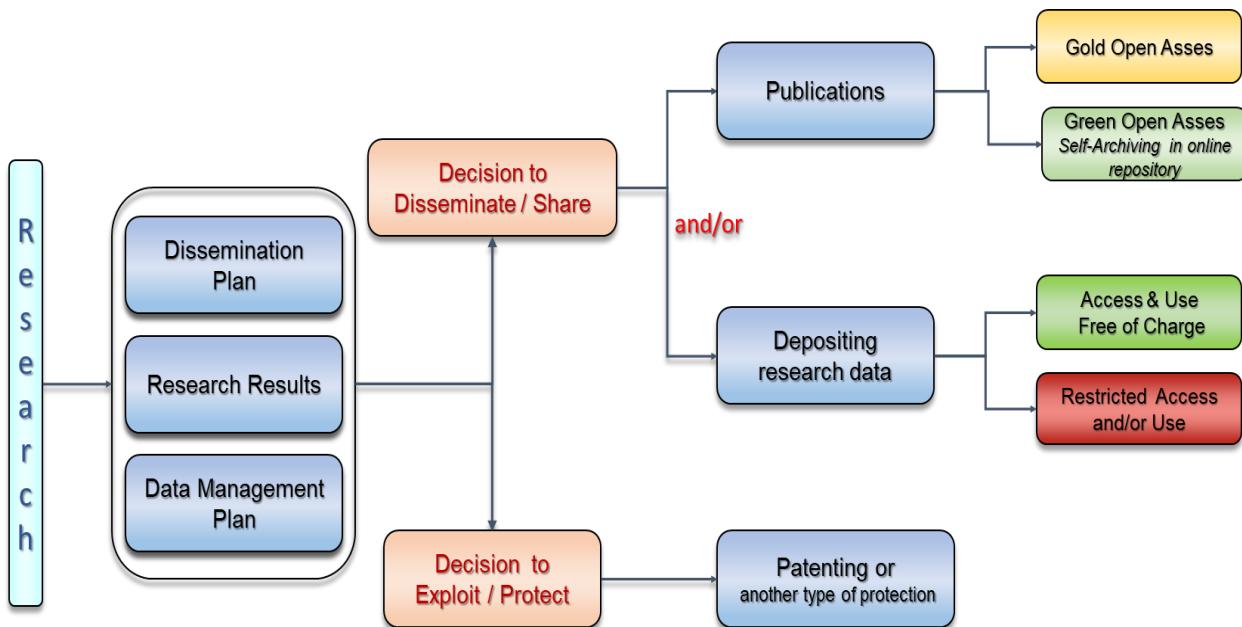
The dissemination protocol plus exploitation planning and Data Management Plan will dictate how knowledge is managed throughout the project and beyond. The priorities for knowledge management are:

- Ensuring the maximum value from project innovations
- Identifying, protecting and exploiting innovation points from across the technology platforms applied into the project outcomes.

#### 3.2. Data Access

As regards the research data that will be produced during the project, CATCHER will opt in to participation in the Open Research Data initiative (ORDI) of the Horizon 2020, agreeing to make research-relevant data available in a suitably anonymised format.

There will be several routes for the project results access (Scheme 1.1)



**Scheme 1.1.** Pathways for the project results access, adapted from EU source [[https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm)]

Non-sensitive research data will be made accessible *via* the project website and disclosed *via* conferences, workshops and open-access publications. The Consortium will make available experimental data; this will include information such as, “humidity to electricity” Prototype performance/results of the device testing and Prototype specification, environmental data and sustainable life cycle information. Especially all technology specific data being used in WP4 on Integrated sustainability assessment will be listed in the final

reports to make them accessible to the public and science. The data will be published in its native format, where appropriate, to avoid ambiguity.

The following measures will be taken to ensure open access: (i) depositing publications in repositories (online archive); (ii) selecting the green or gold open access route to the peer-reviewed scientific publications which will result from the project tasks implementation; (iii) placed data generated by CATCHER within the public domain, without undermining the development of any commercial activities; indeed. Making data available (e.g. in the form of user guides, data management plans etc.) will underpin and support partners' and users' activities.

Project Partners are encouraged to publish project results in relevant international peer-reviewed journals. All publications derived from the CATCHER project will contain an acknowledgment of the European Commission for project funding. Partners will ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to their results (as defined in Article 29.2 of the H2020 GA). Open access publishing (also called "gold" open access) means that an article is immediately provided in open access mode by the scientific publisher. The costs relating to open access to scientific publications resulting from CATCHER will be charged on the project and reimbursed under the conditions of the grant agreement (GA). For this purpose, a dedicated budget for each participant of the project has been calculated to guarantee Open access publishing. It will be checked also to use self-archiving ('green' open access) providing the articles or the final peer-reviewed manuscript by the research staff in an online repository before, after or alongside its publication. It should be also noted, when the "gold route" will be used, a copy of the publication will be also deposited online in open asses (OA) repository recognized by EU, such a general-purpose repository ZENODO or/and ERS recommended for Physical and Engineering Science arXiv repository.

Where data will be considered commercially sensitive, an embargo period will be applied (min of 3-6 months) to allow the consortium to protect the intellectual property contained there-in. At six monthly intervals all research data will be transferred to a central repository where it will be stored. The data will comprise both paper and electronic back up *via* hard drive and server. Each member of the consortium will have access to the repository, while access to a sensitive information stored within the repository will be granted under the terms of a non-disclosure agreement entered in to with the IP contributor allowing them to access commercially sensitive data with the aim of promoting the commercial exploitation of the technical achievements of the CATCHER.

### 3.3. Internal Knowledge Management and Protection

CATCHER proposes a complete range of activities leading to the optimal visibility of the project and its results, increasing the likelihood of market uptake of the knowledge it produces, and ensuring smooth handling of the individual intellectual property rights of the involved partners in view of paving the way to knowledge transfer. **Knowledge management and protection** are defined in the Consortium Agreement (CA) in detail. Knowledge sharing, and dissemination are central to a platform and SSHARE will aim to release data and information to the public domain when it is confirmed as safe to do so by all partners. This will underpin all dissemination activities, centrally from the dissemination partner and from individual partners.

**Internal knowledge management** will be facilitated through a web-based secure professional collaborative space [such as 'teambox'] for information and document sharing. Each partner will have a section where they can upload key documents and papers. For greater consistency, IPR protection and IPR strategy

activities are managed by the Dissemination & Exploitation Team under WP5. The overall IPR strategy of the project is to ensure that partners are free to benefit from their complementarities and to fully exploit their market position. Hence, the project has a policy of patenting where will be possible.

The IPR issues will be managed in the framework of WP5 “Dissemination, Exploitation and Communication”. General IPR rules will apply to the project. According to these general IPR rules, all partners are encouraged to protect any knowledge that has potential commercial applications. Each partner will be bound by the terms and conditions of the Commission contractual rules, Annex II General Conditions Part C entitled "Intellectual Property Rights" and by the Consortium agreement. Partners agree on the following: (1) Access Rights on the Pre-Existing Know-How needed for carrying out the Project shall be granted on a royalty-free basis. (2) The new knowledge shall be the property of the partner generating it. If, in the course of carrying out work on the Project, a joint invention, design or work is made (and at least two Contractors are contributors), and if the features of such joint invention design or work are such that it is not possible to separate them for the purpose of applying for, obtaining and/or maintaining in force the protection of the relevant intellectual property right, the partners concerned agree that they may jointly apply to obtain and/or maintain the relevant rights and shall strive to set up amongst themselves appropriate agreements in order to do so.

**The knowledge management approach** of the CATCHER will ensure that the project findings will be protected and covered as already reflected in the signed Consortium Agreement (CA). For this purpose, a Dissemination and Exploitation team (DET) will be established. DET will consist of highly skilled professionals from ULusofona (PT) Coordination team with the support of technological business units – SME CASCATA (PT) and SME NRD (PL) with the assistance of the Dissemination/Communication team of SME SYNO (AU). The main task of the Dissemination and Exploitation Coordinator [DEC, who is Prof. Dr. Svitlana Lyubchyk from Ulusofona (PT) team] will be the development of the CA update, when/if needed; as well as a legal consulting of the consortium partners on any issues related to the protection of their know-how. More specifically, the DEC will deal in detail with various legal issues such as: (i) access to background knowledge (ii) joint ownership and use of foreground knowledge (iii) the transfer of foreground knowledge (iv) detailed rules for dissemination-related activities and measures (v) various access rights. Dissemination will follow appropriate guidelines to ensure quality and, where appropriate, confidentiality; any information generated through work associated with the project and intended for publication, must be submitted to the Project Management Board for notification of conflict by any other partner. This will ensure the safety of all knowledge within CATCHER and allow its full utilization as intended by the project's exploitation role.

## 4. Setup of the Research Data Management Plan

### 4.1 Objectives of the Research Data Management Plan (RDMP)

The Research Data Management Plan (RDMP) is an official document that sets out how the members of Consortium CATCHER deal with research data, both during the research and once the research project has been completed. Drawing up an RDMP before the data is collected ensures that the data is generated in the correct format and is categorized properly.

### 4.2 Responsible persons /partners

Contact Persons of the nodes are responsible for their data management, proper data collection, documentation, and storage, throughout the project. In the project team's nodes like ULusofona (PT), RMA (BE), NRD (PL), CASCATA (PT), LAVOLA (ES), and SYNYO (AU) the technicians, IT group members are involved to provide assistance with data back-up and storage. The list of responsible for managing their respective data is given below

1. Svitlana Lyubchyk, ULusofona, Portugal, Coordinator
2. Ricardo Mateus, Ulusofona, Portugal, Team member
3. Andriy Lyubchyk, CASCATA, Portugal, Team Leader
4. Leticia Fernandez, RMA, Belgium, Team Leader
5. Oxana Gorban, NRD, Poland, Team Leader
6. Alba Canovas, LAVOLA, Spain, Team member
7. Christoph Steiner, SYNYO, Austria, Communication & Dissemination Manager

### 4.3 Data Summary

#### 4.3.1. Purpose of data collection

The whole project research objectives are fulfilled by participants through the realization of their individual projects. Research data collected and generated by each participant to keep track of individual research progress and to maximize the level of insights into the overall state of research in the project.

#### 4.3.2. What types and formats of data will you generate/collect?

**Types of generated and collected data** are nanomaterials and prototype elaboration, manufacturing, operational and testing data, e.g., on efficiency, temperatures, flows, energy consumption, etc. Data for flowsheet, technical estimations, and sustainability assessment will be generated from WPs1-4 of the project.

More in details:

- The data will include the technology design and validation and analysed data and the metadata that describe how these designs were implemented and the data was generated.
- The technology design will include comprehensive details of the materials and their assembling.

- The analysed data will include information relating to “humidity to electricity” devices design, development and manufacture, active coatings and measurements of the technical parameters and will include relevant statistical analyses.
- It will include digital images, published tables, and tables of the numbers used to create charts and graphs.
- The necessary metadata will include characteristics of nanomaterials (NMs), descriptions (protocols) or suitable citations of experiments, different types of production lines and screens, raw materials, computational codes, model parameters and input conditions.
- These data will include laboratory notebook entries, computer files created by data acquisition software, and images produced via microscopy, with essential metadata present either as header in the relevant electronic files or included along with the indexed laboratory notebook narrative.
- More specifically the data and the metadata will include data on the design, construction and operation of the different prototypes integrated at electrochemical, electrical and optic, photocatalytic and active coatings parts.
- The data will specify the production methods, coating procedures, release study technology and prototype design, development and manufacture which is developed to underwrite the experimental platforms.
- The metadata will include the location of the storage of all the specific details of the platforms together with the software/tools developed in the CATCHER project.

Namely, a large amount of specific data will be generated from Prototype elaboration/ testing/specification (WP1) and fundamental knowledge advancement on “humidity to electricity” conversion using nanomaterials and nanotechnologies (WP2). These will provide the necessary data needed for sustainable life cycle assessment and technical feasibility evaluations (WP3 and WP4). In the WP4, these data will be collected, as ISO 14040 and ISO 14044 states, as inventory data and they will be collected in datasheets. These inventories can be made accessible, for example as annexes in the assessment reports so that, together with the methodology and results, can be accessible for verification, replication and further investigation. In the report data quality will be addressed.

During the research, text documents, as well as spreadsheets, databases, images, and video, will be generated.

Therefore, all the following file formats may be generated and collected (non-exhaustive list) Text documents: LATEX (.tex), PDF (.pdf), MS Office (\*.doc, \*.docx, \*.ppt, \*.pptx), LibreOffice (.odt) Spreadsheets: MS Office (\*.xls, \*.xlsx), LibreOffice (\*.ods), Comma Separated Values (.csv) Figures (rasterized): JPEG (\*.jpg, \*.jpeg), PNG (\*.png), bEPS (\*.eps) Figures (vector): Scalable Vector Graphics (\*.svg), PDF (\*.pdf) Video: MPEG (\*.mpg, \*.mpeg, \*.mp4), AVI (\*.avi), MKV (\*.mkv) Programming: Python (\*.py), Jupyter Notebooks in Python (\*.ipynb), Matlab (\*.m) Miscellaneous: Software configuration files (\*.ini, extensionless).

**Handling of research data:** The research data will consist of technical designs, results of measures, methodologies applied and testing. This data will be interpreted and documented in the deliverables and additionally in the project-internal documents. This data will be maintained for up 10 years, to ensure the replication of the project results by others to exploit the technology.

It is planned to organize the data in a way that it could be utilized for IP development and further use for further commercialisation of the results, based on a license from the consortium members. For this purpose, all members of the investigative teams with access to data will receive instructions by the work package leaders. Firstly, the metadata will be documented by taking careful notes in the laboratory notebook that refer to specific data files and describe all columns, units, abbreviations and missing values identifiers. These notes will be transcribed to a text document that will be stored with the data file. After all of the data are collected, they will be digitalised employing a spreadsheet application. Original data notebooks will be retained in a secure location in the laboratories of consortium's partners, with electronic data backed up in multiple on-site backups in the form of hard drive storage or on off-site storage servers whenever the nature of the data makes such archiving possible.

#### 4.3.3. Re-use of existing data

Most of the partners will generate and collect authentic data originating from experiments performed at their institutions. In addition, the re-use of existing data is foreseen by the following nodes. The SMEs CASCATA (Portugal) and NRD (Poland) will possibly re-use data from earlier experiments or publications by the research group. The SME Partner LAVOLA from Spain dealing with Life Cycle Analysis type-work and Academic team form ULusofona (Portugal) dealing with operation research, including simulation & modelling will possibly re-use the algorithms and software produced/built in previous research.

CASCATA (PT) staff, NRD (PL), RMA (BE) will use the models & data originated from previous measurements performed on liquid phase adsorption, i.e. samples analysis under controlled humidity conditions (CASCATA & NRD) and models previously developed to predict the water sorption isotherms of these materials (RMA). They will also use the existing data from the publications/reports to verify or compare the outcomes of future experiments. The Ulusofona (PT) will collect information on technological feasibility from the Partners working with materials WP1 and assembled systems WP3 elaboration, Multicriteria analysis programs, and home-written analysis software. The NANOTECH (UA) may use published data as reference or calibration for future experiments/nanomaterial manufacture and will use data generated by SME NRD (PL) team who worked previously with the similar type of material production in Pilot scale. Data from the calibration of nano-sample fabrication parameters to achieve the targeted composition will be used.

#### 4.3.4. Data processing

Most of the nodes will work with software tools that are either commercial or open-source: ORIGIN, MATLAB, COMSOL Multiphysics, Microsoft Visual Studio, Python, LabView, MS Excel, Paraview, VTK, GMSH, FENiCS, PyCharm. The CONICET and UNIZAR also work with in-house developed software that can be made accessible for verification purposes.

**Standards, reliability and reusability:** The integrity of the research data will be ensured through validation against established technologies and higher integrity standards. In this respect it has been considered beneficial to adopt well established standards such as IEEE, ISO, AGILE and PMI. All NMs production technology and the “humidity to electricity” Prototype development will adhere to up-to-date sustainability and health and safety standards. The planning of data management will be such that it will fulfil standards of reliable data [1]. In regulatory safety screening the Klimisch codes [2] are the accepted approach, enforced in Europe by the relevant guidance [3] and the IUCLID database. They provide definitions and support for annotating the data records by relevance, reliability and adequacy. Some of the criteria necessarily overlap with rules defined elsewhere (availability of the raw data, adequate description of the study, protocols,

parameters, purities/impurities and the origin of the test substances; proof of ability of the lab to do the study).

#### **4.3.5. Methods or software tools are needed to access the data.**

The software from 4.3.2

#### **4.3.6. Data quality assurance processes.**

Data quality is ensured through the use of well-known, solid software and extensive testing procedures.

### **4.4 Data Processing**

#### **4.4.1. The naming of the data**

Naming conventions are individually chosen by the project participants to accommodate their needs and practice. The principles of the individual data nomenclature will be communicated to partners.

#### **4.4.2. Data and metadata vocabularies, standards, or methodologies**

In most cases, data connected to publications (articles; proceedings) will be published in a suitable archive or repository, following the metadata scheme of that repository. For making data findable by researchers in other disciplines keywords based on the Web of Science categories are included. In addition, partners will follow the national and local standards for metadata vocabularies or methodologies. Also, partners will use the universal scheme for describing datasets such as Dublin Core scheme, using a thesaurus with specific, discipline-related keywords that will be useful as a metadata scheme. The information supplied by the Partners on naming, vocabularies, and metafiles on the generated data will be made available together with these datasets.

**Data exploitation and sharing** will be aimed to make accessible to all partners to allow verification and re-use. For each data set that is produced during the project, the responsible partner will have to ensure that the data is also usable beyond the original cause that it was collected, meaning that there will be information or metadata explaining its use and making it usable even by non-experts and the scientific community as a whole. Yet, the SMEs/main R&I Developers and potential End Users such as CASCATA (PT) and NRD (PL) need to protect their confidential data/business cases. Here, restricted access could be considered upon request to the responsible Parties and via signed NDA, the action will be also documented in annex to the consortium agreement.

**Data curation and preservation** will generally be done over a project-internal website with clear assignment of rights and accesses in line with the philosophy given above – including Deliverables, Milestones, papers, protocols, and other technical and operational management documents. If SME Partners do not want to have its data over there, a regulation has to be found in the consortium agreement. In addition, the data will be stored at the 4TU. Data centrum archive for reasons of scientific integrity and to provide access to the outside world, making the data interoperable with standardised systems and other datasets. A Digital Objective Identifier (DOI) containing metadata (such as a URL) will be provided here to ensure, that the data is findable, and all will be done under the internationally accepted code of “Data Seal of Approval”. Furthermore, other aspects related with provision for data security (including data recovery as well as secure storage and transfer of sensitive data) will be also addressed.

#### **4.4.3. The location where the primary and secondary (processed) data are stored**

The local servers, available at each participating organization will be used for storage of the primary, secondary, and interim data for the internal circulations. For the primary and secondary experimental and calculation data for inter-consortium collaboration, the google-drive storage will be mostly adopted. When will be requested, the overleaf server will be used to prepare and process the LaTex-based publications. The open versions of the articles will be deposited to the ArXiv storage. For the long-term storage of the data, both open and private password-protected levels of the cloud repositories such as GitHub, GitLab, Bitbucket and self-hosted Git on the Digital Ocean will be used.

#### **4.4.4. The expected size of the data.**

The estimated size of data that will be generated by Partners in the framework of the CATCHER project is estimated in the range of giga- and terabytes

#### **4.4.5. Provisions for data security**

For all data storage facilities, the local back-up systems, protected by the institutional firewalls and appropriate cryptography (if necessary), are in place on a daily basis.

#### **4.4.6. For how long data will be stored**

Primary, secondary data and interim results (if relevant) will be stored for the time from 6 years to permanently, depending on the preference of the individual organizations/research groups. The Consortium of CATCHER might decide at a later stage on a collective exact duration for storing the research data generated throughout the project. Costs and potential value associated with the long-term preservation of data will be discussed and agreed upon at a later stage.

### **4.5 Fair Data**

#### **4.5.1. Data access granted for**

Direct participants of the project.

#### **4.5.2. Accessibility of published data**

Data will be either deposited in the open repositories or available from corresponding authors upon reasonable request.

#### **4.5.3. Interoperability and internal exchange of the data.**

The consortium will focus on the interoperability of research data on the project level. The internal cloud repository will be used to exchange data among the researchers within the CATCHER project. Some information, such as publications, will be available in open access while sensitive data will be accessible at the protected intranet portal in the restrictive mode. The CATCHER members will agree in advance on the preferred data formats to be used for exchange.

In addition, recommendations will be given on how to properly name research data in combination with providing a short metafile to describe the generated data; including the used vocabularies. At a later stage,

when partners start publishing, the options on how to make data interoperable on a higher public level will be discussed.

#### **4.5.4. Ownership of research data**

Ownership of research data has already been clarified at the beginning of the project. Future storage and re-use are directly affected by the intellectual property rights of research data.

Research data and intellectual property generated within CATCHER are owned by the respective beneficiaries (solely or jointly when several beneficiaries have jointly carried out the work and if their respective share cannot be ascertained), according to the Grant and Consortium Agreements. During secondments, the generated research data and intellectual property will be subject to joint ownership.

### **4.6 Ethical Aspects**

#### **4.6.1. Ethical or legal aspects that can impact the data sharing**

There is no ethical or legal issues that can impact data sharing have been identified.

#### **4.6.2. Collection of personal data**

Not applicable

## 5. Conclusion

As described in this report, the Data Management Plan is an important and dynamic element of the project which needs to be updated periodically and deployed along the project life cycle as planned:

- Data Management Plan (M6)
- RPX update of the Data Management Plan for the subsequent reporting period M30
- RPX update of the Data Management Plan for the subsequent reporting period M48

## 6. References

European Commission, "Annotated Model Grant Agreement", 2019

European Commission, Pathways for the EU project results access

[https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm)

European Commission, Open Research Data (ORD) - the uptake in Horizon 2020

<https://data.europa.eu/data/datasets/open-research-data-the-uptake-of-the-pilot-in-the-first-calls-of-horizon-2020?locale=en>

CATCHER, "Description of Action Part A", 2022

European Commission, ARTICLE 29 — DISSEMINATION OF RESULTS — OPEN ACCESS — VISIBILITY OF EU FUNDING [https://openscience.unige.it/sites/openscience.unige.it/files/pagine/G.A.%20art%2029.3\\_0.pdf](https://openscience.unige.it/sites/openscience.unige.it/files/pagine/G.A.%20art%2029.3_0.pdf)

European Commission, H2020 Programme Guidelines on FAIR Data Management in Horizon 2020

[https://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-data-mgt\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf)

[1] Lubinski et al., SAR and QSAR in Environmental Research (2013) 24:1995, 30].

[2] Klimisch et al., U. Regul. Toxicol. Pharmacol. (1997) 25:130

[3] Evaluation of available information. Guidance on information requirements and chemical safety assessment; 2011; pp 16