



MOBILITY SERVICES ENHANCED BY GALILEO & BLOCKCHAIN

**D6.4 – Data Management Plan (DMP) –
Open Research Data Pilot**

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¹ PU = Public | CO = Confidential, only for members of the consortium (including the Commission) | CL = Classified, information as referred to in Commission Decision 2001/844/EC



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1. Introduction

1.1 Project background

MOLIERE aims to develop, test, demonstrate, and exploit the full potential from the fusion of the GALILEO Satellite Navigation System, with its authenticated positioning signal, its enhanced geo-positioning capabilities (authenticated positioning signal, multi-frequency, and superior accuracy in urban dense areas), and the emerging blockchain and Distributed Ledger Technologies, building on their immutable, decentralized, and secure characteristics. While GALILEO provides reliable and precise geo-location, in order to power the upcoming trend of mobility services aggregation (so-called Mobility as a Service) there is still an unmet requirement: the broad availability of quality, public data sources on the availability of mobility services. Blockchain offers the potential to manage transport capacity (both for vehicles and infrastructure) and can allow operators to manage access rights, data and payments across a broad network of competing transport service providers and platforms while guaranteeing anonymity and security. Other issues addressed by the fusion of these two technologies are the anonymity of the data, where geo-positioning is considered as personal data and GDPR laws protect them. MOLIERE will specifically address legal, regulatory, and technical issues involving the processing of personal data.

1.2 Overview of the Data Management Plan

The MOLIERE Data Management Plan (DMP) aims to provide a strategy for managing data generated and collected during the project and optimise access to and re-use of research data. The DMP is intended to be a ‘living’ document that will outline how the MOLIERE research data will be handled during and after the project, and so it will be reviewed and updated at regular intervals.

Note that the ORD pilot applies primarily to the data needed to validate the results presented in scientific publications. Partners are encouraged to provide open-access to other data on a voluntary basis if it is not sensitive or subject to protection, but this is not a requirement under the ORD Pilot.

The DMP describes the data management life cycle for all datasets to be collected, processed and/ or generated by the research project. It covers:

- Data handling during and after the project
- What types and formats of data will be generated/collected?
- What methodologies and standards will be applied?
- Whether the data be shared or made open-access, and how?
- How data will be curated and preserved

The DMP will be updated as the project evolves to verify the applicability of the DMP to the generated data.

MOLIERE will generate diverse outputs, including measurements data related with geo-positioning, observations, validation protocols, service descriptions, assets, transactions in order to power the upcoming trend of mobility services aggregation (so-called Mobility as a Service). This diversity requires a Data Management Plan, building on existing open resources that are interoperable and trusted.

1.3 Guiding Principles of the Data Management Plan

The Data Management Plan of MOLIERE is coordinated by Work Package 6, and is articulated around the following key points:

1. This Data Management Plan (DMP) has been prepared by taking into account the template of the “Guidelines on Data Management in Horizon 2020” (https://ec.europa.eu/research/participants/data/ref/h2020/gm/reporting/h2020-tpl-oa-data-mgt-plan_en.docx). The elaboration of the DMP will allow MOLIÈRE partners to address all issues related with IP protection and data. The DMP is an official project Deliverable (D6.4) due in (March 2021), but it will be a live document throughout the project. This initial version will evolve depending on significant changes arising and periodic reviews at reporting stages of the project.
2. The consortium will comply with the requirements of Regulation (EU) 2016/679 and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). Guidance on how these regulations interact with open-access data policy can be found here: <https://www.openaire.eu/ordp/>
3. Type of data, storage, confidentiality, ownership, management of intellectual property and access: Procedures that will be implemented for data collection, storage, access, sharing policies, protection, retention and destruction will be in line with EU standards as described in the Grant Agreement and the Consortium Agreement, particularly Articles 18, Keeping Records — Supporting Documentation; Article 23a, Management of Intellectual Property; Article 24 Agreement on background; Article 25, Access Rights to Background; Article 26, Ownership of Results; Article 27, Protection of Results — Visibility of EU funding; Article 30, Transfer and Licensing of Results; Article 31, Access Rights to Results; Article 36, Confidentiality; Article 37 Security-related Obligations; Article 39 Processing of Personal Data; Article 52, Communication between the parties, and “Annex I – Description of Work” of the Grant Agreement.

1.4 Data Management Policies

The DMP’s Data Management Policy will address the points below and will detail the current status of reflection within the consortium regarding the data that is being produced (source: European Commission DGRI. 2016. Guidelines on Data Management in Horizon 2020). According to ORD requirements, the MOLIÈRE DMP observes FAIR (Findable, Accessible, Interoperable and Reusable) Data Management Protocols. This document addresses for each data set collected, processed and/or generated in the project the following elements:

- **Dataset reference and name** – Internal project Identifier for the data set to be produced. This will follow the format: *WPNumber_TaskNumber__PartnerName_DataSubset_DatasetName_Version__DateOfStorage* where the project name is MOLIÈRE, the PartnerName represents the name of the data custodian (WP Lead/ Task Leader).
- **Dataset description** - Description of the data that will be generated or collected, including its origin (in cases where data is collected), nature and scale and to whom it could be useful, and whether it underpins a scientific publication. Information on the existence (or not) of similar data and the potential for integration and reuse.
- **Standards and metadata** - Reference to existing suitable standards. If these do not exist, an outline on how and what metadata will be created.
- **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 reuse, and definition of whether access will be open or restricted to specific groups. Identification of the repository where data will be stored, if already existing and identified, indicating the type of repository (institutional, standard repository for the discipline, etc.). In cases where the dataset cannot be shared, the reasons for this will be stated (e.g. ethical, rules of personal data, intellectual property, commercial, privacy related, security-related).



- **Archiving and preservation** (including storage and backup) - Description of the procedures that will be put in place for long-term preservation of the data, including an Indication of how long the data should be preserved, the approximate end volume, associated costs, and how these are planned to be covered.

1.5 FAIR Data

The open data from an ORDP should follow the FAIR principles: research data should be findable, accessible, interoperable and re-usable. This makes sure that the data is well formatted in order to exploit the ability of machines to automatically find and use the data, in addition to supporting its reuse by stakeholders (Wilkinson et al. 2016). According to FAIR principles, data should be:

- identified in a persistent manner;
- properly described with enough metadata;
- stored so that both humans and machines can easily access it;
- well structured so that it might be integrated with other data sets;
- clearly presents well-defined a license or terms of use. In case the data is restricted, or its publication delayed or limited, the researcher should clearly add documentation of the reasons behind this choice, and the released data should still be managed in line with the FAIR principles.

2. Data Management Plan

2.1 Data Summary

The following table lists the (already existing) data sets that are being used in the framework of the project.

(To be updated as data sets are used.)

Code	Description of Dataset/Digital Output	Units and Format	Size	Ownership

Whereas the following table lists the data sets generated within the scope of the project.

(To be updated with the data sets that are generated.)

Code	Description of Dataset/Digital Output	Units and Format	Size	Ownership

2.2 FAIR Data

2.2.1 Making Data Findable

A data repository for the data sets generated by the project will be set up and documented in future versions of this document.

Each data set that is used within the project and can be made public will be listed and described (including purpose, formats, size, ownership, and rights of use).

The organization that generates each data set will be responsible for updating the repository.

(To be updated with details of what kind of repository will be set up.)

2.2.2 Making Data Openly Accessible

Within the course of the project, data sets will be generated. Such data sets will be candidates for open publication in the data repository. Task leaders will be in charge of identifying candidate data sets, and assessing initially if any licensing or data ownership issues prevent their publication. An IPR Committee of Moliere will approve the publication of data sets that are identified as candidates for public access which respect the principles laid out on section 2.3. This process will be carried out on an ongoing basis to facilitate the publication of appropriate data as soon as possible.

The IPR Committee of Moliere will assess such justifications and make the final decision, based on examination of the following elements regarding confidentiality of datasets:

- Commercial sensitivity of datasets
- Data confidentiality for security reasons
- Conflicts between open-access rules and national and European legislation (e.g. data protection regulations).
- Sharing data would jeopardise the aims of the project.
- Other legitimate reasons, to be validated by the IPR Committee

Where it is determined that a database should be kept confidential, the reasons for doing so will be included in an updated version of this DMP. The following table³ illustrates an example of a level of accessibility of data.

Dataset Identifier	Task	Dataset Name	Open/Restricted	Reason for restriction
D1	T1.1	Vehicle locations of ACME provider	Restricted	Commercially sensitive

2.2.3 Making Data Interoperable

Where possible, data will be published under standard formats, or in the case such standards do not exist, widely known formats to facilitate the reuse of the data sets by other projects. If no widely known formats are available, data formats will be free, but shall avoid proprietary formats that require non-free software or manual processes to decode.

2.2.2 Promoting Data Re-use

Researchers must provide information on how their datasets can be accessed, including the licence under which they can be accessed and reused, and information on any restrictions that may apply; several options are available for data (<https://opendefinition.org/guide/data/>), software (<https://choosealicense.com/>), and also content (<https://creativecommons.org/share-your-work/>).

2.3 Considerations for Data Publication

2.3.1 Data Security

All research data underpinning publications will be made available for verification and re-use unless there are justified reasons for keeping specific datasets confidential. The main elements when considering confidentiality of datasets are:

- Protection of intellectual property regarding new processes, products and technologies where the data could be used to derive sensitive information that would impact the competitive advantage of the consortium or its members,
- Commercial agreements as part of the procurements of components or materials that might foresee the confidentiality of data
- Personal data that might have been collected in the project where sharing them is not allowed by the national and European legislation.

2.3.2 Ethical considerations

MOLIERE will ensure that ethical requirements are met for all research undertaken in the project, including data management aspects, in compliance with H2020 ethical standards. All partners will assure that the EU standards regarding ethics and data management are fulfilled. MOLIERE partners must comply with the ethical principles (see Article 34) and confidentiality (see Article 36 as set out in the Grant Agreement).

In addition, the project will comply with POPD Requirement No. 2, meaning:

- Opinion or confirmation by the competent Institutional Data Protection Officer and/or authorization or notification by the National Data Protection Authority must be obtained (whichever applies according to the Data Protection Directive (EC Directive 95/46, currently under revision, and the national law).
- If the position of a Data Protection Officer is established, their opinion/confirmation that all data collection and processing will be carried according to EU and national legislation, should be obtained.
- Templates for informed consent forms and information sheets must be kept on file and submitted upon request to the REA.

3. Review Process

The first version of the DMP will be validated by the consortium and will function as the operational manual until a next update has been validated. The DMP will be updated over the course of the project whenever significant changes arise, such as:

- New data
- Changes in consortium policies
- Changes in consortium composition and external factors

The MOLIERE DMP will also be reviewed, and revised as needed, at regular intervals, by the full consortium Feedback will be recorded in Table 2 (below) to support clarity and transparency in the revision process.

Overview of revisions of the DMP:

Version	Date	Comments & recommendations
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1.0	May 2021	Initial version