



D1.1 – Ethics & Data Management

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Abstract

This deliverable presents the initial data management plan and evaluation of ethical principles of the CLAIM project. It is a document that describes the ethical requirements to comply with ethical principles regulated by the European Commission (EC) [1]. As well as data management life cycle of the data to be collected, processed and/or generated by this Clean Aviation Coordination and Support Action [3].

Keywords

Ethics, Data Management, Ethical Principles, Data Management Plan, Data Management Lifecycle



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Table of Acronyms and Abbreviations

Acronym/Abbreviation	Description / Meaning
DOI	Digital Object Identifier
DMP	Data Management Plan
EC	European Commission
OA	Open Access
PID	Persistent Identifier

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1. INTRODUCTION

This deliverable presents the Initial Data Management Plan and evaluation of ethical principles of the CLAIM project. It is a document that describes the ethical requirements to comply with ethical principles regulated by the European Commission (EC) [1]. As well as data management life cycle of the data to be collected, processed and/or generated by this Clean Aviation Support project [1].

Data refers to information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation [4]. The Initial Data Management Plan doesn't need to provide detailed information of the data handled in a research project, but it is rather conceived as a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses and when significant changes occur.



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2. ETHICS

As any research project CLAIM has to comply with ethical principles regulated by the European Commission (EC) [1].

In order to verify the compliancy with ethics requirements, the EC provides a guideline for the ethics self-assessment [2]. This deliverable answers to the questions collected into the EC's guideline on ethics assessment. In particular section 4 "Personal data" and section 6 "Non-EU countries".

2.1 Section 4: Personal data

The EC's guideline for the ethics self-assessment includes the questions collected and answered in the present section.

- Does your research involve processing of personal data?

No.

- Does your research involve further processing of previously collected personal data (including use of pre-existing data sets or sources, merging existing data sets)?

No.

- Does your research involve publicly available data?

Yes, publicly available data might be used in the research, but this does not cause any ethics issues.

- Is it planned to export personal data from the EU to non-EU countries? Specify the type of personal data and countries involved.

No.

- Is it planned to import personal data from non-EU countries into the EU? Specify the type of personal data and countries involved.

No.

2.2 Section 6: Non-EU countries

The EC's guideline for the ethics self-assessment includes the questions collected and answered in the present section.

- In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues? Specify the countries involved.

Researchers and research organizations from the USA and/or Canada may be involved, no ethical risk identified.

- Is it planned to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?

No.

- Is it planned to import any material from non-EU countries into the EU? For data imports, see Section 4.

Publicly available research may be involved. This is typical in a research project and it does not cause any ethics issues.

- Is it planned to export any material from the EU to non-EU countries? For data exports, see Section 4.

Yes, publicly available data might be used in the research, but this does not cause any ethics issues.

- In case research involves low and/or lower-middle income countries, are any benefit-sharing actions planned?

No low and/or lower-middle income countries are involved in the CLAIM project.

• Could the situation in the country put the individuals taking part in the research at risk?

No

2.3 Conclusions

This deliverable consisted of the evaluation of how the CLAIM project complies with the Ethics Requirements for Involvement of Non-EU Countries and Personal data.

In order to perform the ethics assessment in CLAIM, a guideline from EC has been adopted, and ethics results have been presented in the previous sections. It can be stated that no potential ethics issues are arising in the project.

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3. DATA MANAGEMENT

This deliverable presents the Initial Data Management Plan of the CLAIM project. It is a document that describes the data management life cycle of the data to be collected, where data refers to information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation [4].

The Initial Data Management Plan doesn't need to provide detailed information of the data handled in a research project, but it is rather conceived as a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses and when significant changes occur.

A Data Management Plan (DMP) is a document that describes the data management life cycle for the data to be collected, processed. (Research) data refers to information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images. The focus is on research data that is available in digital form. Users can normally access, mine, exploit, reproduce and disseminate openly accessible research data free of charge [4].

As schematized in Fig. 1, research results can be either exploited/ protected (through patenting or other forms of protection), or disseminated outside the project consortium, either in open (often together with publications) or restricted access.

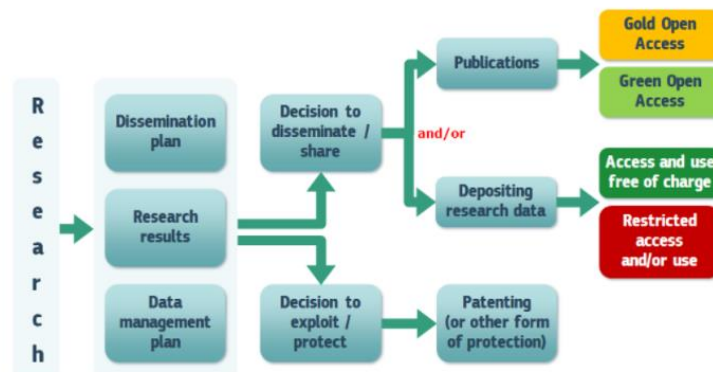


Figure 1: Scheme on handling research data in EU-funded projects [4]

According to the European Commission (EC), research data should be made findable, accessible, interoperable and re-usable (FAIR). Therefore, a DMP should include information on:

- the handling of research data during & after the end of the project
- what data will be collected, processed and/or generated
- which methodology & standards will be applied
- whether data will be shared/made open access and
- how data will be curated & preserved (including after the end of the project).

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In order to make available all this information about data, the EC provides a guideline for the preparation of a DMP, in the form of a questionnaire [3]. This questionnaire has been exploited to prepare the present deliverable. In other words, the content of the present deliverable is conforming to the guidelines prescribed by the EC for the management of data.

This deliverable presents the Initial DMP of the CLAIM project. This document doesn't provide detailed answers to all the questions of the EC's questionnaire on data management previously mentioned, but it is rather conceived as a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses and when significant changes occur.

A DMP is required for all EU-funded projects, and CLAIM is not an exception. The CLAIM consortium is dedicated in complying with the open-access (OA) and FAIR data management practices that are mandatory by the Granting Authority; in this frame, a first version of a DMP is elaborated within the first six months of the project, as part of this deliverable. The DMP is a living document and shall be updated over the course of the project whenever significant changes arise, including new data, changes in consortium policies (e.g., new innovation potential, decision to file for a patent), or changes in consortium composition and external factors (e.g., new consortium members joining or old members leaving). An updated, final DMP will be delivered at the end of the project for the final review.

3.1 Data summary

This section provides a preliminary description of the DMP for the CLAIM project. The individual DMPs of the partners that have specified a preliminary plan for how they will share and safeguard their created and acquired data sets, combined with a tracking list detailing the types and formats of the shared information, constitute the overall CLAIM DMP. While the project is still in its early stages, the procedure and timeline for making the data sets accessible are currently unclear. Though it is provisioned that this DMP will be updated until the end of the project.

It is planned to reuse existing data to establish connections between the different tools, initiate the collaborative assessment as part of the project. The pre-existing data will include disciplinary data from assessment tools and collaborative assessment data from the workflow, mostly acquired from the tools provided by other partners and other public resources.

Data is expected to be in various formats, including:

- .xml, • .mdax
- .csv • .kml
- .mpg • .png
- .jpg • .svg
- .raw • .pdf
- .so6. • .stp
- .txt • .pptx
- .xlsx

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The data size will mainly be below 10 MB and sometimes below 100 MB for disciplinary input and output data; in total, the size is not expected to exceed 1 GB.

The data reused or generated within the project may be useful for various stakeholders, including the public, the EC, aircraft design entities, researchers, regulatory and industrial stakeholders involved in air transport development perspectives and innovative opportunities, and sectors outside aviation. In general, data is reused and generated to fulfill the requirement of the dashboard application, i.e., to help researchers, scientists, analysts, and policy makers to be able to perform required studies and assessments.

3.2 FAIR DATA

The section of the EC's guideline on data management [3] regarding FAIR data is divided in 4 parts. Therefore, the present section follows the same organization.

3.2.1 Making data findable, including provisions for metadata

The subsection "Making data findable, including provisions for metadata" of the EC's guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- Are the data produced and/or used in the project discoverable with metadata, identifiable and locatable by means of a standard identification mechanism (e.g. persistent and unique identifiers such as Digital Object Identifiers)?
- What naming conventions do you follow?
- Will search keywords be provided that optimize possibilities for re-use?
- Do you provide clear version numbers?
- What metadata will be created?

The open accessible generated data will be identified by a persistent identifier (PID), probably a DOI (Digital Object Identifier), managed via the ZENODO trusted data repository. The corresponding metadata will comprise search keywords and versioning of different releases to optimize search and potential reuse but will be discussed in detail in the final DMP.

3.2.2 Making data accessible

The subsection "Making data accessible" of the EC's guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- Which data produced and/or used in the project will be made openly available as the default?
- How will the data be made accessible (e.g. by deposition in a repository)?
- What methods or software tools are needed to access the data?
- Is documentation about the software needed to access the data included?
- Is it possible to include the relevant software (e.g. in open source code)?
- Where will the data and associated metadata, documentation and code be deposited?

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- Have you explored appropriate arrangements with the identified repository?
- If there are restrictions on use, how will access be provided?
- Is there a need for a data access committee?
- Are there well described conditions for access (i.e. a machine-readable license)?
- How will the identity of the person accessing the data be ascertained?

The data model and framework will be openly available, providing open source and documentation. Some data, such as disciplinary input and output data from tools, will be closed access to the tool owners and other data will be closed access to the project team, based on the provisions of the Consortium Agreement. Other data shall be shared externally only after approval of each project partner involved in the data creation process.

The openly accessible data will be documented through the public deliverables. It will be deposited to commonly utilized trusted repositories that support data identification through DOI, including ZENODO, European Open Science Cloud (EOSC), and GitHub. Open data will be accessible through open, free, and universal protocols for information retrieval on the web, provided by the trusted repositories. Open data and metadata will be retained for the lifetime of these repositories. Should any software be required, proper information and documentation will be provided.

3.2.3 Making data interoperable

The subsection “Making data interoperable” of the EC’s guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organizations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?
- What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?
- Will you be using standard vocabularies for all data types present in your data set, to allow inter- disciplinary interoperability?
- In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?

The project partners are dedicated in the production of interoperable data, not only within the consortium but also towards externals, using a common software used within the project. Qualified references to other data will also be determined. Consequently, the adoption of standards is highly promoted in the project, and already available standard data models are adapted to serve the project purposes.

3.2.4 Increase data re-use

The subsection “Increase data re-use” of the EC’s guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- How will the data be licensed to permit the widest re-use possible?

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- When will the data be made available for re-use?
- Are the data produced and/or used in the project useable by third parties, in particular after the end of the project?
- How long is it intended that the data remains re-usable?
- Are data quality assurance processes described?

The data model and framework will be open source and documented. The commonly utilized software is already open source, and the relevant documentation is available on the respective website. Deliverable reports will be provided for the utilisation and application of the Dashboard Application.

Regarding the reuse of data, specific restrictions will be applied in accordance with legal and contractual constraints. Some data will be closed access to the tool owners and project team only as described in the accessibility section, due to IPR restrictions. The openly accessible data will remain reusable by releasing it in standardized, wide-spread data formats, along with documentation. The data usage license (Open Definition license) that will be used for the release of the open and reusable data, as well as any further data quality assurance processes, will be discussed at consortium level, and described in the final DMP. No embargo periods or specific restrictions regarding the reuse of the open data are foreseen.

3.3 Allocation of resources

The costs for making data and other research outputs FAIR are covered by the project grant, including the costs for developing and releasing the website. The selected trusted repositories are free to use and support long term preservation of data, and the coordinator provides a common working environment to facilitate consortium collaboration, without any further costs. If costs for dissemination activities become necessary, they will be covered by the project grant, the budget assigned for publications. FAIR data will be accessible for a minimum time period of 10 years; the necessary resources will be elaborated in the final DMP.

3.4 Data security

The Section “Data security” of the EC’s guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?
- Is the data safely stored in certified repositories for long term preservation and curation?

Sensitive data produced or used in the project are stored in different repositories. Partners store unshared data on personal drive and personal cloud spaces (e.g. GitLab and GitHub). Data within the project is shared on the Teamsite (powered by Microsoft Sharepoint), which is basically a tool for collaboration within the project. The Teamsite is managed by DLR and is accessible only to invited partners with their personal accounts and credentials. Although it has an extendable storage quota and includes an automatic versioning system, the tool does not provide an archive or backup system and is therefore not meant for long-term preservation.

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3.5 Ethics

The Section “Ethics” of the EC’s guideline on data management [3] contains the following questions to be answered for the preparation of a DMP:

- Are there any ethical or legal issues that can have an impact on data sharing?
- Is informed consent for data sharing and long-term preservation included in questionnaires dealing with personal data?

There are not any ethical or legal issues related to the sharing of data that according the Project Grant Agreement should be made openly accessible (e.g. those made available through public deliverables).

However, tool outputs can be only shared within the Consortium, and often with limitations, in accordance with the Consortium Agreement. Data will be safely stored in trusted repositories for long-term preservation and curation. Regarding the data retained by the project partners, it will be safely stored in and retrieved from the respective data servers, following each entity’s internal procedures for data storage and maintenance.

3.6 Other issues

The Section “Other issues” of the EC’s guideline on data management [3] contains the following question to be answered for the preparation of a DMP:

- Do you make use of other national/funder/sectorial/departmental procedures for data management?

If yes, which ones?

No partners make use of other procedures for data management.

3.7 Conclusions

This deliverable consisted of the Initial DMP of CLAIM project. This document didn’t aim at providing all the detailed information about data management, but it was rather conceived as a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses and when significant changes occur.

Therefore, an updated Data Management Plan will be made available at the end of the project.

Regarding the FAIR principles, the partners acknowledged the importance of identifying the data by a persistent identifier (PID), with DOI (Digital Object Identifier) being the most prominent option. Metadata will comprise mainly search keywords, to optimise findability. Regarding accessibility, the input and output data will be closed to the tool owners and other categories will be closed to the project team, based on the provisions of the Consortium Agreement. The openly accessible data will be stored in trusted repositories that support data identification, open and free protocols for information retrieval on the web and long-term storage. Furthermore, the consortium is dedicated in the production of interoperable data, by adopting standards and already available standard data models. All results that will be made publicly available, the consortium uses public deliverables, the project website, and the trusted repositories.

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For making the data and other research outputs FAIR, no additional costs are foreseen. The compliance with the open-science practices and the FAIR principles is covered by the project grant. The proposed trusted repository is free for upload and download, while the common working environment within the consortium is provided by the coordinator. Data produced or reused may be stored in different repositories, with the individual partners being responsible for the safe keeping and preservation, enforcing their in-house data safety procedures. The data sharing will be supported by the common working environment, which enables access to authenticated users. Lastly, no ethical issues on data management are foreseen.

To sum up, projects partners are currently working together to develop a comprehensive framework that aligns with the FAIR principles and addresses any potential challenges or limitations. The DMP will be frequently updated to ensure effective data management throughout the entire project's lifecycle.



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