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Data Management Plan

D1.2



HALLOA

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¹ Use one of the following codes: R=Document, report (excluding the periodic and final reports)

DEM=Demonstrator, pilot, prototype, plan designs

DEC=Websites, patents filing, press & media actions, videos, etc.

OTHER=Software, technical diagram, etc.

ORDP : Open Research Data Pilot

² Use one of the following codes: PU=Public, fully open, e.g. web

SEN= Confidential, restricted under conditions set out in Model Grant Agreement

R-UE/EU-R - EU Classified= Classified, information as referred to in Commission Decision 2001/844/EC.

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List of acronyms

Acronym	Full name
CA	Consortium Agreement
DMP	Data Management Plan
DOI	Digital Object Identifier
FAIR	Findable, Accessible, Interoperable and Reusable
GDPR	General Data Protection Regulation
IPR	Intellectual Property Rights
TDFA	Thulium-Doped Fiber Amplifier
WP	Work Package

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1. Data Summary

Throughout the 3 years of its duration, HALLOA will generate data from a wide range of activities from lidar performance modelling, component environmental testing, laser system performance, etc. HALLOA main results, data, and publications will be disseminated so they can be scrutinized by other researchers, potential future partners, and the wider research and operational communities.

HALLOA contributes to the Open Data effort in the Horizon Europe program.

HALLOA will ensure that its research data is Findable, Accessible, Interoperable and Reusable (FAIR). However, the sharing of data will be temporarily restricted to allow publication releases, PhD and postdoctoral accomplishments, taking into account the “need to balance between openness and protection of scientific information, commercialization and intellectual property rights (IPR), privacy concerns, security as well as data management and preservation questions” as indicated in the FAIR data management in Horizon Europe guidelines published by the European Commission.

The DMP’s purpose is to provide the main elements of the data management policy to be used by the HALLOA’s consortium with respect to its complete data cycle. It thus describes :

1. types, sources and formats of data generated/collected,
2. the standards to be applied,
3. the data curation methods and,
4. the data sharing policies for re-use.

The DMP reflects the exploitation strategy as defined in the Consortium Agreement (CA).

The present document is the first draft of HALLOA DMP containing a summary of the datasets (types, sources, formats, WP and partners), specific conditions to apply for sharing and re-use.

As a continuously evolving document, this DMP will be updated and refined throughout the project life-span. It will at least be refined at the reporting periods.

2. Overview

The DMP covers the complete conceptual scheme of HALLOA presented below.

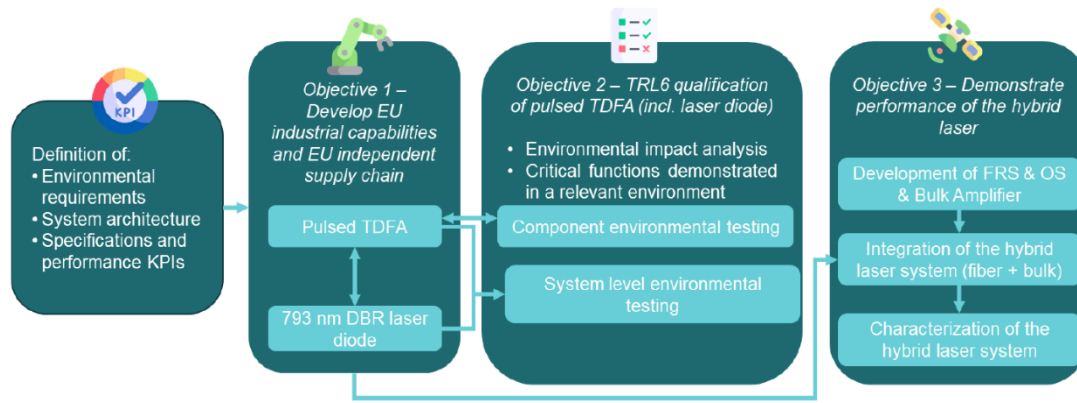


Figure 1 - HALLOA's methodology

Across all WPs, HALLOA will generate primary data (detailed below) that will then be processed and made available into different stable forms: (meta)database, R codes, reports and publications. The HALLOA's open access policy will be applied to determine which dataset shall be made publicly available (shared) for re-use and when.

2.1. Overview of the datasets produced by HALLOA:

2.1.1. WP1 & WP2

Dataset name	Project Monitoring file
Purpose and relation with the objectives	List of participants to the Consortium, contact details & position; List & timing of deliverables; List & timing of the tasks; List of risks; Budget consumption
Work Package	WP1 & WP2
Partners	All
Data types	Excel
File formats	List/Chart
Reuse of existing data	.xls
Data production methods	-
Expected size	-
Utility	This task will allow to monitor the progress of the project
Reuse potential	-
Diffusion principles	These data will be made updated regularly and shared with the consortium.

Dataset name	Newsletter mailing list
Purpose and relation with the objectives	List of email addresses of people who have signed up to receive the newsletter and to be informed about HALLOA latest news.
Work Package	WP1 & WP2
Partners	All

Data types	Mailchimp
File formats	List
Reuse of existing data	-
Data production methods	-
Expected size	-
Utility	Communication purposes
Reuse potential	-
Diffusion principles	These data will be only shared with the consortium.

2.1.2. WP3

Not applicable.

2.1.3. WP4

Dataset name	Pulsed fiber amplifier performance
Purpose and relation with the objectives	This dataset contains information relative to the optical performance of the thullium optical fiber amplifier. It gathers the experimental scientific data (recording, observations, etc.) used for the performance evaluation of the fiber amplifier w.r.t requirements expressed in WP3.
Work Package	WP4
Partners	ONERA, EP-LMD, LZH
Data types	Scientific
File formats	Graphics, Tables
Reuse of existing data	NA
Data production methods	Laboratory experiment and signal processing
Expected size	100Mo
Utility	Thullium doped fiber amplifier definition and performance
Reuse potential	Future Lidar mission preliminary phase; future laser system optimization
Diffusion principles	These data will be made available at the M35 of the project. These data will be mainly made available through publications and conference presentations

2.1.4. WP5

Dataset name	Pump laser diode properties and performance
Purpose and relation with the objectives	This dataset contains information on the wavelength stabilized high power laser diode at 793 nm used to pump thullium active fibers. It gathers measurement data used to evaluate the device properties and the performances needed by the application.
Work Package	WP5

Partners	LPI, KEOPSYS
Data types	Scientific
File formats	Graphics, Tables
Reuse of existing data	NA
Data production methods	Laboratory measurements
Expected size	TBC
Utility	Validation of the 793 nm DBR laser diode
Reuse potential	Optimization of semiconductor diode lasers emitting at the 79X wavelength; Optimization of Distributed Bragg Reflector technology
Diffusion principles	Data will be available at the M35 of the project and shared through scientific publications and conference presentations.

2.1.5. WP6

Dataset name	Environmental testing of laser amplifier components
Purpose and relation with the objectives	This dataset comprises the performance validation of the laser amplifier components including the Tm-fiber before and after environmental testing. It collects the experimental data (parameters to be defined) that is used to assess and to prequalify the fiber amplifier components selected in WP4 according to the specifications defined in T6.1.
Work Package	WP6
Partners	LZH, KEOPSYS, ONERA
Data types	Scientific
File formats	Graphics, Diagrams, Tables, Photos
Reuse of existing data	Not applicable
Data production methods	Laboratory experiments and environmental tests at LZH and external facilities
Expected size	< 1 GB
Utility	Performance validation of the selected TDFA components regarding space environmental conditions
Reuse potential	Future use of the tested components for laser space missions.
Diffusion principles	This data will be generated until M18 of the project. Part of this data will be made available through publications and conference presentations.

2.1.6. WP7

Dataset name	Environmental testing of amplifier system and laser diodes
Purpose and relation with the objectives	This dataset comprises the performance validation of the complete TDFA system and the laser diodes before and after environmental testing. It collects the experimental data (parameter to be defined)

	that is used to assess and to qualify the TDFA system developed in WP4, and the laser diodes developed in WP5 according to the specifications defined in T7.1.
Work Package	WP7
Partners	LZH, KEOPSYS, ONERA
Data types	Scientific
File formats	Graphics, Diagrams, Tables, Photos
Reuse of existing data	Not applicable
Data production methods	Laboratory experiments and environmental tests at LZH and external facilities
Expected size	< 1 GB
Utility	Performance validation of the complete TDFA system and laser diodes regarding space environmental conditions
Reuse potential	Future use of tested TDFA and laser diodes for laser space missions.
Diffusion principles	This data will be generated until M36 of the project. Part of this data will be made available through publications and conference presentations.

2.1.7. WP8

Dataset name	Laser system performance
Purpose and relation with the objectives	This dataset contains information relative to the optical performance of the complete hybrid laser system. It gathers the experimental scientific data (recording, observations, etc.) used for the performance evaluation of the laser system w.r.t the general requirements expressed in WP3.
Work Package	WP8
Partners	ONERA, EP-LMD
Data types	Scientific
File formats	Graphics, Tables
Reuse of existing data	NA
Data production methods	Laboratory experiment and signal processing
Expected size	100Mo
Utility	Validation of the hybrid laser system optical performance
Reuse potential	Future Lidar mission preliminary phase; future laser system optimization
Diffusion principles	These data will be made available at the M35 of the project. These data will be mainly made available through publications and conference presentations

2.1.8. WP9

Dataset name	European non-dependence and market implementation
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Purpose and relation with the objectives	This dataset contains information relative to the European non-dependence and market implementation of the thullium optical fiber amplifier.
Work Package	WP9
Partners	ONERA, EP-LMD, LZH
Data types	TBC
File formats	TBC
Reuse of existing data	NA
Data production methods	Laboratory experiment and signal processing
Expected size	-
Utility	European non-dependence evaluation
Reuse potential	
Diffusion principles	These data will be made available at the M35 of the project. These data will be mainly made available through publications and conference presentations

3. FAIR Data

The FAIR methods presented below will make HALLOA's data 'findable, accessible, interoperable and reusable' for the datasets presented above.

3.1. Making HALLOA data findable, including provisions for metadata

Metadata is data on the research data themselves. It enables other researchers to find data in an online repository and is, as such, essential for the reusability of the dataset. By adding rich and detailed metadata, other researchers, can better determine whether the dataset is relevant and useful for their own research. HALLOA's partners will upload, in a standardized form, metadata (type of data, location, etc.) on the project website that will allow everyone to find out what data has been provided during the project lifespan. This metadata will be kept separate from the original raw research data.

As described in the project Grant Agreement (Article 17), the bibliographic metadata includes all of the following:

- the terms "European Union (EU)" and "Horizon Europe";
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable;
- a persistent identifier.

Note: All publications resulting from HALLOA will acknowledge the financial support by EU by the statement: "This project has received funding from the European Union's Horizon Europe research and innovation program under grant agreement No 101056732."

Data produced by HALLOA will first be stored via a centralized database located on the project's website during an embargo period and then made public on the ZENODO data repository: by doing so, the HALLOA data will be findable via a Digital Object Identifier (DOI) and/or Creative Commons's license numbers will be used as persistent identifiers on open data repositories. Files and folders at data repositories will be versioned and structured by using a name convention consisting of project name, dataset name and ID.

All data will have a Digital Object Identifier (DOI) and/or Creative Commons's license numbers will be used as persistent identifiers on open data repositories. Files and folders at data repositories will be versioned and structured by using a name convention consisting of project name, dataset name and ID.

3.2. Making HALLOA data openly accessible

HALLOA's datasets will be stored and organized in a database by the data owners (personal computer, or on the institutional secure server) and on the project database (project website's private section).

During the project, data will first be stored via a centralized database located on the project's website during an embargo period and then made public on the ZENODO data repository, the open-access repository of the Open Access Infrastructure for Research in Europe (OpenAIRE). At the end of the project, metadata and data will be transferred to the database hosted by the coordinator, HALLOA and shared to relevant data portals such as the XXX or XXX.

The raw data should be openly accessible 12 months after completion of the publishable dataset and a justification will be provided shall this timeline not be respected. A publishable dataset is defined as a dataset, which went through processing and analysis to allow producing a manuscript under its final publishable form. The reasons that such an embargo would be allowed include competitive advantages such as the completion of a PhD thesis, in which case an embargo of three years will be upheld.

Restriction on use of data, software and code are documented in the HALLOA's Grant Agreement and can vary according to institutional and national policies and legislations. In case of restrictions on use, metadata is still provided, which allow for contacting of the data owner. The request will then be up for consideration of the data owner and depending on the data owner's decisions full access to the data may be granted.

To get a DOI, data will be deposited in ZENODO under 1) open access to data files and metadata and 2) data files provided over standard protocols such as HTTP and use and reuse of data permitted. To protect the copyright of the project knowledge, Creative Commons license will be used in some cases.

Most HALLOA data will be produced in common electronic document/data/image formats (.csv, .docx, .pdf, .tex, .jpg, .eps, ASCII etc.) that do not require specific software. Software developed by HALLOA's members (e.g. software tools for processing data) will be deposited in code repositories. Where possible existing software will also be made accessible, e.g. existing R scripts.

To preserve and share internal datasets, HALLOA will use:

- ✦ Individual researchers data storage media;
- ✦ Partner's individual institutions' secure data repositories;
- ✦ Project website's private section (<https://www.XXX.eu> member only section)

For Open Access data and publications, HALLOA will use:

- Project website's public section (<https://www.XXX.eu>);
- ZENODO (<https://zenodo.org/>) where data will be findable through a DOI.

3.3. Making HALLOA data interoperable

Controlled vocabularies will be used to describe the metadata fields and support consistent, accurate, and quick indexing and retrieval of relevant data. Keywords and their synonyms will be used for indexing and subject headings of the data and metadata. As controlled vocabularies change within different disciplines of Science, these keywords will be updated during the project's course to increase the interoperability of the project's data and metadata.

3.4. Increase ZENODO data re-use through clarifying licenses

HALLOA's datasets will be made openly available for re-use. As pointed out above, for reasons of competitive advantages a data embargo may apply. For example, in the case of the completion of a PhD thesis, an embargo of three years will be upheld.

Restriction on use of data, software and code are documented in the HALLOA's Grant Agreement and may vary according to institutional and national policies and legislations. In case of restrictions on use, metadata is freely still provided, which allow for contacting of the data owner. The request will then be up for consideration of the data owner and depending on the data owner's decisions full access to the data may be granted.

Creative Common Licensing will be used to protect the ownership of the datasets. Both Share-Alike and NonCommercial-ShareAlike licenses will be considered for the parts of datasets for which the decision of making that part public has been made by the Consortium.

The Steering Committee meetings (every 3 months) will ensure the proper conduct of project's data management.

4. Allocation of resources

The costs for making data FAIR will be covered as follow:

- Fees associated with the publication of scientific articles containing project's research data in "Gold" Open access journals. The cost sharing, in case of multiple authors, shall be decided among the authors on a case-by-case basis.
- Project Website operation: covered by WP1/2 (Communication).
- Data archiving at ZENODO: free of charge.

5. Data security

Risk management aims to avoid or minimize the impact of potentially possible, but unforeseen or unlikely, external, or internal events on the achievement of the targeted outcome of the project.

The following guidelines will be followed in order to ensure the security of the data:

- Store data in at least two separate locations to avoid loss of data;
- Encrypt data if it is deemed necessary by the participating researchers;
- Limit the use of USB flash drives;

- Label files in a systematically structured way in order to ensure the coherence of the final dataset;
- Store data on the secured space on the project website.

Long-term data preservation security will be ensured by partner institution's data repositories.

6. Compliance with General Data Protection Regulation (GDPR)

Personal data collected in HALLOA will be managed in compliance with GDPR.

7. Ethical aspects

HALLOA's partners need to comply with the Ethics on research integrity as described in the Description of Action. In addition, HALLOA's partners have to comply with national or international legislation related to data collection.

8. Other aspects

The responsible Data Manager of HALLOA is Julien Lahyani (ONERA).



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