

ROAD trailer design - Use of Type V thermoplastic tubes with light composite structure for Hydrogen transport

D2 D1.2 Data Management Plan

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I. Introduction

Data coming from the research gathered during the ROAD TRHYP project is as important as publications that will be written with their support.

It is then paramount to define a data management policy. This document presents the Data Management Plan (DMP).

The ROAD TRHYP project DMP lists :

- the different datasets coming from the project,
- the main exploitation perspectives for each dataset,
- the major management principles the project will implement to handle those datasets.

The purpose of the DMP is to provide an analysis of the key elements of the data management policy that will be used by the consortium with regard to all the datasets that will be generated by the project.

The DMP is not a fixed document; on the contrary it will have to evolve during the lifespan of the project. This first version of the DMP includes an overview of the datasets to be produced by the project, and the specific conditions that are attached to them.

The next versions of the DMP will get into more detail and describe the practical data management procedures implemented by the project. This deliverable will be updated during the lifespan of the project.

This deliverable is therefore part of the WP 1, Task 1.4. It is designed to capture all aspects of the research data lifecycle of ROAD TRHYP. In particular, it will cover :

- Data set description,
- Standards and metadata,
- Name and persistent identifier for the data-sets,
- Curation and preservation methodology,
- Data sharing methodology,
- Output management and Costs and personnel related to research data management (RDM)

II. Data

A. Dataset description

This section describes the data set that will be produced in ROAD TRHYP and presents the partner responsible for it.

It includes:

- the description of the data that will be produced or gathered
- its origin (if gathered)
- nature and to whom it could be useful
- whether or not it could end up with a publication
- information on the existence (or not) of similar data and the possibilities for integration and reuse.

ROAD TRHYP partners have identified a dataset that will be produced during the project. The list below is indicative and allows estimating the data that the project will produce – it may be amended in the next versions of the DMP to take into consideration the project developments (if needed).

Nb	Dataset Name	Partner	WP
1	Cylinder initial performances on 60 l and 330 l Type V tanks	COVESS	2
2	Permeation on Type V tank structure	AL	2
3	Cylinder performances on 60 l and 330 l Type V tanks : burst & amb cycling	ENVITEST	3
4	Cylinder performances on 60 l and 330 l Type V tanks : temperature cycling	WUT	3
5	Mapping of applicable regulations, codes and standards for trailer design and maintenance	SEGULA	4

6	Review of the HRS RCS and permitting in several European countries	AL	4
7	Recommendations for RCS based on RCS for trailers and HRS and also interoperability between HRS and trailers	AL	4
8	List of failure scenario on trailers	EFR	5
9	Mechanical behaviour of tanks exposed to fire	PPRIME	5
10	Behaviour of a set of Type V tubes exposed to fire	EFR	5
11	CFD simulation on one tube for the determination of the min/max local temperatures	AL	6
12	Filling / unfilling tests on a set of tubes	AL	6

B. Data storage

The data gathered in ROAD TRHYP acquired is in the magnitude of several gigabytes. Therefore, we decided that the data will be stored on a secured platform setup by Air Liquide (Digital Guard).

However, Data collected during an experiment will be stored initially on the dedicated bench test computer, as well as numerical simulations and associated results.

C. Data sharing procedures

Project partners obviously have Intellectual Property Rights (IPR) on their technologies and data, on which their economic sustainability relies. Therefore, the partners of the ROAD TRHYP project will have to protect this data and consult the project consortium before publishing data or any other use of this output, in accordance with EC Grant rules.

An Advisory Board made out of key actors in the domain (trailer manufacturers) will be kept informed about progress and consulted at every step of the project to review and evaluate the design and performances in respect to existing Codes and Standards. They also may help in promoting the developed technology. To do so, and upon decision of the General Assembly, selected data will be shared with the members of the advisory board.

III. Archiving of the final data

1. Cylinder initial performances on 60 I and 330 I Type V tanks

Data identification	
Description	Reports, pictures
Type (*)	Text, excel, pictures, graphics measurement data, datalogger
Source	COVESS
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	COVESS
Partner that gather the data	COVESS
Partner to analyse the data	COVESS
WP(s) and Task(s)	WP2: T2.1 - T2.2
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored on Onedrive and Dropbox COVESS
Standards, format, estimated amount of data	Xls, jpg, doc, ppt, csv
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Tank & production specifications, testing data

Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Confidential
Data sharing, re-use, distribution, publication (How?)	Digital Guard
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	OneDrive, Dropbox, Digital Guard

(*) Examples provided at the end of the document

2. Permeation on Type V tank structure

Data identification	
Description	Photos, permeation tests
Type	Experimental data
Source	Experimental test bench
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	AL, COVESS
Partner that gather the data	AL

Partner to analyse the data	AL
WP(s) and Task(s)	WP2, T2.4
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Sheet files and photos
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Scientific knowledge
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Members of the consortium and European Commission Services
Data sharing, re-use, distribution, publication (How?)	Digital Guard
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

3. Cylinder performances on 60 l and 330 l tanks : burst & amb temperature cycling

Data identification	
Description	Reports, pictures, movies
Type	Excel sheets, text documents, graphics
Source	ENVITEST
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	ENVITEST, ALL
Partner that gather the data	ENVITEST
Partner to analyse the data	ALL
WP(s) and Task(s)	WP3: T3.1
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored on iCloud ENVITEST, Digital Guard
Standards, format, estimated amount of data	Csv, pdf, ppt, doc, jpg, mp4, avi
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Tanks cycling results
Data access policy / Dissemination level :	Confidential

confidential (only for ROAD TRHYP members and the Commission Services) or Public	
Data sharing, re-use, distribution, publication (How?)	Digital Guard
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	iCloud ENVITEST, Digital Guard

4. Cylinder performances on 60 l and 330 l Type V tanks : temperature cycling

Data identification	
Description	Report, pictures,
Type	Experimental data: temperature, pressure, etc.
Source	Experimental test bench
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	WUT
Partner that gather the	WUT

data	
Partner to analyse the data	WUT, AL, ENVITEST
WP(s) and Task(s)	WP3: T3.2
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored on Google Drive (WUT)
Standards, format, estimated amount of data	txt, excel, pictures, datalogger files
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Verification of the tank performance
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Confidential: only for ROAD TRHYP consortium members
Data sharing, re-use, distribution, publication (How?)	Digital Guard
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For	Google Drive (5 years)

how long ?	
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5. Mapping of applicable regulations, codes and standards for trailer design and maintenance

Data identification	
Description	Report
Type	Text
Source	Regulations, codes and Standards databases
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	N/A
Partner that gather the data	SEGULA
Partner to analyse the data	AL, EFR
WP(s) and Task(s)	WP4, T4.1
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Google docs and sheet files
Data exploiting and sharing	
Data exploitation (purpose / use of the data)	Regulatory and scientific knowledge

analysis)	
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Public
Data sharing, re-use, distribution, publication (How?)	Digital Guard, project website
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

6. Review of the HRS RCS and permitting in several European countries

Data identification

Description	Report
Type	Text files
Source	Regulations, codes and Standards databases
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	NA
Partner that gather the data	AL
Partner to analyse the data	AL, EFR
WP(s) and Task(s)	WP4, T4.2
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Google docs and sheet files
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Regulatory and scientific knowledge
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Public
Data sharing, re-use, distribution, publication (How?)	Digital Guard, project website
Non disclosing period of	N/A

time (if applicable)	
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

7. Recommendations for RCS based on RCS for trailers and HRS and also interoperability between HRS and trailers

Data identification	
Description	Report
Type	Text files
Source	RCS databases
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	N/A
Partner that gather the data	AL
Partner to analyse the data	AL, EFR, Segula
WP(s) and Task(s)	WP4, T4.3, T4.4
Standards	

Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Google docs and sheet files
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Regulatory and scientific knowledge
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Public
Data sharing, re-use, distribution, publication (How?)	Digital guard, project website, RCS committees
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

8. List of failure scenario on trailers

Data identification	
Description	Reports
Type	Text files
Source	Standards and literature
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	NA
Partner that gather the data	EFR
Partner to analyse the data	EFR, AL
WP(s) and Task(s)	WP5, T5.1 and T5.2
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal EFR server system and Digital guard
Standards, format, estimated amount of data	Google docs and sheet files
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Identification of the failure scenarios of the trailer - Consequence assessment of the identified scenarios
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Public
Data sharing, re-use, distribution, publication	Digital guard, project website

(How?)	
Non disclosing period of time (if applicable)	NA
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	NA
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	EFR server + hard disks & Digital Guard

9. Mechanical behaviour of tanks exposed to fire

Data identification	
Description	Thermomechanical test results, FE thermomechanical simulations
Type	text, excel sheets, graphics, pictures, finite element input files and output database
Source	Pprime
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	Institute Pprime (CNRS, as supervisor of the laboratory)
Partner that gather the data	Institute Pprime (CNRS, as supervisor of the laboratory)
Partner to analyse the data	Institute Pprime (CNRS, as supervisor of the laboratory), EFR
WP(s) and Task(s)	WP5, task 5.3

Standards	
Info about metadata (production and storage dates, places) and documentation	records : temperature, force, displacement, mechanical and thermal simulated fields storage : hard disk and server
Standards, format, estimated amount of data	ascii, excel, jpeg, volume > 10Go
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Assessment of the material mechanical behaviour, observations before and after thermomechanical tests, simulation of the thermomechanical behaviour
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	public
Data sharing, re-use, distribution, publication (How?)	intended for publication, to be shared with the consortium
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	no
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	partner's computer server during the project, hard disks after 2025

10. Behaviour of a set of Type V tubes exposed to fire

Data identification	
Description	Experimental & numerical data for bonfire tests
Type	text, excel sheets, graphics, pictures, videos, output database, test reports, numerical inputs and outputs, numerical simulations
Source	Standards, literature, tests, numerical tool
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	EFR
Partner that gather the data	EFR
Partner to analyse the data	EFR, AL
WP(s) and Task(s)	WP5, T5.4
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal EFR server system and Digital guard
Standards, format, estimated amount of data	Test reports, test results (excel files, data logger), videos, pictures, FDS format (outputs, inputs and result files around 10 Gb)
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	Assessment of the tank behaviour when exposed to fire, observations before and after thermomechanical tests, simulation of the thermomechanical behaviour
Data access policy /	Confidential, some results could be published (Public)

Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	
Data sharing, re-use, distribution, publication (How?)	Digital guard, project website, intended for publication
Non disclosing period of time (if applicable)	NA
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	NA
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Data stored in internal EFR server system and Digital guard + Hard disks

11. CFD simulation on one tube for the determination of the min/max local temperatures

Data identification	
Description	Results for CFD simulation
Type	Data file for CFD simulation

Source	CFD simulation
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	AL
Partner that gather the data	AL
Partner to analyse the data	AL
WP(s) and Task(s)	WP6, T6.5
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Ansys/Fluent file format, around 10 Gb
Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	To determine the locations and magnitude for maximum and minimum temperatures inside the tank during filling and defueling respectively
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Confidential, some results could be published
Data sharing, re-use, distribution, publication (How?)	Publication for scientific article on some CFD results
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ?	N/A

If so, do you have written consent from the owner to collect this information ?	
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

12. Filling/unfilling tests on a set of tubes

Data identification	
Description	Experimental and modelling results
Type	Excel or csv files, Pictures
Source	Test bench, modelling
Partners WP, Task & responsibility	
Owner of the data, copyright holder (if any)	ENVITEST, AL
Partner that gather the data	ENVITEST
Partner to analyse the data	AL
WP(s) and Task(s)	WP6, T6.4, T6.8
Standards	
Info about metadata (production and storage dates, places) and documentation	Data stored in internal AL Google Drive and Digital guard
Standards, format, estimated amount of data	Sheet files and photos

Data exploiting and sharing	
Data exploitation (purpose / use of the data analysis)	CFD and SOFIL software modelling validation
Data access policy / Dissemination level : confidential (only for ROAD TRHYP members and the Commission Services) or Public	Confidential, some results could be published
Data sharing, re-use, distribution, publication (How?)	Publication for scientific article on experimental results and software validation
Non disclosing period of time (if applicable)	N/A
Personal data protection: are they personal data ? If so, do you have written consent from the owner to collect this information ?	N/A
Archiving and preservation (including storage and backup)	
Data storage (including backup) : where ? For how long ?	Google Drive & Digital Guard

Example of Data type = Experimental data, Measurement Data, Modelling tools (Which one) to generate such data, Text files, Excel files, Graphics, Pictures, Electronic recording (Data logger, ...), ...