

Orcelle Horizon

Wind as main propulsion



Deliverable 1.4 - Data Management Plan

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1 Introduction

The Orcelle project is a Horizon Europe research and innovation project under Grant agreement HORIZON-CL5-2022-D5-01. The project's purpose is to develop and demonstrate a solution for ships using wind as main propulsion.

The present document contains the project's data management plan ('DMP') following the FAIR¹ principles. It will be regularly updated throughout the project's lifetime.

2 Data Summary

2.1 Overview

The general data management principle in the Orcelle project is that²:

- Each organisation keeps **raw** and **analysed** data according to their own practise.
- **Raw** and **analysed** data is shared between partners when it is required to solve the tasks.
- **Reported** data is shared with the other project partners via the project's Sharepoint site.
- **Reported** data is publicly disseminated after agreement with all other partners.

Table 1 specifies how data will be collected or generated, the type of data and the purpose of the collection. This table will be expanded and updated along the project lifetime.

2.2 Raw measurement and simulation data

"Raw data" means unprocessed data from measurements or simulations, recordings from interview, or manual logs from other processes.

Raw data in the Orcelle project will be for example (see details in Table 1):

- Output from numerical simulations of the ship and wing performance.
- Output from various sensors connected to the physical prototype and full-scale ship.
- Recorded or transcribed interviews with industrial stakeholders and crew panels.

2.3 Analysed data

"Analysed data" means raw data that is processed and analysed by, for instance, applying filters, averaging over time periods, applying statistics, selecting the most relevant or most appropriate data and discarding irrelevant data. Analysis data will be presented as graphs, diagrams, tables and other ways to visualise trends.

This will mainly be used in the Orcelle project to discuss the results between the project partners.

2.4 Reported data

From the analysed data, the most relevant parts will be selected to be presented in the public deliverables. This includes key performance indicators, trends and conclusions when communicating the project outcome to stakeholders outside the project. The list of deliverables is given in the Grant agreement.

¹ https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

² For definition of data types please refer to sections 2.2 to 2.4

Table 1 Data summary

WP	Purpose	How will it be collected (collected, generated, reused)	Type (Raw, Analysed, Reported)	Data source (project partner, external partner, other)	Data output (type and format) (‘data utility’ outside your project)	Data confidentiality (confidential, project members only, open access)
2	Assess the performance of ship/develop computational methods	Generated from own computations	raw	RISE, KTH, AW, SG, NTUA, WM	output from CFD codes, numerical simulations	confidential
2	Assess the performance of ship/develop computational methods	Generated from own computations	analysed	RISE, KTH, AW, SG, NTUA, WM	Graphic representation and tables of analysed data	All project members
2	Conclusions on performance assessment methods and design methods		reported	RISE, KTH, AW, SG, NTUA, WM	Reports, articles	Open access
4	Input to business case framework (4.1) and ORCELLE Wind case study (4.2) through	interviews and documentation of processes and performance data	Raw	WW, Volvo	Interview transcriptions and documents	Confidential
4	business case framework and case study (4.1 & 4.2)	Own analysis	Analysed	RISE	Analysed results	All project members
4	Final results of business case framework and case study (4.1 & 4.2)		reported	RISE	Report deliverable 4.1 and 4.2	Open Access
5	Develop crew training programs	Generated in crew panel sessions	raw	RISE, AW, WM, WW & crew panels	Data logs from simulations and interviews with crew panel	Confidential
5	Develop crew training programs	Own analysis	Analysed	RISE, AW, WM, WW & crew panels	Analysed results from simulations and anonymised interviews with crew panel	All project members
5	Develop crew training programs		reported	RISE, AW, WM, WW & crew panels	Reports, articles	Open access
3	Assess the performance of wing sail/develop computational methods	Generated from own computations	raw	UGent	output from FEA models, numerical simulations	confidential
3	Assess the performance of wing sail/develop computational methods	Generated from own computations	analysed	UGent	Graphic representation and tables of analysed data	All project members
3	Numerical framework for structural integrity assessment		Reported	UGent	Report deliverable 3.2 and articles	Open-access
6	Tanker case study data	Generated from own computations on the basis of parent ship data provided by external partner	reported	NTUA, Thenamaris, AW	Report deliverable 6.X...	confidential
6	Containership case study data	Generated from own computations on the basis of parent ship data provided by external partner	reported	NTUA, Bernhard Schulte, AW	Report deliverable 6.X...	confidential
6	Bulk carrier case study data	Generated from own computations on the basis of parent ship data provided by external partner	reported	NTUA, TSAKOS NT, AW	Report deliverable 6.X...	confidential
6, 7	Design methods and case studies		reported	NTUA, WM, AW, external partners of case studies	Summary reports, articles, presentations	public
6	Case study ship drawings and reports (background)	Provided by ship operators/owners (external partners)	Reported	ship operators/owners	drawings and reports in pdf format	Confidential, maybe shared with owner’s written permission
6	Ship operational data (background)	Provided by ship operators/owners (external partners)	raw	ship operators/owners	High (resp. low) frequency data collected onboard by sensors (resp. noon reports)	Confidential, maybe shared with owner’s written permission

WP	Purpose	How will it be collected (collected, generated, reused)	Type (Raw, Analysed, Reported)	Data source (project partner, external partner, other)	Data output (type and format) (‘data utility’ outside your project)	Data confidentiality (confidential, project members only, open access)
6	Ship operational data (simulated)	Own analysis	Analysed	NTUA	Analysed results from raw data	project members
6	Ship performance data from systematic calculations	Generated from own computations	raw	NTUA	output from CFD codes, numerical simulations	confidential
6, 2	Surrogate models for preliminary assessment of ship performance	Generated from own computations	Analysed	NTUA	ANNs, regression polynomials	project members
6	Ship data from DOE or optimization studies	Generated from own computations	raw	NTUA	output from CFD codes, numerical simulations	confidential
2	Gap analysis on international regulations and Class Rules	Generated by own interviews	Raw	DNV	Manual log	Confidential
2	Gap analysis on international regulations and Class Rules	Own analysis	Analysed	DNV, RISE, KTH, AW, SG, NTUA, WM	Analysed results	All project members
2	Gap analysis on international regulations and Class Rules		Reported	DNV, RISE, KTH, AW, SG, NTUA, WM	Report	Open access
7	Collection of news etc. from other partners, turned in to communication, dissemination, and exploitation material	Shared documents, email	reported	Project partners	Articles, reports, news	Open access

3 Data management

3.1 Repository and data security

3.1.1 Raw and analysed data

Each project partner takes responsibility for storing the raw and analysed data in secured repositories including data recovery following each organisation's Quality manual.

3.1.2 Reported data

The lead project partner WalWil is responsible for the data security of the common repository, the Sharepoint site. Reported data will be stored during the project lifespan and 5 years after.

3.2 IP of data within the project

Data ownership and ownership of results are covered by the Grant Agreement and the Consortium agreement Section 8.

3.3 Data accessibility

3.3.1 Non-open data

In principle all raw and analysed data are stored at the repository of the partner who collected or generated it. It is to be treated as confidential data due to commercial interests or personal integrity reasons. Some raw data will be open, see 3.3.4.

3.3.2 Sharing data between partners

The analysed data will be shared with other project partners when needed to perform the tasks. Transfer of data can be done via a secure file transfer or email, depending on the data size, classification and each organisations Quality Manual. All analysed data is assumed sensitive.

The Consortium agreement Section 10 describes how confidential and sensitive data will be shared between partners. In short:

All information which is disclosed between partners in connection with the project implementation, and which cannot reasonably be assumed to be public information, is "Confidential Information" until 5 years after the end of the project. (See Consortium agreement Section 10)

3.3.3 Data open to project participants

All deliverables listed in the in the Grant Agreement will be made available to the project participants and the European Commission via the projects Sharepoint site and the Funding and Tenders Portal. Only identified personal at the partners organisations have access to the Sharepoint site via secure login.

3.3.4 Data open to public

Open dissemination of project results is regulated in Consortium agreement Section 8.6.2:

During the Project and for a period of 1 year after the end of the Project, the dissemination of own Results by one or several Parties including but not restricted to publications and

presentations, shall be governed by the procedure of Article 17.4 of the Grant Agreement and its Annex 5, Section Dissemination, subject to the following provisions.

Prior notice, including all relevant material, of any planned publication shall be given to the other Parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted, in accordance with the notice given.

The deliverables marked as “Public” in the Grant Agreement will be made public via the project’s webpage for 5 years after the project ends, as well as the EC’s CORDIS website (except for deliverables related to project management).

The project will also publish articles, present at conferences, webinars and similar according to Deliverable 7.2.

Scientific publications describing the research, development of methods and general knowledge relevant to the scientific and industrial community shall be published continuously throughout the project lifetime.

The project will strive for publishing open data sets to make the scientific publications reproducible and other data sets that is useful for the research community.

A register of data that is made available to the public will be kept by the project lead partner, including version recording.

Data that the consortium agree to be public will be made available through the EC’s open research platform. The project lead partner will provide a link on the project website to the data and make the scientific community aware of the location of the data through news items on the website.

3.4 Project internal metadata

Most of the technical data in the project describes or relates to the prototype designs. The design of these prototypes will evolve during the project life. Each organisation uses version handling and naming systems according to their own Quality Manual for data that stay within the organisation. To avoid misunderstandings when several partners work on the same objects, the project also uses a common version handling system for the prototypes. This consist of a unique number which is used when naming the geometry definition (eg CAD drawings) and for the computation output and measurements datafiles related to them.

The partner that is responsible for the design of the prototype, is also responsible for its metadata. This is done by keeping an updated list of the versions with a short description and naming of cad files. The various parts included in the common version handing system are listed in Table 2.

Example

- As an example, a given rig version for Orcele is S7.4, which is a combination of six W7.0 wings.
- Alfawall Oceanbird keeps the list of the different versions of wings and rigs, and their geometrical definitions.
- RISE performs a computation with the purpose of assessing the performance of S7.4. The output datafiles containing the raw data and the analysed data contain the reference to S7.4, and a unique version number of the output.

Table 2. Metadata of prototypes

Geometrical Object	Index	Responsible partner
Wing	W	AW
Rig (combinations of wings)	S	AW
Hull	H	WM
Rudder	R	WM
Propeller	P	WM
Superstructure	SU	WM
Vessel (combination of all parts)	V	WM

3.5 Version keeping

Version tracking is carried out for all types of data. For data that is shared between partners, changes compared to the prior version is to be detailed and numbered to easily keep track of the versions. When publishing new versions of data, the old version is either removed or accompanied by a comment that a newer version of the data is available.

3.6 Traceability

Each partner is responsible for the traceability of the raw and analysed data. That means that:

- Raw data is accompanied with information on sensors, measurement set-up, computational set-up, codes version etc such that it can be reproduced if needed.
- Analysed data is accompanied with link to the raw data, method for analysing such as filtering, averaging, assumptions and possibly anonymised if it contains sensitive information.
- Reported data refers to the source of analysed data set.

4 Other research outputs

The Consortium Agreement Section 8 states that results are owned by the Party/Parties that generates them. Especially mentioned is the Logistic Software which shall be owned by WWO (Section 8.1 in Consortium Agreement)

5 Allocation of resources

The project lead partner WalWil is responsible for the overall data management, the platform for sharing data within the project and the webpage for sharing data with the public.