**Horizon Europe programme, grant agreement No. 101096068**

# RETROFIT SOLUTIONS TO ACHIEVE 55% GHG REDUCTION BY 2030

## Data Management Plan Updated

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| WP 9 – Project Management |
| Task 9.4 – Data Management Plan |
| D9.4 – Data Management Plan Updated |
| Partners involved: CNR, all |
| Authors: Emanuele Spinosa, Cecilia Leotardi, Alessandro Iafrati |

## Project details

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|---|---|
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| 01 | 12/06/2024 | Emanuele Spinosa, (CNR) | First draft |
| 02 | 15/09/2024 | Emanuele Spinosa, (CNR) | Second draft (comments incorporated) |
| 03 | 11/10/2024 | Emanuele Spinosa, (CNR) | Final version |

## Quality check review

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| Cecilia Leotardi (CNR) | Technical and editorial review |
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## Table of Contents

## Executive Summary

This Data Management Plan (DMP) describes the data that will be collected and generated during the RETROFIT55 project. The main focus is on how the data will be managed, from the acquisition to the exploitation and dissemination, as well as on the way in which the data will be made available for future use.

This document will be updated during the project lifetime: the first release presented an overview of the data that are expected to be collected/generated during the project and the way the Consortium intended to manage them, as well as information about accessibility and re-use of other project outputs (publications, the project web-page, presentations, dissemination material, etc). This updated version provides more details about the data management and how it is implemented in the project, as well as a detailed description of all datasets collected and generated during the project from M1 to M18. A final version will be issued at the end of the project.

Since RETROFIT55 involves either industrial data or the development to higher TRL of innovative industrial solutions, which may eventually turn into market products, some data used in the project and some of the results will not be open to the public.

In order to disseminate certain results in a manner that mitigates the potential for reverse engineering by external users, efforts will be made to present data in a suitable non-dimensional format. This approach will facilitate the quantification of the benefits associated with the developed solutions while preventing any possibility of analysis that could lead to replication.

## List of Acronyms

| | |
|---|---|
| CA | Consortium Agreement |
| DMP | Data Management Plan |
| DOA | Description Of the Action (Annex 1 of the GA) |
| DOI | Digital Object Identifier |
| EC | European Commission |
| EU | European Union |
| FAIR | Findable Accessible Interoperable Reusable |
| GA | Grant Agreement |
| GDPR | General Data Protection Regulation |
| GHG | Green-House Gas |
| ICT | Information and Communication Technologies |
| IPR | Intellectual Property Rights |
| KPI | Key Performance Index |
| PC | Project Coordinator |
| PO | Project Officer |
| WP | Work Package |
| PID | Persistent Identifier |

# 1 Introduction

RETROFIT55 is a Horizon Europe Innovation Action aimed at delivering new technologies and solutions for the reduction of the fuel oil consumption and Green-House Gas (GHG) emissions. These solutions will be implemented on existing ships by retrofitting. In addition, Information and Communication Technologies (ICT) strategies will be developed to support the ship owners during the retrofitting process.

In order to achieve these objectives, the use of wings-sails for Wind Assisted Ship Propulsion (WASP) and the injection of micro air bubbles at the bottom of the hull to reduce the skin friction through an Air Lubrication System (ALS), will be investigated. These solutions will be complemented by an optimization of the route based on weather information, a hydrodynamic optimization of the hull, the introduction of green energy solutions and of a smart energy management module. Besides the technical solutions, a web-based configuration tool will be developed with the purpose of guiding and assisting the ship owners and ship builders to configure the retrofit interventions, by combining different technologies. The different configurations will be evaluated in a life-cycle perspective in terms of specific Key Performance Indexes (KPI). To this aim, surrogate models will be used to represent the different alternatives in a digital form.

Design and technical data, as well as data collected at a high sampling rate on board existing ships, will be provided by the shipowners participating in the project for different types of ships. Such data will be used to define specific use cases and will represent an incredibly valuable tool for the development and validation of the digital twins of the different subsystems, as well as for the quantification of the gain achievable when installing new energy saving solutions and green technologies. Besides the real data, other data and surrogate models will be generated during the project as a result of numerical simulations, laboratory measurements and, possibly, on-board measurements. The benefit of the implementation of the new technologies will be determined either numerically or via laboratory and large-scale experiments.

In order to fulfil the EU requirements, the definition of a number of principles and a clear organization of the data management are necessary and will be summarized in this report, i.e. the Data Management Plan (DMP).

The first version of the DPM was outlined at the beginning of the project (M6) and will be updated regularly until the end of the project, when the final version will be delivered. This report is the updated version of the DMP. It contains updates related to the:

- Data summary: in particular more precise information regarding the data that will be shared within the project are provided, including information sheets that will be shared when input data cannot be share for confidentiality or IPR reasons.

- Dataset nomenclature of data/metadata: this is now based on the standards of the repository where the data re being submitted, Zenodo.org.

- Information on the repository and on the generated community, where the data are stored and shared.

- List of datasets used and generated so far within the project and list of publications produced.

The report organized as follows: in Section 2 the objectives of the Data Management Plan are described, as well as the responsibilities of the project partners in terms of data management. In Section 3 the types of data collected and generated during the project are summarized. In Section 4 the provisions to make data Findable, Accessible, Inter-operable and Re-usable (FAIR) are outlined. In Section 5 the other research outputs of the projects will be illustrated, which are mainly scientific publications and presentations for dissemination events. In Section 6 provisions for data security are outlined, in Section 7 ethical questions are briefly recalled and, finally, in Section 8 other issues are addressed.

# 2 Data Management in the framework of RETROFIT55 Project

### 2.1.1 Objectives of the RETROFIT55 Data Management Plan

The objective of the DMP is to provide indications for the project partners in terms of data collection, generation, organisation and storage, in order to make the data available and usable by the Consortium and by potential users outside the project, in compliance with the confidentiality and the Intellectual Property Right (IPR) policy described in the Consortium Agreement and at the dissemination level indicated in the Grant Agreement.

Specifically, the DMP provides the guidelines that will ease the coherent and consistent full life-cycle data handling throughout project lifetime, according to privacy and ethical issues and complying with the guidelines of the European Commission (EC), i.e. in line with the FAIR protocol.

The indications in the present report concern the different stages of data management and include information on what kind of data are collected, generated, and on the way, they are handled during and after the end of the project, also addressing storage and preservation tasks.



Figure 1: Key phases of data management.

Specifically, the DMP includes the following specific indications on the key phases of the data management (see Figure 1).

- Collection and generation of data: origin, nature and characteristics (type, content and size) of the collected/generated data;

- Storage: how and where data will be stored and who will be responsible for security, maintenance and access;

- Access & Sharing: format and data structure, how data are made available and shared within the Consortium and outside the project, and who determines the level of sensitivity of the data to be shared;

- Archiving: how data are made available after the end of the project.

### 2.1.2 Partners' role and responsibilities in implementing the DMP

All project partners are involved in data management in one way or another. However, some of them have specific roles and responsibilities:

- the Project Coordinator (*i.e.*, CNR), has the responsibility to ensure that data are stored in a trusted repository (in this case Zenodo.org) and to guarantee the respect of the FAIR principles, assuring that the proprietary data are secured.

- each WP leader is responsible for the integrity and the compatibility of the data generated within the WP they are responsible of.

- each Task leader is responsible for the quality of the data generated in the task and in the registration of the metadata.

### 2.1.3  Data Management Plan updates

The DMP is a "living document", which is updated continuously during the project. A first version has been submitted at M6 and a final version will be formally submitted M36. This version takes into account updates in terms of the data collected and generated during the project and in terms of the data management policy (e.g., new data, changes in consortium policies, changes in consortium composition, changes in applicable EU regulation, IPR aspects, etc.).

### 2.1.4  Data Management Plan and General Data Protection Regulation

This DMP is developed in line with the General Data Protection Regulation (EU) 2016/879 (GDPR) which was adopted on the 14th of April 2016, and became enforceable as of the 25th of May 2018 Another reference document is the  Guidelines 4/2019 on Article 25 Data Protection by Design and by Default, published in  October 2020.

# 3 Data Summary

As mentioned in Section 1, different data types will be used during the project and generated as project's outcomes. Data are preliminarily classified into **input data** and **output data**.

- **Input data (collected data)**, are provided either by
    - the **ship owners** involved in the project (*e.g.*, Laskaridis, Grimaldi) that can deliver, for example, in terms of **ship design data** (characteristics of the ships, propulsion system, maneuvering and stabilization devices, etc.) and of **on-board energy systems data** (e.g. main engine, diesel generators, energy distribution, energy absorbers, etc.). Moreover, **operational data** in terms of time histories acquired at the **highest possible frequency**, will be provided in order to tune the digital twins of the different use cases. Examples of these variables are: ship speed and route, weather conditions, sea state, wind speed and direction, fuel oil consumption, energy absorption of the auxiliaries, GHG emission, etc. When available also noon reports are provided, providing information to be compared to the high frequency operational data.
    - **other partners** in terms of additional information for the specific use cases, for the various technologies considered in the project and for the design and characterization of the retrofitting. In particular, operational data when a retrofit measure is on and off can help characterize the performance of the specific intervention.
    - **literature** (publications, papers, reports) or **public databases** (e.g. data about the Japanese Bulk Carrier that will be employed for the testing).
- **Output data (generated data)** will be delivered as a result of the project activities in terms of numerical simulations and analyses, laboratory experiments, data assimilation, data driven and surrogate models. Possible examples:
    - global values, e.g. ship resistance, propulsion thrust and torque, total and averaged power absorption, sails loads, ALS efficiency, averaged power absorption, etc.;
    - local data, e.g. hydro-aero dynamics fields, green energy production, energy storage, air fraction in ALS, optimized routing, etc.
    - KPIs characterizing the different combination of the retrofitting solutions evaluated through surrogate models for the selected use cases. These data will be made available to the public via demo-cases in the **web-based platform.**

A detailed list of the datasets provided to date during the project is provided in the Appendix. An updated table will be provided in the final version of the DMP, due by M36. In addition, a list of publications and datasets is available on the OpenAire website, which can be found at this link: https://explore.openaire.eu/search/project?projectId=corda_____he::69db76d99d861b3470c253c534045ac0

# 4   FAIR data

## 4.1 Making data findable and inter-operable, including provisions for metadata

In order to make the data files easily findable and inter-operable (*i.e.,* integrated with other data and with applications or workflows for analysis, storage, and processing) they will be grouped into **datasets**, with an appropriate ID name. Each dataset will be named in order to be easily identified by the user or by an appropriate computer code.

All data files in each dataset must have the same format and must be homogeneous, i.e. they all must be read/interpreted using the same procedure/algorithm. Data files should be provided in an open file format, meaning a format typically maintained by a standards organization and accessible for use by anyone. These formats must be compatible with both proprietary and open-source software, each under their respective licenses. For example, TXT and CSV files are suitable for this purpose. Excel files are also acceptable, as they can be opened with open-source tools like Google Sheets or OpenOffice, despite being a proprietary format.

A list of open file format can be found at this link https://opendataformats.org/ or at the Wikipedia page https://en.wikipedia.org/wiki/List_of_open_file_formats, which is constantly updated.

The metadata associated with each dataset provides information on the creator, date of publication, the types of data files and, more importantly, a brief description in which all the necessary information on how to read the data files in the dataset. As detailed in Section 4.2.1, all datasets that are suitable for sharing, particularly those that do not present any intellectual property rights (IPR) concerns, are uploaded to Zenodo.org, a reliable repository. Zenodo automatically generates a metadata file that adheres to the DataCite Metadata Standard.

As mentioned in Section 3, the dataset can be distinguished into two categories: input datasets and output datasets. The file nomenclature is different according to this classification.

### 4.1.1 Input data files

**Input or collected datasets** are provided by the project partners or come from literature or external sources, but they are not generated during the RETROFIT55 project. These data are associated with the project partner that collects or provides them. For example, they could be related to the ship design parameters, geometry, propeller shape, on-board systems, operational data of a ship on several routes, etc. The association between the owner of the input data and data/metadata files is shown, as an example, in Figure 2. It is anticipated that not all data utilized within the project can be disclosed, due to its industrial relevance or intellectual property rights (IPR) considerations. In such cases, a **description file** in open format will be shared in place of the dataset, adhering to the same nomenclature.

Figure 2: Example of Association of Data Providers to Input Datasets with Related Nomenclature

These data files are associated with an ID code in the following format:

**I_[P]_[K]_[ABC…]_V[JJ]**

where

- [I] is the letter which identifies the file as an INPUT data file

- [P] is the partner ID code, according to Table 1. If the data come from an external source, literature review or from other databases, the ID is set as EXT

- [K] is the dataset identifier (two-digit)

- [ABC…] is an optional free text to identify in short the type of data. Details on the content are provided in the corresponding metadata file.

- V[JJ] is a running two-digit index that indicates the version of the data file, in case of revisions/corrections (e.g. V01, V02 etc.). The highest number indicates the latest version.

Table 1: Partners ID

| Organisation name | Partner ID |
|---|---|
| Consiglio Nazionale delle Ricerche | CNR |
| Aalto University | AALTO |
| Atlantec Enterprise Solutions | AES |
| Friendship Systems | FSYS |
| National Technical University of Athens | NTUA |
| Astilleros De Santander | ATD |
| SimFWD | SFWD |
| Rina Services | RINA |
| Laskaridis Shipping | LASK |
| Bound4Blue | B4B |
| Liverpool John Moores University (Associated) | LJMU |
| Armada Technologies Ltd (Associated) | ARM |
| Advanced Wing Systems | AWS |
| Grimaldi Euromed | GRI |
| External source (details in metafile) | EXT |

The list of input datasets submitted to date within the project is detailed in the Appendix.

### 4.1.2  Output data files

The **output datasets** are generated within the project, hence they are associated with the work packages and the tasks in which they are produced. Figure 3 shows an example of a possible nomenclature for the output data for a given WP.
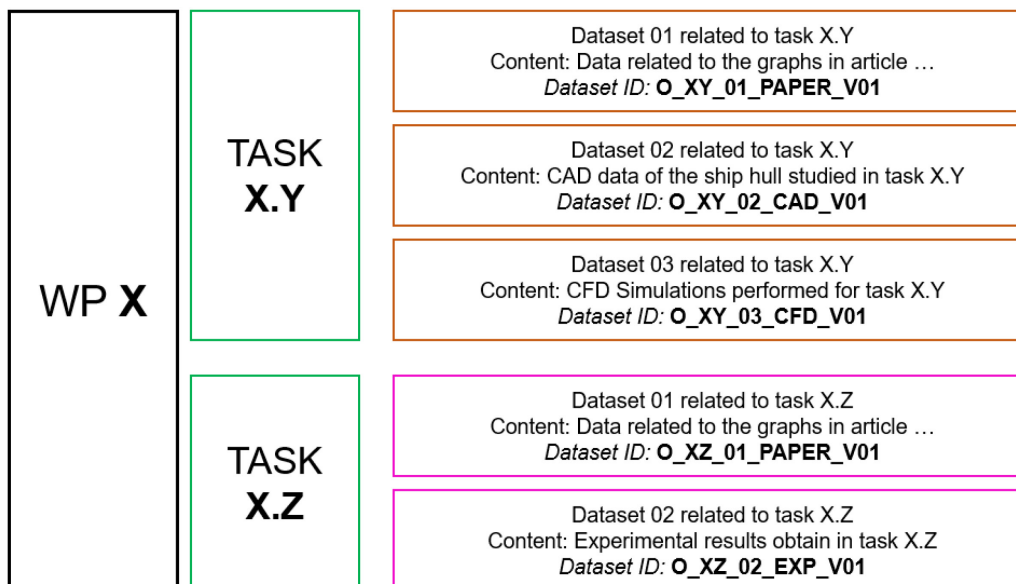


Figure 3: Example of association between Work Packages (WPs), tasks, and output datasets with related nomenclature

Each data file is associated and named using a code with the following format

**O_[WT]_[K]_[ABC…]_V[JJ]**

where

- O is the letter which identifies the file as an OUTPUT data file

- [WT] is a two-digit number indicating work package (1 to 9) and related task

- [K] is the dataset identifier (two-digit)

- [ABC…] is an optional free text to identify in short, the type of data. Further details on the content are provided in the corresponding metadata file

- V[JJ] is again a running two-digit index that indicates the version of the data file (e.g. V01, V02 etc.). The highest number indicates the latest version

The list of output datasets submitted to date within the project is detailed in the Appendix.

## 4.2 Making data Accessible

### 4.2.1 Repository

The data and metadata files will be stored in the trusted repository **ZENODO.org.** A community named RETROFIT55 on the Zenodo platform has been created, which is a space on the website that will group all the files related to the project. The community can be reached at the link: https://zenodo.org/communities/retrofit55/records?q=&l=list&p=1&s=10&sort=newest.
A snapshot of the web-page of the community is shown in Figure 4.
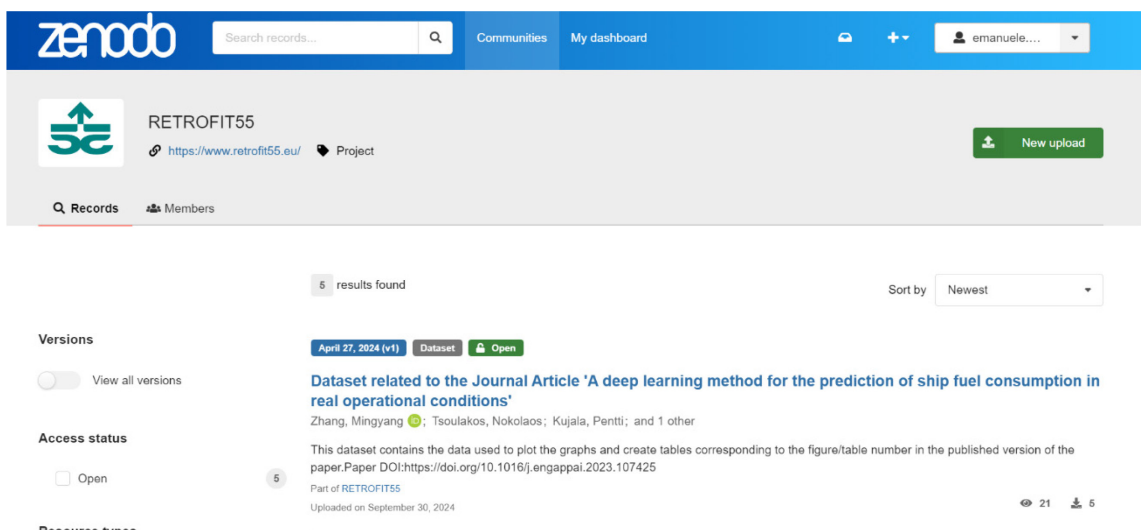


Figure 4: RETROFIT55 community on Zenodo

A Digital Object Identifier (DOI) for each dataset or any submitted file will be automatically assigned by Zenodo during the upload. When the datasets or any other type of document is submitted to Zenodo, a metadata file, compliant with the Horizon Europe requirements, is automatically produced. Different types of data can be uploaded on ZENODO platform, namely:

- publication
- poster
- presentation
- dataset

- image
- video
- software
- lesson
- other

Zenodo accepts up to 50GB per dataset, multiple datasets uploads are permitted. There is no size limit for communities.

Each task leader or partner who produces/provides the data must upload the single datasets following the nomenclature specified in Section 4.1.1 and 4.1.2, so that he can be considered the primary holder of the Intellectual Property Rights. All the necessary information to build the metadata file, required by Zenodo.org, must be provided during the submission process. The Project Coordinator (CNR) will supervise and help the authors (WP/ task leaders or other project participants) to submit the data appropriately and by the due time.

It is worth noting that once a file is uploaded on ZENODO platform, **it cannot be easily removed or modified**.

As mentioned above, due to IPR issues related to ship data which make up the majority of the input datasets, the data cannot be shared, as they belong to shipowners and/or are considered sensitive. For further details regarding the confidentiality reasons for each individual dataset, please refer to the Appendix. To provide information for potential external users, a **description file in Word (DOCX) format** is created for each dataset. This file includes a summary of the dataset and contact details (email) of a person who can be reached for inquiries about reusing the data. A template of this document is shown in Table 2.

Table 2: Template of the description files for the input datasets

| Database NAME: I_PARTNER_01 | |
|---|---|
| **Submission Date (date in which the database has been shared with the partners)** | |
| **Provider (Company/Institution Name)** | |
| **Contact Person (Name Surname, e-mail)** | |
| **Sharing Mode** | Cloud? Storage Device? Secure Server? |
| **Confidentiality (choose one of the three options)** | CONFIDENTIAL/CURRENTLY CONFIDENTIAL/PUBLIC |
| **Data Confidentiality Reasons (if Applicable)** | **Commercial Exploitation?/ Intellectual Property Rights?/Proprietary Data?/Other** |

| | |
|---|---|
| **Data Description** | *Example:*<br><br>*Operational data for the ship XXX.*<br>*The included routes are from … to … on dates …*<br>*The variables included in the data files are …*<br>*Other relevant information* |

It is important to note that when these description files are uploaded to Zenodo, the automatically generated metadata refer to the description files themselves, not to the associated datasets.

### 4.2.2 Data Sharing Platform

Part of the datasets will be also present on a data-sharing platform, only accessible by the project partners, inked to the project website Members Area. The data stored in this platform will not be accessible by external users. A screenshot of what the private area looks like is shown in Figure 6
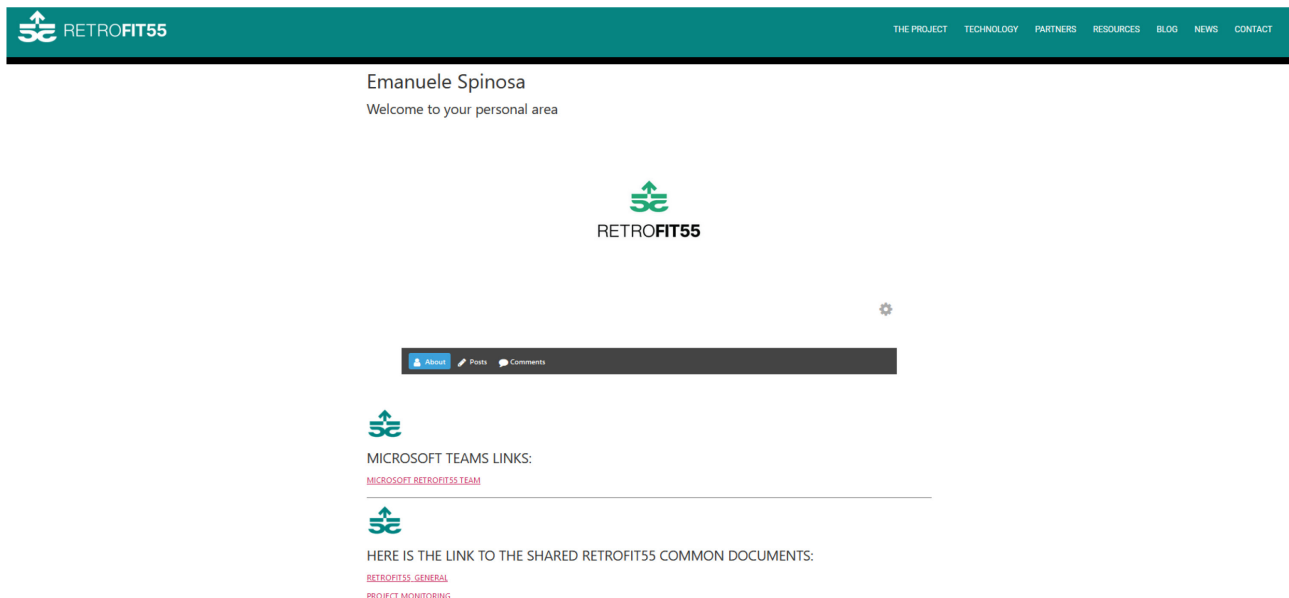


Figure 5: Screenshot of the Private Area of the RETROFIT55 website

### 4.2.3 Confidential/Public Data

The data files collected and generated during the RETROFIT55 project are classified according to three level of confidentiality, as specified in the GA. These levels are the following:

- **SC → strictly confidential**: these are company sensitive data, provided that there is no legal basis for being distributed or diffused.

- **CC → currently confidential**: these data are confidential during the project development, but they can possibly become public at a later stage e.g., Intellectual Property Rights (IPR) relevant data.

- **P → public**: this type of data can be distributed at any time and also re-used by third part users (external to the project) upon the publication of the project results.

The type of confidentiality level must be specified for each dataset. This will be detailed in the next versions of the DMP.

According to the regulations of Horizon Europe, to each non-confidential dataset or document, (i.e. CC or P data) a Creative Common 4.0 licences, type CC0 (Public Domain Dedication) or CC-BY has to be applied. A Creative Commons (CC) license is a copyright license that enable the free distribution of a copyrighted "work", i.e. any creative material made by a person (a painting, a graphic, a book, a song and its lyrics, a photograph etc.). A CC license is applied when the author wants to provide other people with the right to share, use, and build upon a created work, see for more information the website https://creativecommons.org/licenses/?lang=en. A CC license allows a certain degree of flexibility to the author, who can choose, for example, to allow only non-commercial uses of his work. In addition, a CC license protects the people who use/redistribute the author's work from the concerns of copyright infringement, as long as they abide by the conditions specified in the license itself. In particular, as indicated in the CC website:

- the **CC0 license** "enables scientists, educators, artists and other creators and owners of copyright- or database-protected content to waive those interests in their works and thereby place them as completely as possible in the public domain, so that others may freely build upon, enhance and reuse the works for any purposes without restriction under copyright or database law";

- the **CC-BY license** "lets others distribute, remix, adapt, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials".

**Other types of Creative Commons licenses, such as CC-BY-NC, CC-BY-ND, or CC-BY-NC-ND, do not align with the directives of Horizon Europe and cannot be assigned.**

### 4.2.4  Data Availability Statement

A data availability statement, which refers to any used generated or collected datasets, must be added to the end of any article or document (*e.g.*, papers, posters, presentations, etc.) before the reference list section. The statement must describe each dataset, include a link to the repository containing the data, and the DOIs.

The statement must specify if a CC0 Public Domain Dedication or a CC-BY 4.0 license is applied to document and to the related datasets.

There can be exceptions in case data cannot be shared because of legitimate interest, such as industrial exploitation, confidentiality, trade secrets, security rules, union competitive interests or IPR, including patents. In this case, the article/document must include a description of the restrictions on the data and all necessary information required for a reader or reviewer to apply for access to the data and the conditions under which access will be granted.

A few examples of Data Availability Statements, which is adapted from the website https://open-research-europe.ec.europa.eu/for-authors/data-guidelines, is presented in Table 3.

Table 3: Example of Data Availability Statements

| DATA TYPE | DATA AVAILABILITY STATEMENT EXAMPLE |
|---|---|
| Data deposited into a generalist repository | The datasets generated and/or analysed during this study are available in [insert repository name, e.g., Zenodo] and can be accessed via the persistent identifier: [insert DOI].<br>These datasets are made available under the license: [Creative Commons Attribution 4.0 International License (CC-BY 4.0)/Creative Commons Zero (CC0)].<br>For additional inquiries regarding the datasets, please contact the corresponding author. |
| Data with access restrictions | Access to the datasets generated and/or analysed during this study is restricted due to considerations related to patents, confidentiality, or intellectual property rights (IPR). As a result, the data cannot be made publicly available. However, a description of the datasets, including relevant metadata, can be provided upon request. For further inquiries regarding the datasets, please contact the corresponding author. |
| Articles without data | No data associated with this article |

### 4.2.5  Data availability policy

The RETROFIT55 Consortium supports the idea of Open Science, and the benefits coming from the data re-use at large scale. Although some of the technologies and solutions are protected by IPR and cannot be fully disclosed, most of the data generated in the project will be made openly available, in dimensionless form where appropriate. The policy for the open access of data is summarized in the schematic in Figure 7. If there is no confidentiality issue or legitimate interest, the datasets must be uploaded on an open access repository, which is Zenodo.org for this project.  If the data are underpinning a publication, they can be uploaded **at the latest at the time at the publication**, otherwise they must be uploaded as soon as possible, but in any case, **before the end of the project**.  In cases of public emergency, the granting authority can ask for immediate open access of the data. If exceptions to open access to data apply, data should be made available at least to the legal entities that need the data to address the public emergency. Only in exceptional cases, data can be deposited after the pro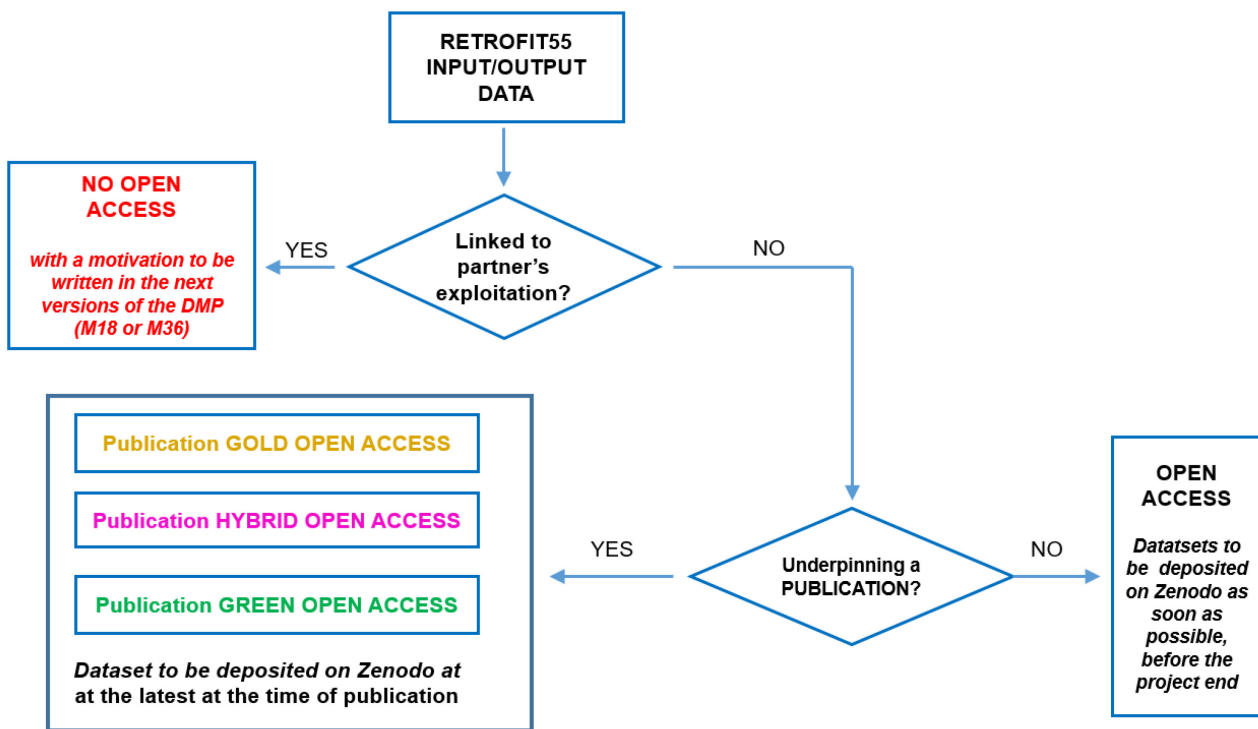ject has ended. For more information, see the website https://www.openaire.eu/how-to-comply-with-horizon-europe-mandate-for-rdm.

Figure 6: Policy for the open access of the data generated in the project RETROFIT55

## 4.3 Data Re-use policy

In line with Horizon Europe guidelines, comprehensive documentation must be provided to validate the data analysis and facilitate data reuse. To this end, the metadata for each dataset contains all the information required to read and interpret the data files, not only for the project partners but also for any external users. In certain instances, a ReadMe file may also be incorporated into the database to provide clarity on the data files and their interpretation.

The data available on the Zenodo repository are accessible to the public domain, allowing for the greatest possible reuse.

All data associated with a scientific publication are subject to a review process, as the publications themselves are all subject to peer review, which ensures quality control. In addition, the quality of the data is also ensured during the project monitoring process, with a double review process for each deliverable (see Project Management Handbook). This includes a technical review by a relevant project partner and an editorial review by the project coordinator.

# 5 Other research outputs

## 5.1 Publications

In the RETROFIT55 project, scientific publications are among the main research outputs. The procedure for the publication acceptance is detailed in the GA and summarised in the Data Management Handbook, Deliverable 9.1.

As specified in the DOA-GA, all scientific publications must follow the Open Access policy. For more information, see the web-page https://www.openaire.eu/how-to-comply-with-horizon-europe-mandate-for-publications.

When choosing a journal to publish the RETROFIT55 results, following the policy of Horizon Europe, three options are available:

- **Gold Open Access**, in which the final published version of your article is made permanently and freely available online for anyone, anywhere to read/download. Gold Open access allows the author to share their research anywhere as of the publication date, while keeping the author's copyright. An Article Publishing Charge (APC) is typically required by the journal, which is eligible for reimbursement.
- **Hybrid Open Access,** in which the article can be published on a submission journal, which also offers the option for open access after the payment of an APC. In this case the APC is not eligible for reimbursement in the framework of Horizon Europe, therefore this option should be chosen preferably if the institution/company has already a read-and-publish deal with the selected editor/journal.
- **Green Open Access**, also known as self-archiving, is the procedure when the author posts on a public repository an earlier version of the manuscript sent to a submission journal, i.e. the accepted version after the peer reviewing process. This enables the author to share the article, complying with the EU regulations, without having to pay any APC. In Horizon Europe **no embargo period is permitted**, therefore it is necessary to choose a journal/editor complying with this requirement.

Each paper must contain a data availability statement and a link to the underlying datasets, as specified in Section 4.2.4. If it is not possible to share the data, for the reasons mentioned above, the data availability statement must report this.

Just like the datasets, the manuscript shared in the public repository must be associated with a Creative Commons CC0 or CC-BY license (https://creativecommons.org/licenses/?lang=en). It is worth to be remarked again that also for publications other types of licenses, such as CC-BY-NC or CC-BY-ND or CC-BY-NC-ND are not in line with the policy of Horizon Europe and cannot be chosen.

## 5.2 Web based tool

The web-based tool will be available to the public with some specific examples developed within the project. The background information or other data that are liable for commercial exploitation and that could limit the patentability of the developed technology, will not be made accessible to the public.

## 5.3 Presentations, Posters etc.

The main results of the project will also be presented at events, conferences or dedicated meetings with stakeholders.

# 6 Data security

As far as data security is concerned - including data recovery, as well as secure storage/archiving and transfer of sensitive data - Zenodo is hosted at CERN, which is an Intergovernmental Organization (IGO), with its seat in Switzerland and therefore not subject to the EU's General Data Protection Regulation (GDPR). Data protection at CERN, which Zenodo complies with, is governed by CERN's Operational Circular 11 (OC11) that offers data protection at the same high standards and comparable to GDPR.

The security system of the data-sharing platform will be in line with the directives of Horizon Europe.

The task leaders, the work package leaders must also perform regular local data backups to minimize at most the risk of data loss.

# 7 Ethics

At the current stage there are no ethics or legal issues that can have an impact on data sharing. Any possible issue will be discussed in further meeting, whether any problem arises.

# 8 Other issues

At the current stage, the project is not supposed to make use of other national, funder, sectorial, departmental procedures for data management.

# 9 Closing remarks

This report represents an updated version of D9.2. It provides an update to the initial data management plan for the RETROFIT55 project.

The report provides some general information about the type of data used and generated by the project, the organisation of the file repository (Zenodo.org), the way files and associated metadata files are named, and the approach to open access. The document will continue to be updated throughout the project, with a final version due by the end of the project, which will include all details of the data produced by the project and how it can be accessed for re-use after the project has ended.

# Appendix – List of Datasets

In this Section the list on input and output datasets is detailed. A table is available and automatically updated at the link https://explore.openaire.eu/search/project?projectId=corda_____he::69db76d99d861b3470c253c534045ac0.

## Input datasets

1. **Owner/Providers:** LASKARIDIS Shipping

   **Short Dataset Description:** Operational data for the Kastor Ship (1st set from 1st Feb 2021 to 10th Feb 2023, 2nd set from 10th Feb 2023 to 31st Jul 2023)

   **Dataset ID:** I_LASK_01_OD_V01

   **Submission Date:** 26/08/2023

   **Confidentiality:** Strictly Confidential

   **Data Confidentiality Reasons (if Applicable):** Commercial Exploitation

2. **Owner/Providers:** LASKARIDIS Shipping

   **Short Dataset Description:** Noon Reports for the Kastor Ship (year 2021; year 2022; and Jan 1 2023 to10 Feb 2023)

   **Dataset ID:** I_LASK_02_NOONR_V01

   **Submission Date:** 26/08/2023

   **Confidentiality:** Strictly Confidential

   **Data Confidentiality Reasons (if Applicable):** Commercial Exploitation

3. **Owner/Providers:** LASKARIDIS Shipping

   **Short Dataset Description:** Detailed drawings of the Kastor Ship's hull and of systems installed on the vessel: ship assembly and other general drawings, hull and appendages, machinery, piping and electrical systems

   **Dataset ID:** I_LASK_03_CAD_V01

   **Submission Date:** 08/03/2023

**Confidentiality:** Strictly Confidential

**Data Confidentiality Reasons (if Applicable):** Commercial Exploitation

# Output datasets

1. **Authors/Providers:** Mingyang Zhang

   **Dataset Content:** Data for figures of the journal article

   **Dataset ID:** O_13_01_PAPER_V01

   **WP Task:** 1.3

   **Underpinning Publications:** A deep learning method for the prediction of ship fuel consumption in real operational conditions Engineering Applications of Artificial Intelligence

   **Sumbission Date:** 27/09/2024

   **PID of Dataset:** https://doi.org/10.1016/j.engappai.2023.107425

   **Zenodo URL (if available):** https://zenodo.org/records/13846854

   **License:** CC-BY 4.0

   **Data Confidentiality Reasons (if Applicable):** -

2. **Authors/Providers:** Dimitra Anevlavi

   **Dataset Content:** Data for figures of the journal article

   **Dataset ID:** O_21_01_PAPER_V01

   **WP Task:** 2.1

   **Underpinning Publications:** Efficiency Enhancement of Marine Propellers via Reformation of Blade Tip-Rake Distribution

   **Sumbission Date:** 27/09/2024

   **PID of Dataset:** https://doi.org/10.3390/jmse11112179

   **Zenodo URL (if available):** https://zenodo.org/records/13838874

**Data Confidentiality Reasons (if Applicable): -**

## References

1. RETROFIT55 Grant Agreement.
2. RETROFIT55 Consortium Agreement.
3. WP9 Kick-off meeting presentation
4. https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/agr-contr/general-mga_horizon-euratom_en.pdf
5. https://open-research-europe.ec.europa.eu/for-authors/data-guidelines
6. https://creativecommons.org/licenses/?lang=en
7. https://www.openaire.eu/how-to-comply-with-horizon-europe-mandate-for-rdm
8. Guidelines 4/2019 on Article 25 Data Protection by Design and by Default