SEUS
Smart European Shipbuilding

Funded by the European Union

D7.5 - SECOND UPDATE TO THE DMP (M36)

This project has received funding from the Horizon Europe Framework Programme (HORIZON) EU programme under grant agreement No 101096224.

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Name	Organization
Jisang Ha, Henrique M. Gaspar	Partner No. 1, NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU

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Executive Summary

This document provides the second update to the Data Management Plan (DMP) following previous versions D7.3 (M06) and D7.4 (M18), in accordance with Horizon Europe data management guidelines. The SEUS data management plan defines the policy for handling data generated in the project, specifying what types of data are produced, whether and how they are made open and accessible for verification and reuse, and how they are curated, processed, and stored.

The SEUS project continues to support openness according to the EU FAIR approach and the principle *as open as possible, as closed as necessary*. For data management and sharing, Zenodo has been established as the main repository for public datasets and documentation, ensuring long-term preservation and DOI assignment, while GitHub remains the platform for code management and version control. Confidential data continues to be handled internally by industrial partners using commercial-grade security systems. GDPR compliance is maintained across all institutions. The project has no ethical issues.

This document is part of WP7 (Task 7.5) and outlines the updated data management requirements and policies at Month 36. It reflects the evolution of practices since M18 and includes a summary table comparing the status at M18 and M36, followed by detailed explanations of the updates. The next update is scheduled for M48, as the project progresses and new datasets and results become available.

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1. Purpose and Overview

1.1. Purpose

The organizational structure of SEUS has been chosen according to the DESCA model grant agreement governance structure to ensure that the objectives can be achieved within the project's lifetime, thereby guaranteeing the highest possible quality.

This document, D7.5 – Updated Data Management Plan (DMP), is the second update following the first DMP (D7.3) and the previous update (D7.4). It is prepared in accordance with Horizon Europe guidelines and outlines how research data is managed during the project and after its completion. The DMP describes what data is collected, processed, or generated, the methodologies and standards applied, whether and how this data is shared and/or made open, and how it is curated and archived.

At M36, the update reflects the consolidation of Zenodo as the main repository for public datasets and documentation, continued use of GitHub for code management, and reaffirmation of confidentiality measures for proprietary data. GDPR compliance remains fully implemented across all partners. No ethical issues are expected with the data from this project.

1.2. Project Overview (M36 Update)

The SEUS project aims to deliver a smart, integrated platform for European shipbuilding, combining CAE, CAD, CAM, and PLM functionalities to support digital continuity and Industry 5.0 principles. The platform is being developed and tested in industrial environments to enable advanced workflows, interoperability, and human-centric design practices.

At M36, the project has progressed significantly in software development and integration, with ongoing validation in shipyard use cases. These advancements generate diverse datasets, including CAD models, simulation results, and documentation, which require structured management to ensure openness, security, and compliance with FAIR principles. This update to the Data Management Plan reflects these developments and reinforces the strategies for handling both open and confidential data throughout the remaining project phases.

2. Smart Platform – SEUS (M36 Update)

2.1. SEUS Platform

The core of the project remains the development of a smart PLM platform incorporating CAD/CAM/CAE elements aligned with shipbuilding practices. Since M18, significant progress has been made in software development and integration. The platform now includes validated modules for CAE, CAD/CAM, and PLM functionalities, supporting digital continuity and Industry 5.0 principles. These modules are being tested in industrial environments to ensure interoperability and scalability for real-world shipyard applications.

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The SEUS Smart CAD+PLM platform aims to integrate Naval Architecture modules for early-stage design (hull form, stability, weight estimation) with AI-driven enhancements, CAD/CAM modules for functional and production design (including automated CNC outputs), and PLM components for lifecycle management, change control, and IoT integration. At M36, the platform architecture has matured, and the WAVE Architecture developed by CADMATIC and CONTACT is operational in pilot demonstrations, enabling end-to-end data flow and digital thread implementation.

Cybersecurity remains a priority. The project continues to conduct workshops on secure programming, threat awareness, and ISMS development to safeguard both open and proprietary data. These measures ensure compliance with GDPR and industry standards while supporting the openness principle for non-confidential datasets. A detailed public description of the platform and its components is available on the project website: https://www.ntnu.edu/seus/resources.

2.2. Data from SEUS Platform Implementation

The implementation of the SEUS platform at industrial partners has generated significant datasets that require structured management. These datasets originated mostly from WP4 - User Case I: Concept Design Development, which tested 11 critical functionalities within the PLM environment. The data (mostly confidential) includes:

1. **Historical Project Data**
    - Documentation from 139 historical projects, covering 219 individual ships.
    - Includes technical specifications, design parameters, and performance data.
2. **New Design Projects**
    - Data from 48 concept design development projects executed partially through the SEUS platform.
    - Includes CAD models, design breakdown structures, and associated documentation.
3. **Product Breakdown Structures (PBS)**
    - Hierarchical design data for ship concepts and contract designs.
    - Includes component-level details and configuration data.
4. **Document Revision and Workflow Data**
    - Version-controlled design documents, status management (WiP, Released, Obsolete).
    - Internal review logs and design change tracking.
5. **Equipment Design Documentation**
    - General arrangements (GA), build specifications, makers lists, and technical sheets.
6. **Access Control and User Role Data**
    - Configuration of user permissions, access rights, and subscription functionalities within the PLM system.
7. **Survey Responses and Feedback**
    - Detailed usability and performance evaluations from 10 end-users (naval architects and system specialists).
    - Includes structured responses for 11 tested functionalities and qualitative feedback on challenges.
8. **Performance Metrics**
    - Observations on system speed, usability issues, and time-saving potential during early implementation phases.

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These datasets are primarily confidential, as they contain proprietary ship design information and internal operational data from Ulstein and Gondan shipyards. They are stored within the SEUS platform (Wave) and internal servers of the respective companies, following commercial-grade security standards. Access is restricted to authorized project partners, and GDPR compliance is ensured for any personal data collected during surveys. Figure 1 exemplifies one of the dashboards from SEUS platform implementation, including document structures and revision histories within the PLM environment.

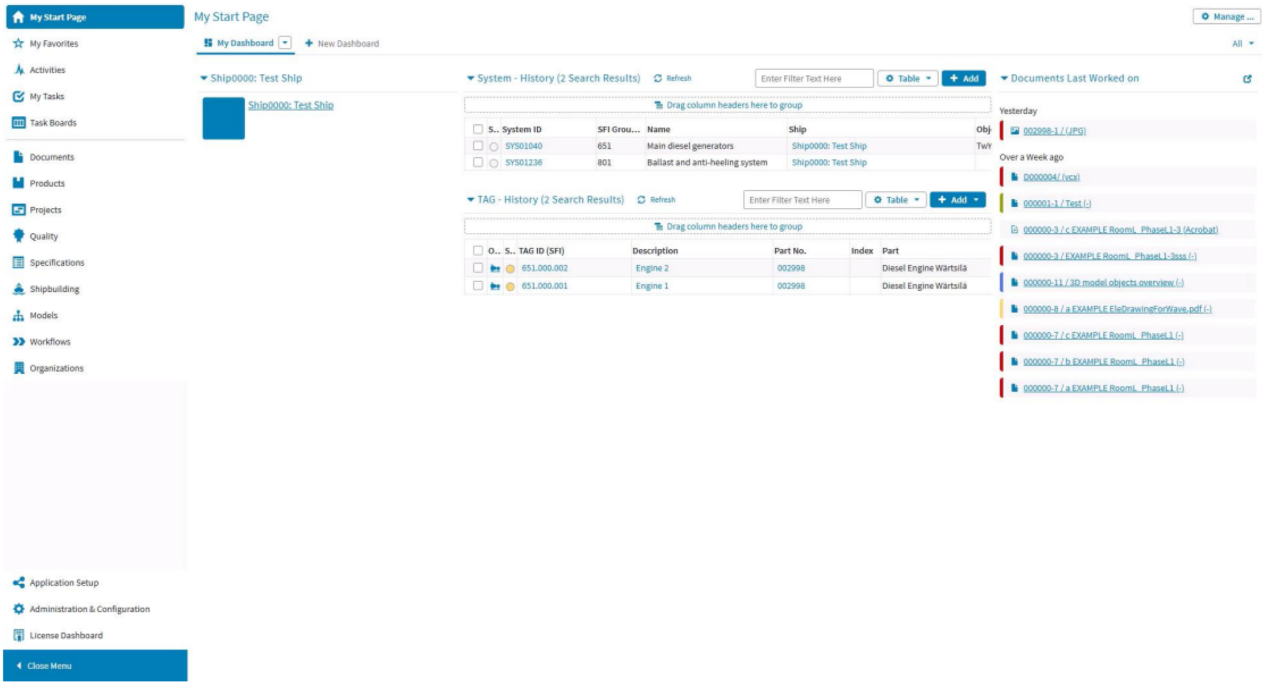

Figure 1 – Example of Project database on SEUS platform

For open science compliance, aggregated and anonymized survey results and non-sensitive implementation insights will be published in Zenodo, supporting transparency and reproducibility without compromising confidentiality. Detailed technical data, including CAD models and PBS structures, will remain restricted to industrial partners.

Further details on the implementation data, including user case descriptions, functionalities tested, and survey results, are provided in Deliverable D4.4 – Implementation Data (SEN).

3. Data Description and Management

This section provides an updated overview of SEUS data management practices at Month 36 (M36), highlighting key changes since M18 and confirming compliance with Horizon Europe requirements. It explains how data is collected, processed, stored, and shared, and introduces new datasets generated during platform implementation.

The SEUS project continues to follow the principle *as open as possible, as closed as necessary* and adheres to FAIR and GDPR guidelines. Personal data collected during surveys is anonymized before

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publication, while raw data is securely retained for the project duration and deleted according to GDPR retention rules. Resources for data management, including repository maintenance and compliance activities, are covered internally by partners, with no additional EU budget allocation required.

To ensure openness and long-term accessibility, Zenodo has been consolidated as the main repository for public datasets and documentation, providing DOI assignment and integration with OpenAIRE. GitHub remains the platform for code management under MIT license, supporting collaborative development and transparency. Confidential data continues to be stored on secure internal servers of industrial partners.

Interoperability and reusability are also priorities. The project is evaluating recognized standards such as ISO 10303 (STEP), BIM, and OCX for maritime CAD data. All open datasets will include comprehensive documentation and metadata to ensure clarity on origin, structure, and intended use.

Since M18, new data has been generated through SEUS platform implementation at industrial partners, including:

- Historical project data (139 projects, 219 ships)
- Concept design projects (48 projects)
- Product Breakdown Structures (PBS) and revision logs
- Equipment design documentation and workflow status data
- Survey responses and performance metrics from end-users
- Training material

These datasets are primarily confidential and stored within the SEUS platform (Wave) and internal servers at Ulstein and Gondan shipyards. Aggregated and anonymized survey results and non-sensitive insights will be published in Zenodo to support transparency without compromising confidentiality. Further details are provided in Deliverable D4.4 – Implementation Data.

To summarize progress, this section includes in the following: Updates summary table comparing M18 and M36 status (Table 1) and a Data summary table listing all major datasets, their formats, access levels, and storage location (Table 2)

NTNU, as project coordinator, oversees compliance with Horizon Europe data management requirements and ensures timely updates to the DMP. Each WP leader remains responsible for managing data within their scope, following the agreed policies.

Table 1 – Data Status

Topic	M18 Status	M36 Status (Implemented)
Repositories & Openness	GitHub and Zenodo mentioned; FAIR principles referenced.	Zenodo established as the main repository for project documentation, GitHub remains for code management.
Confidential Data Handling	Confidential data stored in SharePoint and internal tools.	Confidential data continues to be managed on internal servers with commercial-grade security, no new measures needed.

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Data Summary	No defined structured table of data types, formats, volumes.	Added summary of CAD models, ship design data, construction/operations datasets, documentation, tutorials, with formats (2D, 3D CAD, text, PDF).
Interoperability	No mention of vocabularies or standards.	Interoperability under review; testing standards and vocabularies for validation before adoption.

The Data Summary Table complements this by offering a structured overview of all data types managed within the project, including confidential datasets from industrial implementation and public datasets for open science. This table ensures transparency regarding data formats, access levels, and storage locations, supporting FAIR principles and Horizon Europe's emphasis on reproducibility and openness.

Table 2- Data Summary Table (M36):

Data Type	Format	Access Level	Storage Location
CAD Models (Hull, Outfitting)	2D/3D CAD files	Confidential	SEUS Platform (Wave), internal servers
Historical Project Documentation	PDF, text	Confidential	Internal servers (Ulstein, Gondan)
Concept Design Projects	CAD, PBS, docs	Confidential	SEUS Platform (Wave)
Equipment Design Documentation	GA drawings, specs	Confidential	SEUS Platform (Wave)
Workflow & Revision Logs	PLM system data	Confidential	SEUS Platform (Wave)
Access Control & User Role Configurations	PLM system data	Confidential	SEUS Platform (Wave)
Survey Responses (Aggregated)	CSV, PDF	Public (anonymized)	Zenodo
Performance Metrics	Text, tables	Confidential	Internal servers
Source Code	Git repositories	Public (MIT license)	GitHub
Public Deliverables & Reports	PDF	Public	Zenodo

The SEUS project maintains an active commitment to openness and transparency through continuous updates to its dissemination channels. The official project website (www.seus-project.eu - Figure 2) provides public access to project information, deliverables, and summaries of results. Source code repositories on GitHub (https://github.com/orgs/seus-project/repositories - Figure 3) are regularly

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updated under open licenses to support collaboration and reuse. Public datasets and documentation are preserved on Zenodo (https://zenodo.org/communities/seus - Figure 4), ensuring long-term accessibility, DOI assignment, and integration with the European Open Science ecosystem. These platforms collectively guarantee that SEUS data remains findable, accessible, and reusable in line with Horizon Europe's FAIR principles.

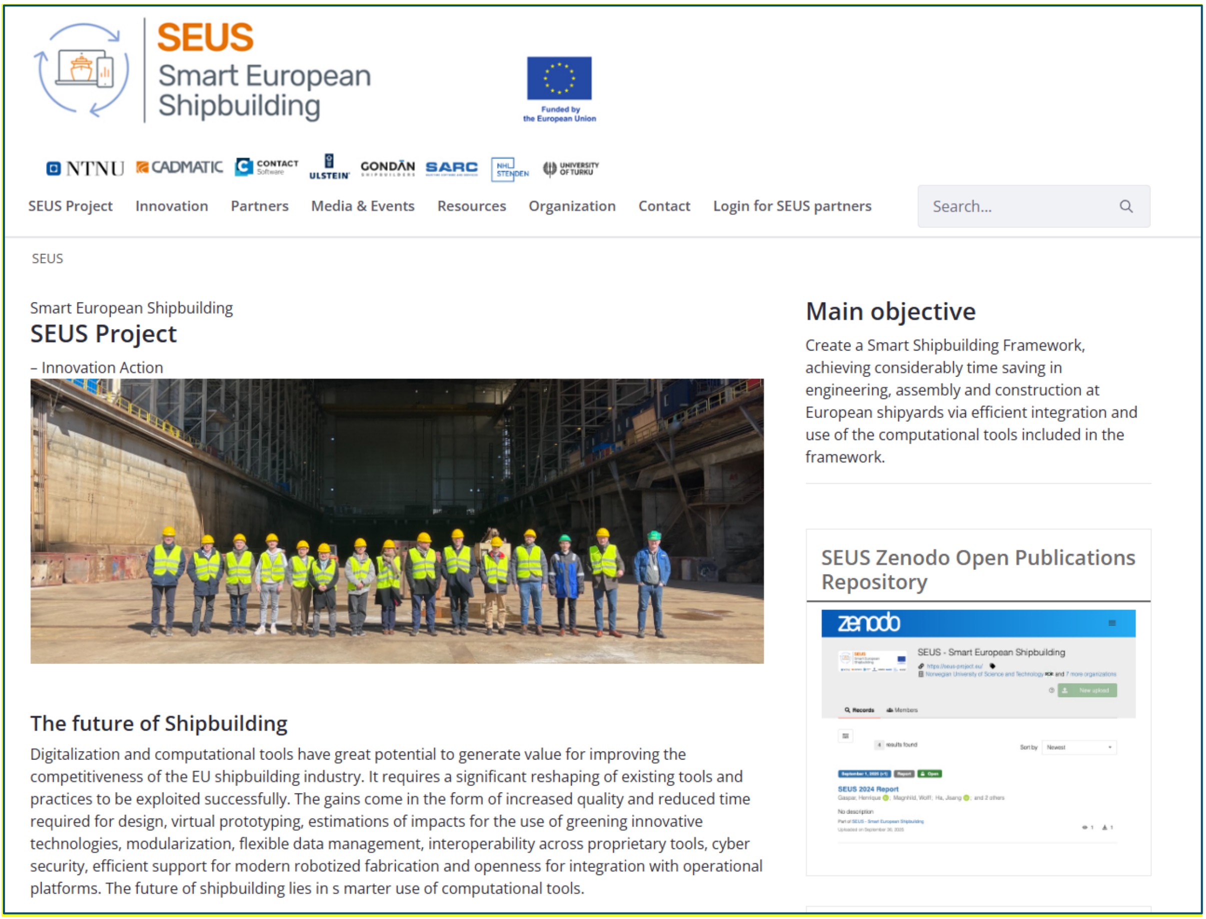

Figure 2 - SEUS Webpage screenshot (obtained on 8th December 2025)

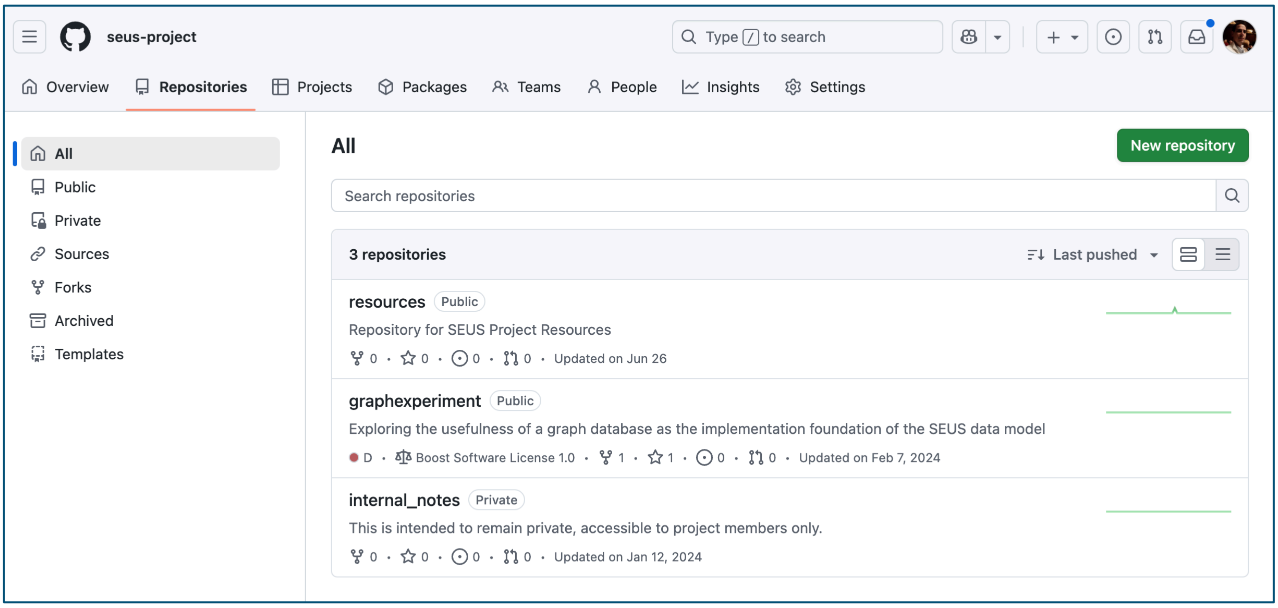

Figure 3 – GitHub repository of SEUS Project (obtained on 10 Dec 2025)

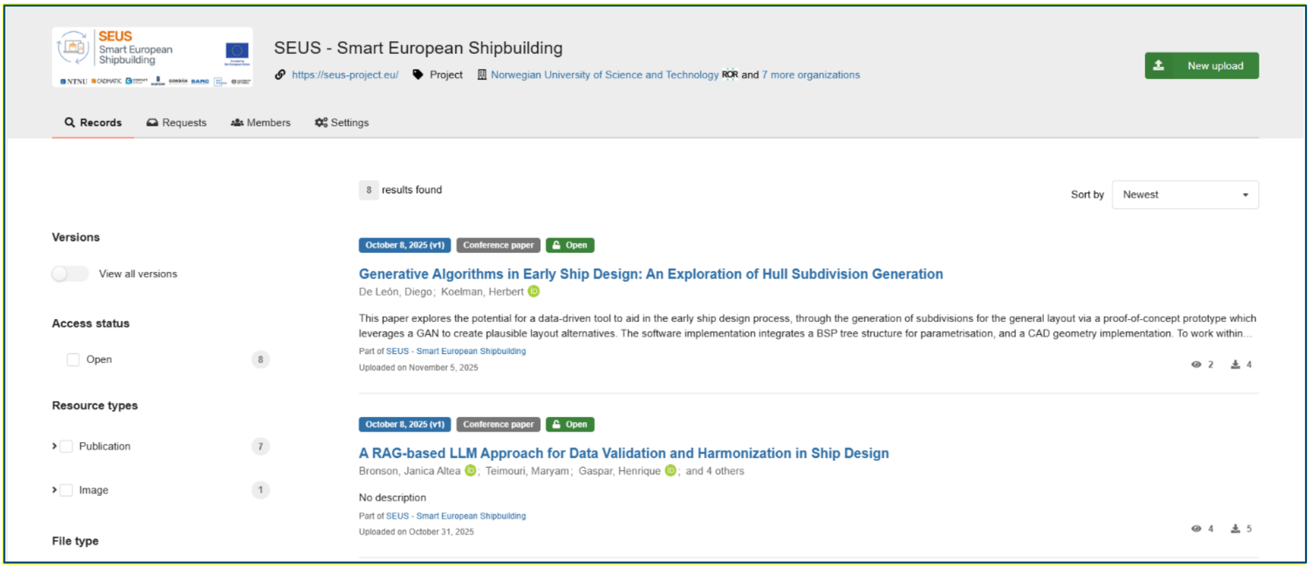

Figure 4 – Zenodo Repository of SEUS Project (obtained on 8th December 2025)

A final update of the DMP will be produced in M48 (D7.6).

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