MoDeClear

Data Management Plan

version 1.1

Laboratorio de Ingeniería Mecánica - LIM

Universidade da Coruña

November 13, 2025

Review history

v. 1.1	November 13, 2025	Review by UDC Library service - Added ISO norm for STEP format - Metadata includes human-readable .txt files - Zenodo selected as repository for long-term data preservation
v. 1.0	November 10, 2025	Initial version

1 Description

This is the Data Management Plan (DMP) of the MoDeClear project (Multibody System Dynamics Methods for the Detection and Monitoring of Clearances in Industrial Machinery). MoDeClear is a research initiative aimed at providing a solid knowledge background and methodological approaches for the modelling and detection of undesired clearances in industrial machinery.

This DMP regulates the generation, handling, storage, and sharing of the data collected during the development of the MoDeClear project.

1.1 Project researchers and organizations

MoDeClear is developed by researchers from Laboratorio de Ingeniería Mecánica (LIM - Mechanical Engineering Laboratory) at CITENI, Universidade da Coruña (UDC), and Ikerlan. The list of MoDeClear researchers is shown in Table 1.

Table 1: MoDeClear personnel.

Researcher	**Organization**	**ORCID**
Antonio J. Rodríguez	UDC	0000-0002-8635-0452
Emilio Sanjurjo	UDC	0000-0002-3024-911X
Mario Cabello	IKERLAN	
Mario López Lombardero	IKERLAN	0000-0001-8673-1944
Francisco J. González	UDC	0000-0003-0187-7990
Miguel Á. Naya	UDC	0000-0001-7901-8278

The project tasks have included collaborations with researchers from LUT University (Finland), Warsaw University of Technology (WUT, Poland), and Kyung Hee University (KHU, Korea). The list of MoDeClear collaborators is shown in Table 2.

Table 2: MoDeClear collaborators.

Researcher	**Organization**	**ORCID**
Grzegorz Orzechowski	LUT	0000-0002-3252-1236
Vuong Nguyen	LUT	
Aki Mikkola	LUT	0000-0003-2762-8503
Maciej Pikuliński	WUT	0000-0002-8239-8328
Paweł Malczyk	WUT	0000-0001-5969-7218
Jin-Gyun Kim	KHU	

The contact person for the MoDeClear project is Francisco González (f.gonzalez@udc.es).

2 Funding

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3 License

4 Data Management

4.1 Data Description, Collection, and Reuse of Existing Data

The primary data collected in ModeClear will consist in raw observational data from physical sensors mounted on prototypes and industrial machinery. Secondary data will include processed sensor data and 3D CAD files.

Sensor data, both raw and processed, will be stored, where possible, in human- and machine-readable plain text formats, such as .csv and .txt. CAD models will be provided in .step format. These are widely supported formats across disciplines. The .csv and .txt formats can be easily processed without the need of specific software tools. The .step format is an ISO standard[1] supported by the majority of CAD software-packages.

The size of each data file is expected to be of several MB. The sampling rate required for

[1]ISO 10303-1:2024 Industrial automation systems and integration — Product data representation and exchange. Part 1: Overview and fundamental principles.

most experiments is in the range of kHz. Data will be stored in double precision, when possible.

4.1.1 Data collection

New data will be collected in test-bench and machinery experiments, obtained by means of direct observation sensors, e.g., accelerometers and gyroscopes.

The CAD models of the project test benches have been developed with conventional CAD software tools and will be offered as support documentation to provide a background to interpret the data obtained in the experiments.

Each test bench used in the project will be assigned a unique identifier. Each experiment in which data are collected is assigned a unique test identifier and a description sheet, which documents the date and time of experiment execution, the location at which the test was performed, and the execution conditions (test bench identifier, configuration, and experiment duration).

CAD models are timestamped. A register of modifications is kept.

XML-formatted metadata will accompany the project data and contain the above-mentioned information about the experiment during which it was collected. This information will also be provided in a human-readable .txt or markdown file.

All data will be processed following FAIR principles throughout their whole lifecycle, in order to make them findable, accessible, interoperable and reusable.

4.1.2 Data reuse

Collected data will be reused to reproduce and validate findings, to enable follow-up research by the MoDeClear team and other research initiatives, and to contribute to the wider community of researchers, public authorities, and scientists.

4.2 Storage and Backup during the Research Process

The data will be stored at LIM during the duration of the MoDeClear project, using the storage capabilities (OneDrive) offered by UDC. LIM researchers will keep local backup copies of the data at the Lab server. Regular backups will be performed every month in external hard drives kept at two different locations.

No sensitive data will be collected nor stored during this project.

4.3 Legal and Ethical Requirements

Personal data will not be collected nor stored during this project.

MoDeClear data will be owned by Universidade da Coruña. The management of the project data will correspond to Francisco J. González and Miguel Á. Naya.

Data will be open as defined by this DMP license, except for those data obtained from Ikerlan machinery, which will be treated as confidential. The third-party use of open data is not restricted, while the re-use of confidential data is subjected to the approval of the UDC and Ikerlan teams.

The designed test benches remain the intellectual property of the project researchers.

The publication of research data will not be in conflict with the commercial interests or patent applications of UDC and Ikerlan. FAIR data must be “as open as possible, as closed as necessary”. Thus, following this principle, datasets regarding patent applications or other intellectual/industrial registrations will not be shared.

4.4 Data Sharing and Long-Term Preservation

Open data selected for dissemination will be uploaded to Zenodo upon publication of the project results. The characteristics of the Zenodo repository guarantee the FAIRness of data: metadata follows the DataCite schema and the JSON exchange system, which ensures reproducibility and exchange with other schemas. Each dataset deposited in Zenodo will have an associated

readme.txt and will be identified by means of a DOI. Data will be available immediately upon their publication on the repository and could be used to support the research conclusions of MoDeClear or reused by other researchers. No exclusive use of the uploaded data will be claimed. Given the data formats recommended in this project, no specific tools will be needed to access and reuse the experimentally collected data. CAD software tools will be necessary to interpret CAD files.

The person responsible for data management will be Francisco J. González, who will be in charge of data archiving and sharing, and will act as data manager.