INTERMODEL EU

Simulation using Building Information Modelling Methodology of Multimodal, Multipurpose and Multiproduct Freight Railway Terminal Infrastructures

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D1.15 – DATA MANAGEMENT PLAN 2

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Revision	Date	Author	Organization	Description
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0.2	08/02/18	Gisela Soley	IDP	Dataset 6
0.3	12/02/18	Mikel Borràs Gisela Soley	IDP	First draft
0.4	14/02/18	Pau Morales	CENIT	Dataset 4
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Statement of originality:

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Executive Summary

This deliverable provides the INTERMODEL EU Data Management Plan (DMP) version 2 as an update of the Data Management Plan version 1.

The deliverable outlines how data collected or generated will be handled during and after the INTERMODEL EU action, describes which standards and methodology for data collection and generation will be followed, and whether and how data will be shared.

This document follows the template provided by the European Commission in the Participant Portal.

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1. Introduction

1.1 Scope

The scope of this document is to update the Data Management Plan (DMP) that was delivered in M6 of the project (February 2017), and describes the types of data that will be generated or gathered during the project, the standards that will be used, the ways how data will be exploited and shared for verification or reuse, and how data will be preserved.

This document aims to provide a consolidated plan for INTERMODEL EU partners in the data management plan policy that the project will follow. The present document is the second version of the DMP. If necessary, the DMP will be updated during the lifecycle of the project.

1.2 Audience

The intended audience of this document is the INTERMODEL Consortium.

1.3 Definitions / Glossary

The main terms used in this deliverable are described as follows:

Data Management Plan (DMP) – document that describes the data management life cycle for all datasets to be collected, processed or generated by a research project. It covers: the handling of research data during and after the project; what data will be collected, processed or generated; what methodology and standards will be applied; whether data will be shared/made open access and how; and how data will be curated and preserved.

FAIR data – set of guiding principles to make data Findable, Accessible, Interoperable and Re-usable.

1.4 Abbreviations

The abbreviations used in the present document are:

BEP: BIM Execution Plan

BIM: Building Information Modelling

DMP: Data Management Plan

EU: European Union

FAIR: Findable, Accessible, Interoperable and Re-usable

PDF: Portable Document Format

WP: Work Package

1.5 Structure

- **Introduction:** contains an overview of this document, providing its Scope, Audience, and Structure.
- **Responsibilities:** defines who is the responsible for data management.
- **Data summary:** contains the purpose of the data collection/generation and its relation to the objectives of the project; types of formats of data generated and collected; origin of the data; to whom might it be useful.
- **General principles:** describes the principles that must be taken into consideration for the data management.
- **FAIR data:** this section includes the requirements to make data findable, openly accessible, interoperable and increase data re-use, if necessary.
- **Allocation of resources:** defines the costs for making data FAIR, if any, and the responsible for data management in the project.
- **Data security:** explains provisions for data security if needed and how data is safely stored.
- **Ethical aspects:** contains ethical and legal issues that can have an impact on data sharing.
- **Other issues:** this section contains other national/sectorial/departmental procedures for data management, if necessary.
- **Data Management Plan:** provides an analysis of the main elements of the data management policy used with regard to all datasets identified and generated by the project.
- **Conclusions:** gathers the main issues of the DMP.

2. Responsibilities

Mikel Borras (IDP) will be the person in charge of the data during the project. He has the responsibility to ensure that data shared through the INTERMODEL EU website are easily available, and also that backups are performed and that proprietary data are secured.

Data responsible	
Person in charge of the data during the project	Mikel Borràs mborras@idp.es IDP

IDP will ensure data integrity and compatibility for its use during the project lifetime by the different partners composing the Consortium.

Validation and registration of data is responsibility of the partner who generates the data in the WP.

3. Data summary

Data will be collected from the intermodal terminals in order to properly develop a BIM virtual model of them and to be able to simulate the processes within through simulation software. This data needed for the simulations will include information regarding aspects such as 3D volumes' dimensions and geo-location, modal laying out, waiting time, terminal arrival behaviours, number of trucks, terminal's machinery data, etc.

In addition, regarding the modelling, data needed will consist basically in the design/layout of the terminal, number of cranes, CAPEX, OPEX, etc. All this data will be provided by the Terminal Operators/Owners (CSI, ASPS) and managed mainly by IDP, MAC, VTT and VIASYS. All these partners will have open access to models and their underlying data.

Different datasets will be created in order to define the models, and will be useful for the Consortium to be able to validate the results obtained through the simulations.

3.1 Data set description

All consortium partners have identified the datasets that will be required for the development of the project. The list is provided below, while the nature and details for each dataset are given in the subsequent section 10.

This list was previously defined according to the needs of the project and has been adapted in the present updated version taking into consideration the project progress. If required, the list below could be adapted in future versions of the DMP.

#	Dataset (DS) name	Responsible partner	Related WP(s) & task
1	DS1_Data_collection_terminals_operation	MAC	WP5 Task 5.1
2	DS2_Data_collection_external_mobility	CENIT	WP6 Task 6.2
3	DS3_Data_collection_terminals_layout	IDP MAC	WP4 Task 4.2 WP7 Task 7.1
4	DS4_Data_collection_market_data	DHL	WP8 Task 8.2
5	DS5_Project_deliverables	IDP	WP1 Task 1.1
6	DS6_Data_collection_terminals_KPI	IDP MAC VIAS	WP4 Task 4.2 WP7 Task 7.1 WP7 Task 7.2

4. General principles

There are no requirements expected by the funding or partners regarding data linked to the project, and there are no additional requirements associated with the data being submitted.

The INTERMODEL EU project only needs the collection of **non-sensitive data**, which means that **no personal identifiers will be recorded by the researches in any form**.

5. FAIR data

5.1 Making data findable, including provision for metadata

The BIM models and simulations will contain all the necessary data to achieve the goals mentioned previously and already have defined metadata. These models and simulations will be shared within the Consortium and the software programs to use and the necessary information to manage them will be specified in the BIM Execution Plan (BEP).

5.2 Making data openly accessible

Models and simulations, and therefore, the data in them, will be shared openly among the consortium members through INTERMODEL EU website intranet. The use of them or their data consultation will be possible through the right BIM software programs (defined in the BEP) and other software programs for simulation and traffic studies (e.g. Aimsum, etc.). Also, during the project, the interoperability and data exchange and the

integrating ICT environment prototype will be defined, but they will be confidential and only accessible for the members of the Consortium and the Commission Services.

5.3 Making data interoperable

BIM methodology is based on the interoperability between several software programs. The outcome models follow BIM open standards and vocabularies specified in the BEP in accordance with the participant members. This BEP document, just like this DMP, is not a once-time document but a live on so it will go through changes as the project is developed.

5.4 Increase data re-use

The generated models will remain accessible by Consortium members throughout all the project duration. The re-use of the models and the data within them after the project shall be defined in the exploitation agreement (Deliverables 9.8, 9.9, 9.10 and 9.11 in months 18, 24, 30, 36 respectively).

6. Allocation of resources

Making models and their underlying data FAIR will not take any more time or at least, any more calculable time, used to generate the models and carry on the different simulations, using the information in the BIM format/standards models. The staff personnel hours dedicated to this will be counted within the Person Month dedications to the respective tasks.

The ultimate person responsible for data management in the INTERMODEL EU project will be Mikel Borràs, IDP Financial & Data Manager, as long as the project lasts. Once the project ends, this issue shall be discussed within the exploitation agreement.

7. Data security

Models and their underlying data will be stored in the INTERMODEL EU website's intranet, with access restricted to all Consortium partners in order to work on them through modelling, data introduction, data collection, simulation, etc. Each partner is responsible for those recovery files that may be stored in each partner's facilities, databases, servers, etc.

8. Ethical aspects

There are no ethical aspects that can have an impact on data sharing and no human data is included in any model/simulation, according to ethics deliverables D10.1 and D10.2.

9. Other issues

Not applicable.

10. Data Management Plan

10.1 Dataset 1

DS1_Data_collection_terminals_operation	
Data identification	
Dataset description	This dataset contains data from terminals (volumes handled, seasonal impacts, modal splits, staff, processing times, arrival patterns, equipment, etc.).
Source	CSI and other terminals own records.
Partners activities and responsibilities	
Partner owner of the data	MAC
Partner in charge of the data collection	MAC
Partner in charge of the data analysis	MAC
Partner in charge of the data storage	MAC
Related WP(s) and task	WP5 Task 5.1
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of EXCEL/WORD/PDF documents and file extensions such as .xlsx (Excel), .docx (Word) and .pdf (PDF). It will be updated if necessary.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset is the result of a collaborative work between MAC and CSI, and once cleaned and validated, will provide the basis for the simulation component library.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	Confidential, so only the members of the Consortium and the Commission Services will have access to this dataset.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in MAC and IDP infrastructure.

10.2 Dataset 2

DS2_Data_collection_external_mobility	
Data identification	
Dataset description	This dataset contains data related to the traffic flows incoming to the terminals (Melzo and La Spezia) and at the surrounding road network.
Source	CSI and APSP
Partners activities and responsibilities	
Partner owner of the data	CENIT
Partner in charge of the data collection	CENIT
Partner in charge of the data analysis	CENIT
Partner in charge of the data storage	CENIT
Related WP(s) and task	WP6 Task 6.2
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of EXCEL/WORD documents and file extensions such as .xlsx, .docx and .ang.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset is the result of a collaborative work between CENIT and CSI/ASPS, and it will be used for the validation of the KPIs resulting from the simulations.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	Confidential, so only the members of the Consortium and the Commission Services will have access to this dataset.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in CENIT and IDP infrastructure.

10.3 Dataset 3

DS3_Data_collection_terminals_layout	
Data identification	
Dataset description	This dataset contains data related to the layout of the real terminals that will be modelled and analysed throughout the project (Melzo and La Spezia) and the railway interconnection.
Source	CSI and APSP
Partners activities and responsibilities	
Partner owner of the data	IDP
Partner in charge of the data collection	IDP
Partner in charge of the data analysis	IDP
Partner in charge of the data storage	IDP
Related WP(s) and task	WP4 Task 4.2 WP7 Task 7.1
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of CAD files and file extensions such as .las and .rcp.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset composed of .dwg files and the results from the point cloud will be used for generating the BIM models of the real terminals.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	This dataset does not contain confidential information, but models are shown in demonstration activities for the members of the consortium and the Commission Services.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in IDP infrastructure.

10.4 Dataset 4

DS4_Data_collection_market_data	
Data identification	
Dataset description	This dataset contains data related to transportation and logistics studies and statistical data compiled for the assessment of intermodal terminals and statistical market data and forecasts.
Source	Existing publications (international statistics institutions, public and private logistics companies, white papers, etc.).
Partners activities and responsibilities	
Partner owner of the data	DHL/CENIT
Partner in charge of the data collection	DHL/CENIT
Partner in charge of the data analysis	DHL/CENIT
Partner in charge of the data storage	DHL/CENIT
Related WP(s) and task	WP8 Task 1, Task 8.2
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of WORD/PDF documents.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset will be used for the validation of results concerning functional, economic and environmental issues at selected terminals.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	This dataset does contain confidential information available to subscribers, only excerpts of aggregated data will be public through deliverables.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in DHL and CENIT infrastructure.

10.5 Dataset 5

DS5_Project_deliverables	
Data identification	
Dataset description	Deliverables resulting from the development of the project.
Source	Generated by WP leaders.
Partners activities and responsibilities	
Partner owner of the data	IDP
Partner in charge of the data collection	IDP
Partner in charge of the data analysis	IDP
Partner in charge of the data storage	IDP
Related WP(s) and task	WP1 Task 1.1
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of WORD/PDF documents.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset presents the outcomes of the project.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	This dataset does not contain confidential information. Thus, the access to the dataset is mainly public, except the progress technical and financial reports and deliverables associated to the definition and development of the decision making tool to be integrated within the BIM models and simulations. The reports related to exploitation agreement and ethics requirements will be confidential as well, as they only concerned members of the consortium.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in IDP infrastructure.

10.6 Dataset 6

DS6_Data_collection_terminals_KPI	
Data identification	
Dataset description	This dataset contains data related to the operation and exploitation of the real terminals that will be modelled and analysed throughout the project (Melzo and La Spezia) and the railway interconnection. This data is related mainly to the calculation of Key Performance Indicators.
Source	CSI and APSP
Partners activities and responsibilities	
Partner owner of the data	IDP/MAC/VIAS
Partner in charge of the data collection	IDP/MAC/VIAS
Partner in charge of the data analysis	IDP/MAC/VIAS
Partner in charge of the data storage	IDP/MAC/VIAS
Related WP(s) and task	WP4 Task 4.2 WP7 Task 7.1 WP7 Task 7.2
Standards	
Information about metadata and documentation	N/A
Standards, format, estimated volume of data	This dataset can be a combination of WORD/PDF documents and EXCEL files.
Data exploitation and sharing	
Data exploitation (purpose and use of the data analysis)	This dataset will be used for the calculation of the Key Performance Indicators in the real case studies and for the validation of results.
Data access policy, dissemination level (confidential – only for members of the Consortium and the European Commission or public)	Confidential, so only the members of the Consortium and the Commission Services will have access to this dataset.
Data sharing, re-use, distribution, publication	None
Personal data protection (are they personal data?)	No personal data
Archiving and preservation (including storage and backup)	
Data storage (where?, for how long?)	The dataset will be preserved in MAC and IDP infrastructure.

11. Conclusions

This Data Management Plan (DMP) provides an overview of the data that the INTERMODEL EU project will produce together with related challenges and constraints that need to be taken into consideration.

The analysis contained in this report allows anticipating the procedures and infrastructures to be implemented within the project to efficiently manage the data it will produce.

Some of the partners will be owners or/and producers of data, which implies specific responsibilities, described in this report.

References

Guidelines on Data Management in Horizon 2020. Version 2.1. 15 February 2016. EC Directorate-General for Research & Innovation. http://www.cuni.cz/UK-5624-version1-h2020_hi_oa_data_mgt_en.pdf

H2020 Programme. Guidelines on FAIR Data Management in Horizon 2020. Version 3.0. 26 July 2016. EC Directorate-General for Research & Innovation. http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf