

CO ACTIVE

5.2 – Data Management Plan

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PU	Public	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

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EXECUTIVE SUMMARY

This document is deliverable “D5.2 Data Management Plan” of the CO-ACTIVE Project, associated to task 5.1.

The overall objective of CO-ACTIVE is to provide new concepts, tools, and systems to improve the attractiveness of rail transport by offering more intuitive and engaging travel experience to customers while shielding them from the complexity and heterogeneity of services for door-to-door intermodal journeys.

CO-ACTIVE, as part of the Shift2Rail Innovation Program 4, will address the general enrichment of the ‘one-stop-shop’ capability as initiated in the IT2Rail project (<http://www.it2rail.eu>) and further completes the scope of functionality by addressing post-sale business transactions, and an underlying payment-settlement solution for comodally retailed products and services.

This DMP describes how the existing data and the new data generated by the project will be handled. It is a live document that describes the type of data that will be collected, processed, stored and disseminated.

Following H2020 guidelines ([R4]). The DMP will detail how these research data will be made Findable, Accessible, Interoperable and Reusable (**FAIR**), to ensure it is soundly managed,

The first section of this document will describe general data management lifecycle that applies to all WP of the project.

The following sections will describe for each WP (except WP6 – Project Coordination) a data summary indicating the purpose of the data collection/generation, its origin, size, format, and its relation to the project objectives.

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1. INTRODUCTION

1.1 Purpose of CO-ACTIVE DMP

The present Data Management Plan (DMP) details what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how will be curated and preserved. This document should be considered in combination with:

- Section 9 of the Consortium Agreement. “Access Rights”
- Section of the Grant Agreement No. 730846 “Rights and Obligations related to Background and results”

The main objective of this DMP is to provide an analysis of the main elements of the data management policy that are going to be used by the Consortium.

It has the following characteristics:

- It is a document outlining how all the research data generated will be handled during the project life, and even after it is completed, describing, whether and how these datasets will be shared or allowed data re-use and also allow validation of results presented in scientific publications generated by the project.

- It is also a document outlining how all the research data and non-scientific documents generated during the lifetime of the project will be handled in terms of sharing policies, archiving and storage and preserving time.

1.2 Background of CO-ACTIVE DMP

In order to better understand the data used or generated by the project, a brief overview of the project structure and objectives is given below:



Figure 1 – Project Structure

WP1 Travel Shopping

The Travel Shopping work package will address the following objectives:

- Enrich Journey Planning functionalities by ensuring the re-accommodation of journey
- Enlarge the journey planning by taking into account the first and last miles, allowing the traveller to use personal or shared transport modes (e.g. Car sharing, Bike Sharing)
- Refine the offer building with more information, alternatives and ancillary services.
- Manage the failure cases
- Develop Technology Demonstrators for Rail and Urban domain with the addition of the Car-Sharing, Bike-Sharing, Vehicle Tolling and Car park management.

WP2 Booking & Ticketing

The Booking & Ticketing work package will address the following objectives:

- Model the travel rights in order to manage a smart re-accommodation of the co-modal journey
- Manage the failure cases
- Manage the contracts between business entities for a travel.
- Ensure the correct clearing and settlement for business entities
- Develop Technology Demonstrators for Rail and Urban domain with the addition of the Vehicle Tolling and Car park management.

WP3 Business and Contractual Management

The Business and Contractual Management work package will address the following objectives:

- Analysis of the legal rules that govern the transportation business and the relation between the business partners between them and with the end-users
- Analysis of the Terms and Conditions for the retail and usage policy
- Specify and model data for future management of the contractual aspect within the IP4 ecosystem

WP4 Technical Coordination and System Coherence

The Technical Coordination and System Coherence work package will address the following objectives:

- Define and apply the proven best practices in system engineering
- Guarantee the technical consistency across the project work package and within work package in other projects
- Manage the technical coordination and decide on mitigation strategy to bypass or resolve the technical issues
- Foster of the convergences of technologies to facilitate the adoption across the Railway industry
- Define the testing strategy and create testing material and means
- Pre-integrate the software components inside the project and provide an active support to the ITD7
- The partners plan to deliver software components through an iterative development process. Nevertheless, the Proof of Concepts solutions that will be demonstrated in two releases:

WP5 Dissemination and Communication

This WP handles all activities related to dissemination within the Project

WP6 Project Management

This WP encompasses all activities related to Project and Consortium Management. Considering its nature, there will be no data produced by this WP suitable for inclusion within this DMP.

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Following these objectives, CO-ACTIVE outcomes will be the production of

- a set of technical specifications and ontologies, defining the IP4 ecosystem
- a reference implementation of these specifications, in the form of Technical Demonstrators

1.3 List of Acronyms

EC	European Commission
GA	Grant Agreement
SC	Steering Committee
TMT	Technical Management Team
WP	Work Package
DMP	Data Management Plan
CT	Cooperation Tool
S2R	Shift2Rail
TD	Technology Demonstrator
FAIR	Stands for : Findable, Accessible, Interoperable and Re-usable

2. DATA MANAGEMENT AT PROJECT LEVEL

This section describes overall data management that apply to the whole project and all data when not specified otherwise in the next chapters.

2.1 Typologies of data

The following categories of outputs will be provided by CO-ACTIVE Consortium, to related datasets, in order to fulfil the H2020 requirements of making it possible for third parties to access, mine, exploit, reproduce and disseminate the results contained therein:

- (public) Deliverables
- Conference/Workshop presentations (which may, or may not, be accompanied by papers, see below)
- Conference/Workshop papers and articles for specialist magazines
- Research Data and metadata

2.2 Data Collection & Definition

The responsibility to define and describe all non-generic data sets specific to an individual work package shall be with the WP leader.

The WP leaders shall formally review and update the data sets related to their WP.

All modifications/additions to the data sets shall be provided to the CO-ACTIVE Coordinator (THALES) for inclusion in the DMP.

2.3 Dataset naming, and FAIR principles

All dataset materials produced or used within the project will be named and referred to within this DMP with the following codification in the objective of unambiguous identification and ease of access:

WP (3 char.)	Number (3 digits)	Version
WP1	001	1

Table 1 Dataset Codification

FAIR principles of the data produced will be detailed in each WP section of this DMP.

2.4 Archiving and preservation

Open access to public deliverables (reports), publication or presentation will be achieved in CO-ACTIVE by depositing the data into the CT, and activating their publication to the project Website [R5].

These documents will be available for at least 3 years following the project completion

Regarding other research data, archiving and preservation policies will be detailed in the later section of the document.

2.5 Data Security

CO-ACTIVE is not supposed to use or produce any confidential or sensitive data that would require setting up specific measures for secure storage or transfer.

The current status of the project does not reconsider this position, but these aspects will be monitored over time.

2.6 Ethical aspects

The developed procedures and findings generated in CO-ACTIVE are centred around embedded systems topics and do not foresee any research on areas of ethical relevance such as research on humans, animals, medical applications, genetics or bio/nano-electronics.

In the course of the project all possibly needed data will be simulated (fake data) and thus are constituting no personal data. If future development of the Co-Active outputs requires real personal data then this will be secured and managed in line with the General Data Protection Regulation 2016/679 (GDPR).

3. DMP OF WP1: TRAVEL SHOPPING

3.1 Data Summary

The WP1 of CO-ACTIVE deals with the TD4.2 – Travel Shopping and the extension (in terms of functionalities and technical readiness) of the outcomes of the IT2Rail lighthouse project.

As foreseen in CO-ACTIVE Grant Agreement, WP1 will result in the production of a set of specifications documents, and a reference implementation (software components) to demonstrate the concepts.

Some expected deliverables under this WP are expected for public dissemination.

At the current status of the project, the consortium only expects to use

- Real timetable information in order to perform journey calculation and
- Simulated data for demonstrating the concepts that will be developed (Person identification (name, address, age, gender), Fare Products characteristics (technical IDs)).

Code	Description	Origin	Types and Format	Size	Ownership
WP1-01	Feeds for Indra's Urban TSP with the planning data of the urban transit in Madrid (CRTM)	CRTM	GTFS		CRTM (Consortio Regional de Transportes de Madrid)

Table 2 Data Summary for WP1

This chapter describes measures taken following FAIR principles for the data

Findable aspects:

Code	Meta Datas, Comments
WP1-01	Data has been obtained from the open data portal of the CRTM (http://data-crtm.opendata.arcgis.com/) containing the GTFS files for Metro, Buses, Coach, Tram and Train and this information is imported in the Indra's Urban TSP.

Table 3 Findable aspects for WP1 data

Accessible aspects

Code	Public/Private	Specific Restrictions	Access	Comments
WP1-01	Public	Not applicable	Stored in the Indra's Urban TSP repository	

Table 4 Accessible aspects for WP1 data

Interoperable aspects :

Code	Comments
WP1-01	The GTFS data can be combined with GTFS data from other providers to have a complete multimodal environment covering multiple regions.

Table 5 Interoperable aspects for WP1 data

Reusable aspects :

Code	Comments
WP1-01	The GTFS data can be used to feed the TravelExpertRepository and build the MetaNetwork through the MetaNetwork Builder.

Table 6 Reusable aspects for WP1 data

3.2 Specific considerations

No specific considerations regarding data within this WP.

3.3 GDPR Data Use

In accordance with the General Data Protection Regulation (GDPR) of the European commission, a solution which processes personal data shall comply with the "Privacy by Default" and "Privacy by Design" principles by defining requirements then implementing and verifying them in the proposed solution and its elements.

Therefore, in an operational scenario with real TSP connected to the ecosystem, some of them will need to use user's personal information, and each TSP will be in charge of applying the GDPR with the user data.

In addition, each stakeholder should:

- Put in place appropriate measures to prevent incidents that compromise the security of networks and information systems:
 - 'Privacy by design' and 'privacy by default',
 - Adopt necessary and proportionate technical and organizational measures to manage risks to the security of networks and information system,
- Provide prompt notification of incidents that have a significant impact on the continuity of the essential services they provide.
- Ensure consistent application & compliance, even outside of EU for EU data.

4. DMP OF WP2: BOOKING AND TICKETING

4.1 Data Summary

The WP2 of CO-ACTIVE deals with the TD4.3 – Booking and Ticketing and the extension (in terms of functionalities and technical readiness) of the outcomes of the IT2Rail lighthouse project.

As foreseen in CO-ACTIVE Grant Agreement, WP2 will result in the production of a set of specifications documents, and a reference implementation (software components) to demonstrate the concepts.

Some expected deliverables under this WP are expected for public dissemination.

At the current status of the project, the consortium only expects to use simulated data for demonstrating the concepts that will be developed (Person identification (name, address, age, and gender), Payment means (credit card, bank accounts), Fare Products characteristics (technical IDs, tokens)).

Code	Description	Origin	Types and Format	Size	Ownership

Table 7 Data Summary for WP2

4.2 FAIR principles

This chapter describes measures taken regarding FAIR principles and applying to the data

Findable aspects:

Code	Meta Datas, Comments

Table 8 Findable aspects for WP2 data

Accessible aspects

Code	Public/Private	Specific Restrictions	Access	Comments

Table 9 Accessible aspects for WP2 data

Interoperable aspects :

Code	Comments

Table 10 Interoperability aspects for WP2 data

Reusable aspects :

Code	Comments

Table 11 Reusability aspects for WP2 data

4.3 **Specific considerations**

Not applicable

4.4 **GDPR Data Use**

In accordance with the General Data Protection Regulation (GDPR) of the European commission, a solution which processes personal data shall comply with the “Privacy by Default” and “Privacy by Design” principles by defining requirements then implementing and verifying them in the proposed solution and its elements.

Therefore, in an operational scenario with real TSP connected to the ecosystem, some of them will need to use user’s personal information, and each TSP will be in charge of applying the GDPR with the user data.

In addition, each stakeholder should:

- Put in place appropriate measures to prevent incidents that compromise the security of networks and information systems:
 - ‘Privacy by design’ and ‘privacy by default’,
 - Adopt necessary and proportionate technical and organizational measures to manage risks to the security of networks and information system,
- Provide prompt notification of incidents that have a significant impact on the continuity of the essential services they provide.
- Ensure consistent application & compliance, even outside of EU for EU data.



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5. DMP OF WP3: BUSINESS AND CONTRACTUAL MANAGEMENT

5.1 Data Summary

Under the scope of the WP3, the Consortium will be performing an analysis of the business rules that govern the transportation industries, and that must be considered when designing the IP4 ecosystem.

The results of this WP will be the production of specifications and ontologies deliverables, disseminated at a public level.

It is not expected at the time that data would be used or produced within this WP other the deliverables foreseen in the GA and previously mentioned.

Code	Description	Origin	Types and Format	Size	Ownership

Table 12 Data Summary for WP4

5.2 FAIR principles

This chapter describes measures taken following FAIR principles for the data

Findable aspects:

Code	Meta Datas, Comments

Table 13 Findable aspects for WP4 data

Accessible aspects

Code	Public/Private	Specific Restrictions	Access	Comments

Table 14 Accessible aspects for WP4 data

Interoperable aspects:

Code	Comments

Table 15 Interoperability aspects for WP4 data

Reusable aspects:

Code	Comments

Table 16 Reusability aspects for WP4 data

5.3 Specific considerations

Not applicable

6. DMP OF WP4: TECHNICAL COORDINATION

6.1 Data Summary

WP4 handles all activities regarding technical coordination within the Consortium, and manages interaction with other Shift2Rail complementarity projects.

In particular WP4 will carry out integration and testing activities of the TDs developed within WP1 and WP2, and thus will mostly rely on data generated amongst them.

It will produce deliverables in the form of integration and synchronization reports that will be disseminated at public level.

Code	Description	Origin	Types and Format	Size	Ownership

Table 17 Data Summary for WP4

6.2 FAIR principles

This chapter describes measures taken following FAIR principles for the data

Findable aspects:

Code	Meta Datas, Comments

Table 18 Findable aspects for WP4 data

Accessible aspects

Code	Public/Private	Specific Restrictions	Access	Comments

Table 19 Accessible aspects for WP4 data

Interoperable aspects :

Code	Comments

Table 20 Interoperability aspects for WP4 data

Reusable aspects :

Code	Comments

Table 21 Reusability aspects for WP4 data

6.3 Specific considerations

Not applicable

7. DMP OF WP5: DISSEMINATION ACTIVITIES

7.1 Data Summary

Code	Description	Origin	Types and Format	Size	Ownership
WP5-01	D5.3 – Project NewsLetter	Produced by the consortium	PDF	<1M	Consortium
WP5-02	D5.1 – Project Identity and website	Produced by the consortium	PDF	<1M	Consortium

Table 22 Data Summary for WP1

7.2 FAIR principles

This chapter describes measures taken following FAIR principles for the data

Findable aspects:

Code	Meta Datas, Comments
WP5-01	This document is a deliverable of the project, disseminated at public level. Under the form of a Newsletter, it details the project progress and status.
WP5-02	This document is a deliverable of the project, disseminated at public level. Its purpose is to describe the setup of the project website.

Table 23 Findable aspects for WP5 data

Accessible aspects

Code	Public/Private	Specific Restrictions	Access	Comments
WP5-01	Public	read only	This document has been published over the project Website, and is accessible in the deliverable section.	
WP5-02	Public	read only	This document has been published over the project Website, and is accessible in the deliverable section.	

Table 24 Accessible aspects for WP5 data

Interoperable aspects:

Code	Comments
WP5-01	Not applicable
WP5-02	Not applicable

Table 25 Interoperability aspects for WP5 data

Reusable aspects :

Code	Comments
WP5-01	This document can be reused as a dissemination/communication mean to share information regarding the CO-ACTIVE project.
WP5-02	No reusability is expected for this kind of document

Table 26 Reusability aspects for WP5 data

7.3 Specific considerations

Not applicable

8. REFERENCES

[R1]	Co-Active Grant Agreement – N°730846	08/08/2016
[R2]	Co-Active Consortium Agreement	28/07/2016
[R3]	D6.1 – CO-ACTIVE Quality Plan	10/10/2017
[R4]	Guidelines on FAIR Data Management in Horizon 2020 (v3.0) http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf	26/07/2016
[R5]	CO-ACTIVE public Website http://projects.shift2rail.org/s2r_ip4_n.aspx?p=CO-ACTIVE	

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