

# D1.2 Data Management Plan

WP1 Project management and coordination



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**EU-RES**: Classified Information - restraint UE;  
**EU-CON**: Classified Information - confidential UE;  
**EU-SEC**: Classified Information - secret UE

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## **Abstract**

This document describes the initial Data Management Plan of the UPPER project. The purpose is to set out the main elements of the consortium data management policy for the datasets used and generated as part of the project.

The Data Management Plan presents the procedure for managing datasets and information created during the project lifetime and describes the key data management principles. Specifically, the plan describes the data management life cycle for the datasets to be collected, processed and/or generated as part of the research within the project.

## **Keywords**

Data Management, Privacy, Data Protection, Open Data, Ethics

# 1. Introduction

## 1.1. Project Overview

UPPER is a **Cities Mission** project that will put the Public Transport at the centre of the mobility ecosystem by implementing a combination of **over 80 measures** to push people away from private motorised travel and pull them towards public transport and shared mobility - **push and pull measures** - acting on the five innovation axes that condition users' choices: mindset and culture, urban mobility planning, mobility services ecosystem, road network management and democratic governance.

UPPER **vision** is to reach a safe, resilient, efficient and inclusive PT that becomes the backbone of the urban mobility in European cities.

## 1.2. Objectives of the project

The project will be developed around 7 main goals:

- to understand the needs of different urban areas, user groups and dependencies between public transport and active travel modes;
- to establish a local policy framework and innovative spatial planning to promote a sustainable and public transport-oriented culture in line with the SUMP;
- to co-create new local solutions and services to improve the overall PT offer and attractiveness in line with users' needs and expectations and trigger behavioural change;
- to develop a set of cross-pilot supporting tools as an integrated and replicable approach to plan, test, evaluate and upscale mobility measures;
- to implement packages of “push and pull” urban mobility measures in the living labs, supported by the UPPER toolkit, to improve the overall PT share in the modal distribution;
- to establish new solutions, strategies and business models, where public transport and mobility providers cooperate to offer services addressing user needs and;
- to ease and accelerate the transferability of results, cooperation and uptake of replicable public transport solutions.

## 1.3. UPPER results

UPPER is an impact-oriented project driven by cities that will demonstrate and evaluate a set of **“push & pull” measures**, to be implemented within 5+5 living labs and twinning sites, addressing 5 innovation axes to boost and reinforce the massive potential of PT in Europe:

- Innovation axis 1: Mindset and culture: Perception of accessibility, User satisfaction, Concept of Freedom, Maslow applied to PT, the status of PT, PT as a carrier of culture, image, ‘coolness’.

- Innovation axis 2: Urban mobility planning: Ability to structure space at regional, local and hyperlocal level, PT as the focal point for urban development and economic activity, the combination of infrastructures and services.
- Innovation axis 3: Mobility services ecosystem: Intermodality, MDMS, digital ecosystem, eMobility system, the first mover in automation.
- Innovation axis 4: Road network management: Priority management (traffic lights), access regulation, low emission zones regulation and monitoring, parking space management
- Innovation axis 5: Democratic governance: Multi-stakeholder and multi-level governance, PT as a driver for inclusion, societal return on investment of long-term capital and revenue spending.

In addition to the measures, UPPER will develop a set of 7 IT supporting tools (**UPPER Measures Implementation Support Toolkit**) that will complement the measures in different phases of their design and implementation and will ensure the expected objectives of citizen participation, behaviour understanding, impact, and definition of new policies, knowledge transfer and scalability:

- **U-TWIN**: A solution to provide city and mobility authorities with a comprehensive solution for real-time visualisation and decision support based on deep learning.
- **U-SIM**: A tool to simulate the effect and potential of the “push & pull” measures before its implementation or its upscale to a wider area.
- **U-SUMP**: A platform to integrate the results of the “push & pull” measures and guide the development, implementation and update of the Sustainable Urban Mobility Plans.
- **U-NEED**: A tool to support the Public Transport Operators in defining the optimal capacity and frequency of PT lanes based on the user needs and passenger transport flows.
- **U-GOV**: A community engagement platform to power democratic governance that facilitates citizen participation in the different phases of the decision-making process related to PT.
- **U-KNOW**: A knowledge powerhouse for PT through a Mission-oriented platform for activating a new bottom-up and dynamic capacity building process among cities.
- **U-TRANSFER**: An exchange hub for the UPPER cities based on an online interactive space, resources, calendar, and collaborative tools to promote cooperation, shared initiatives and lessons learnt among cities.

## 1.4. Data Management Proposed Plan

The UPPER Data Management Plan (DMP) introduces the data management process for the information that will be gathered, analysed and generated during the project. As part of making research data findable, accessible, interoperable, and reusable, the DMP includes information on:

- the control of research data, both during and after the conclusion of the project;
- what type of information will be gathered, analysed or produced;
- which framework and guidelines will be used;

- whether data will be publicly available;
- how data will be handled and stored throughout the project's lifetime and beyond;

This Data Management Plan will provide a guiding framework for Partners for the management of the data collected and analysed during the project.

The DMP is foreseen to be revised in project month 18 (June 2024), month 36 (December 2025) and in month 48 (December 2026), taking into account the data that has been collected, analysed and published during the course of the project, and how the data and knowledge generated throughout the project lifetime will be stored and made available after the end of the project.

## 2.Data Summary

### 2.1. Data summary

The UPPER project tasks generate and analyse data as an essential condition for their completion and creation of the required outputs and deliverables. The following types of data will be used and generated as part of the UPPER tasks.

#### 2.1.1. EXPERT INPUT AND INTERVIEW RESPONSES

Such inputs from within the Consortium, or expert interviews with individuals working for entities outside the UPPER Consortium will be treated as internal to the Consortium. Any proceedings of workshops or meetings eliciting such inputs will only be made available to the relevant participants. Intermediate outputs and draft documents will also be treated as internal to the Consortium.

#### 2.1.2. MOBILITY DATA

As part of the process of developing the 7 U-Tools of the project, each leading partner will specify the data and information required for the respective tool. The developers, in cooperation with the UPPER cities, will specify the data sources, standards and formats required for the optimal functioning of the tool. Whenever possible open data will be used for such purposes. The UPPER Consortium partners will respect the conditions applying to access and use of the entities providing the data.

#### 2.1.3. INDICATORS CALCULATED WITHIN THE LIVING LABS

Especially for the evaluation of the impact of UPPER measures in the cities, data related to mobility patterns and behaviour will be used. This data will be used and analysed in accordance with the conditions laid out by the data producers. The UPPER measures will require a variety of data for their development to help in the targeting and development of the various interventions, e.g. selecting the specific network hubs to connect multi-modal services to. Such data may be historical, static, or real-time data coming from a variety of sources, including municipal authorities, Public Transport Operators or public transport authorities.

#### 2.1.4. SOFTWARE DEVELOPMENT

The development of the 7 U-Tools is done in an iterative manner by inputting, validating and testing the various requirements for the tools, as described in the Volere methodology. All project partners were invited to contribute and

register via a secure environment, their respective contributions will be analysed by the task leaders and then be considered as internal to the UPPER consortium.

The resulting software products for the 7 U-TOOLS will be made available to the project partners and the results of their use by the UPPER cities using them will be shown on the project website. Members of the public interested in testing the U-TOOLS from UPPER will be able to register as a demo user once the development and testing of the tools is completed.

The creation of any of the U-TOOLS software shall not imply the publication of algorithms or software previously developed by the project partners and indicated as background information in accordance with Art. 16 of the UPPER Grant Agreement. Moreover, software developed as part of the project activities will be protected by applicable IPR provisions as described in the UPPER Grant Agreement. The Results Ownership List that will be included in the final version of the DMP will refer to these aspects.

### 2.1.5. SURVEYS, CONSULTATIONS AND PARTICIPATION IN EVENTS

As part of the activities related to measure development, testing, or impact evaluation, surveys may be carried out. Additionally, individuals may be invited to participate in public consultations, contests, or focus group simulations. All such interactions and their results for the project will be treated in accordance with the applicable data protection and privacy regulations. Information that may identify respondents acting in a personal capacity will only be made available with prior consent.

## 2.2. Anonymisation

Apart from specific cases where an individual's name is necessary for the UPPER task at hand – e.g. name of representative from project partner needed for dissemination task; name of contest winner for communication video – other data will be anonymised. When data identifying individuals is used, this information will be discarded, such as in using online reviews. This is the case for example in task in T2.1 Netnography study. The study focuses on the analysis of various social media, reviews and comments, analysed using natural language processing. Information related to the usernames providing the reviews has not been used, while demographic information has been used as part of the analysis.

If mobility data is obtained via the use of devices using cameras, such as traffic counts, parking enforcement vehicles, automatic vehicle license plate recognition, any information related to the license plate the personal data will not be shared. Only anonymised or pseudonymised vehicle characteristics will be used.

## 2.3. Open data

The project partners will endeavour to use open data whenever feasible for the respective tasks, and will also strive to make the results from the project openly available. This will be done while taking into account all existing IPR from any of the UPPER partners that has been identified as background information.

As such, whenever data produced in the framework of UPPER will be provided as open data, this will be done in accordance to the following principles:

- **Availability and access:** data is made available as a whole, at no more than a reasonable reproduction cost. The data should also be available in a convenient, preferably machine-readable format.
- **Reuse and redistribution:** the terms under which the data are provided should permit re-use and redistribution, including intermixing with other datasets

- Universal participation: everyone must be able to use, re-use and redistribute, without discrimination against persons, groups or fields of endeavour.

## 2.4. Privacy policy

The information and data provided by the UPPER partners in response to surveys or requests coming from other Consortium partners for the completion of tasks described in the UPPER Grant Agreement will be treated as internal to the UPPER Consortium. Such contributions, or parts thereof will only be included in one of project deliverables or published using the project communication channels if agreed with the party providing the original information.

## 3.FAIR Data

### 3.1. Making data findable, including provisions for metadata

All UPPER data used for and resulting from research and the production of the research publications included in the Grant Agreement will be made available via the Zenodo Repository. Through rich metadata provided by the UPPER project and the Digital Object Identifier attached to the publications, the research outputs, and whenever possible the data collected as part of the analysis will be findable. However, when the UPPER project uses data that is not made public by the entity producing it, the UPPER Consortium will not make an attempt of making this data open. Metadata will be provided for all datasets used and created.

For example, in evaluating the level of satisfaction with public transport services in one of the project living labs, the UPPER partners may be given access to detailed information regarding the responses from individuals responding to the survey. UPPER will make the necessary calculations and breakdowns of the data to enable the calculation of impact a certain measure or group of measures have had. However, if the entity conducting the survey has decided to make public only aggregate information related to satisfaction with public transport, UPPER will not attempt to make available more data than had already been published.

### 3.2. Making data accessible

Standard protocols (REST API, MQTT, message brokers...) will be used within the Consortium, allowing the involved partners to take advantage of open data used in the project (such as Open Street Map, public transport NeTeX profile, etc.) for the development of the project outputs. These include among others the 7 IT Tools that UPPER will develop, user research, or indicators databases.

Through the Zenodo Repository, data created by the UPPER project will be accessible outside the project. As mentioned before, this can be subject to restrictions.

### 3.3. Making data interoperable

The UPPER Consortium acknowledges that the project partners may already operate solutions similar with those proposed in the project. As such, all solutions proposed by the UPPER project will be designed to be interoperable with tools which are already in use. Interoperability refers to tools and datasets within the UPPER Cities or partners directly, but also outside the project activities, such as National Access Points for Mobility as mandated by the ITS Directive (Directive 2010/40/EU).

For example, the digital twin solution proposed in the UPPER project, the U-TWIN tool, is based on multiple layers of information, integrating background information, such as street maps, public transport stop locations and planned

timetables with real-time information from the vehicles, as well as real time alerts. Moreover, U-TWIN will also include a layer predicting demand or delays. The tool is interoperable as each of these layers can fit with the digital tools that a city administration or public transport operator may have to generate these data.

Open datasets created by the UPPER project will be published using common formats and standards, and where applicable making use of controlled vocabularies.

### 3.4. Increase data re-use

The research papers and deliverables that will be produced as part of UPPER will be made available via the Zenodo Repository. Thus, the datasets and papers can be quoted and re-used by other interested researchers. Moreover, the open research conducted as part of UPPER will also be published on the project website, enabling the dissemination of project research results towards policy-makers as well as the general public.

Datasets will be well-documented and clear license and use conditions will be provided. Data provenance will be part of the documentation.

## 4.Data Privacy and Security

### 4.1. Storage and backup

During the course of UPPER, a secure environment to share data and documents has been made available by the Project Coordinator via Microsoft Teams. This is being backed up and secured using the state-of-the-art secure processes. Project meetings, Work-Package or Task-level meetings where the participants have given their consent are recorded and the recording/transcription of such meetings are stored on the shared channel to which access is allowed only to representatives of project partners.

### 4.2. Access and Security

Access for project partners to the UPPER shared secure environment has been set up via a 2-step authentication factor process, the current state of the art in the sector.

When in the case of IT tool development, the development process will be done using the secure environment of the lead partner for the task, using their usual high standard for securing access to data. Project partners involved in the respective task will be given access to the information required for the performance of the task with appropriate level of access.

Additionally, data required for the development of the software tools is collected by the respective Task leaders and the Tool developers via their respective secure environments.

Access to project documents or data collected and used as part of the UPPER will be granted to only to users with email addresses verified as belonging to the Consortium.

## 5.Ethical aspects

UITP will be the Ethics Manager of the project. Together with the other Work Package leaders and Task leaders within the project, it will verify and ensure that the latest standards with respect to ethics, gender and inclusiveness

standards will be followed. Inputs will be sought from a wide variety of groups for any consultation, research or demonstration activity to ensure balance and inclusivity.

For example consultations on the use of or predisposition towards the use of shared mobility services will seek out responses from all genders, economic backgrounds, from users of services or non-users, as appropriate to the measure to be implemented in an UPPER Living Lab. In such cases, relevance of the measure for the respective group will be the main criterion for consideration. In the case of multi-modal hubs for example, those living or working within the vicinity of a proposed hub, as well as current users of public transport routes connecting into the hub would be considered and within this population an inclusive and balanced number of responses will be sought.

## **6. Conclusion**

The present deliverable D1.2 - Data Management Plan – provides a set of guidelines complying with European legislation on the acquiring, handling, and processing data generated during the UPPER Project. The deliverable will be updated in light of the advancement of activities described in the UPPER Grant Agreement. Revised versions will be submitted in M18 and M36 of the Project and a final one in M48, the foreseen final month of the Project.

This final version shall also contain a Results Ownership List, detailing which organisations or individuals have rights to specific results generated within the project.