

# Data Management Plan

ULaDS D1.3: Data Management Plan

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## Abstract

ULaaS sets out to offer a new approach to system innovation in urban logistics. Its vision is to develop sustainable and liveable cities through re-localisation of logistics activities and re-configuration of freight flows at different scales. Specifically, ULaaS will use a combination of innovative technology solutions (vehicles, equipment and infrastructure), new schemes for horizontal collaboration (driven by the sharing economy) and policy measures and interventions as catalysers of a systemic change in urban and peri-urban service infrastructure. This aims to support cities in the path of integrating sustainable and cooperative logistics systems into their sustainable urban mobility plans (SUMP). ULaaS will deliver a novel framework to support urban logistics planning aligning industry, market and government needs, following an intensive multi-stakeholder collaboration process. This will create favourable conditions for the private sector to adopt sustainable principles for urban logistics, while enhancing cities' adaptive capacity to respond to rapidly changing needs. The project findings will be translated into open decision support tools and guidelines.

A consortium led by three municipalities (pilot cities) committed to zero emissions city logistics (Bremen, Mechelen, Groningen) has joined forces with logistics stakeholders, both established and newcomers, as well as leading academic institutions in EU to accelerate the deployment of novel, feasible, shared and ZE solutions addressing major upcoming challenges generated by the rising on-demand economy in future urban logistics. Since large-scale replication and transferability of results is one of the cornerstones of the project, ULaaS also involves four satellite cities (Rome, Edinburgh, Alba Iulia and Bergen) which will also apply the novel toolkit created in ULaaS, as well as the overall project methodology to co-create additional ULaaS solutions relevant to their cities as well as outlines for potential research trials. ULaaS is a project part of ETP ALICE Liaison program.

## Keywords

Zero Emission Logistics

On-demand economy

Future urban logistics

Trials

ULaaS solutions

Urban planning integration

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## Executive summary

This report represents Deliverable 1.3, describing the Data Management Plan (DMP) of the ULaADS project. Its main objective is to consolidate the guidelines for all project partners within ULaADS that describe the data management processes for the data generated in the project. Essentially, this DMP describes the data that needs to be collected, the data requirements and how the data will be treated and secured, and in a comprehensive manner acts as a compilation on data management.

All project partners dealing with data (collecting, generating, processing, disseminating, ... ) have been consulted concerning their research data and specifically contributed to this deliverable.

The document consists of 9 chapters focussing on the different issues of the project's data handling and management.

Chapter 2 zooms in on data collection; chapter 3 specifies the data storage system within ULaADS, chapter 4 elaborates on the FAIR concept, chapter 5 deals with data availability and accessibility; chapter 6 handles data quality and usability; chapter 7 focuses on the responsibility concerning data management and the cost of data accessibility; chapter 8 covers data security and chapter 9 the ethical aspects of data use in the project.

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# 1. Introduction

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The ULaaS project concept focuses on understanding the last mile logistics situation, current and upcoming scenarios and solutions and the actual implementation and impacts of such scenarios and solutions.

ULaaS looks for alternative choices to meet the challenges of the on-demand economy and does so by exploring and building on a better understanding of the urban freight logistics complexity represented by the use cases in the trials. To be able to improve the future of UFT, ULaaS is based on 3 pillars:

1. Multistakeholder process to collaboratively assess the future of on-demand urban logistics (covered by WP2)
2. Development and demonstration of logistics practices and solutions for sustainable, cooperative, flexible and cost-efficient UFT based on the sharing economy (covered by WP3 and WP4)
3. Full integration of logistics activities into urban planning at local and regional level (covered by WP5 and WP6)

Data management is pivotal in making the ULaaS concept work. Data generated and gathered in the various trials (WP4) will feed WP2, WP3, WP5 and WP6 with quantitative and qualitative data that will enable these work packages to meet their contribution to the goal of improving the future of UFT.

The data management within ULaaS follows the relevant EU and national legislation on data protection. This includes the General Data Protection Regulation (EU) 2016/679 (GDPR)<sup>1</sup> and Directive (EU) 2016/6802 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, as well as Directive 2006/24/EC3 of the European Parliament and of the Council of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communication services or of public communication networks. In addition, this deliverable also follows the guidelines of the European Commission for FAIR data management in Horizon 2020, that is, to make data findable, accessible, interoperable and re-usable.

All data controllers must also keep records of dataset descriptions (see Chapter 9).

The ULaaS Data Management Plan is expected to be updated during the course of the final refinement of the trials (WP4) and subsequently aligned with WP2, WP3, WP5 and WP6, during the course of the first year, and will reach its final version after the first trial period, prior to the first iteration loop.

External factors such as consortium members joining or leaving might also have an impact, although this is not anticipated.

The DMP is furthermore connected to the following project deliverables:

- Deliverable 1.1: Project management plan
- Deliverable 1.7: Ethical guidelines & documentation of RRI processes
- Deliverable 2.2: Local ecosystem stakeholders' needs and requirements & prioritization of use case (first version)
- Deliverable 2.6: Local ecosystem stakeholders' needs and requirements & prioritization of use case (final version)
- Deliverable 4.1 Trial Experimental plans description repository for effective implementation (and iterations)
- Deliverable 4.2: ULaADS data collection & monitoring architecture
- Deliverable 5.1: Framework, methodology and KPI identification
- Deliverable 6.3: ULaADS decision support toolbox; v.1
- Deliverable 6.7: ULaADS decision support toolbox; final
- Deliverable 7.1: Dissemination strategy

## 2. Data Summary

The primary purpose of this section is to define and categorised data processing in ULaaS, as well as identifying the main data types being generated during the lifetime of the ULaaS project.

The purpose of data collection in ULaaS is to contribute towards the project objectives, the WPs development and results (e.g. stakeholder requirements for on demand last mile deliveries in WP2, best practice repository in WP3, operational performance and efficiency in WP4, the impact and upscaling assessment framework in WP5 and the extraction of best practices and production of application guidelines culminating in a decision support toolbox for integrating the ULaaS principles in SUMP and SULPs).

The data being processed in ULaaS, will not contain personal or commercially sensitive information before being shared with the consortium and/or publishing.

No sensitive personal data will be collected. Human participants in collaborative multi-stakeholders' meetings and interviews will not be selected actively on ethnicity, nor economic or socio-economic factors. Human participants are representatives of geographical groups or local stakeholders' groups in view of logistic behavioural and logistics flows patterns to maximise the ULaaS solutions.

The handling of sensitive data (management of knowledge, background, research data, data access, publications and intellectual property rights) is describe in Table 1.

Table 1 presents a consolidated overview of the data that will be generated, including the standards that will be used, how data will be exploited and how it will be used and preserved. All project deliverables (regardless of the fact whether labelled as "Public" or "Confidential") will be stored in BAL.PM, the project's repository system – described in chapter 3.

Table 1: OVERVIEW OF DATA GENERATED IN THE PROJECT

Generated Data	Exploitation of Data	Use of Data	Preservation of Data
<b>WP1 – Personal data collected</b>	All data will be produced and provided by project members and will target both consortium members and project office.  Personal data in WP1 will be collected from the partnership in the contact lists, as well as	In line with GDPR regulation and the Consortium Agreement (art. 12), personal data will be kept and treated only by the partners active in WP1 (BRE, BAX).  Documents containing personal information will be saved in BAL.PM	Documents containing private/personal information will be preserved with a private password in the BAL.PM repository system.  This documentation will also be saved into BRE 's own repository system (BRE file server with limited, PW-protected access) to avoid any possible loss of data due

	<p>the BAL.PM repository system.</p> <p>Additionally, the setup of the ULaADS Advisory Board will mean that a specific contact list is created, containing personal data</p>	<p>with a private password, only accessible for those partners.</p>	<p>to technical reasons and up to five (5) years after project end.</p>
<p><b>WP2 – 360° Urban Logistics Observatory – (T 2.1)</b></p>	<p>Provide a collection of actual data, evidence or hypothesis of relationships between on-demand economy and other trends (e.g., sharing economy) and urban mobility of goods.</p> <p>Build a data repository about challenges faced by urban logistics as a consequence of the on demand economy.</p> <p>Major relevant megatrends to be analysed from stakeholder panel interviews (demographics, technology, socioeconomics and environment)</p>	<p>In line with GDPR regulation and the Consortium Agreement (art. 39), personal data will be kept and treated by WP lead FM-AMOR and the relevant lighthouse cities that will be pivotal in bringing the stakeholders together (Partners active in WP1 (BRE, MECHELEN, GRONINGEN and BAX).</p> <p>Documents containing personal information will be saved in BAL.PM with a private password, only accessible for those partners.</p>	<p>Documents containing private/personal information will be preserved with a private password in the BAL.PM repository system.</p> <p>NDA's with all stakeholders to protect individual data</p> <p>This documentation will also be saved into BRE's own repository system (BRE file server with limited, PW-protected access</p>
<p><b>WP2 – Local Fora on Urban Freight in each of the ULaADS lighthouse cities – (T 2.2)</b></p>	<p>Establish multi stakeholder dialogue groups involving private and public partners to develop deep understanding of the local ecosystem.</p>	<p>Goal to define general on-demand needs and to define requirements and operational steps and to derive common and diverging objectives.</p>	<p>NDA's with all stakeholders to protect individual data.</p>

	<p>Expanding on existing local partnerships</p> <p>Establishing co-creation dialog and data collection</p> <p>Definition of collective target system</p>	<p>Collected data and requirements to be used for development, extension and refinement of the uses case and solutions for ULaADS</p>	
<p><b>WP2 – Stakeholder’s needs and requirements for ULaADS use cases – (T 2.3)</b></p>	<p>Determine real and perceived needs, requirements and priorities.</p> <p>Transform those in representative use cases.</p> <p>Define functional requirements for the ULaADS solutions of WP3.</p>	<p>Joint effort to extend upon the individual use case (based on Urban Logistics Observatory and Local Fora.</p> <p>Additional surveys to further validate the initial outcome of the Urban Logistics Observatory.</p> <p>Iterative process based on experience and data gather during the trials.</p>	<p>NDA’s with all stakeholders to protect individual data.</p>
<p><b>WP3 – Benchmark of logistics solutions for sustainable on-demand UFT – (T 3.1)</b></p>	<p>Review of publicly available academic and professional literature and best practices</p> <p>Dedicated interviews to extend scope and enrich benchmark.</p> <p>Review of existing horizontal collaboration initiatives</p>	<p>Analysis and assessment of consolidated knowledge and data by RUG in order to support development and integration of new logistics (ULaADS) solutions.</p>	<p>NDA’s with all stakeholders to protect individual data.</p>
<p><b>WP3 – Definition &amp; pre-validation of novel collaborative business and</b></p>	<p>Revision of list of novel business and operating models for on-demand logistics.</p>	<p>Analysis will be used to develop new (ULaADS) operating</p>	<p>NDA’s with all stakeholders to protect individual data.</p>

<p><b>operating models – (T 3.3)</b></p>		<p>strategies and models.</p>	
<p><b>WP4 – ULaADS Research Trials (T 4.1 – 4.2 – 4.3 – 4.4)</b></p>	<p>Definition of an implementation and commissioning framework methodology</p> <p>Allocation of responsibilities and definition of all operational conditions for research trials</p> <p>Advanced mapping of legal requirements at policy levels</p>	<p>Convert LHC scenarios (T 2.4) into implementable trials based on public data from cities and reference data from stakeholders.</p> <p>Use available public data to adjust implementation and commissioning framework to comply with legal requirements.</p> <p>Feed the iterative loop</p>	<p>Data to be provided by cities (public data) to be stored in BAL.PM.</p> <p>Section 10 “Non-disclosure of Information” of CA protects Disclosing Party clearly describing the role and responsibilities of Recipients of such data.</p> <p>Additional NDA’s with all operational stakeholders in the trials.</p> <p>Specific data protected by NDA will be preserved with a private password in the BAL.PM repository system.</p> <p>Data generated by the trials stored within BAL.PM, no specifics to be released, only generic learnings to be shared</p>
<p><b>WP 4: Data collection, monitoring and results consolidation – (T 4.5)</b></p>	<p>Capture real life data:</p> <p>Quantitative data collection (performance, technical characteristics, cost figures)</p> <p>&amp;</p> <p>Public data collection (macro data, legal framework,</p>	<p>Use data to analyse and validate effectiveness and efficiency of the ULaADS solutions tested.</p> <p>Find synergies with other projects.</p> <p>Feed the iterative loop.</p> <p>Support the final definition of ULaADS</p>	<p>Data to be provided by cities (public data) to be stored in BAL.PM.</p> <p>Section 10 “Non-disclosure of Information” of CA protects Disclosing Party clearly describing the role and responsibilities of Recipients of such data.</p> <p>Additional NDA’s with all operational</p>

	framework conditions, ...)	<p>solutions for on-demand logistics (WP3) and impact assessment (WP6)</p> <p>Use data and learnings to support upscaling and multiplication activities with satellite cities.</p> <p>Provide database with lighthouse city information and industrial stakeholder's needs.</p>	<p>stakeholders in the trials</p> <p>Specific data protected by NDA will be preserved with a private password in the BAL.PM repository system.</p> <p>Data generated by the trials stored within BAL.PM, no specifics to be released, only generic learnings to be shared.</p>
<b>WP5 Impact and upscaling assessment (T 5.1)</b>	Develop framework and comprehensive methodology to identify, evaluate and compare impacts of on-demand services.	<p>Use data to assess:</p> <ul style="list-style-type: none"> <li>* achievements</li> <li>* strength, weakness</li> <li>* cost effectivity</li> <li>*generated learnings</li> <li>* impact on policy &amp; priorities.</li> </ul>	<p>Data generated by the trials stored within BAL.PM, no specifics to be released, only generic learnings to be shared.</p> <p>Specific data protected by NDA will be preserved with a private password in the BAL.PM repository system.</p>
<b>WP 5 Impacts on logistics and traffic efficiency, land-use and environment (T 5.2)</b>	Assess short, medium- and long-term impacts and benefits if ULaADS solutions and trails in context of UT operations.	Analysis of data collected at LHC during pilots (7 stage methodology TRIANGULM).	<p>Data generated by the trials stored within BAL.PM, no specifics to be released, only generic learnings to be shared</p> <p>Specific data protected by NDA will be preserved with a private password in the BAL.PM repository system.</p>

<p><b>WP6</b>      <b>ULaDS</b> <b>SUMP/SULP</b> <b>assessment (T 6.1)</b></p>	<p>Translate overarching vision and targets defined in existing SUMPs/SULPs into specific requirements and metrics for urban logistics demonstrated in ULaDS research trials.</p>	<p>Use case data (and iterative process) to:</p> <p>Compile case studies of each LHC trial</p> <p>Develop guidelines to assist policy makers in choice of urban logistics measures and strategies.</p>	<p>Data generated by the trials stored within BAL.PM, no specifics to be released, only generic learnings to be shared.</p> <p>Specific data protected by NDA will be preserved with a private password in the BAL.PM repository system.</p>
<p><b>WP7</b>      – <b>Dissemination,</b> <b>communication and</b> <b>training (task 7.1)</b></p>	<p>Tools to be developed:</p> <ul style="list-style-type: none"> <li>• Urban Logistics Observatory (T2.1) on project website to be updated regularly.</li> <li>• Leaflet</li> <li>• Roll-ups</li> <li>• Videos</li> <li>• Replication booklet</li> <li>• Replication webinars</li> <li>• Scientific publications for academic dissemination</li> <li>• Event presentations</li> <li>• Final conference</li> <li>• High-level debate</li> <li>• Clustering with other RDI projects</li> <li>• Social media outreach</li> <li>• Active promotion</li> </ul>	<p>All developed tools by EUR and BAX will be used for dissemination purposes.</p> <p>Additional presentations to be developed by partners based on official project tools and presentations.</p>	<p>Tools will be publicly available on website and social media.</p> <p>Additional presentations by partners will be uploaded in BAL.PM.</p> <p>For dissemination purposes the project will use the project partners' proprietary networks covered by their respective GDPR agreements.</p>
<p><b>WP7 – Exploitation plans, barriers and value proposition – (Task 7.2)</b></p>	<p>Newsletter subscribers' contact details.</p>	<p>BAX and EUR to coordinate monitoring and exploitation strategies by partners as well as execution of specific activities aiming at market introduction.</p>	<p>Analysis to measure and coordinate is not publicly available.</p>



Clarifications on data collected in different WPs:

- Data collected from individuals within an online, public forum, such as user opinion forums, surveys, tests, interactive apps, will be anonymised and registered without reference to that individual and no data can connect written statements, demographic profiling data, user reviews or scores with the creator of said data.
- Online formats designed for public responses will include the notice that contributors' responses and data may be used for research purposes. Surveys or tests will not be conducted without explicit agreement if the user to share results.
- Researchers will request explicit permission to use direct quotations of users' written responses.
- Should specific trails or data collection procedures require the storing of identification and contact information of volunteers, following protocols will be followed:
  - no data will be collected or used without informed, written consent from the individual.
  - all collected data in raw and tabulated format will be anonymised, i.e. codes will be used for each individual data set and the codes relating data sets with the individual study participants will be stored separately from the data and the individual's personal and contact information. Such codes will be stored internally in a secure location (i.e. digital data on internal protected servers and hard copies in a locked office).

## 2.1 Data types, categories and formats

The type and format of research data created depend on how task leaders define collection and analysis of data – i.e. on discipline-specific standards and customs. Ensuring long-term usability of the ULaADS data requires consideration of the most appropriate types and file formats.

The data collected within the research activities of the ULaADS project is intended to be of different types, as well as of different formats.

- Data sets: interview recordings, literature review, best practices review, online surveys, stakeholder platforms, spreadsheets, PDFs, quantitative data, operational data, public data, etc.
- Data exchange of research and trial results: Word documents, Excel spreadsheets, PowerPoint presentations, PDFs, workshops, webinars and online interviews.
- Documentation of results: Word documents (deliverables), PDFs (publications), PowerPoint presentations, videos, awareness raising materials (various formats).

- Personal data: gender, age, socio-economic status, professional activity region, residential region, education, mobility preferences (to be anonymised), ICT (app) experience. Project's internal contact list (internal use only), Advisory Board contact list (internal use only), other stakeholders contact list, access details to BAL.PM.

## 2.2 Re-use of existing data

### 2.2.1 Tasks within ULaaDS which will re-use existing data

The ULaaDS partnership will make use of existing data in a number of activities (see full list below). The ULaaDS consortium is encouraged to make existing data available for research within the project. This data is to be collected in the following tasks:

- Task 2.1: Urban logistics observatory. Stakeholders will provide insights and literature from other related projects, conferences, research...
- Task 2.2: Ecosystem perception and local stakeholder involvement: local urban freight fora. Stakeholders will contribute on local fora creation and participation through sharing experience, knowledge insights, etc.
- Task 2.3: Stakeholders' needs and requirements. Evaluation of relevant on-demand use cases
- Task 2.4: Future scenario creation and assessment. Information on the local context of the Lighthouse cities to support the creation of the ULaaDS scenarios (local policies, initiatives, past experience, etc.)
- Task 3.1: Benchmark of logistics solutions for sustainable-on-demand UFT. Academic and professional literature and a (re-)collection of best/validated practices of other innovation initiatives, from academic references to latest insights on commercial consultancy assignments.
- Task 3.2: Definition & pre-validation of novel technology solutions and concepts. desk research and expert interviews with solution providers and cities
- Task 3.3: Definition & pre-validation of novel collaborative business and operating models. Definition and further development of existing solutions
- Task 4.1: Pre-trial set-up. Research for trial implementation
- Task 4.5: Data collection and monitoring. Comparing with existing international standards and guidelines, data sharing from local stakeholders.
- Task 5.1: Impact assessment framework, methodology, tools and KPI identification. Cities will be providing expertise and current policies, tools or other relevant useful tools.
- Task 5.2: Impacts on logistics and traffic efficiency, land-use and the environment. Review of existing literature and frameworks.

- Task 5.3: Economic impacts, user experience, user acceptance, willingness to pay and awareness. socioeconomic impact assessment, evaluation of data gathered and other experiences during piloting phase.
- Task 6.1: ULaADS and SUMP/SULP assessment. existing strategic documents and roadmaps, strategic documents and targets on urban mobility/logistics at local level.
- Task 6.2: Building adaptive capacity for ULaADS through SUMPs and SULPs. Local policy documents and insights will be used.

### 2.2.2 Overview of other projects used in ULaADS as data-sources

ULaADS builds on the main EU projects and initiatives developed in the urban logistics and mobility domains and intends to exploit the prior work to further enhance the achieved results for the three pillars of the project. All consortium partners that are/were directly involved in these projects, are listed in brackets. The list is not exhaustive, and only the most relevant projects are included.

#### Project Relationship to ULaADS

- NOVELOG, H2020, EU, 2015-2018 (MEC, RSM)  
Development of a set of toolkits that enable users identify city logistics measures and their impacts based on a set of parameters. ULaADS aims to build upon the evaluation toolkit generated and expand it to generate relevant scenarios for future on-demand urban logistics.
- Cyclelogistics Ahead, IEE, 2014-2017 (MEC, FGM)  
Integration of municipalities, private and commercial end users aiming to reduce emissions from freight transport in cities. In particular, MEC established and implemented a micro consolidation centre and regulative measures to promote the use of cargo bikes. ULaADS will use the results to deploy its solutions by using existing micro consolidation centres and cargo bikes.
- CityChanger CargoBike, H2020, 2018-2021 (MEC, FGM)  
Assessment of cargo bike implementation examples, contexts and expertise in EU to transfer these on a larger scale. ULaADS will use the raise of awareness among the relevant stakeholders (public, private and commercial sectors) to create a collaborative and cooperative framework.
- ALEES, 2016-2018, BE, Flanders regionally funded (IML, MEC, VIL)  
ULaADS will build upon the first practical test performed with an AV shuttle in the city of Mechelen using the results of ALEES about the requirements and possibilities for autonomous delivery vehicle in inner cities.
- VITAL NODES, H2020, 2017-19 (EUR, dr. Jos Arts, dual affiliation: RUG & Rijkswaterstaat NL, LoS signed in attachment)

Recommendations for cost efficient and sustainable integration of all urban nodes in the TEN-T network corridor. ULaADS will leverage it to integrate relevant scenarios for future on-demand urban logistics in TEN-T corridors.

- SHARE NORTH, Interreg NSR, 2017-2019 (BRE, BER)  
Creation of living labs for the development, implementation, promotion and assessment of shared mobility in urban areas, replicating the concept of Mobihubs. ULaADS will leverage the novel cooperative business models for shared mobility and MaaS to be applied in the integration of shared solutions for logistics delivery while developing the concept of Dual Mobihubs .
- SENSE, H2020, 2017-20 (VIL, IML)  
Further understanding of PI concept and its opportunities for transport and logistics. ULaADS will use the results to ensure the integration of our solutions with the roadmap for the deployment of PI.
- Cargo Hitching, NL TKI Dinalog, 2012-17 (RUG, GRO)  
First exploration of the possibilities to combine people and goods transport, focusing on decision support via mathematical modelling. ULaADS will leverage the derived requirements for pilot tests with combined people and goods transport.
- CityLab, H2020, 2015-18 (TOI)  
Elaborating the Living Lab methodology and practice project supporting seven implementation actions, data collection and evaluation and transfer to 9 cities. ULaADS will use experiences from the Living Lab methodology elaborated for implementation, data collection and evaluation of use cases; and experiences from transfer to satellite cities and follower cities.
- PIONEER, NL TKI Dinalog & Dutch Science Foundation, 2019-22 (RUG, DROP)  
Focuses on the development of Physical Internet based concepts around micro-hubs for e-commerce, whereby a balance is sought between service orientation, efficiency, sustainability and quality of life. The Physical Internet (PI) is a future vision for fully open and connected logistics networks, in which physical, digital, operational and financial interconnectivity are central. ULaADS will build on and extend the work in PIONEER focusing on on-demand urban freight transport.
- SUMP-PLUS, H2020, 2019-22 (AIM, FGM)  
Addressing urban mobility related challenges and exploit new opportunities through a Co-Created city approach with regard to existing SULP and SUMP. FGM is a partner in this project and synergies regarding joint meetings and conferences can be exploited. Lessons Learnt from SUMP-PLUS will be integrated into ULaADS and vice versa.
- SPROUT, H2020, 2019-22 (MEC)

MEC will be a following a city in Poland taking on the infrastructure of the loading and unloading of goods. This project is linked to SURFLOGH and looks into how we should be using public space to meet the on-demand economy.

- SURFLOGH, Interreg NSR, 2017-21 (GRO, MEC)

ULaaS will use experiences from stakeholder cooperation platforms created within city labs when setting up the local fora. The concept of the smart urban hub developed will be leveraged for the development of the dual MobiHub concept and enhance the interaction between hubs and the urban logistics system.

- R!SULT (Responsive Sustainable Urban Logistics), BE, Flanders regionally funded, 2018-20 (MEC, VIL)

The goal of this project is to work out and validate a versatile generic logistic concept of ideal city deliveries. ULaaS will use results and components of this project as inspiration and input in the trials.

## 2.3 Data creation and origin

Data creation refers to the act of creating new data or acquiring existing data which is new to the ULaaS project (e.g. by obtaining existing data sets for use in the project).

If a consortium partner is the creator of data (e.g. by conducting data collection, survey or study), the partner is responsible for properly storing, processing and sharing that data, ensuring that it does not contain personal data before being shared with the members of the consortium.

Existing data will be collected and will be made available by ULaaS partners (e.g. trials definition). Data sets provided to the project will be assessed prior to their use by each respective partner. Only technically and legally suitable data will be used within ULaaS.

Personal data (or data sets that contain personal data) gathered by a consortium member remain with that consortium member and will not be distributed to any other consortium member or any party outside of the consortium. If (processed) data is to be transferred from one partner to another, the transfer will be done securely via a secure data channel, in an encrypted mode or via physical transfer.

## 2.4 Expected size of data

The expected data size is to be monitored during project lifetime. In the case of videos for example, several GBs of data can be expected from a single set of high resolution / high speed files. Consequently, in such cases only reduced, relevant sets will be made available.

## 2.5 Data utility

As per who will make use of the data extracted and collected throughout the project, the following preliminary list of players is indicated below.

- City councils, city administrations, city administrators in charge of innovation tracks regarding logistics, city administrators in charge of SUMP/SULPs.
- ULaaDs consortium
- All stakeholders directly or indirectly involved in last mile on-demand logistics, e.g. LSPs, integrators, express couriers, bike logistics couriers, crowd logistics platforms, transport companies, shippers, retail, local shop owners, construction companies, service companies, consumers, ...
- European Commission
- The general public including the broader scientific community.

### 3. Data storage

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The project coordination team benchmarked several project management tools and decided on a platform tailor-made to Horizon 2020 projects: BAL.PM, developed and maintained by Bremen-based BALance Technology Consulting GmbH. The BAL.PM system was set up and filled with ULaaDS project key data at project start and has been fully operational as of project M2 (October 2020).

BAL.PM serves as a document management (file storage, data repository) and reporting tool that is fully in line with European data protection requirements (General Data Protection Regulation, GDPR). According to contract,

- the planned system availability per year is 99.9 percent
- maintenance for the system is performed outside normal working hours
- a backup server is available that could replace the BAL.<sup>®</sup>PM server within less than 1 working day.
- data are available in selected data formats after project end, including a copy of all data in databases (SQL format) and a copy of all static webpages on CD-ROM or DVD

BALance Technology Consulting GmbH is hosting BAL.PM on a dedicated external server, replicating data (incremental backup) to a physically independent internal server on a daily basis. In addition, there is a regular backup by BALance onto an external hard drive stored at a separate geographical location than the other servers.

All entities and persons part of the ULaaDS project team have been set up in the system. Individual users are assigned accounts according to their respective role in the project (coordinator, work package leader, main contact, contact), providing them with different and configurable rights to view or edit information, as their respective roles require. This makes for a secure data transfer.

New and additional user accounts for the BAL.PM system are created upon request by the main contacts at each project partner. The latter are obliged to inform the project management team if

a person leaves the project partner organisation or is no longer actively involved in ULaADS so that person's account can be set to inactive, no longer giving him/her access to project data.

The scope of data stored in BAL.PM stretches to

- project structure (WPs, tasks, subtasks), periods, milestones, budget
- project partners (organisations and persons)
- documents (deliverables, reports, meeting agendas and minutes, ...)
- reporting on financials, project progress, deviations, dissemination, ...

In BAL.PM, a “document” is not a single file, but rather a container which can store several (ideally: related) files, e.g. a series of internal newsletters, even in different format. This feature enables users to group different versions of a file, or any supportive data, into the same document, creating a document library. Documents can be also related to events from the calendar, making them more easily retrievable.

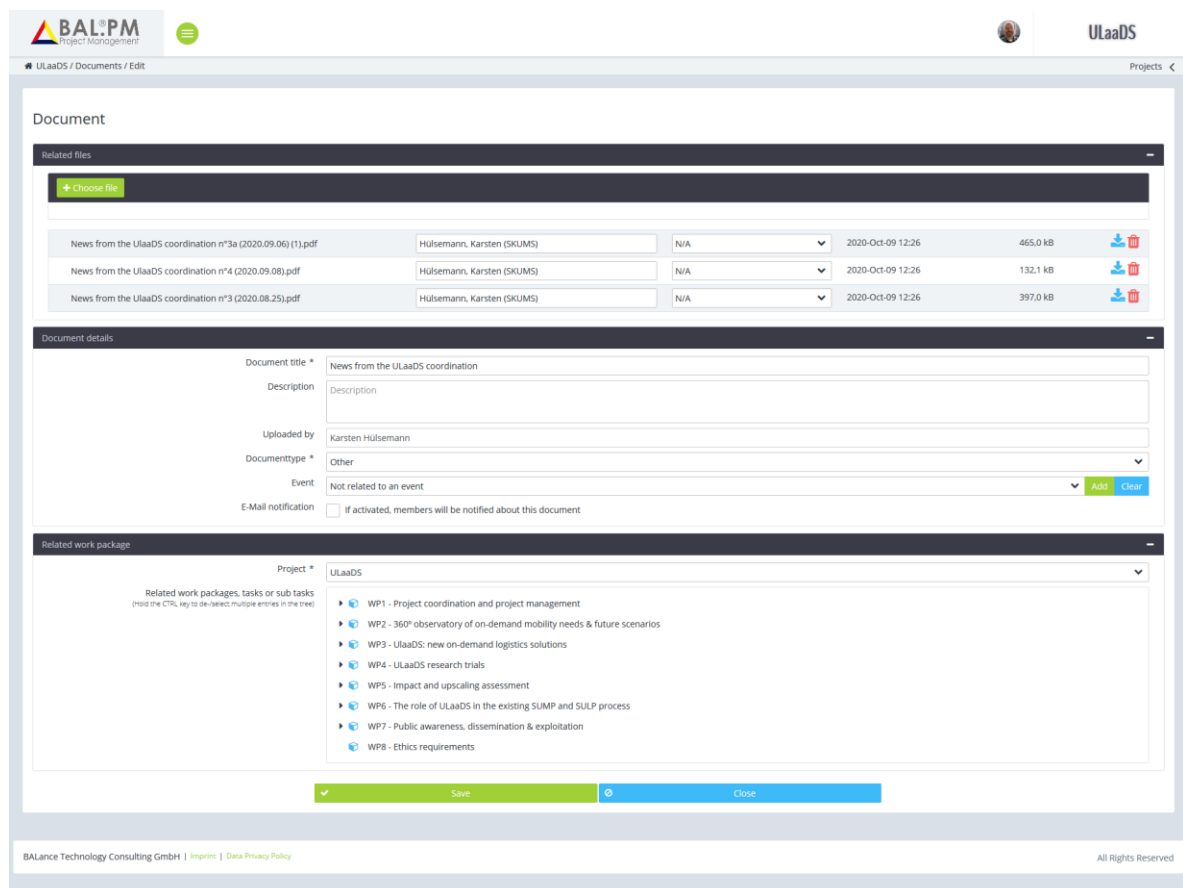


Figure 1: “Document” in BAL.PM holding several files (coordinator view)

Based on this, the project coordination team of BRE and BAX has decided there is no need for an additional repository system to mirror all documents. Rather, documents are to be stored in the local systems (Servers) of the respective authors' organization.

For temporary, non-confidential, and especially for large files (such as published videos to be shared, etc.), the project team has secured cloud storage space. HiDrive cloud storage, provided by German-based Strato AG, is used for storing and easily accessing those large and non-confidential files. HiDrive includes a two-factor authentication, limiting access to files to project partners.

Updates and maintenance of the BAL.PM repository systems will be monitored by the ULaADS Steering Committee (SC), formed by the following organisations:

- Work Package leaders
- Project Coordinators

Compliance with GDPR regulation is ensured thanks to applying a strict policy in granting and revoking access to data.

## 4. FAIR data

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With respect to the guidelines on FAIR Data Management in Horizon 2020, research data in ULaADS will be “FAIR” – that is: Findable, accessible, interoperable and re-usable. ULaADS will undertake all necessary action to make its data FAIR.

As indicated in Chapter 3, the primary responsibility for storing and making data findable lies with the data creator. Yet, all data created within ULaADS will be stored in one central repository (BAL.PM). This archive is to be maintained by BREMEN and BAX.

### 4.1 Naming and discoverability of data

A structured data storage is essential for proper and secure storage of data files and records. For any file-based storage this includes clear and unambiguous file naming, the use of proper versioning, clear and intuitive folder structure.

All relevant documents that need to be shared or accessed by the project partners are stored in BAL.PM.

Every entry is categorised after which a drill down option gives access to the effective documents.

#### 4.1.1 BAL.PM categorisation

BAL.PM features a set of dynamic filters and search fields, allowing for a convenient and fast discoverability of data. The system distinguishes and categorises documents by type, providing a drop-down menu to select from when creating a new document, as well as when searching and retrieving a document. Options include:

- Agenda
- Deliverable
- Event Document



- Logo
- Minutes of meeting
- Other
- Participant list
- Presentation
- Publication
- Internal report
- Template
- Training document

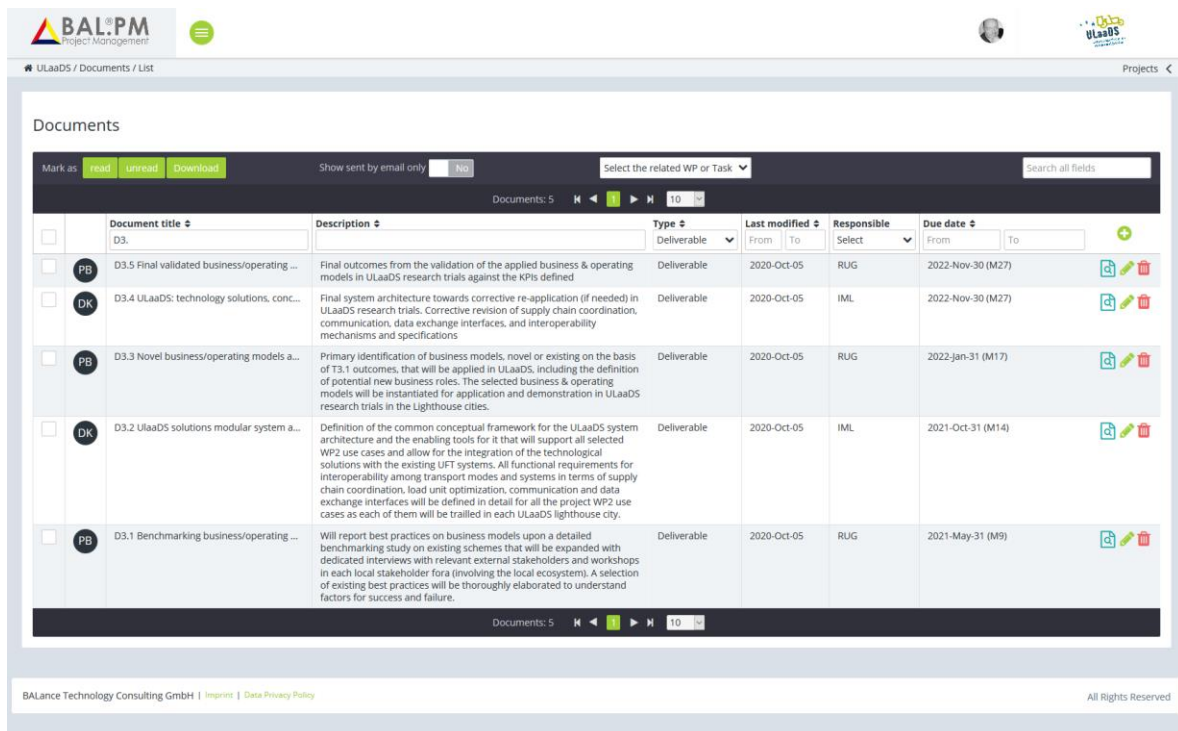


Figure 2: Retrieving documents by type (here shown for deliverables; coordinator view)

Document Title / Description/ Type / Last Modified / Responsible / Due Date

e.g. D1.4 Innovation management plan / This report will describe ... / Other / “relevant date” / “relevant person” / 2021-Jan\_05

### 4.1.2 Presentations and minutes

ULaaDS\_Meeting\_(VERSION if applicable).FILE EXTENSION

e.g. ULaaDS\_KoM\_MoM\_(final).pdf

### 4.1.3 Deliverables

ULaaDS\_D\_DELIVERABLE NUMBER.FILE.FILE EXTENSION

e.g. ULaADS\_D1.4\_InnovationManagementPlan.pdf

## 4.2 Version control and metadata

The version control for documents will be performed on BAL.PM. BAL.PM records the creator of a document, as well as the time of its creation.

Metadata is described by Eurostat as the “information that is needed to be able to use and interpret statistics”<sup>8</sup>. This same definition specifies two different types of metadata:

- **Structural metadata:** Used to identify, formally describe or retrieve statistical data. E.g. Dimension names, variable names, dictionaries, descriptions, locations, keywords...
- **Reference (or explanatory) metadata:** Describe the content and quality of the statistical data from a semantic point of view. E.g. Methodologies for data collection, context of the statistical data, quality and dissemination characteristics...

Both types of metadata will be compiled and saved in ULaADS and will be specified as such in the dataset description (see section 4.3). Once the document is finished the final version will be uploaded to BRE’s file server with limited, PW-protected access.,

## 4.3 Data description

This section provides a preliminary table to be used for describing datasets to be produced/collected in the ULaADS project.

As the nature of the datasets can evolve during project lifetime, changes in the template may occur (see Table 2).

Table 2: DATASET DESCRIPTION TEMPLATE

<b>Dataset reference</b>	See section 4.1 <b>(DATE) TITLE (VERSION if applicable).FILE EXTENSION</b>
<b>Dataset name</b>	Name of the data set (see section 4.1) DATE_TASK_TITLE_SPECIFICATION_(VERSION if applicable).FILE EXTENSION E.g. 2022.04.13_T4.4_Trial1_Operations_V.01.xlsx
<b>Dataset description</b>	Datasets will have a full data description explaining the origin of the data and its usefulness.
<b>Standards and metadata</b>	Structural/Reference metadata.
<b>File format</b>	Format that defines the data.
<b>Data size</b>	Expected size of the data.
<b>Data sharing</b>	See options: Public – Open for public disposal Embargo – To become public after the embargo applied by the publisher is over (YYYYMMDD format) Restricted – For project internal use only
<b>Archiving and preservation</b>	The preservation guarantee and the data storage during and after the project (for example: databases, institutional repositories, public repositories, etc.)
<b>Re-used data</b>	Y/N. If yes, indicate how/from was it retrieved

## 4.4 Keywords, abbreviations and data search

In each deliverable, a List of Abbreviations will be produced. Furthermore, the title should also be a keyword that defines the content of the document/file.

BAL.PM includes a search function, for which it is possible to search for document titles.

## 5. Open access data

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### 5.1 Open available data

In most cases, data collected within ULaaS will be open by default. For example, many project deliverables have been labelled as “public”. However, some sensitive data may be shared under restrictions and due to that some deliverables will be shared within the consortium only. This is specifically the case for WP4 in which the specific data gathered during the trials will be confidential and the collected qualitative and quantitative data will be used to draw conclusions in an iterative process in order to improve the logistics models (WP3) and assess their impact (WP5).

To share data within the ULaaS consortium, the BAL.PM system will be used.

BAL.PM is maintained by the BRE team, as is the BRE file server. In all cases, compliance with GDPR regulation is ensured thanks to applying a strict policy in granting and revoking access to data.

Deliverables with the distribution level “Public” (majority) will be uploaded to the [ULaaS website](#), where open access is granted to all interested parties.

### 5.2 Data access

To share data and make it accessible within ULaaS, a project repository has been set up by BREMEN in BAL.PM (see point 5.1). As mentioned, public deliverables and publications will be available on the ULaaS website as well as in the according repositories.

Access to the on-demand mobility needs and future scenarios as well as scientific publication and research data and business/operating models related to the new on-demand ULaaS solutions will be made open, with the exception of sensitive data related to the protection of ULaaS solutions modular system architecture and tools.

For public data, in line with Article 29.1 (Obligation to disseminate results) of the Grant Agreement and Article 8.4 of the Consortium Agreement, project partners will deposit an electronic copy of the published version or final peer-reviewed manuscript accepted for publication in the project’s website – this ensures a long-term preservation.

ULaaS project authors will be encouraged to retain their copyrights and grant adequate licenses to publishers.



## 5.3 Use of data and restrictions

Access to the ULaADS repository BAL.PM will be provided by BREMEN. Access is only granted to project beneficiaries. In addition, restrictions to folders are possible. Restrictions on use are defined in the Grant Agreement and in the Consortium Agreement.

Open available data (public deliverables, publications, research results) will be available on the ULaADS website and on according to depositories as described in section 5.1. There is no need for a data access committee.

## 6. Interoperability of data

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Common data and metadata standards and formats are a key aspect of data operability. Standardisation makes data discoverable and this way promotes international and interdisciplinary access to, and use of, research data. To ensure the correct use of data by owners and re-users in ULaADS, the use of standardised vocabularies is necessary.

### 6.1 Vocabularies, standards and licensing

Standardisation on data level will be performed by applying community-based standards as used in peer-reviewed publications and conferences and ISO standards.

Standard and common vocabularies will be used in all types of data to be published by ULaADS. Where additional explanation is necessary, it will be provided.

### 6.2 Re-usability of data

As soon as public data and results are ready to be made available, they will be published and/or uploaded for open access.

Public project results and outputs will be published on the ULaADS website and open repositories accessible for verification and re-use. The website will remain online at least five years after the project ends.

ULaADS supports the concept of FAIR data, and will work towards making research data findable, accessible, interoperable and re-usable, except in the provisions identified in section 5.2. Open access data will be as FAIR as possible.

Most part of the deliverables and dissemination documents in ULaADS will be open access as soon as the research has been completed and published. There are no plans to end provision of ULaADS data, and they will therefore be available for re-use as long as the archives exist.

### 6.3 Data quality assurance

An initial control of the data (during data collection) is needed. This data control is to be carried out by the data creator/owner together with the task leader, who must ensure that the data reflects correct facts, responses, observations and events.

## 7. Allocation of resources

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### 7.1 Costs of making data FAIR

The ULaaS BAL.PM repository will be maintained and kept active by partner BREMEN with the support of BAX.

The repository system, as well as the [ULaaS website](#), will be accessible up to five years after project end. All open accessible data will be provided to the website.

### 7.2 Data types, categories and formats

The ULaaS consortium has organised a well-structured data repository on BAL.PM.

WP1 project partners BREMEN (project coordinator) and BAX will be responsible for:

- Upgrades and maintenance of the data repository.
- Access control, reporting and blocking any possible security threat.

The quality of data control is the primary responsibility of each individual ULaaS partner.

## 8. Data security

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Research data is shared between project partners and stored in BAL.PM and BRE's file server with limited PW-protected access during the project's lifetime.

### 8.1 Provisions for data security

All data processed and shared will be stored in secure environments. If processed data is to be transferred from one partner to another, the transfer will be done securely via the BAL.PM platform ideally.

ULaADS will undertake all necessary efforts to protect data, products and services against unauthorised use, as well as to provide secure access to data. The primary responsibility to take necessary measures to ensure data security lies with each individual partner. Log-in systems will be used before providing access to secured data and information.

ULaADS will take measures to be compliant with the EU regulations regarding the protection of personal data, including GDPR, and promote openness and sharing of data and good practices where possible.



## 9. Ethical aspects and templates

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### 9.1 Ethical or legal issues on data sharing

Ethics and legal issues are to be covered within the ULaADS Grant Agreement (GA) and Consortium Agreement (CA). Ethics is also covered in a separate confidential deliverable D8.1, which sets out the 'ethics requirements' that ULaADS must comply with.

In line with the EU GDPR, no sensitive personal data, such as data on ethnicity, will be collected. There are no ethical or legal issues that can have an impact on data sharing.

In the ULaADS project, trials will be conducted in a real-life operational on-demand economy environment and be conducted by trained personnel, equipped with all necessary tools that are common for last mile delivery. Aspects of the trials for which non-associated individuals are hired (crowd sourcing) will not require specific expertise or tools, except for personal communication tools for electronic communication.

In accordance to H2020 ethical standards and guidelines, the health and safety procedures, risk assessment and potential environmental consequences will be part of the 'implementation and commissioning framework' to be implement in all ULaADS research trials.

## 9.2 Documentation of consent/or data sharing

In ULaaDS, as in any activity subject to GDPR, consent for data sharing is one of the key aspects for the success of activities involving personal data. For this reason, the following standard consent form is provided:

Table 3: PARTICIPATION CONSENT FORM

**Research participants' identity and dated signatures of the participant affirming that consent was given.**

The information shown below identifying the participant should be entered in the designated spaces at the time of execution of the consent document.

Name: \_\_\_\_\_

Anonymisation code: \_\_\_\_\_

*Participation Consent Form*

*Title of the study:*

*Place of the study:*

Please circle as necessary		
I have read and understood the written information handed out for the study mentioned above. My questions in connection with the study have been answered satisfactorily. I can keep written information and receive a copy of my written declaration of consent.	Yes	No
I had sufficient time to take my decision.	Yes	No
I have spoken to Dr./Ms./Mr.:		
I understand that I am free to withdraw from the study <ul style="list-style-type: none"> <li>• <b>At any time</b></li> <li>• <b>Without having to give a reason for withdrawing</b></li> </ul>	Yes	No
The confidentiality of my personal data/individual data was assured to me. Personal/Individual data will be anonymised at the publication of the study's results. I however approve the fact that, under a strict compliance with confidentiality, the responsible authority experts and the ethic commission may look at my original data due to examining and control purposes.	Yes	No

Signed \_\_\_\_\_

Date \_\_\_\_\_

Name (in capital letters) \_\_\_\_\_

*Investigators' confirming statement*



*I have given this research participant information on the study, which in my opinion is accurate and sufficient for the participant to understand fully the nature and benefits of the study, and the rights of a research participant. There has been no coercion or undue influence. I have witnessed the signing of this document by the participant.*

*Investigator's name:* \_\_\_\_\_

*Investigator's signature:* \_\_\_\_\_

*Date:* \_\_\_\_\_

*Currently, no other issues of interest are identified. During the course of ULaADS, additional aspects will be added here if necessary.*

### 9.3 Data processor’s record of processing activities

(Individual) Consent is not the only requirement needed for the correct use and treatment of personal data. Together with it, people who agree that their personal data is used must have access to:

- Contact details of the people that will treat her/his personal data (Data Processors and Data Controller)
- Full information: How the personal data will be treated, and for what purpose
- Security measures (e.g., encryption) available to ensure privacy of personal data

For these reasons, the following Table 4 is also made available for the partnership:

Table 4: RECORD OF PROCESSING ACTIVITIES

<b>1</b>	<b>Contact details of Data Processor (and Controller on behalf of which the processor is acting)</b>
<b>Data Processor’s name(s)</b>	
<b>E-mail address</b>	
<b>Company address</b>	
<b>Telephone</b>	
<b>Data Controller’s name(s)</b>	
<b>E-mail address</b>	
<b>Company address</b>	
<b>Telephone</b>	
<b>2</b>	<b>Categories of processing carried out on behalf of the Controller</b>
<b>3</b>	<b>Where applicable, transfers of personal data to a third country or an international organisation, including the identification of that third country or international organisation</b>

<b>4</b>	Where possible, add a general description of the technical and organisational security measures
<b>a</b>	<i>The pseudonymisation and encrypting of personal data -</i>
<b>b</b>	<i>The ability to ensure the ongoing confidentiality, integrity, availability and resilience of processing systems and services -</i>
<b>c</b>	<i>The ability to restore the availability and access to personal data in a timely manner in the event of a physical or technical incident -</i>
<b>d</b>	<i>A process for regularly testing, assessing and evaluating the effectiveness of technical and organisational measures for ensuring the security of the processing -</i>

## 10. Conclusions

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This DMP and deliverable provides an overview of the data that will be produced and treated in ULaaS during its project lifetime, together with related legal and ethical data processes and requirements that need to be taken into consideration.

This DMP also outlines an overview of what type of datasets will be produced, as well as defining a set of attributes to be used to describe each dataset. These descriptions include methodologies, sharing and storage procedures. The most sensitive datasets are expected to be produced in WP2, WP3, WP4 & WP5; especially the datasets generated in WP4 will be sensitive. Extreme care will be taken that the data gathered qualified as sensitive and confidential will remain confidential and will only be used to draw conclusions as part of an iterative process in order to improve the logistics models (WP3) and assess their impact (WP5), as to maximise the uptake of ULaaS in the existing SUMP and Sulp processes of participating cities (WP6) and to raise the public awareness, dissemination and exploitation of ULaaS in other cities across Europe (WP7)..

BAL.PM was selected to save the data produced in ULaaS. It is the project's anchor point for all exchange and storage of data. The good performance of this repository system is assured thanks to the clear instructions on naming, storage and metadata provided in this document, as well as by the maintenance to be carried out by the assigned project partners BREMEN and BAX. This collaborative effort will facilitate that data in the project is made FAIR (findable, accessible, interoperable and reusable), as described in Chapter 4.

All deliverables that are labelled as "Public will be made publicly available and published on the [ULaaS project website](#).

# Acronyms

Acronym	Meaning
AI	Artificial Intelligence
AV	Autonomous Vehicles
CA	Consortium Agreement
D	Deliverable
DMP	Data Management Plan
EC	European commission
FAIR	Findable, Accessible, Interoperable and Re-usable data
GA	Grant Agreement
GDPR	General Data Protection Regulation (EU) 2016/679
ICT	Information and Communication Technology
LHC	Light House City
LF	Load Factor
LSP	Logistics Service Provider
MaaS	Mobility as a Service
O	Objective
PW	Password
RDI	Research, Development and Innovation (projects)
SAC	Satellite Cities
SC	Steering Committee
SUMP	Sustainable Urban Mobility Plan
SULP	Sustainable Urban Logistics Plan
SotA	State of the Art
T	Task
UC	Use Case
UFT	Urban Freight Transport
ULaaS	Urban Logistics as an on-Demand Service



<b>WP</b>	Work Package
<b>ZE</b>	Zero Emissions
<b>UCC</b>	Urban Consolidation Centre



## References

- [1] The European Parliament and the Council of the European Union, 2016. "Regulation (EU) 2016/679 of the European Parliament and the Council of the European Union of 27 April 2016", <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679>
- [2] The European Parliament and the Council of the European Union, 2016. "Directive (EU) 2016/680 of the European Parliament and the Council of the European Union of 27 April 2016", <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0680&from=EN>
- [3] The European Parliament and the Council of the European Union, 2006. "Directive 2006/24/EC of the European Parliament and the Council of 15 March 2006", <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0024&from=GA>
- [4] European Commission, 2016. "Guidelines on FAIR Data Management in Horizon 2020".
- [5] ULaaDS Grant Agreement, 2020. "5. Ethics & security, 5.1 Ethics, Data handling" (p. 112-114).
- [6] Eurostat, 2020. "Glossary: Metadata", <https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Metadata>
- [7] European Commission. "Open access & Data management" (last accessed on July 2020), [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm)
- [8] SAFE-UP Consortium Agreement, 2020. "

## Annex I – Definitions

The following definitions are drawn from Article 4 of the GDPR regulation and are helpful for the interpretation of this file:

‘Personal data’ means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person;

‘Processing’ means any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction;

‘Pseudonymisation’ means the processing of personal data in such a manner that the personal data can no longer be attributed to a specific data subject without the use of additional information, provided that such additional information is kept separately and is subject to technical and organisational measures to ensure that the personal data are not attributed to an identified or identifiable natural person;

‘Filing system’ means any structured set of personal data which are accessible according to specific criteria, whether centralised, decentralised or dispersed on a functional or geographical basis;

‘Controller’ means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of such processing are determined by Union or Member State law, the controller or the specific criteria for its nomination may be provided for by Union or Member State law;

‘Processor’ means a natural or legal person, public authority, agency or other body which processes personal data on behalf of the controller;

‘Recipient’ means a natural or legal person, public authority, agency or another body, to which the personal data are disclosed, whether a third party or not. However, public authorities which may receive personal data in the framework of a particular inquiry in accordance with Union or Member State law shall not be regarded as recipients; the processing of those data by those public authorities shall be in compliance with the applicable data protection rules according to the purposes of the processing.