Autonomous Vehicles to Evolve to a New Urban Experience

Deliverable D1.5

Final Privacy protection & Data Management Plan

Disclaimer

This document reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

Document Information

Grant Agreement Number	769033
Full Title	Autonomous Vehicles to Evolve to a New Urban Experience
Acronym	AVENUE
Deliverable	Final Privacy protection & Data Management Plan
Due Date	October 2022
Work Package	WP1
Lead Partner	CERTH
Authors	Evangelos Bekiaris, Mary Panou, Stella Nikolaou Evangelia Gaitanidou (CERTH)
Dissemination Level	Public

Document History

Version	Date	Author	Description of change
V0.1	29/08/22	Evangelos Bekiaris, Mary Panou	First draft version, with the indication of the contents and preliminary background data
V0.2	20/09/2022	Evangelos Bekiaris, Mary Panou, Stella Nikolaou Evangelia Gaitanidou	Updated version, in relation to the first version of the deliverable and project pilots documentation
V1	31/10/2022	Evangelos Bekiaris, Mary Panou, Stella Nikolaou Evangelia Gaitanidou	Final version with last refinements

Table of Contents

List of Figures

List of Tables

Acronyms

ADS	*Automated Driving Systems*
AV	*Automated Vehicle*
CAPEX	*Capital expenditure*
DC	*Demonstration Coordinator*
D	*Deliverable*
DMP	*Data Management Plan*
DPIA	*Data Privacy Impact Assessment*
EC	*European Commission*
FAIR	*Findable, Accessible, Interoperable and Reusable*
N/A	*Not Applicable*
ORDP	*Open Research Data Protocol*
OPEX	*Operating Expense*
SoA	*State of the Art*

Executive summary

This updated Data Management Plan contains the complete structure of the database and descriptions of the metadata files to enable self-explainable (re)use of datasets by external parties. Long-term re-usability of these data is of substantial importance, especially in the field of automated driving experience. Embargos (if any) for parts/segments of data, models, evaluation dimensions (Category 4 data: Users' perceptions and satisfaction, toward the vehicle and service; e.g., acceptance), the surrogate and horizontal impact and metadata indicators/estimators will be set by the Partners who own these in collaboration with the Data Manager of the project that are mentioned and addressed in relation to D7.15 and its decisions. A need for a DPIA assessment was further investigated through a dedicated form to investigate if it was needed.

In this version the following elements of the Data Management Plan framework are set:

- Purpose of document, intended audience and interrelations **(Chapter 1)**
- AVENUE methodology for the second version: data categories and clusters and Data Privacy Impact Assessment (DPIA) investigation form **(Chapter 2)**
- Conclusion **(Chapter 3)**

Post-processed datasets, free from any private/personal and identifiable information, will reside in the AVENUE partners safe repositories. The work presented in D1.5 includes only information that has not already extensively presented in the initial DMP (D1.4) and is aligned with the Ethical requirement 1 (informed consent procedure), 2 (data protection and datasets)[1], 4 and 5 of the AVENUE project (as presented in D11.1, D11.2, D11.3, and D11.4, respectively).

---

[1] The information regarding this topic is detailed in Deliverable D1.4 Privacy Protection and Data Management Plan. In Section 3 of D1.4 we detail the Data Collection and Storage methodology, defining the procedures for data collection, storage, protection, retention, and destruction. EU Legislation compliance (GDPR) is addressed in section 5.3 of D1.4; no legal confirmation was required as each partner controlled and processed their data which were anonymous, as shown by the DPIA investigation form.
The information of the procedures regarding the collection, storage, and protection of personal data are defined in D1.4, Section 5. The final high level data descriptions can be found in Annex I, while the information that was provided to the participants, being part of the informed consent, was defined in deliverables D2.16,17,18 .

1 Introduction

AVENUE aims to design and carry out full-scale demonstrations of urban transport automation by deploying, for the first time worldwide, fleets of Automated minibuses in low to medium demand areas of 4 European demonstrator cities (Geneva, Lyon, Copenhagen and Luxembourg) and 2 to 3 replicator cities. The AVENUE vision for future public transport in urban and suburban areas, is that Automated vehicles will ensure safe, rapid, economic, sustainable and personalized transport of passengers. AVENUE introduces disruptive public transportation paradigms on the basis of on-demand, door-to-door services, aiming to set up a new model of public transportation, by revisiting the offered public transportation services, and aiming to suppress prescheduled fixed bus itineraries.

Vehicle services that substantially enhance the passenger experience as well as the overall quality and value of the service will be introduced, also targeting elderly people, people with disabilities and vulnerable users. Road behavior, security of the Automated vehicles and passengers' safety are central points of the AVENUE project.

At the end of the AVENUE project four-year period the mission is to have demonstrated that Automated vehicles will become the future solution for public transport. The AVENUE project will demonstrate the economic, environmental and social potential of Automated vehicles for both companies and public commuters while assessing the vehicle road behavior safety.

1.1 On-demand Mobility

Public transportation is a key element of a region's economic development and the quality of life of its citizens.

Governments around the world are defining strategies for the development of efficient public transport based on different criteria of importance to their regions, such as topography, citizens' needs, social and economic barriers, environmental concerns and historical development. However, new technologies, modes of transport and services are appearing, which seem very promising to the support of regional strategies for the development of public transport.

On-demand transport is a public transport service that only works when a reservation has been recorded and will be a relevant solution where the demand for transport is diffuse and regular transport is inefficient.

On-demand transport differs from other public transport services in that vehicles do not follow a fixed route and do not use a predefined timetable. Unlike taxis, on-demand public transport is usually also not individual. An operator or an automated system takes care of the booking, planning and organization.

It is recognized that the use and integration of on-demand Automated vehicles has the potential to significantly improve services and provide solutions to many of the problems encountered today in the development of sustainable and efficient public transport.

1.2 Fully Automated Vehicles

A self-driving car, referred in the AVENUE project as **a Fully Automated Vehicle (AV)**, also referred as Autonomous Vehicle, is a vehicle that is capable of sensing its environment and moving safely with no human input.

The terms *automated vehicles* and *autonomous vehicles* are often used together. The Regulation 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles defines "automated vehicle" and "fully automated vehicle" based on their autonomous capacity:

- An "automated vehicle" means a motor vehicle designed and constructed to move autonomously for certain periods of time without continuous driver supervision but in respect of which driver intervention is still expected or required
- "Fully automated vehicle" means a motor vehicle that has been designed and constructed to move autonomously without any driver supervision

In AVENUE we operate ***Fully Automated minibuses for public transport***, (previously referred as Autonomous shuttles, or Autonomous buses), and we refer to them as simply *Automated minibuses* or *the AVENUE minibuses.*

In relation to the SAE levels, the AVENUE project will operate SAE Level 4 vehicles.
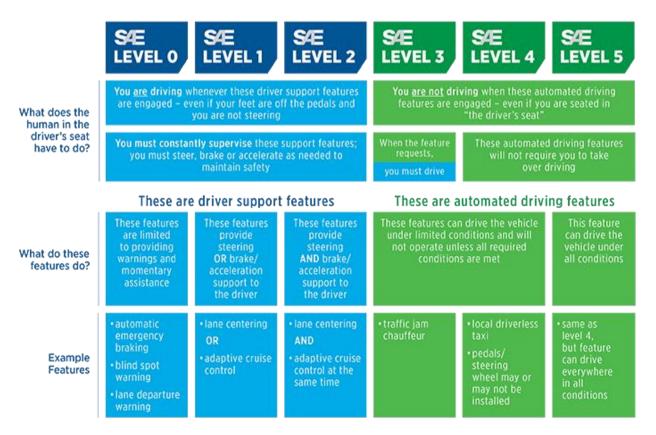

Table 1: SAE Driving Automaition levels (©2020 SAE International)

1.2.1 Automated vehicle operation overview

We distinguish in AVENUE two levels of control of the AV: micro-navigation and macro-navigation. Micro navigation is fully integrated in the vehicle and implements the road behavior of the vehicle, while macro-navigation is controlled by the operator running the vehicle and defines the destination and path of the vehicle, as defined the higher view of the overall fleet management.

For micro-navigation Automated Vehicles combine a variety of sensors to perceive their surroundings, such as 3D video, LiDAR, sonar, GNSS, odometry and other types of sensors. Control software and systems, integrated in the vehicle, fusion and interpret the sensor information to identify the current position of the vehicle, detecting obstacles in the surround environment, and choosing the most appropriate reaction of the vehicle, ranging from stopping to bypassing the obstacle, reducing its speed, making a turn etc.

For the Macro-navigation, that is the destination to reach, the Automated Vehicle receives the information from either the in-vehicle operator (in the current configuration with a fixed path route), or from the remote-control service via a dedicated 4/5G communication channel, for a fleet-managed operation. The fleet management system takes into account all available vehicles in the services area, the passenger request, the operator policies, the street conditions (closed streets) and send route and stop information to the vehicle (route to follow and destination to reach).

1.2.2 Automated vehicle capabilities in AVENUE

The Automated vehicles employed in AVENUE fully and automatically manage the above defined, micro-navigation and road behavior, in an open street environment. The vehicles are Automatically capable to recognize obstacles (and identify some of them), identify moving and stationary objects, and automatically decide to bypass them or wait behind them, based on the defined policies. For example, with small changes in its route the AVENUE minibus is able to bypass a parked car, while it will slow down and follow behind a slowly moving car. The AVENUE mini-buses are able to handle different complex road situations, like entering and exiting round-about in the presence of other fast running cars, stop in zebra crossings, communicate with infrastructure via V2I interfaces (ex. red light control).

The minibuses used in the AVENUE project technically can achieve speeds of more than 60Km/h. However, this speed cannot be used in the project demonstrators for several reasons, ranging from regulatory to safety. Under current regulations the maximum authorized speed is 25 or 30 Km/h (depending on the site). In the current demonstrators the speed does not exceed 23 Km/h, with an operational speed of 14 to 18 Km/h. Another, more important reason for limiting the vehicle speed is safety for passengers and pedestrians. Due to the fact that the current LIDAR has a range of 100m and the obstacle identification is done for objects no further than 40 meters, and considering that the vehicle must safely stop in case of an obstacle on the road (which will be "seen" at less than 40 meters distance) we cannot guarantee a safe braking if the speed is more than 25 Km/h. Note that technically the vehicle can make harsh break and stop with 40 meters in high speeds (40 -50 Km/h) but then the break would too harsh putting in risk the vehicle passengers. The project is working in finding an optimal point between passenger and pedestrian safety.

Due to legal requirements a **Safety Operator** must always be present in the vehicle, able to take control any moment. Additionally, at the control room, a **supervisor** is present controlling the fleet operations. An **Intervention Team** is present in the deployment area ready to intervene in case of incident to any of the minibuses. In table 2 provides and overview of the AVENEU sites and OODs.

	Summary of AVENUE operating sites demonstrators							
	TPG		Holo		Keolis		Sales-Lentz	
	Geneva		Copenhagen	Oslo	Lyon		Luxembourg	
Site	Meyrin	Belle-Idée	Nordhavn	Ormøya	ParcOL	Pfaffental	Contern	Esch sur Alzette
Funding	TPG	EU + TPG	EU + Holo	EU + Holo	EU + Keolis	EU + SLA	EU + SLA	EU + SLA
Start date of project	August 2017	May 2018	May 2017	August 2019	May 2017	June 2018	June 2018	February 2022
Start date of trial	July 2018	June 2020	September 2020	December 2019	November 2019	September 2018	September 2018	April 2022
Type of route	Fixed circular line	Area	Fixed circular line	Fixed circular line	Fixed circular line	Fixed circular line	Fixed circular line	Fixed circular line
Level of on-demand service*	Fixed route / Fixed stops	Flexible route / On-demand stops	Fixed route / Fixed stops	Fixed route / Fixed stops	Fixed route/Fixed stops	Fixed route / Fixed stops	Fixed route / Fixed stops	Fixed route / Fixed stops
Route length	2,1 km	38 hectares	1,3 km	1,6 km	1,3 km	1,2 km	2,3 km	1 km
Road environment	Open road	Semi-private	Open road	Open road	Open road	Public road	Public road	Main pedestrian road
Type of traffic	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed	Pedestrians, bicycles, delivery cars
Speed limit	30 km/h	30 km/h	30 km/h	30 km/h	8 to 10 km/h	30 km/h	50 km/h	20 km/h
Roundabouts	Yes	Yes	No	No	Yes	No	No	No
Traffic lights	No	No	No	No	Yes	Yes	Yes	No
Type of service	Fixed line	On demand	Fixed line	Fixed line	Fixed line	Fixed line	Fixed line	On Demand
Concession	Line (circular)	Area	Line (circular)	Line (circular)	Line (circular)	Line (circular)	Line (circular)	Line (circular)
Number of stops	4	> 35	6	6	2	4	2	3
Type of bus stop	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Bus stop infrastructure	Yes	Sometimes, mostly not	Yes	Yes	Yes	Yes	Yes	Yes
Number of vehicles	1	3-4	1	2	2	2	1	1
Timetable	Fixed	On demand	Fixed	Fixed	Fixed	Fixed	Fixed	On-demand
Operation hours	Monday-Friday (5 days)	Sunday-Saturday (7 days)	Monday-Friday (5 days)	Monday-Sunday (7 days)	Monday-Saturday (6 days)	Tuesday & Thursday Saturday, Sunday & every public holiday	Monday - Friday	Monday – Saturday
Timeframe weekdays	06:30 – 08:30 / 16:00 – 18:15	07:00 – 19:00	10:00 – 18:00	7:30 – 21:30	08:30 – 19:30	12:00 – 20h00	7:00 – 9:00 16:00 – 19:00	11:00 – 18:00 11:00 – 18:00
Timeframe weekends	No service	07:00 – 19:00	No service	9:00 – 18:00	08:30 – 19:30	10:00 – 21:00	No Service	On Suterday only
Depot	400 meters distance	On site	800 meters distance	200 meters distance	On site	On site	On site	500 m distance
Driverless service	No	2021	No	No	No	No	No	No
Drive area type/ODD	B-Roads	Minor roads/parking	B-Roads/minor roads	B-Roads	B-Roads	B-Roads	B-Roads/parking	
Drive area geo/ODD	Straight lines/plane	Straight lines/ plane	Straight lines/ plane	Curves/slopes	Straight Lines/ plane	Straight lines/ plane	Straight lines/ plane	Straight lines / plane
Lane specification/ODD	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Traffic lane	Open area
Drive area signs/ODD	Regulatory	Regulatory	Regulatory, Warning	Regulatory	Regulatory	Regulatory	Regulatory	Regulatory
Drive area surface/ODD	Standard surface, Speedbumps	Standard surface, Speedbumps	Standard surface Speedbumps, Roadworks	Frequent Ice, Snow	Standard surface, Potholes	Standard surface	Standard surface	Standard Surrface

Table 2: Summary of AVENUE operating site (+ODD components)

1.3 Preamble

This report is the update and revision of the information first presented in D1.4 'Initial data privacy and Management Plan' (DMP) for the AVENUE project. The purpose of this version of the DMP is to set out to provide an overview of the main aspects of the data management policy, investigate if any updates are required in the initial dataset descriptions (Annex I), included in the first version of this deliverable, and describe the steps taken to investigate if a Data Protection Impact assessment (DPIA) process was required. It is aligned with D11.1-D11.2 deliverables as well as D7.15. This update will not include the content of D1.4 or any other related aforementioned deliverables (e.g., D7.14 and D7.15).

Data were collected, processed, or generated and following what methodology and standards, whether and how this data was shared and/or made open, and how was be curated and preserved as set in the data privacy protection policy (touching on all data collections, but in particular on subjective data collection during the evaluation conductions) in the initial version and the legal frameworks defined (touching upon mainly operational and performance vehicle data) .

Besides, data types' of list, metadata and global data collection processes are also defined in this document. The AVENUE Data Management Plan refers to the latest EC DMP guidelines. This version has explicit recommendations for full life cycle management through the implementation of the FAIR principles, which state that the data produced shall be Findable, Accessible, Interoperable and Reusable (FAIR) (presented and discussed in D1.4). The report includes a detailed presentation of the methodology for the AVENUE data management, considering that any decisions of the AVENUE consortium to apply for the Open Research Data Protocol (ORDP) will be discussed and presented in a separate Deliverable, i.e., D7.15 The report provides the description of the data sets structures, relating to the different categories of the 4 clusters (as defined in D7.14 'Report on evaluation and assessment of AVENUE solution'):

- **Category 1**: Operating site features
- **Category 2:** Automated vehicle performance
- **Category 3:** Service performance
- **Category 4:** Users' perceptions and satisfaction, toward the vehicle and service

and other data sources like vehicles, but also the specific types and data set used at the different pilot sites, according to the use cases deployed and assessed locally.

1.3.1   Intended audience

This Deliverable serves to inform the Consortium about the updates in the existing data management plan and processes related to any data handling (i.e., collecting, controlling, storing, sharing, cleaning, pre-processing, analysing, and reporting) during the lifetime of the project. Primarily, partners involved in any of these data handling processes have contributed to this update and its content is important for evaluating the potentiality of data protection

risks and respective mitigation strategies and reach decision about the data they will collect, report on how they are managed, and what will happen to them after the end of the project. These decisions are presented in the updated DMP when all data types have been decided and collected.

1.3.2   Interrelations

The objectives, the purpose and the interrelations are the same as the ones defined in D1.4. As such, the interrelations have been highlighted in the previous version of this Deliverable and the information has not changed, so it will not be repeated here. However, we shall emphasise that the Data Management Plan (DMP) is also closely related to D7.15, where the open data decisions and datasets about disseminating and sharing results outside the consortium are made and presented.

2 Methodology

2.1 Data categories and clustering

This section describes the final data categories of the AVENUE project (Table 1) and the data clustering based on the DMP requirements. Annex I contains the update data clustering in relation to the data categories structure and stratification as presented in Table 2. The data were anonymous by nature or anonymised in the process, so the risk was low and as such no mitigation process was required to be applied.

2.1.1 Data Privacy Impact (DPIA) process

The following DPIA investigation form (Figure 2) was available online as an exercise to address if there was the need to initiate a Data Protection Impact Assessment (DPIA). The process and respective templates are thoroughly presented and discussed in D1.4.

As the main evaluation data were the perception of the users, which were collected anonymously, then this process revealed that there was no need for a DPIA process to be performed at the pilot sites.

4. Consider to carry out a Data Protection Impact Assessment (DPIA) in the AVENUE project, *
especially if you are planning to handle, in any way, personal and/or sensitive data. Please
check the ones that will or you believe there is a possibility to apply.

☐ Process special category data (more info on special category data you may find here:https://jerseyoic.or…

☐ Systematically monitor a publicly accessible place

☐ Use innovative technology

☐ Carry out any form of profiling

☐ Process biometric or genetic data in combination

☐ Process personal data in a way that involves tracking individuals' online or offline location or behaviour

☐ Process children's personal data for profiling or automated decision making or for marketing purposes or…

☐ Process personal data that could result in a risk of physical harm in the event of security breach

☐ Use automated decision making to make decision about people

Figure 2. DPIA process checklist

4

This was an initial exercise (first box in the template) to investigate if there is a necessity to initialize the DPIA process and reporting. If personal data were collected and at least one other box was selected, then a DPIA was performed. As no personal user data were collected, it means that they did not have to complete a DPIA. Hence, no moderate and/ or high risks were identified by the controllers and processors. These are the data that are presented in Annex I. Only agreed upon and anonymous data would be decided to be openly shared (i.e., D7.15) as well as the complete list of open-source publications, as part of the project's contribution to research extraversion and to the potentially interested research communities that are considerably expanding in the area of autonomous transportation and smart integrated urban mobility.

Table 1. AVENUE Data categories

AVENUE Data Categories			
Category A: Operative features	**Category B: AV performance**	**Category C: Service performance**	**Category 4: Users' perceptions and satisfaction, toward the vehicle and service**
Funding	**Vehicle's safety and security**	**Transportation service**	**Users' retention**
Start date of project		Average operating spe+F2:F8ed (km/h)	Frequency of use of the service (times per week)
Start date of site's demonstration	Number of operating days	Average number of trips (day)	Intention to use the service again (5-point scale)
End date of site's demonstration	Number of emergency stops	Total number of trips (year)	Comfort in the vehicle (5-point scale)
Type of route	Number of automatic stops due to obstacles	Average distance travelled (km/day)	*This KPI can be the result of average scores of several items (e.g.: cleanliness, temperature, noise level, interior lighting, internal space, seats, handles, ramps for PRM, audiovisual information, etc.).*
Level of on-demand service*	Number of obstacle detections	Total distance travelled (km/year)	**Satisfaction with the automated vehicle**
Routh length	Number of harsh breaks	Average distance travelled by autonomous driving (km/day)	Comfort in the vehicle (5-point scale)
Road environment	Number of out of path deviations	Total distance travelled by autonomous driving (km/year)	*This KPI can be the result of average scores of several items (e.g.: cleanliness, temperature, noise level, interior lighting, internal space, seats, handles, ramps for PRM, audiovisual information, etc.).*

AVENUE Data Categories			
Category A: Operative features	**Category B: AV performance**	**Category C: Service performance**	**Category 4: Users' perceptions and satisfaction, toward the vehicle and service**
Type of traffic	Number of manual takeovers	Average distance travelled by manual driving (km/day)	Feeling of safety and security in the vehicle (5-point scale)
Speed limit	Number of mis- or dis-communication with other road users	Total distance travelled by manual driving (km/year)	*This KPI can be the result of average scores of several items (e.g.: presence of surveillance system, presence of on-board operator, presence of seatbelts, presence of handles, etc.).*
Roundabouts	Number of instances where other road-drivers abused the safety-first mechanisms in AVs	Average detour time (min) – *for on-demand service*	General satisfaction with the ride (5-point scale)
Traffic lights	Number of mechanical/sensor failures	Average waiting time (min) – *for on-demand service*	**Satisfaction with the service**
Type of service	Number of down time hours due to maintenance or other issues	Average occupancy rate (passengers/day)	R+H10:H17eliability of the service (5-point scale)
Number of stops	Number of requests for help from OEM	Total number of passengers (passengers/year)	Punctuality of the service (5-point scale)
Bus stop infrastructure	Number of crashes/accidents	**Service's safety and security**	Efficiency and effectiveness of the service (5-point scale)

7

AVENUE Data Categories			
Category A: Operative features	**Category B: AV performance**	**Category C: Service performance**	**Category 4: Users' perceptions and satisfaction, toward the vehicle and service**
Number of vehicles	Number of other minor incidents	Presence of on-board safety-driver (yes/no/partially)	*This KPI can be the result of average scores of several items (e.g.: waiting time, speed, frequency).*
Timetable	**Vehicle's energy consumption**	Presence of off-board supervision (yes/no/partially)	Location of the operating site (5-point scale)
Operating days		Shuttle surveillance system (yes/no/partially)	Location of the stops/stations (5-point scale)
Timeframe weekdays	Battery autonomy (kW.h/km)	Site surveillance system (yes/no/partially)	Willingness to pay (in euros)
Timeframe weekends	Battery charging time (hours)	**Service's comfort and accessibility**	Importance of additional services (5-point scale)
Depot distance from site	**Vehicle's comfort and accessibility**	Accessibility to people with reduced mobility (yes/no/partially)	**Other road users' perceptions**
Driverless service	Frequency of cleaning (times per week)	Integration to the city transport network (yes/no/partially)	Road system usage safety: Are other road-user perceiving the automated minibus service as threatening (yes/no) or (5-point scale)
(Absence of safety driver)	Temperature control – heating and AC (yes/no)	Timetables at the stops/stations (yes/no/partially)	Road system usage efficiency: Are other road-user perceiving the automated minibus service as slowing down traffic (yes/no) or (5-point scale)
	Presence of a wheelchair ramp (yes/no)	Timetables online (yes/no/partially)	Are other road-user perceiving the automated minibus service as causing any other problems or inconveniences (yes/no) if yes: what are they?

AVENUE Data Categories			
Category A: Operative features	**Category B: AV performance**	**Category C: Service performance**	**Category 4: Users' perceptions and satisfaction, toward the vehicle and service**
	Presence of a SOS button (yes/no)	Availability of on-line application (yes/no/partially)	
	Audio-visual display of information (yes/no/partially)	Integration of route-planning apps (yes/no/partially)	
	Presence of in-vehicle wi-fi (yes/no)	**Economics**	
	Presence of in-vehicle infotainment system (yes/no)	Total yearly capital expenditures – CAPEX (euros)	
		Total yearly operating expenditures – OPEX (euros)	
		Total yearly revenues (euros or % of OPEX coverage)	
		Cost per shuttle/km (euros/year)	
		Cost per passenger/km (euros/year)	

3 Conclusions

This version of the Data Management Plan addresses the data categories, the investigation of a DPIA necessity and the updates of the data clusters (as in Annex I).

As no private data were collected, then data controllers and data processors did not have to complete the GDPR form (Annex 2 of D1.4), which needs to be filled in only for the private data collected in the pilots conducted in project.

Post-processed datasets, free from any private/personal and identifiable information, will reside in the AVENUE partners' safe repositories.

References

European Commission, Directorate-General for Research & Innovation, "Guidelines on FAIR Data Management in Horizon 2020", available at http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hioa-data-mgt_en.pdf

Article 4(5) of the General Data Protection Regulation (EU) 2016/679

Annex I: Data clusters - updated

Below, the AVENUE DMP template for data collected across pilot sites is presented. This Table was updated, and its final version is presented below. Data openness is discussed and presented in D7.15.

D1.5 Final Privacy protection & Data Management Plan

Table 2.AVENUE data clusters -updated

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Collected	Operator input to SoA	written answers to questions posted	Subjective data (quantitative)	document	doc / pdf	Low	the 4 operators	consortium	Partner	restricted	N/A	N/A	4 years	Local
Collected	Operator input to SoA	Interview conducted	Subjective data (qualitative)	notes	doc	Low	Amobility	consortium	Partner	restricted	N/A	N/A	4 years	Local
Collected	Operator input to Legal and social barriers and obstacles	written answers to questions posted	Subjective data (qualitative)	document	doc /pdf	Low	the 4 operators	consortium	Partner	restricted	N/A	N/A	4 years	Local
Collected	5 user interviews	Interviews conducted	Subjective data (qualitative)	document	excel	Low	Amobility	Siemens	Partner	restricted	N/A	N/A	4 years	Local
Collected	collected CAN/sensor data for incidents/accidents	set of collected data for some trips with incidents/accidents including video, continuous time-dependent data: speed, distance to left-right lines, battery level, yaw angle, etc., and event-dependent data such as braking, FCW, system alarms, LDW, obstacle	Raw or preprocessed data	video signals	as handled by NAVYA	as handled by NAVYA	NAVYA	private (NAVYA)	private cloud	Restricted	NA	Yes	4 years	Local

13

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
		detection including type, distance, relative velocity, etc. Collected data from operators in AVENUE will be useful as well as available data from other studies to anticipate a wider variety of situations.												
Created	Incident/Accident Reports	Reporting of encountered incidents/accidents, analyses, probable causes, mitigation measures, etc.	Internal Reporting / Dissemination material	documents	as handled by NAVYA, e.g. text document or others	as handled by NAVYA	NAVYA	private (NAVYA)	private cloud, private drop box or as decided by NAVYA	Restricted	Rather Update frequency when new incidents occur	Yes	4 years	Local
Created	Incident/Accident Database	raw data related to incidents/accidents, severity, participants involved, etc.	structured data in a database	database access	as handled by NAVYA	as handled by NAVYA	NAVYA	private (NAVYA)	private cloud, private drop box or as decided by NAVYA	Restricted	NA	Yes	4 years	Local
Created	Incident/Accident Reports	Reporting of encountered incidents/accidents, analyses, probable causes, mitigation measures, etc.	Internal Reporting / Dissemination material	documents	as handled by NAVYA, e.g. text document or others	as handled by NAVYA	Operators: AMOBILITY KEOLIS TPG SLA	Private - Operators: AMOBILITY KEOLIS TPG SLA	private cloud, private drop box or as decided by OPERATORS	Restricted	Rather Update frequency when new incidents occur	Yes	4 years	Local

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Collected	Passengers	Passengers numbers transported	Raw Data	Census	File extension	as handled by Keolis Lyon	Keolis Lyon	partner	partner storage	Restricted	Daily	unnecessary	Until the end of the experiment	Local
Collected	Vehicle km	Vehicle-kilometers driven	Raw Data	Navyalead	File extension	as handled by NAVYA	Navya	partner	partner storage	Restricted	Daily	No	Until the end of analysis	Local
Collected	Vehicle A km	vehicle-kilometers automatic driven	Raw Data	Navyalead	File extension	as handled by NAVYA	Navya	partner	partner storage	Restricted	Daily	No	Until the end of analysis	Local
Collected	Signal loss	locational losses signal numbers	Raw Data	Navyalead	File extension	as handled by NAVYA	Navya	partner	partner storage	Restricted	Daily	No	Until the end of analysis	Local
Collected	Traj. errors	trajectory's mistakes	Raw Data	Navyalead	File extension		Navya	partner	partner storage	Restricted	Daily	No	Until the end of analysis	Local
Collected	collected CAN/sensor data for nominal behaviour	set of collected data for some regular trips including video, continuous time-dependent data: speed, distance to left-right lines, battery level, yaw angle, etc. and event-dependent data, e.g. braking, FCW, system alarms, LDW, obstacle	Raw or preprocessed data	video signals	as handled by NAVYA	as handled by NAVYA	NAVYA	private (NAVYA)	private cloud, private drop box or as decided by NAVYA	Restricted	NA	Yes	4 years	Local

AVENUE

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
		detection including type, distance, relative velocity, etc. Collected data from operators in AVENUE are useful as well as available data from other studies to anticipate a wider variety of situations.												
Created	Incident/Accident Reports	Reporting of encountered incidents/accidents, analyses, probable causes, mitigation measures, etc.	Reports	documents	as handled by NAVYA, e.g. text document or others	as handled by NAVYA	NAVYA	private (NAVYA)	private cloud, private drop box or as decided by NAVYA	Restricted	Rather Update frequency when new incidents occur	Yes	4 years	Local
Collected	interview data on the use of conventional public transport as well as wishes & expectations for future autonomous buses	Anonymous interviews with volunteers and passengers of public transport. Interviews conducted by AVENUE partners.	Qualitative data	documents	as handled by Siemens	as handled by Siemens	each interviewee	data: private; aggregated results: public	offline PC	Restricted	N/A	Yes	N/a	Local
Collected	Live information about the autonomous shuttle: - Location - Orientation - Speed - Door status	Source: Navya shuttles	Data displayed in Bestmile's Operator Dashboard	Information about vehicle behaviour	N/A	N/A	Transport operators (SLA, TPG, Keolis, AM)	Private to operator	no access for other partners	restricted	Live info is updated every second	live informati on only - for historic informati	N/A	N/A

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
	- Battery level - Online (connected) - Managed / unmanaged by Bestmile platform - Field logs through Field Agent App - Video streams (front, back, interior)											on see next row		
Collected	Historic data: - Vehicle distance - Fleet distance - Average speed - Mode switches (autonomous / manual) - Percentage of manual mode	Source: Navya shuttles	Data displayed in Bestmile's Operator Dashboard	Information about vehicle behaviour	Data file	File extension	Transport operators (SLA, TPG, Keolis, AM)	Private to operator	no access for other partners	restricted	Daily	not necessarily, depending on request from operators	End of project	Local
Collected	Survey: zero measurement	Survey: zero measurement - social acceptability	Raw Data	Document/s tatistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	End of project	Local
Collected	Survey: intermediate measurement	Survey: Intermediate measurement - social acceptability	Raw Data	Document/s tatistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	End of project	Local
Collected	Survey: control measurement	Survey: end/control sample - social acceptabiltiy	Raw Data	Document/s tatistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	End of project	Local
Collected	Shadowing - user experience	Shadowing - observation of user experience	Raw Data	Document/s tatistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Vehicle kms	Vehicle-kilometers driven	Raw Data	Data file	File extension	medium	Navya	partner	partner storage	Restricted	Daily	No	4 Years	Local

17

AVENUE

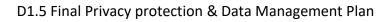| Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Collected	Vehicle A km	vehicle-kilometers automatic driven	Raw Data	Data file	File extension	medium	Navya	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Signal losses	locational losses signal numbers	Raw Data	Data file	File extension	medium	Navya	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Traj mistakes	trajectory's mistakes	Raw Data	Data file	File extension	medium	Navya	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Survey: zero measurement	Survey: zero measurement - social acceptability	Raw Data	Document/statistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Survey: intermediate measurement	Survey: Intermediate measurement - social acceptability	Raw Data	Document/statistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Survey: control measurement	Survey: end/control sample - social acceptabiltiy	Raw Data	Document/statistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Shadowing - user experience	Shadowing - observation _ user experience	Raw Data	Document/statistical	File extension	Small to medium	HS-PF	partner	partner storage	Restricted	Daily	No	4 Years	Local
Collected	Geo-Positioning	From Vehicle to Platform.	Raw Data	API Request	API	Low	NAVYA	Platform manager Partner	partner storage	Restricted	TBD	No	4 Years	Local
Collected	Vehicle Status	From Vehicle to Platform.	Raw Data	API Request	API	Low	NAVYA	Platform manager Partner	partner storage	Restricted	TBD	No	4 Years	Local
Collected	Vehicle Mission	Bi-directional Vehicles <> Platform.	Raw Data	API Request	API	Low	NAVYA / Platform Manager	Platform manager Partner	partner storage	Restricted	TBD	No	4 Years	Local

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Collected	In / Out Vehicle Video	From Vehicles to Platform.	Raw Data	Video CODEC	API	High	Partner	Partner	Private NAVYA	Restricted	Daily	Yes (Streaming)	Streaming	None
Collected	Blackbox	Log information and video data in case of accident (stored inside the vehicle)	Algo + Raw Data	Video CODEC + Sensors Data	Proprietary format	Very High	NAVYA	NAVYA	NAVYA	Restricted	30 minutes FIFO. 12 hours operational guarantee. 3 month In case of Incident	Yes	3 Month (legal requirement)	None
Created	Incident report	Report in case of incident	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage
Created	Owner guide	Technical and User guide of the vehicle, Technical and User Guide of Radio Base	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage
Created	Technical usage recommendation	Storage technical recommendation guide, Charging recommendation guide	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage
Created	Training support Guide	Training support Guide for the operator person inside the vehicle	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Created	Homologation Material	Any homologation material required by the regulators at country level	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage
Created	Maintenance report	A report after any intervention on the vehicle for preventive or curative maintenance	Document	Document	PDF	low	NAVYA / Operator Partner	Partner	Partner/ Open Cloud	Restricted	Need-based	No	4 Years	Operator Partner Storage
Collected	Operator input to SoA	written answers to questions posted	Written text	document	doc / pdf	low	the 4 operators	consortium	Partner	restricted	Need-based	No	4 Years	Operator Partner Storage
Collected	Operator input to SoA	Interview conducted	Written text	notes	doc	low	Amobility	consortium	Partner	restricted	Need-based	No	4 Years	Operator Partner Storage
Collected	Operator input to Legal and social barriers and obstacles	written answers to questions posted	Written text	document	doc /pdf	low	the 4 operators	consortium	Partner	restricted	Need-based	No	4 Years	Operator Partner Storage
Collected	5 user interviews	Interviews conducted	Qualitative data	document	excel	low	Amobility	Siemens	Partner	restricted	Need-based	No	Interviews are only shared anonymously with Siemens (4 months period of keeping data after reporting)	Local

Not approved yet

Collected/Created	Name	Description	Category	Type	Format	Size	Owner	Privacy level	Repository during the project (for private/ public access)	Data sharing (openness addressed in D7.15)	Back-up frequency	Destroyed at the end of the project	Duration of preservation (in years)	Repository after the project
Created	D2.1 First Gap analysis and recommendations on autonomous vehicles for public service	report	Written text	document	doc	low	Amobility	consortium	Project repository	restricted	N/A	N/A	No expiration period/ No embargo	Project/ partner repository
Created	D2.1 First Gap analysis and recommendations on autonomous vehicles for public service	report		document	doc	low	Amobility	public	Project/ partner repository	public	N/A	N/A	No expiration period/ No embargo	Project/ partner repository