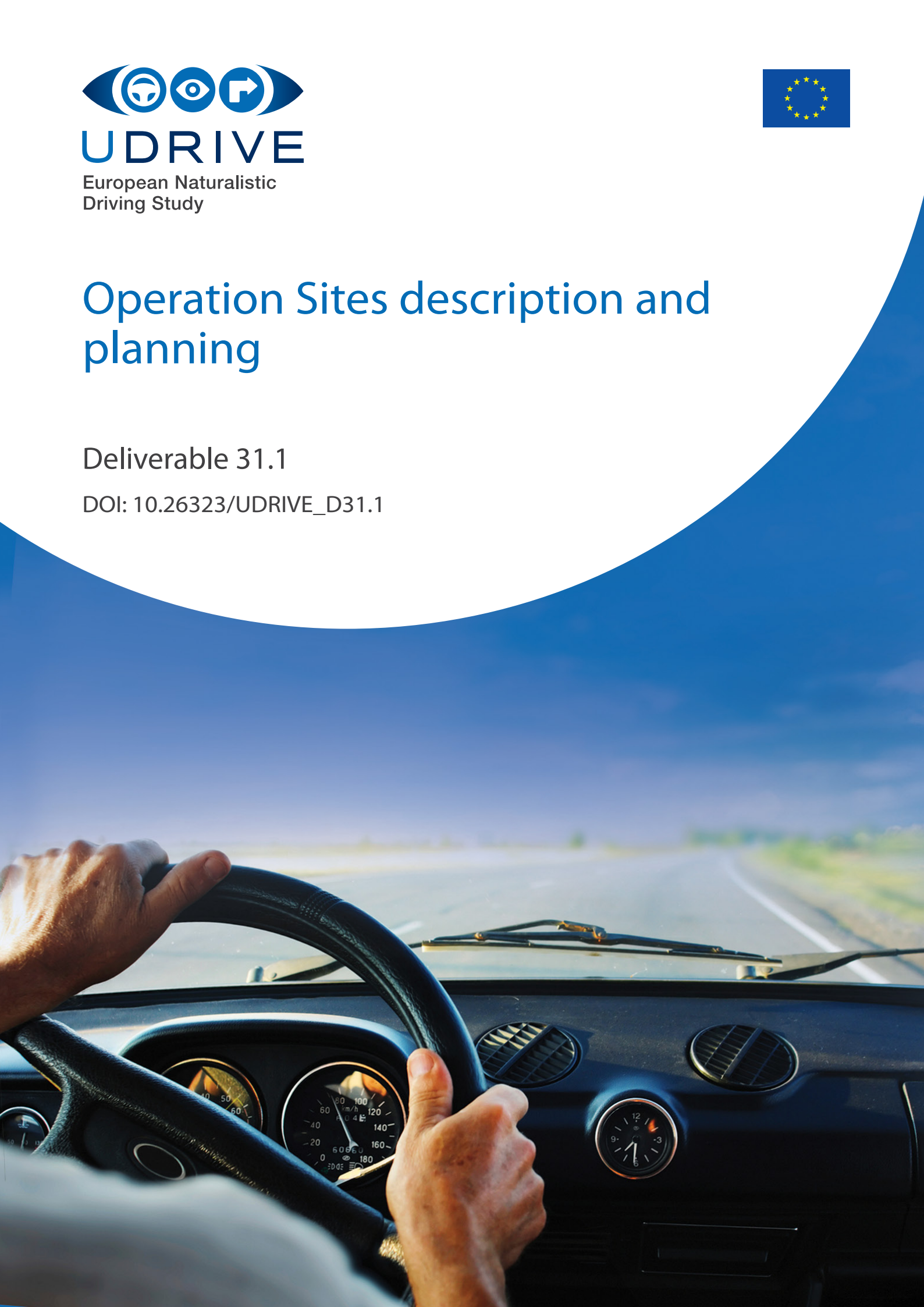
UDRIVE

European Naturalistic Driving Study

Operation Sites description and planning

Deliverable 31.1

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UDRIVE

European Naturalistic Driving Study

EUROPEAN COMMISSION

SEVENTH FRAMEWORK PROGRAMME
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Disclaimer:

SEVENTH FRAMEWORK PROGRAMME

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Executive Summary

UDRIVE is the first large-scale European Naturalistic Driving Study involving 210 vehicles across three types of vehicles; cars, trucks and powered-two wheelers, with an aim of enhancing understanding of road user behaviour by means of field observations. This Deliverable provides an overview of the planning of the field observations and ensures that the field observations carried out at the seven Operation Sites (OS) follow the common data specifications, the time plan as well as data quality assurance protocols. The Operation Sites and associated types of vehicles are depicted in the following table.

OS	Vehicle	Partner
Austria	PTWs	KFV
France	Cars	CEESAR
Germany	Cars	DLR
Netherlands	Trucks	TNO
Poland	Cars	IBDIM
Spain	PTWs	CIDAUT
UK	Cars	UNIVLEEDS/LOUGHBOROU

This Deliverable consists of the following major elements.

OS description and responsibilities: this specifies geographical coverage of the field observations across the seven OS as well as personnel at each OS responsible for trial operation and management.

Time plan: a global time plan is specified for major tasks of the trial preparation. Each OS confirms compliance with the global schedule as well as any site specific schedules.

Participant liaison strategies: this covers recruitment as well as requirements of participant management during the trial; e.g. how communication between the OS and participants will be carried out.

Collection of subjective data: this describes approaches to collecting subjective data via the Participant Questionnaire and associated data quality assurance process.

Data acquisition system installation and maintenance procedure: this specifies approaches to installation of the DAS at the beginning of trial, technical support during the trial, as well as decommissioning of DAS at the end of trial.

Data collection and management: this describes data management during the trial, including access to on-board storage as well as storage backup and transport procedures.

Data and operational quality assurance: this describes quality assurance procedure for data collection during the trial, including monitoring of data collection progress as well as responses required for ensuring data quality.

End of trial management: this specifies procedures to follow at the end of trial, including DAS decommissioning, participant debriefing and payments.

Ethical approval and legal issues: this describes the requirements of ethical and legal approval at each OS.

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1 Introduction

1.1 The UDRIVE project

UDRIVE is the first large-scale European Naturalistic Driving Study, with a plan to instrument 210 vehicles across cars, trucks and powered-two wheelers. It aims at enhancing in-depth understanding of actual road user behaviour by means of field observations. The objectives of the project are to identify measures to improve road safety and to identify approaches for reducing vehicle emissions and fuel consumption in order to make road transport more sustainable.

1.2 This Deliverable in relation to the project structure

The overall structure of the UDRIVE project is shown in Figure 1. This Deliverable provides an overview of the planning of the field observations and serves as the basis for the rest of work to be implemented in SP3. The data generated from the field observations will enable analysis and impact forecasting planned for a later stage of the project.

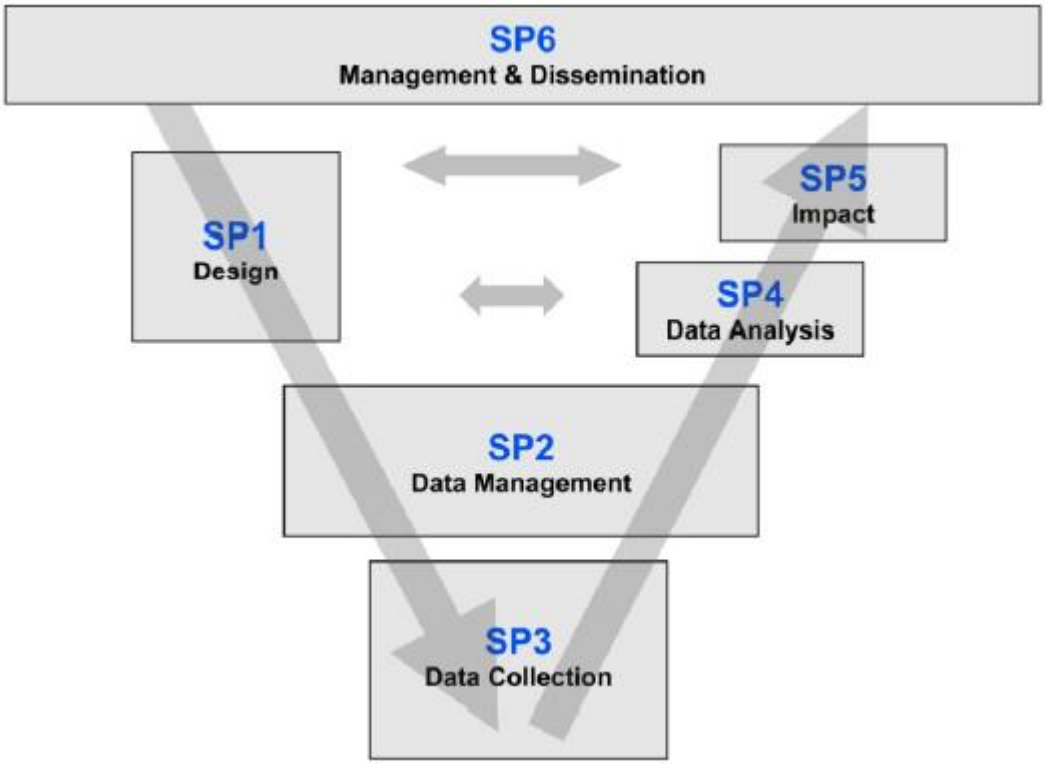


Figure 1: The overall structure of the UDRIVE project

1.3 Background and aims of this Deliverable

SP3 will implement data collection according to the study design and agreed methodology defined by SP1, as well as the data management protocols defined by SP2. The aim of this Deliverable is to ensure that the field observations carried out at the seven OS follow the common data specifications, the time plan as well as data quality assurance protocols.

1.4 Contents and structure of this Deliverable

This Deliverable specifies generic guidelines applicable to all OS, as presented in Chapter 2. This is followed by adaptation of the overall design to the local levels, as laid out in Chapter 3 through Chapter 9, where any OS specific arrangements are explained. Finally, conclusions on OS planning and preparation are made in Chapter 10. The contents of this Deliverable cover overall planning of OS operations, which naturally include participant recruitment and ethical/legal considerations. While these topics are addressed in D32.1 "Participant recruitment procedures" with fuller details, it should be noted that information provided in this Deliverable supersedes that in D32.1 where applicable. D32.1 was due before this Deliverable. However, a number of key decisions affecting the planning and implementation of the trial were only settled after the submission of D32.1.

1.5 Operation Sites

Data collection will be carried out through Operation Sites (OS) hosted in seven countries across Europe, as illustrated in **Error! Reference source not found.**. Project partners responsible for each OS are listed in Table 1.

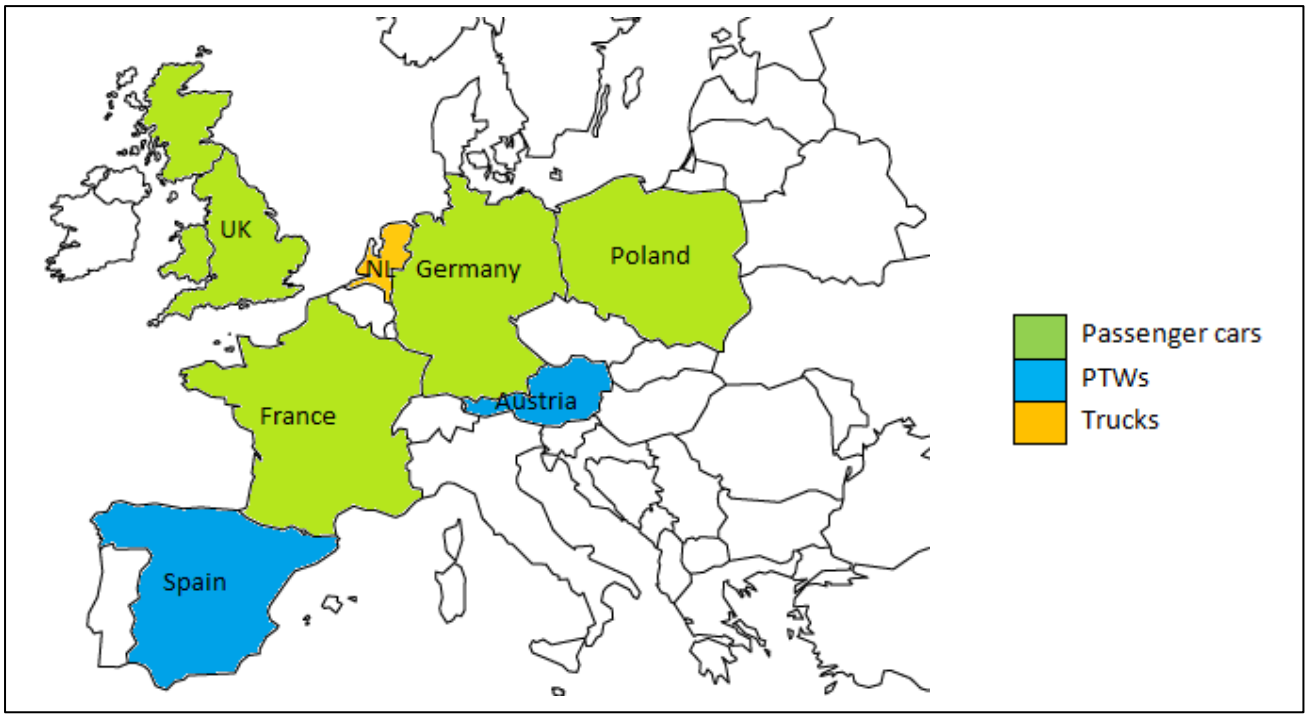


Figure 2: UDRIVE field trials locations and vehicle types

Table 1: List of Operation Sites and responsible partners

OS	Vehicle	Partner
Austria	PTWs	KFV
France	Cars	CEESAR
Germany	Cars	DLR
Netherlands	Trucks	TNO
Poland	Cars	IBDIM
Spain	PTWs	CIDAUT
UK	Cars	UNIVLEEDS/LOUGHBOROU

2 Common guidelines for all Operation Sites

2.1 Roles of Operation Sites

The Operation Sites are responsible for a range of tasks including:

- Trial preparation
- Ethical and legal approval from relevant local authorities
- Recruitment of participants
- DAS installation, and decommissioning of the DAS at the end of trial
- Piloting of trial procedures
- Collection of subjective and objective data
- Trial management, including briefing at the beginning of trial, participant support during the trial (technical and non-technical issues), and debriefing at the end of the trial, as well as incentives arrangement.
- Data management, including data quality assurance, data transmission and storage as well as associated transportation.

The above tasks are specified in more details in the following sub-sections.

2.2 Time plan

A common time plan is specified in Table 2. All OS will follow this time plan of major tasks and start the trials by the end of October 2014. The trials will be running until July 2016, but, given the need to complete the planned analysis before the end of the project, only the data collected up to the end of October 2015 will be used for analysis in SP4 and SP5.

Table 2: Time plan for OS

Start date	End date	Task
July 2013	July 2014	OS preparation and adaptation
Feb 2014	June 2014	Participant recruitment
May 2014	July 2014	OS piloting
August 2014	October 2014	Installation of the DAS and commencement of trials

2.3 Vehicle fleets

D12.1 provides requirements for the vehicles. The stipulated vehicle makes and models are summarised in Table 3.

Table 3: Summary of vehicle fleets

Vehicle type	OS	Vehicle makes and models
Cars	UK, France, Germany and Poland	Renault Clio (Series III, 2005-12 and IV, 2012-), Renault Mégane (Series III, 2008-)
PTWs	Spain and Austria	Piaggio Liberty
Trucks	Netherlands	Volvo FL and FM

2.4 Ethical and legal approval

Each OS is responsible for seeking ethical and legal approval from the relevant local authorities, covering collection and participant recruitment. Ethical and legal approval for participant recruitment are addressed briefly in this Deliverable as description of trial preparation. Full details are provided in D32.1, "Participant recruitment procedures".

2.5 Participant recruitment

This section provides a brief overview of participant recruitment. Detailed recruitment procedures are specified in D32.1.

2.5.1 Driver selection criteria

D12.1 provides requirements of participant characteristics. The minimum and desired requirements are summarised in Table 4 and Table 5. There is also a multiple-driver criterion which requires recruitment of at least 12 vehicles at each car OS to be multi-driver cars, equally split across age bands. Multi-driver cars should ideally be spread across the two car types (see Table 7) as well.

Table 4: Minimum requirements of participant characteristics

	Cars	PTWs	Trucks
Experience	10,000 km per annum	5,000 km per annum	N/A
Age	18-25; 30-65	18-25; 30-65	N/A
Gender	40% per gender	30% per gender	N/A
Multi-driver	12 cars with multiple drivers and a minimum of 2 drivers per car.	N/A	N/A
Exposure	20% of annual mileage in urban, rural and motorway environments respectively.	N/A	N/A

Table 5: Desired requirements of participant characteristics

	Cars	PTWs	Trucks
Experience	N/A	Ride all year around, with a minimum of 100 km per month	N/A
Age	N/A	N/A	N/A
Gender	Equal split between genders	N/A	N/A
Multi-driver	N/A	N/A	N/A
Exposure	N/A	Commuters exposed to both urban and rural environments	N/A

2.5.2 Sample size

D12.1 provides required sample sizes. Table 6 offers a summary of the required vehicles and participants across the OS. The required number of vehicles broken down to demographic requirements is provided in Table 7 and Table 8 for car OS and PTW OS respectively. For trucks, there are no specific requirements due to the nature of recruitment — the availability of driver and vehicles is dependent on the participating fleets.

Table 6: Breakdown of fleet and sample sizes across OS

Type of vehicle	Country	Partner	Fleet size (number of DAS)	Number of participants
Car	France	CEESAR	30	50
	Germany	DLR	30	50
	Poland	IBDIM	30	50
	UK	UNIVLEEDS/LOUGHBOROU	30	50
PTW	Austria	KFV	15	15
	Spain	CIDAUT	25	25
Truck	Netherlands	TNO	50	50

Table 7: Breakdown of required number of vehicles for each car OS

		18-25 years old	30-65 years old
Small cars	Male	Min 2	Min 2
	Female	Min 2	Min 2
Mid-sized family cars	Male	Min 2	Min 2
	Female	Min 2	Min 2

Table 8: Required number of vehicles for PTW OS

	Austria		Spain	
	18-25	30-65	18-25	30-65
Male	4	9	7	6
Female	1	1	6	6

2.5.3 Recruitment channels

It is envisaged that potential participants will be approached through a range of channels (e.g. an advert via local newspapers, radio, local motoring magazines, motoring clubs, social media, etc.). Further details are specified in D32.1. For the car trials, company car drivers are not excluded from acceptable samples, but it is anticipated that recruitment will be made by approaching the general public with the aim of obtaining for homogeneous samples across OS (i.e. in terms of mileage and trip characteristics).

2.5.4 Dissemination materials

Recruitment information will also be incorporated into a leaflet to enhance outreach to potential participants: one potential recruitment route is sending invitations via a local dealership. A global version of the leaflet will be agreed among OS, followed by translation into appropriate languages.

2.5.5 Incentives

Incentives will be managed at each OS individually in order to accommodate local circumstances. Further details are provided in D32.1.

2.5.6 Recruitment events

It is of great help to arrange recruitment events such as an information event where the research team can answer questions from potential participants. It is strongly recommended to keep volunteers informed of progress; this is especially important for keeping early subscribers on board. Potential means include courtesy calls or emails.

2.5.7 Participant consent form

A guideline for the participant consent form is developed as part of D13.1 and available for the different OS. This consent form needs adaptation to local circumstances, where appropriate and agreed, as well as translation into local languages. Consent from the vehicle owners and drivers needs to be sought separately.

2.5.8 Drop-out management

A robust relationship with participants is essential for minimising drop-outs. Periodical courtesy calls can often pick up early signs of dissatisfied participants and hence prevent undesired terminations. On the other hand, there are concerns over regular contacts due to the nature of naturalistic driving studies. There is clearly a trade-off between keeping contact and minimising intrusion. However, the best approach to managing drop-outs would be an OS decision in order to accommodate local circumstances.

An exit interview will be carried out, which covers the requirements of an ordinary end-of-trial interview but also seek feedback on any early termination.

2.6 Data collection and management

2.6.1 Installation of Data Acquisition Systems

Vehicles involved in the UDRIVE field trials will be equipped with a Data Acquisition System (DAS) which would consist of a data logger, a set of cameras, and a GPS antenna. Data recording will be continuous; it will start upon engine ignition and stop a few seconds after the engine is turned off. The data stored in the logger will be encrypted and only authorised persons can access the data. These are defined and developed within SP2 of the project (WP21 – 24).

The data logger records data from the vehicle's CAN[1] (e.g. engine temperature and fuel level etc.) and a range of driving parameters (e.g. steering angle, accelerator pedal, brake pedal etc.) without any activation by the driver.

To accurately measure the dynamic behaviour of the vehicle, a sensor is added to the vehicle for measurement of yaw rate, lateral and transversal accelerations etc.

Cameras will be discreetly installed in the vehicle for filming the environment around the vehicle, the driver and the passengers (face view, feet view, dashboard view and passenger cabin view). A switch will be provided for the driver to turn off the video recording, in case the driver does not wish to be filmed at any particular time or during a trip (e.g. the vehicle is in an area where video would not be permitted).

[1] Applicable to cars and trucks.

GPS antenna: each vehicle will be equipped with a GPS antenna, which measures its position. This information will be used for identification of road types and associated geometric characteristics (e.g. urban, rural, dual-carriageway, etc.).

The installation locations of relevant equipment are shown in Figure 3.

All equipment used is designed for the automotive environment. Rigorous tests will be carried out to ensure that the equipment will not interfere with the originally intended vehicle operation. Approval will be obtained from the vehicle manufacturer.

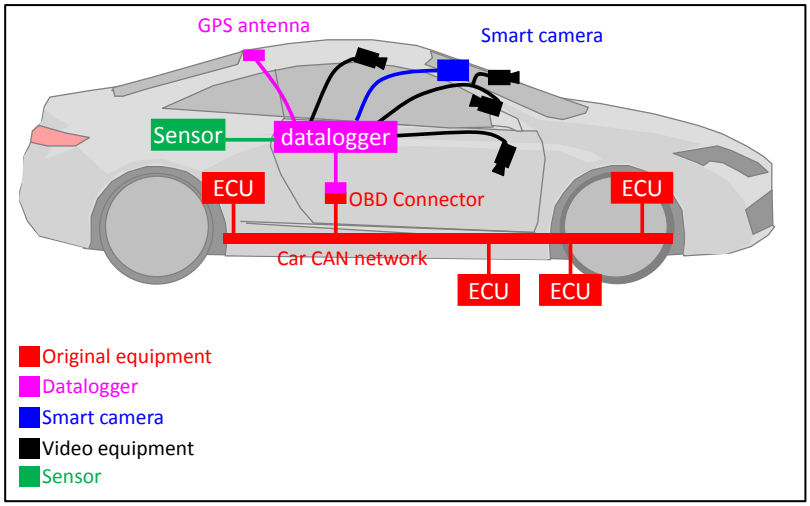


Figure 3: Instrumentation of cars

DAS installation instructions will be provided by SP2 (end of Month 18, March 2014). OS are responsible for appointing a local installer, who may also be contracted for technical support during the trial.

Piloting trial procedures will be in accordance with the timeline specified in Table 2 and will cover installation of DAS on test vehicles, validation of data transmission (including cross referencing between DAS and a manual log of test trips) and participant briefing procedures.

2.6.2 Participant briefing

A standard procedure and a set of documents will be agreed among OS, followed by translation into local versions. Information that needs to be provided during the briefing procedure includes a detailed description of the trial, the DAS system, contact schedule (e.g. swapping hard drives) as well as communication approaches and contact details. The participant consent form will have to be signed. Consent needs to be sought from both the driver/riders as well as vehicle owners, i.e. in the case of fleet or company car drivers. The briefing needs to include all drivers/riders where applicable (e.g. multi-driver recruitments).

2.6.3 Collection of subjective data

A global version of the participant questionnaire is specified in D12.1. Translation into appropriate languages is required.

Questionnaires will be implemented by electronic and paper means. The former is strongly recommended because it has a number of advantages regarding data quality: enforcement of completion, prevention of out-of-range answers, minimal risk of incorrect data recording, etc. A centrally hosted questionnaire server is strongly recommended; OS can therefore access the questionnaire via PC, laptop, or tablet. Centrally

managed data storage also simplifies data safeguard protocols. In case a paper version is adopted, OS are responsible for digitising the data and relevant data safeguarding (e.g. encryption of storage and back up protocol, etc.).

OS is responsible for providing an appropriate space to accommodate the collection of the subjective data; e.g. an appropriate room for housing a PC/laptop, or appropriate desk space for completion of paper questionnaires. Subjective data collection needs to include additional drivers.

Other data to be collected at the beginning of trial include a video-based hazard perception test, which runs on Windows OS and requires a PC/laptop.

OS need to consider logistics arrangements; e.g. separate visits by the participants for one vehicle may be required if the additional drivers cannot attend the briefing with the principal driver.

2.6.4 Vehicle data management

Validation of transmission, data storage and backup solutions will follow guidelines from D22.1 and D22.2.

2.7 OS piloting

The trial procedure will be piloted at each OS within WP33; tasks include:

- Installation of DAS on test vehicles and validation of data transmission
- Participant briefing, questionnaire administration
- Report of issues and feedbacks, e.g. problems identified and solutions developed.

2.8 Operations

The work specified in this section will be carried out in WP34.

2.8.1 Participant management

Participants need to be advised regarding contact protocols:

- A dedicated local telephone number and a local email address (e.g. xxx@udrive.eu, xxx being a site specific text, for example “leeds”), staffed during normal office hours. An answering machine or voice mail facility needs to be provided.
- A separate telephone number (e.g. a mobile number) for out-of-office support, in case of emergency, including technical or non-technical issues.
- Contact details provided on a card for ease of carrying, as well as a country-specific website.

Participants need to be advised regarding events for which they are requested to make contact:

- When they know that they will not be using the vehicle for more than a predefined duration (for example, three days) due to holidays or illness, etc.
- When they know that they will be driving the vehicle out of the supported area for more than a predefined duration (for example, three days) due to holidays or work commitment, etc.
- As soon as they know that they are going to move out of the supported area.
- As soon as they know that they are going to change driving patterns, for example, a new job which would affect frequent destinations.

2.8.2 Event logs

All enquiries are to be logged, regardless whether an enquiry is initiated by the participant or by the OS. A centrally managed database with search function is recommended. This will facilitate experience sharing across OS.

Fields of the logging table:

- OS (drop down menu)
- Participant id (drop down or open text)
- Description of event (open text)
- Status (i.e. if it needs follow up etc.)

2.8.3 Periodic reports

A monthly report by each OS will be submitted to the SP3 leader for integration. This will serve various purposes, such as quality assurance (e.g. same problem is not repeated across OS's) or dissemination (e.g. milestone on data collection; for instance 100,000 km achieved, which could be reported in project newsletters).

2.8.4 Data quality assurance

A quality assurance guideline will be provided by SP2. The document provides general guidelines on quality issues as well as online checks on "live" data and offline checks on the recorded data. The general guidelines give information about installation, cabling and video data which can have a major quality impact if left unchecked. Other issues such as vibration, temperature, signal interference and calibration, etc. are also discussed. Online checks refer to identification of data recording errors (e.g. DAS malfunction), while offline checks refer to more detailed data verification that can be carried out after the data has been uploaded. The data quality assurance procedures will be validated during the piloting phase.

2.9 Post-trial tasks

At the end of the trial, a debriefing will be carried out upon decommissioning of DAS. Due to the nature of a Naturalistic Driving study (e.g. no intervention of specific driver support systems), it is not anticipated that driver behaviour would change in a systematic manner. Hence, no formalised questionnaire will be used. However, drivers should be offered an opportunity to make comments on the trial.

In-depth interviews are planned in WP35. The requirements will be provided by SP4 by the end of the trial for SP3 to define interview questions and procedures, which will lead to D35.1 (Interview procedures).

The debriefing results, together with event logs throughout the trial, will provide inputs to D35.2 (Lessons learned from OS operation).

3 Austrian Operation Site

3.1 OS description and responsibilities

Name	Company	Telephone	Email	Responsibilities
Martin Winkelbauer	KFV	+43 5 77077 1214	Martin.winkelbauer@kfv.at	• Liaison • DAS installation, validation of installation • DAS troubleshooting
Alexander Pommer	KFV	+43 5 77077 1306	Alexander.Pommer@kfv.at	• Data quality assurance • DAS installation, validation of installation • Liaison • DAS troubleshooting
Elisabeth Ströbitzer	KFV	+43 5 77077 1280	Elisabeth.Stroebitzer@kfv.at	• General management • Contact to legal department at KFV • Participant agreement form
Administrative support	KFV	+43 5 77077 1402	nd@kfv.at	• Liaison to drivers for standardised procedures • Helpline

3.2 Time plan

The general time plan specified in Table 2 will be followed.

KFV has already started recruitment of participants on an informal basis. Nevertheless, official recruitment will start in February 2014, after the participant agreement and all preparation work has been finalised.

Moreover KFV intends to equip PTW as early as possible for an early start of trials. Due to seasonal effects, Austrian riders generally do not accumulate much travel distance in the winter and hence starting the trial early would help data collection.

3.3 Participant liaison strategies

As the Austrian OS is rather small (15 participants), the organisational requirements will not be a major challenge. There will be assigned persons for liaison with participants, who will be supported by an administrative person in charge.

Participants' obligations (e.g. change of storage device within a defined interval of time, notification of vehicle change or damage, driving abroad, filling out questionnaires,…) will be defined in the participant agreement.

KFV will monitor data collection via the online monitoring tool provided by SP2 and will make arrangements with participants for e-mail notification if a change of storage device is necessary.

A helpline will be installed and will be available during office hours (Monday – Thursday, 08:00 – 16:30h, Friday 08:00 – 14:00h). Furthermore a dedicated e-mail address will be checked on a daily basis.

A recruitment web-site (based on a Lotus Notes database) has already been set up and will be adapted to the special needs of the projects (http://www.kfv.at/size2/kfv/naturalistic-driving/).

3.4 Collection of subjective data

Subjective data will be collected before and – if required - after the trial. SP1 provides the content of the questionnaires. In case official translation into German is available, it will be used. If not, they will be translated into German. The Austrian OS is in close contact with the German OS to make sure, that the same translations will be used.

Subjective data will be collected through an online tool ("Lime Survey"). In case phone or face-to-face interviews are needed, trained employees will be used to do them during a hard-disk change.

Participants will be informed in the participant agreement as well as in the general information about their duty to fill out the questionnaires. In case riders do not fill in, the OS will contact them. They have to fill out the questionnaires before DAS installation at the latest.

Data storage will be provided in a secure place with limited access.

3.5 Data acquisition system installation and maintenance procedure

The DAS will be installed in a professional workshop. Depending on the technical requirements (provided by SP2) DAS installation will be most probably done by an official Piaggio garage. As soon as installation and warranty details are provided by SP2, KFV will get in contact with the installer.

During the trial the same garage will be responsible for maintenance.

3.6 Data collection and management

KFV staff responsible for driver liaison will change the storage devices, check the data consistency and send the hard drives to the Local Data Storage Centre in Germany. They will be supported by administrative staff for all standardised procedures. The same staff will check the online monitoring tool and will notify participants in case storage device has to be changed.

3.7 Data and operational quality assurance

According to the guidelines from SP2, data quality assurance will be realised by a person in charge at KFV.

A helpline (during office hours) and a dedicated e-mail will be installed for participant liaison. More than one person will be trained on the procedures, so that in case of holidays or absence all issues can be handled promptly.

Liability issues should not arise during the trial. Everything has to be clarified in advance within the participant agreement. It has to be guaranteed that the DAS does not interfere with driving tasks. KFV cannot be held responsible for DAS-related problems. Producer liability has to be specified in advance.

3.8 End of trial management

The DAS will be de-installed by the same garage which is responsible for installation and maintenance.

In case SP4 asks for a feedback questionnaire, KFV will do that according to their guidelines (online, face-to-face, etc.). Nevertheless it is important to define all the obligations of participants before finalising the participant agreement.

Regarding the fact that DAS (de-)installation costs extra money and time, KFV aims at a zero drop-out rate. Therefore, the incentive strategy is to pay the incentive after the whole project duration. Terms of payment have already been discussed with KFV's accounting department and will be part of the participant agreement.

3.9 Ethical approval and legal issues

In Austria ethical approval is only necessary for clinical studies and therefore is not relevant to this project. Nevertheless laws for the protection of personal data have to be considered. Table 9 shows an overview.

Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data is implemented in Austria through the Austrian Federal Act concerning the Protection of Personal Data [Datenschutzgesetz 2000 - DSG 2000, BGBl. I Nr. 165/1999]. The Austrian data protection commission (*Datenschutzkommission DSK,* www.dsk.gv.at) is a governmental authority charged with data protection. The data protection commission is the Austrian supervisory authority for data protection, the equivalent of a national data protection commissioner in other countries.

According to §46 par 2 DSG collection of personal data is possible, if the person concerned agrees. In UDRIVE personal data will be collected from:

- Test subjects
- Passengers within the vehicle (not applicable to PTW)
- People passing the equipped vehicle
- Passing vehicles (number plates)

If the pictures taken by the external cameras are not edited so that individuals are unrecognisable or if passengers are being recorded without having their consent, permission of the Austrian data protection commission according to §46 DSG has to be obtained. This permission replaces the approval of the people concerned. Transfer to other countries with the same standard of data protection is allowed in principle.

To get legal permission for data collection, KFV submitted relevant documents to the Austrian data protection commission in January 2013. KFV expects an official decision at the beginning of 2014.

If sensitive data is collected, permission from the Austrian data protection commission is necessary. The Austrian Federal Act concerning the Protection of Personal Data protects in a particular way data relating to offences (even suspicion), criminal convictions or security measures and prohibits the processing of data without permission. The use of data concerning acts and omissions punishable by the courts or administrative authorities, and in particular concerning suspected criminal offences, as well as data concerning criminal convictions and preventive measures infringes interests in privacy deserving protection as a basic principle.

If sensitive data from participants is to be collected, permission from DSK is absolutely necessary. This takes at least 6 months and the result is uncertain. It depends on an evaluation of the relation between scientific purpose and infringement of personal data protection. KFV prefers not to collect sensitive data.

Table 9: Overview of data protection

Kind of data	Documents	Body (to ask for approval)	Time to get the approval
Personal data – consent from subject is possible	• Consent form	Participant	x
Personal data – consent from subject is not possible (external video)	• Data security measures • Detailed information on which data is collected (subjective, objective data) • Detailed information on the project • Detailed information, who will have access to the data • Detailed information on the scientific purpose • Description of DAS, especially cameras • Duration for which the collected data may be stored	DSK (Austrian Commission for Data protection)	6 months
Personal data - Sensitive data (including crimes)	• Same as above	DSK (Austrian Commission for Data protection)	6 months (at least)

4 Dutch Operation Site

4.1 OS description and responsibilities

The Dutch OS is responsible for running a trial of 50 trucks and 50 truck drivers. The Dutch test site is coordinated by TNO. Three persons make up the team which is responsible for coordinating the OS. This way tasks can be divided, and in case of absence of team members, others can take over the coordination. When data is being collected, at least two persons (from TNO or hired by TNO) will be contactable daily in case of technical problems, practical issues, etc.

Name	Company	Telephone	Email	Responsibilities
Stefanie de Hair - Buijssen	TNO	+31630192557	Stefanie.dehair@tno.nl	Overall responsibility for the trail preparation and operation at TNO.
Maartje de Goede	TNO	+31622390352	maartje.degoede@tno.nl	Overall responsibility for the trail preparation and operation at TNO
Marika Hoedemaeker	TNO	+31622478053	marika.hoedemaeker@tno.nl	Overall responsibility for the trail preparation and operation at TNO

4.2 Time plan

The Dutch OS has started recruitment of fleet owner participants via Volvo NL in order to encourage willingness to participate and to arrange legal and insurance issues in time. In general the Netherlands will follow the global time plan as specified in Table 2.

4.3 Participant liaison strategies

Currently contacts with fleet owners are organised via Volvo NL. They have already experience with this kind of projects e.g. the EU EuroFOT project. For recruitment, a presentation will be given to the fleet owners and their drivers, to enhance support and understanding, the value of participating in the project and the fact that their data will be processed anonymously will be stressed.

Before the start of the trial, fleet owners and truck drivers will be informed about communication protocols, management of technical deficiencies, damaged material or other practical questions. Also the procedures for data collection (e.g. hard disk change) and installation will be explained. This will be done again by giving a presentation to the drivers and by written instructions. Agreements on installation will be made with the fleet owners (time and place). Fleet owners will be requested to inform TNO on driving schedules, so it is known beforehand when a driver change will take place, in order to flag this in the data. All drivers involved in driving the equipped trucks will be consulted on their willingness to participate in the trial, and invited to sign the Participant Agreement. If a change of driver takes place unexpectedly, the fleet owner will be asked to report this. At the start of the trial, fleet owners will be asked not to include trucks that will be removed from the fleet within the trial duration.

During the trial, fleet owners will be provided with an update of the trial progress at least twice, to secure their continuous support to the trial. The research team will monitor data collection via the online monitoring tool provided by SP2, for both data quality as well as data collection progress. Fleet owners and/or truck drivers will be requested to contact the research team (least two persons from TNO or hired by TNO) in case:

- a vehicle has been damaged, vandalised or stolen
- a vehicle is to be removed from the fleet
- a driver is changed unexpectedly

The research team will be contactable daily by phone and e-mail. In addition, participants will be able to post messages on the project website. Here participants can also read about project news.

4.4 Collection of subjective data

Before the start of the trial and after the trial, participating truck drivers will be asked to fill in a questionnaire by means of an online tool. This will be explained at the presentations and by written instructions. Data collection will be started only after completion of the questionnaire. At the end of data collection, an additional questionnaire is to be filled in by an online tool. The research team will check whether a questionnaire has been filled in before and after the trial. In case drivers do not fill in each questionnaire, they will be contacted by the research team.

Data storage will be provided in a secure way with limited access. Two backups will be made which will also be secured.

4.5 Data acquisition system installation and maintenance procedure

DAS installation will be executed by the garage where the trucks are under normal maintenance. At the garage of each fleet (company), the employees that will be involved in installing the DAS will be instructed by a TNO employee with the required technical knowledge. Besides practical information, a written guideline will be provided. In case of questions or problems afterwards, the TNO research team can be contacted. DAS installation will be planned in consultation with the fleet owner as well as with the fleet manager.

4.6 Data collection and management

The status of the data acquisition will be monitored by the online monitoring tool provided by SP2. When the hard drive is reaching 20% free space remaining, the fleet manager will be contacted in order to set a time at which the disk has to be replaced. This will be done by the fleet manager, since he/she knows best the availability of the trucks. Hard drives will be appropriately packed for posting to TNO via courier services.

Data quality assurance protocols, as provided by SP2, will be followed. Data will be backed up before the hard disks are posted.

The fleet managers will be, on approval of the fleet owner, carefully instructed (verbally and written) on the above procedures before the start of the trial.

4.7 Data and operational quality assurance

The online monitoring tool and quality assurance procedure provided by SP2 will be used.

In case any deficiency is detected or reported, the research team will try to solve issues within 24 hours.

Liability and insurance issues will be carefully described in an agreement between:

- The UDRIVE project and the DAS supplier
- TNO and the fleet owner

4.8 End of trial management

At the end of the trial de-installation will be planned in cooperation with the fleet managers.

A feedback questionnaire and/or focus group session will take place, depending on the requirements from SP4.

The incentive budget is fixed at 800 Euros. The payment structure has still to be decided on and will be determined on agreement with the fleet owners.

4.9 Ethical approval and legal issues

Official ethical approval for the UDRIVE trial is not required in the Netherlands. However, since video-data will be collected and saved, the project has to be registered at and approved by the institute for personal data protection.

The legal department of TNO will work out contacts between the fleet owners and TNO for clarification of legal issues and liability.

5 French Operation Site

5.1 OS description and responsibilities

CEESAR is responsible for the French Operation Site. Thirty vehicles will be recruited in the Southeast of France. The trial will start in August 2014 (but possibly before if tool chain is operational early). The CEESAR team consists of four members and their responsibilities are described in the following table.

Name	Company	Telephone	Email	Responsibilities
Clément Val	CEESAR	+33 1 76 83 04 90	clement.val@ceesar.fr	French OS responsible
Reakka Krishnakumar	CEESAR	+33 1 76 83 54 93	reakka.krishnakumar@ceesar.asso.fr	Responsible for trial preparation and operation
Lionel Boulommier	CEESAR	+33 1 76 83 35 40	lionel.boulommier@ceesar.fr	Responsible for data quality Responsible for DAS installation/de-installation and DAS maintenance
Jean Marc Bersac	CEESAR	+33 1 76 83 35 03	Jean-marc.bersac@ceesar.fr	DAS installation/de-installation and DAS maintenance

5.2 Time plan

The global time plan will be followed.

OS preparation and adaptation (July 2013 – July 2014), which would include participant recruitment, ethical and legal approvals, questionnaires translated/implemented, helpline implemented, consent forms translated, and incentive strategy defined.

OS piloting (May 2014 – July 2014), which would include organisational piloting (responsibilities are distributed appropriately in French OS), operational piloting (testing questionnaire) and technical piloting (testing DAS installation process on different vehicles).

The trial will start between August and October in 2014.

5.3 Participant liaison strategies

In France, thirty car owners who own Renault Clio III, Renault Clio IV and Renault Mégane will be recruited in the Southeast of France (Lyon). CEESAR will use the database of private car owners which is available from Auxiliary Automotive Association (AAA) for the recruitment.

At the French OS, a helpline will be implemented and dedicated to the trial. One staff member will be designated as the main contact with the drivers.

During the participants' briefing at the beginning of the trial, all participants will be advised on the functions of the helpline:

- A badge with a unique driver Identification and the helpline number will be provided to all the participants at the beginning of the trial. This contains the information that the participant has to give when calling the helpline, to ensure his/her proper identification.
- All drivers will be able to reach the research team between 9am and 6 pm, Monday to Friday.

- They are requested to contact the research team for specified circumstances, e.g. moving house, travel outside of France.
- They will also be advised about situations in which the research team would contact them (e.g. exchange of hard drives or DAS).

This information will also be included in the written information provided to the participants.

5.4 Collection of subjective data

Subjective data will be collected at the beginning and at the end of the trial. Questionnaires and interviews provided by SP1 will be translated into French. The questionnaires will be digitised using Lime Survey software.

The questionnaires will be administrated and interviews will be conducted when participants bring the vehicle to the workshop for the installation/de-installation of the DAS. A computer will be provided to facilitate completion of the questionnaire. CEESAR will verify that all answers are correctly included in the database once the questionnaire is completed.

In case a driver feels uneasy with completing the computerised questionnaire, it will be possible to complete the questionnaire on a paper-based version which will be later digitised by the research team.

5.5 Data acquisition system installation and maintenance procedure

The DAS installation will be carried out at the IFSTTAR premises in Lyon. Guidelines which explain how to install the DAS in the vehicles will be provided by SP2 and be used by the DAS installation team of CEESAR.

The following procedures will be followed at the workshop:

- Vehicle owner hands over the vehicle to CEESAR DAS installation team for instrumentation.
- Installation of DAS in the vehicle following the document on DAS installation procedure.
- Verification of DAS installation following the document on DAS verification guidelines.
- CEESAR DAS installation team hands over the vehicle to the vehicle owner after instrumentation.

The online monitoring tool (OMT) provided by SP2 will be used to monitor the data collection. Using the OMT, the CEESAR staff member with responsibility for data quality will regularly check that the data collection is progressing as planned for each vehicle. This includes checking that 1) the DAS regularly connects to the OMT, 2) the amount of data is in line with the plan, and 3) the quality of the numerical and video data is correct (e.g. no disconnection of a data source, no disconnection or change in framing of a camera).

In the event that malfunction of the DAS is detected and rectification is needed, the CEESAR staff member with responsibility for data quality will inform the maintenance team. If physical access to the instrumented vehicle is necessary to troubleshoot and to repair the DAS, an appointment with the participant will be arranged. Two interventions are possible on the DAS: hardware repair or replacement of the DAS or DAS parts in order to bring it back to full working order.

5.6 Data collection and management

The hard drive exchange is based on the size/quality of collected data. There are two ways to pick up the data from a DAS in the vehicle:

- Pickup operator (IFSTTAR staff) goes to the vehicle and collects the data device by himself.

- Participant removes the data device and sends it directly to CEESAR.

After receipt of the hard drive, the raw data contained in it will be added to the French Local Data Centre storage. Then the raw data is converted and pre-processed in order to make it suitable for Central Data Centre use. Finally the pre-processed data will be transferred to the Central Data Centre (Online transfer or the hard drive will be sent by post).

5.7 Data and operational quality assurance

CEESAR will use and follow the quality assurance guidelines provided by SP2. The online monitoring tool provided by SP2 will allow monitoring the quality of data collection. It is important to note that assessing quality of data collection is not limited to checking the quality of the data itself once gathered, but also includes verifying that operational aspects are correctly performed (data transfer and data storage).

To minimise drop-outs, the staff member responsible for driver liaison will ensure that all enquiries from the participants are dealt with promptly. Interactions between drivers and CEESAR will be recorded via Excel files.

Regarding the questionnaires, CEESAR will verify that all answers are correctly included in the database.

5.8 End of trial management

The workshop for DAS de-installation is located at IFSTTAR. The following procedures will be followed:

- Vehicle owner hands over the vehicle to CEESAR DAS de-installation team.
- De-installation of the DAS of the vehicle takes place following the document on DAS de-installation procedure.
- Reconditioning of the vehicle is performed.
- The CEESAR DAS de-installation team hands over the vehicle to the vehicle owner.

Participants will get the final payment upon de-installation of the DAS. The amount of the incentive will be divided into three. Participants will receive the first payment at the beginning of the trial, the second in the middle, and the last one at the end.

The final questionnaire will be administered and interviews will be conducted.

5.9 Ethical approval and legal issues

CEESAR will undertake the following actions to settle the legal and privacy issues in France:

1. Data privacy acts: In France the Act n°78- 17 of January 6th, 1978 on Data Processing, Data Files and Individual Liberties[2], amended by the Act of August 6th, 2004 ensures the protection of individuals with regard to the processing of personal data. CNIL[3], the French National Commission for Data protection, which is an independent French administrative authority, has a mission to ensure that data privacy law is applied to the collection, storage, and use of personal data.

Before the start of experimentation, CEESAR will:

- Notify to the CNIL the implementation of the UDRIVE database and its characteristics.

[2] Loi 78-17 du 6 janvier 1978 relative à l'informatique, aux fichiers et aux libertés
[3] CNIL : Commission Nationale de l'Informatique et des Libertés

The following information will be provided to the CNIL:
  - The person responsible for the implementation of processing personal data.
  - The main purpose of data processing.
  - The kind of data recorded, their exploitation, their recipients, the duration of storage, and if there will be transfer or not out of the European Community.
- CEESAR ensures that all participants are in a position to exercise their rights. The participants have the right at any time to consult the information that concerns them, verify its correctness, rectify it, ask for deleting it and restrict its transmission. CEESAR has to inform the participants the way to exercise their rights.
- CEESAR ensures data security and confidentiality:
  - Personal data (name, address, phone number etc.) will be stored for a specific period, and then will be destroyed. Access to the personal data is restricted.
  - Personal data is not communicated to unauthorised third parties.

2. Video recording of the drivers and the passengers:
   CEESAR needs the consent of the driver to use his/her images. The following items will be specified in the consent form (the agreement must be written):
   - Why CEESAR needs to film the driver.
   - Aims of the use and publication of the images.
   - Which media may be used to publish the images (internet, reports, presentations, etc.?
   - If there is another passenger in the car, the driver consents to inform him/her about the experimentation and that he/she will be filmed.

   In case of “video recording of third parties in public places”, CEESAR needs to declare to the CNIL that there will be “video recording of third parties in a public place”.

3. Accident and crime:
   Each driver has to insure his own car. In case of an accident or infringement of the law, the court could ask CEESAR for access to the data. In such a case, CEESAR will have no other option than to release the data available at the moment. Conversely, in conformity with the French data privacy acts, participants can also require CEESAR to delete some portions of data, if they think the data might be prejudicial to them.

6 German Operation Site

6.1 OS description and responsibilities

The German OS is responsible for running trials including 30 vehicles and 50 participants. The test site is located in the city of Braunschweig. With just under one million residents and connections to motorway and rail networks, the city of Braunschweig provides a variety of traffic conditions to study drivers' behaviour. DLR will recruit drivers and manage the trials.

Name	Company	Telephone	Email	Responsibilities
Mohamed Mahmod	DLR	+495312953466	Mohamed.Mahmod@dlr.de	Overall responsibility for the German trials including preparation and operation. Also maintaining contact with external garage. Responsible for reporting trials progress within SP3.
Fabian Utesch	DLR	+495312953538	Fabian.Utesch@dlr.de	Representative for Mohamed Mahmod. Contact person for participants.
Daniel Waigand	DLR	+495312953415	Daniel.Waigand@dlr.de	Responsible for data quality assurance issues

6.2 Time plan

The German OS will follow the global time plan specified in Table 2. Accordingly, the trials will start no later than October 2014. After the start of the trials, the following tasks are planned:

- Trial management (October 2014 - July 2016), including: monitoring data collection using online tools, changing hard disks, checking of data quality and storage of data at the local data centre, performing periodic courtesy calls with participants for early signs of for participant dissatisfaction, pay part of incentive.
- DAS de-installation (August 2016 - September 2016), including: de-installation of DAS from vehicles, report on lessons learned from OS, paying the last part of the incentive.

6.3 Participant liaison strategies

A person has already been assigned to be responsible for liaison with participants. To recruit participants, the following channels are currently being used:

- Contact volunteer drivers from DLR own database
- Advertisement on newspaper (already published)
- Contact Renault dealership in Braunschweig (already contacted one garage)
- Set up a recruitment website which contain information about the project, the leaflet and link to recruitment questionnaire (see: www.dlr.de/ts/udrive).

Participants will be briefed at DLR. During the briefing, a contact person from the DLR will be introduced to participants for non-technical issues (e.g. collection of subjective data and information on the helpline number at DLR available during working hours. Another contact person will be introduced from the external garage to be responsible for technical issues (e.g. DAS installation and maintenance issues); this includes a separate helpline number to be used in case of maintenance and emergency.

During the trials, data collection will be monitored via the online monitoring tool provided by SP2. The participants will be contacted about changing the hard disk, if needed, and in case of suspected failure in data logging or if no data has been logged for a long time (e.g. more than a week). The participants will be asked to inform the contact person at DLR if: 1) damage has occurred to the vehicle or any equipment, 2) the vehicle is to be used outside the borders of the OS.

6.4 Collection of subjective data

The Participant Questionnaires provided by SP1 for subjective data collection will be translated and digitised. Translation of the questionnaires has already started, and standard German versions have been sourced for some parts of the questionnaires. Although the questionnaires are planned to be filled in online, a paper version will be also used in case a driver cannot use the online version.

Collection of subjective data will be conducted in parallel with DAS installation. On the day of installation, a contact person from DLR will meet the participant at the external garage and take him/her to DLR for briefing and collection of subjective data. A designated room with PC connected to the internet is already prepared for filling the questionnaires and conducting the hazard perception test.

6.5 Data acquisition system installation and maintenance procedure

DLR will employ an external garage for DAS installation and maintenance during the trials. The Participant Agreement will be sent to participants beforehand allowing enough time for reading and understanding it. An appointment for DAS installation at the external garage will be set with each participant individually. On the day of installation, the Agreement will be signed first before proceeding with the installation process.

A helpline number from the garage will be provided to participants for maintenance issues and emergency events. DAS installation on the 30 vehicles is planned for August 2014.

6.6 Data collection and management

Data collection will be monitored via the online monitoring tool provided by SP2. The participants will be contacted to change the hard disk by technicians at DLR or in case of a failure in logged data. The procedure of hard disk exchange will be that a participant comes to DLR or for a meeting at an agreed place (e.g. home, workplace).

6.7 Data and operational quality assurance

The data quality assurance procedure provided by SP2 will be followed. The online monitoring tool provided by SP2 will be used to monitor the quality of data collection. Moreover, the collected hard disks will be checked by data quality person at DLR before uploading the data into DLR's server.

A helpline number will be defined at DLR during working hours to answers participants' inquires on non-technical issues. For technical issues, a helpline number will be defined at the external garage, where technical staff will be asked to respond to participants' inquires as fast as possible. This is to insure participant satisfaction and minimise drop-outs.

DLR is discussing liability issues with the legal department at DLR to define issues such as equipment insurance and whether or not participants should inform their vehicles' insurance companies about DAS installation. Based on recommendations from the legal department, an agreement will be defined to be signed with the participants before DAS installations.

6.8 End of trial management

At the end of the data collection period, the DAS will be de-installed at the external garage. Interviews will be performed with the participants, using the questionnaire from SP4, to receive their feedback. Finally, lessons learned from the OS will be reported.

Since participants will drive for 21 months, the total incentive of 800 euros per vehicle will be divided into periods of 6 months. This is to keep the participants motivated during the whole period of data collection. It is the responsibility of the participants to report the monetary income in their tax declaration.

6.9 Ethical approval and legal issues

In Germany there is no committee to which to apply for ethical approval and it is DLR's own responsibility to comply with the rules.

Regarding legal issues, permission for data collection needs to be obtained in accordance with the following steps. First, construct an expert board which consists of 1) the data security commissioner for DLR (in German *Datenschutzbeauftragter*), 2) the legal department at DLR, 3) an external expert company, 4) the person at DLR responsible for the OS. Second, submit a data security concept to the expert board. The concept includes issues such as the content of the recorded data, the schedule of the project, who will have access to the data and when the data will be deleted. Finally, obtain approval of the data security concept from the DLR institute director. The process takes 4 month to 1 year. However, since DLR already has experience with it, within UDRIVE the support from an external company will not be needed and the procedure is expected to be shorter in time (around 6 months).

7 Polish Operation Site

7.1 OS description and responsibilities

The Polish OS is responsible for running a car trial including 30 vehicles and 50 participants. The test site in Poland covers the city of Warsaw with its Metropolitan area. For the Polish site, all indispensable documents covering recruitment materials and recruitment procedure, as well as data collection and trial management protocols will be prepared in Polish.

The persons responsible for the Polish trial are:

Name	Company	Telephone	Email	Responsibilities
Jacek Malasek	Road and Bridge Research Institute	+4822 3900 202	jmalasek@ibdim.edu.pl	Overall responsibility for the Polish trial
Leszek KornalewskI	Road and Bridge Research Institute	+4822 814 1073	lkornalewski@ibdim.edu.pl	Overall responsibility for trial preparation and operation at the Warsaw site

7.2 Time plan

The Polish OS will follow the global time plan specified in Table 2. The trial will start no later than October 2014.

7.3 Participant liaison strategies

Participant liaison will primarily be reactive. The research team will not initiate communications with the participants unless necessary (e.g. no data are coming in while the participant has not advised being away on holiday) in order to minimise triggering unnatural behaviours.

A sheet of FAQ in Polish will be handed out to participants, which will contain key information for communication protocols, for example occasions when would the participants be requested to contact the OS (e.g. DAS malfunction) and occasions when the OS would contact the participants (e.g. swapping hard drives).

The participants will be requested to contact the research team if the vehicle will not be used for over a week (e.g. away on holiday or business trips or illness). The research team will monitor data collection via the online monitoring tool provided by SP2, for both data quality as well as data collection progress (e.g. when the hard drives are due to be replaced).

Participants will also be requested to advise the research team on the following occasions:

- they are going to change vehicle, move house or change jobs (with the implications that the travel patterns will be significantly changed)
- vehicle will be designated to someone else (in case of fleet drivers)
- vehicle being vandalised or damaged (the research team needs to assess if data collection would be interrupted)
- vehicle being stolen.

Contact details will also be offered on the FAQ sheet. Three communication means will be used:

- A dedicated helpline number with answering machine, or voicemail facilities.
- A dedicated email address.
- A mobile number will also be available for emergency contacts, for both technical (e.g. DAS interfering vehicle operation) and non-technical issues (e.g. vehicle being vandalised or stolen).

The web space used for participant recruitment will be converted to a "participant notice board" where trial progress can be posted. Participants will be invited to visit the web page if they wish to be aware of the project news, but information will not be actively pushed out to participants.

7.4 Collection of subjective data

Collection of subjective data will be executed during the DAS installation, at the workshop, in the separated dedicated space. After welcoming the participants and acknowledging them with the project details, subjective data will be collected in the Polish version of the Participant Questionnaires.

The data storage will be encrypted and secured by the controlled access. Two backups will be made upon addition of new data; the backup drives will also be encrypted.

7.5 Data acquisition system installation and maintenance procedure

Installation of the DAS will be arranged depending on the installation duration (participants may be arranged in small batches for installation, if necessary). DAS installation will be executed by the authorised Renault workshop. The installation instructions will be provided by the SP2 and, if necessary, translated into Polish. The workshop will provide the appropriate space and competent installers. The installers will also be contracted to provide technical support during the trial (e.g. in case of the DAS malfunction).

The status of the data acquisition will be monitored by the online monitoring tool provided by SP2. In case of emergency (system malfunctions) participants will be contacted and the meeting with the technical support team will be arranged. All faults will be recorded on the logging system.

7.6 Data collection and management

The status of the on-board storage will be monitored. When the hard drive will reach the level of 20% free space remaining, participants will be contacted in order to arrange the meeting for replacing the hard drive. The arrangement of the hard drivers' replacement will include participant's long term planes (e.g. holidays, business trips).

After replacement, hard drivers will be appropriately packed and posted by courier to the Local Data Centre at DLR. The data quality assurance protocols, provided by SP2, will be followed; the data will be backed up before sending.

7.7 Data and operational quality assurance

The online monitoring tool and quality assurance procedure provided by SP2 will be used and followed.

Aiming to minimise the number of drop-outs, participant satisfaction and efficient communications will be ensured. The research team will aim to provide answers for all enquires within 3 hours (excluding the night period of 10 pm – 6 am). All the enquiries will be logged and progress tracked.

The participant agreement will define and specify the liability issues; e.g. in case of system interference, whether the liability lies with the vehicle manufacturer or the DAS suppliers.

7.8 End of trial management

Regardless of the number of drivers per vehicle, the fixed incentive budget of €800 (approximately 3300 PLN) per vehicle id destined; the payments will be executed to the participants in cash. A preliminary payment schedule is at:

- Month 6
- Month 12
- Month 21

In order to ensure the participants' completion of the trial, a larger amount will be allocated to the final payment, e.g.:

- 500 PLN at Month 6
- 800 PLN at Month 12
- 2000 PLN at Month 21

The participants will be requested to sign a receipt upon receiving cash payment and advised that they are liable to declare the payments for income tax purposes.

De-installation of the DAS will be performed by the system installers, after previous appointment.

The final questionnaire will be administered and interviews will be conducted, depending on the requirements from SP4.

7.9 Ethical approval and legal issues

Road and Bridge Research Institute Legal Department will provide the ethical approval for data collection.

A description of the study including data collection protocols (e.g. video images and scrambled audio) will be logged with the Road and Bridge Research Institute, following the legal advice received by the IBDiM's Legal Department.

8 Spanish Operation Site

8.1 OS description and responsibilities

The Spanish Operation Site will collect data from 25 PTW riders. The vehicle chosen is the Piaggio Liberty. Data collection will be carried out in Valladolid.

Name	Company	telephone	Email	Responsibilities
Oscar Martin	Cidaut Foundation	+34 983 548035	oscmar@cidaut.es	Overall responsibility for the Spanish trial and its preparation and operation at the Valladolid site

8.2 Time plan

The Spanish OS will follow the global time plan specified in Table 2. The trials will start no later than October 2014 but if possible they will start earlier (August or September).

8.3 Participant liaison strategies

The recruitment strategy will be based in contact motorcyclists clubs and advertisement through the local press and the internal network. There is also a backup plan, consisting in make contact with the Piaggio local dealer and get an agreement so they can provide us with some participants.

After the selection of the participants they will be contact in order to install the equipment in their vehicles. During the DAS kit installation an individual briefing meeting will take place to provide the participants with all information needed and to ask them to fill the questionnaires.

Contacts with the participants will be the minimum possible. The OS will contact them only if it is necessary, for example to collect data from the hard disk, replace the hard disk, to fix any problems coming from the DAS, or if there is no data recording without any known reasons.

On the other hand, participants should contact the OS if they change their riding patterns, if the vehicle or the DAS suffers any damage, any equipment damage, malfunction or robbery as well as any changes that could affect the study (e.g. moving house, temporal or permanent medical impairment, and vehicle change). All these circumstances and the communication protocols will be specify in a sheet of FAQ that will be given to participants.

The OS data quality team will monitor data collection via the online monitoring tool provided by SP2, for both data quality as well as data collection progress.

The Spanish OS will set up two permanent information services:

- A dedicated land phone line (during office opening hours, a team member will attend the phone and outside this time an answering machine or a voice mail will be available).
- A dedicated email address.

The contact details of both services will be provided on the FAQ sheet.

8.4 Collection of subjective data

Basic participant information and subjective data will be gathered through questionnaires. These questionnaires will be filled in electronically in order to minimise human errors during collection and transcription. Ideally the questionnaires will be collected during the DAS installation, to reduce inconvenience to the participants. A meeting will be organised with each participant during the DAS installation to provide them with information on the project and collect the questionnaires.

All data storage will be encrypted and access to data will be restricted to two members of the OS team. Encrypted backups will be made upon addition of new data.

8.5 Data acquisition system installation and maintenance procedure

Installation, maintenance and de-installation of the DAS equipment will be carried out by accredited and competent professionals. If possible, these services will be subcontracted to a local Piaggio dealer/garage. SP2 instructions will be used to perform these procedures. The research team at Cidaut will support the garage during all the processes.

The installation of systems will progress once the participants have signed the agreement. The installation will be done in the minimum possible time to minimise inconvenience to the participants.

Through the online monitoring tool provided by SP2 the DAS systems will be monitored. Upon detection of any system failure, malfunction, or no data registration, the OS will contact the participants to let them know that they have to go to the Piaggio garage to fix the problem.

8.6 Data collection and management

Data storage will be monitored through the online monitoring tool provided by SP2. An automatic alert will be defined in order to contact the participant to arrange an appointment for replacing the hard disk.

The hard drives will be moved to Cidaut facilities and their data backed up. After the backup, the hard drives will be posted to the Local Data Centre at CEESAR via courier services. Once the OS has received confirmation from CEESAR that they have the hard disk and information is correct, the backup data will be erased. SP2 data quality assurance protocols will be followed.

8.7 Data and operational quality assurance

Regular data checks and the online monitoring tool should assure data quality. The online monitoring tool and quality assurance procedure provided by SP2 will be used and followed.

A very detailed definition of the liability issues covering all possible aspects will help solving problems. Liability issues will be covered by the different agreements between OS, DAS installation garage, vehicle manufacturer, the DAS suppliers and the participants.

In order to assure operational quality assurance, prompt support to the participants is needed. To achieve this, it is important to give them clear information and an agile response. All enquiries will be answered fast and clearly, and traced until issues solved.

8.8 End of trial management

The DAS de-installation will be carried out by Cidaut. A final session will be held with all the participants to give them information concerning the progress of the project and to encourage them to follow the project web page where they will find the project results. It is possible to collect any final questionnaires or information during this workshop if needed.

There is an incentive budget of €800 per vehicle. A cash payment will be made to participants in three different periods, Month 6, Month 12 and the largest amount at the end of the trial. One option will be €150 at Month 6, €150 at Month 12, and €500 at Month 21. A signed receipt will be obtained in which the participant declares that he/she has received each incentive for participating in the trial and has been advised about liability to declare the payments for income tax purposes.

8.9 Ethical approval and legal issues

The national agency for data protection has given its approval for collecting the data provided the database information (variables names to be collected) is registered with the agency.

9 UK Operation Sites

9.1 OS description and responsibilities

The UK OS is responsible for running a car trial including 30 vehicles and 50 participants. There are two test sites in the UK: Leeds and Loughborough. The two sites will work collaboratively in driver recruitment, i.e. share recruitment materials/procedure, but there will not necessarily be 15 vehicles at each site. Both sites will follow the same data collection and trial management protocols.

The persons responsible for the UK trials are:

Name	Company	Telephone	Email	Responsibilities
Frank Lai	University of Leeds	+44-113-3436606	f.c.h.lai@its.leeds.ac.uk	Overall responsibility for the UK trials. Overall responsibility for trial preparation and operation at the Leeds site
Daryl Hibberd	University of Leeds	+44-113-3431788	D.L.Hibberd@leeds.ac.uk	Participant liaison, data monitoring and handling
Ruth Welsh	University of Loughborough	+44-1509-226937	r.h.welsh@lboro.ac.uk	Overall responsibility for trial preparation and operation at the Loughborough site
Martyn Chambers-Smith	University of Loughborough	+44-1509-226945	m.chambers-smith@lboro.ac.uk	Technical support, online monitoring
Jo Barnes	University of Loughborough	+44-1509-226922	j.barnes@lboro.ac.uk	Legal and ethical issues

9.2 Time plan

The UK OS will follow the global time plan specified in Table 2. The trials will start no later than October 2014.

9.3 Participant liaison strategies

The UK OS will recruit qualified drivers from the general public, according to the agreed recruitment criteria.

Potential participants, responding to the advertising, will initially be invited to attend an informal information evening when further details regarding the nature and requirements of the trials will be discussed. Those wishing to continue into the trial will then attend a formal briefing. At this briefing all of the relevant documentation will be explained and signed, and participant ID photographs will be taken.

Participant liaison will primarily be reactive during the trial. The research team will not initiate communications with the participants unless necessary (e.g. no data are coming in while the participant has not advised being away on holiday) in order to minimise triggering unnatural behaviours.

A sheet of FAQ will be handed out to participants, which will contain key information on communication protocols, for example occasions when would the participants be requested to contact the OS (e.g. DAS malfunction) and occasions when the OS would contact the participants (e.g. swapping hard drives).

The participants will be requested to contact the research team if the vehicle will not be used for over 3 days (e.g. away on holiday or business trips or illness). The research team will monitor data collection via the online monitoring tool provided by SP2, for both data quality as well as data collection progress (e.g. when the hard drives are due to be replaced).

Participants will also be requested to advise the research team on the following occasions:

- they are going to change vehicle, move house or change jobs (with the implications that the travel patterns will be significantly changed)
- vehicle being vandalised or damaged (the research team needs to assess if data collection would be interrupted)
- vehicle being stolen

Contact details will also be offered on the FAQ sheet. Three communication means will be used:

- A dedicated helpline number (a Leeds number and a Loughborough number respectively) with answering machine or voice mail facilities.
- A dedicated email address.
- A mobile number which will be available for emergency contacts, for both technical (e.g. DAS interfering with vehicle operation) and non-technical issues (e.g. vehicle being vandalised or stolen).

The web space used for participant recruitment will be converted to a “participant notice board” where trial progress can be posted. Participants will be invited to visit the web page if they wish to be aware of the project news, but information will not be actively pushed out to participants.

9.4 Collection of subjective data

Subjective data will be collected via the Participant Questionnaires, which will be digitised for use at both sites. This will ensure data completeness as well as minimise human errors during data transcription. Data collection will be carried out in conjunction with DAS installation appointment. A member from the research team will meet and greet the participants at the DAS installation workshop where an appropriate space will be arranged for briefing and collection of subjective data.

The data storage will be encrypted and have controlled access. Two backups will be made upon addition of new data. The backup drives will also be encrypted.

9.5 Data acquisition system installation and maintenance procedure

Accredited and competent local installers in Leeds and Loughborough will be appointed for DAS installation, once relevant installation instructions are provided by SP2. Appropriate workshop space will be provided by the appointed installers. The installers will also be contracted to provide technical support during the trial (e.g. DAS malfunction).

Installation of DAS will be arranged upon receipt of the signed participant agreement. Participants may be arranged in small batches for installation, depending on the installation duration.

DAS status will be monitored by means of the online monitoring tool provided by SP2. In case of system malfunctions, participants will be contacted for arranging an appointment with the technical support team. All faults will be recorded on the logging system.

9.6 Data collection and management

The status of on-board storage will be monitored. Participants will be contacted upon the hard drive reaching 20% free space remaining. The research team will find out if the participant intends to carry out long trips as well as availability (e.g. taking holiday, working away, etc.) in order to arrange an appropriate time for replacing the hard drive.

The data quality assurance protocols, provided by SP2, will be followed.

Hard drives will be appropriately packed for posting to Chalmers via courier services. Data will be backed up before the hard drives are posted.

The OS will operate according to a 'Management Handbook' that will outline all aspects of the trial from initiation to completion. Each participant will have a dedicated spread sheet that documents each stage of their trial. This will include 'sign off' for all documentation, a log of all communication between the participant and the OS personnel, a log of all actions taken by the OS personnel in relation to the data collection and it will reference the completion of other documentation such as the pre-vehicle inspection report and DAS installation report.

9.7 Data and operational quality assurance

The online monitoring tool and quality assurance procedure provided by SP2 will be used and followed.

Efficient communication is the key to participant satisfaction, which would in turn minimise drop-outs. The research team aims to answer all enquiries within 2 hours. All enquiries will be logged and progress tracked.

Liability issues will be dealt with following an agreement within the project; e.g. in case of system interference, whether the liability lies with the vehicle manufacturer or the DAS suppliers.

9.8 End of trial management

DAS de-installation will be carried out by the appointed system installers.

Feedback questionnaire and/or a focus group will be take place, depending on the requirements from SP4.

There is an incentive budget of €800 (approximate £650) per vehicle, regardless of the number of drivers per vehicle. Cash payment will be made to participants. A preliminary payment schedule is £100 at the end of Month 2, £125 at the end of Month 8, £150 at the end of Month 14, and £250 at the end of Month 21 (i.e. end of trial). The incremental amount of payments is designed to encourage participants staying in the trial until completion. The participants will be requested to sign on a receipt upon receiving cash payment and advised that they are liable to declare the payments for income tax purposes.

9.9 Ethical approval and legal issues

Ethical approval for data collection will be sought from both the University of Leeds and Loughborough University ethical committees.

A description of the study including data collection protocols (e.g. video images and scrambled audio) will be logged with the University of Leeds and Loughborough University, following the legal advice received by the

University's legal advisor. The UK Government's guideline on Mandatory Minimum Measures for data protection will be followed.

10 Conclusions

The purpose of this Deliverable is to define OS responsibilities and planning, serving as the basis for the first Go/NoGo decision within the project. The criteria set for the Go/NoGo decision are:

1. Description of responsibilities (detailed functions, names, e-mail address, phone numbers) in the OS and up-to-date contact list
2. Description of the process to reach out sufficient number of possible participants (means, estimated audience, estimated response)
3. Description of procedures to contract NDS drivers (briefing, contract, consent forms, translation procedure, incentives strategy)
4. Description of a detailed driver liaison strategy (scope, policy, means of helpline, availability – e.g. 7/7 24/24)
5. Description of the subjective data gathering process (online questionnaire, offline questionnaire, phone interview)
6. Description of the data acquisition system installation and maintenance procedure (workshop, ramping up timeline, DAS check)
7. Description of the data gathering process (collecting/exchanging storage devices, checking data consistency, sending to LDCs)
8. Description of the data/operational quality insurance procedure (data quality, handling driver complaints, liability complaints)
9. Description of the procedure for decommissioning participants (DAS de-installation, feedback questionnaire, incentives payment)
10. Description of the plan to acquire ethical approval and legal advice

The evidence here suggests that all Operation Sites have planned the trials following the common guidelines closely, but also outlined trial preparation accommodating local circumstances. This provides the way of proceeding to the next stages of trial preparation: coordination and tracking of tasks completion across OS, including recruitment of participants, trial piloting, and full readiness for trial commencement, as specified in the global OS time plan.

11 References

This Deliverable is related to the following Deliverables within the project.

D12.1: Study Plan

D13.1: Identification of relevant legal issues and recommendations for agreements with participants

D22.1: Guidelines for data quality assurance [pending]

D22.2: Online tool for monitoring ND vehicles in the field [pending]

D32.1: Participant recruitment procedures

D34.1: Summary of OS operations [pending]

D35.1: Interview procedures [pending]

D35.2: Lessons learnt from OS operation [pending]

List of abbreviations

DAS	Data Acquisition System
LDC	Local Data Centre
OS	Operation Site

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