DRIVing implementation and Evaluation of C2X communication technology in Europe

DRIVE C2

Accelerate cooperative mobility

Deliverable 43.1

Detailed Data Specification for Evaluation

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Executive summary

In the project DRIVE C2X, large-scale field operational tests are being conducted at several European test sites to obtain insights into the functionality and performance of car-to-car and car-to-infrastructure communication (C2C / C2I). For the technical evaluation and the impact assessment of C2C / C2I, appropriate data collection plays a crucial role. This document describes the requests and guidelines for measurements data to be collected during the field operational tests (FOT) such that this data can be used later for the technical evaluation and impact assessment.

The description of the data takes a two-sided approach: on the one-hand the requirements from the technical evaluation and the impact assessment determine the availability and also the quality of the data that need to be provided; on the other hand, the technical possibilities of the ITS stations and other test site specific facilities like meteorological stations or traffic measurements, outline what data are available for logging, their frequencies and other characteristics. This also holds for the descriptions of the scenarios under which the experiments are carried out, including environmental data like weather or traffic conditions. It was seen as one of the tasks to bring these two sides together in a dialog to define data required for analyses that can be logged with reasonable resources. The dialog was seen as essential for two reasons: on the one hand the wish list of the analysts must meet the technical and economical possibilities of the test sites; on the other hand, possible restrictions for data recording should lead to reasonable substitutions, e.g. by post processing of other data.

In the course of specifying the data, it became obvious that this process is not a "linear" process in such a way that the data are defined and then logged and fed into the analyses; this process will require feedback loops: once data are logged and processed, the results of the analyses will indicate whether and what refinement for the processing are needed. One example is the indicator "spot speed", the speed at a certain location relative to the location of a trigger for an application. The exact location will depend on the resulting driver behavior – thus further analyses into this are required to establish an optimal location. This is one of the reasons why the task of data processing is strongly interlinked with the analysis process.

Another strong and important link exists with the data sources. In the case of FOTs these sources are primarily the test sites with the ITS stations in vehicles and the road site. They provide the logging of the data; in DRIVE C2X the logging is an integral part of the systems employed. Other sources, also related to the test sites, provide data about the environment in which the concrete test drives are performed. Such data, e.g. weather related, plus the description of the test sites themselves, e.g. detailed road characteristics, explain under which conditions the logged data have are recorded. In many cases these data provide valuable information of the determinants of driver behaviour. The analyses will then use such scenario related data to explain the results found.

Further to the specification of the data, this document also yields results of the checking of data coming from the test sites during the piloting. To this end the pilot data were analyzed both, automatically by the processing software and also manually by checking the processed data against the requirement tables. Apart from this, the continuous data checks performed when new pilot data is uploaded to the repository, an ftp site, are communicated

to the test sites in a direct way. There is a strong personal link between the responsible partners established. This guarantees not only a quick but also an efficient exchange of information; this is seen as essential for a timely execution of the FOT experiments.

Finally, this deliverable gives an overview of the database available for technical and impact assessment. The database consists of log data imported into a PostgreSQL database and post-processed information such as event and trip summaries. The post-processed summaries include indicators requested by project analysts and at the same time form an index for all test site data.

This document contains the situation of the data specification at a certain stage of the project; at this stage, the data specification is not finalized. This is due to the strong links to both, the analysis side and the data provision side; the final specification of data that will be the direct input into the analyses will only be available when the analysis process has reached a stage when no more further processing of the input data is required.