



GRIMALDI STUDIO
LEGALE



WAVESTONE

TNO



KOMIS

Review of services and data needs

Big Data and B2B platforms: the
next big opportunity for Europe
EASME/COSME/2018/004

EASME - European Commission
Executive Agency for Small and
Medium-sized Enterprises

Brussels
17SEP, 2019



**Review of
services and
data needs**



AGENDA

Items

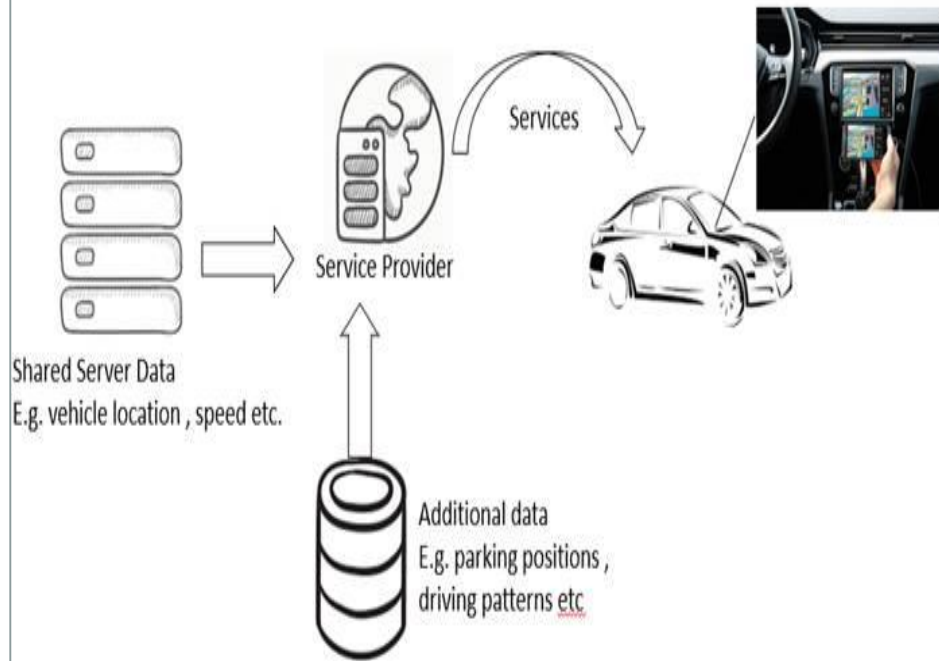
Overview of Services from 1st Workshop

Description of services

Data Overview

Key findings from 1st workshop

Data Provision and Services Architecture



Deployment of services in Shared Server solution



A Shared Server solution could be a **faster way to empower SMEs**, as the access of the data is made easier



Safety emerges to be of **high importance**, and it goes beyond pure monetisation



The **monetisation** of new services is needed to apply a **viable model for the Shared Server solution**

Key findings from 1st workshop

A prioritization of the services took place , identifying the most important ones , to be implemented during the pilot:



Park and ride service



Usage monitoring and scoring



Usage-Based Insurance (UBI)

Hazardous Location Notification (HLN)



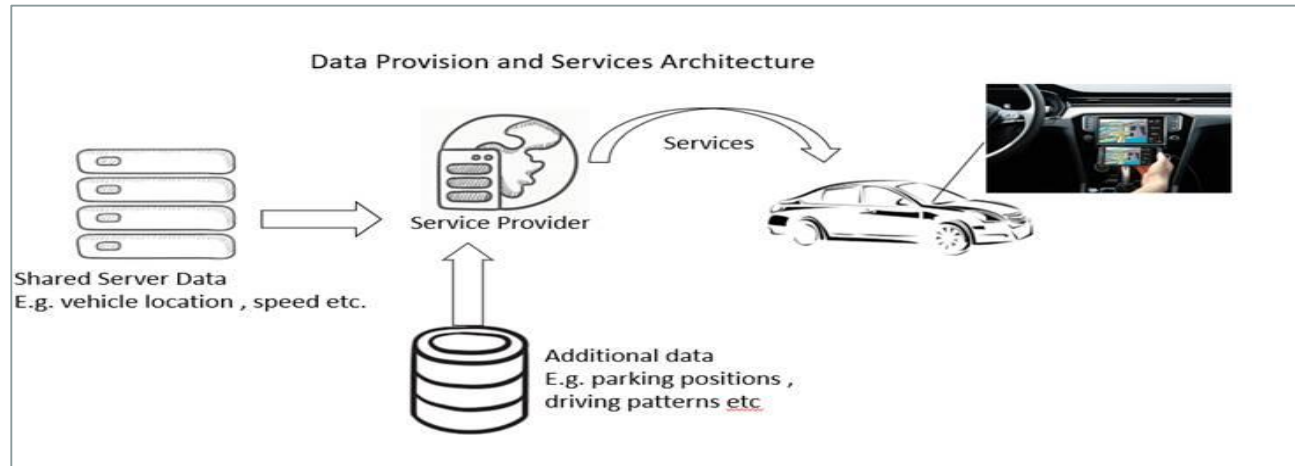
2nd Workshop Objectives - Services in Shared Server Solution



Define the services to be implemented



Present a first dataset to be used for the services provision



How streaming technology and cloud computing affects the implementation of services ?

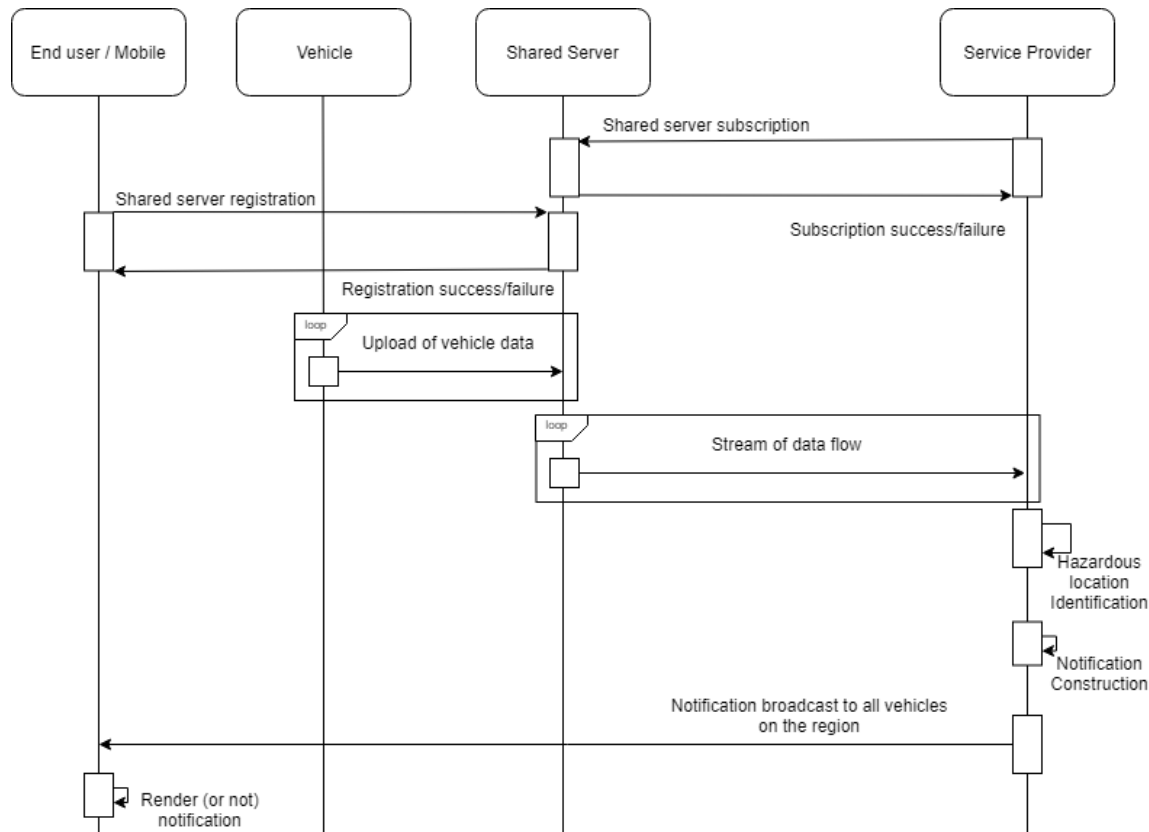


Which data , how often and in which format , should be transmitted ?



How semantic annotation can affect SMEs for services implementation?

Hazardous Location Notification (HLN): a safety system that provides a warning notification to the driver in order to direct his attention to a potential hazardous situation or area. These areas have a higher risk of collision or incident



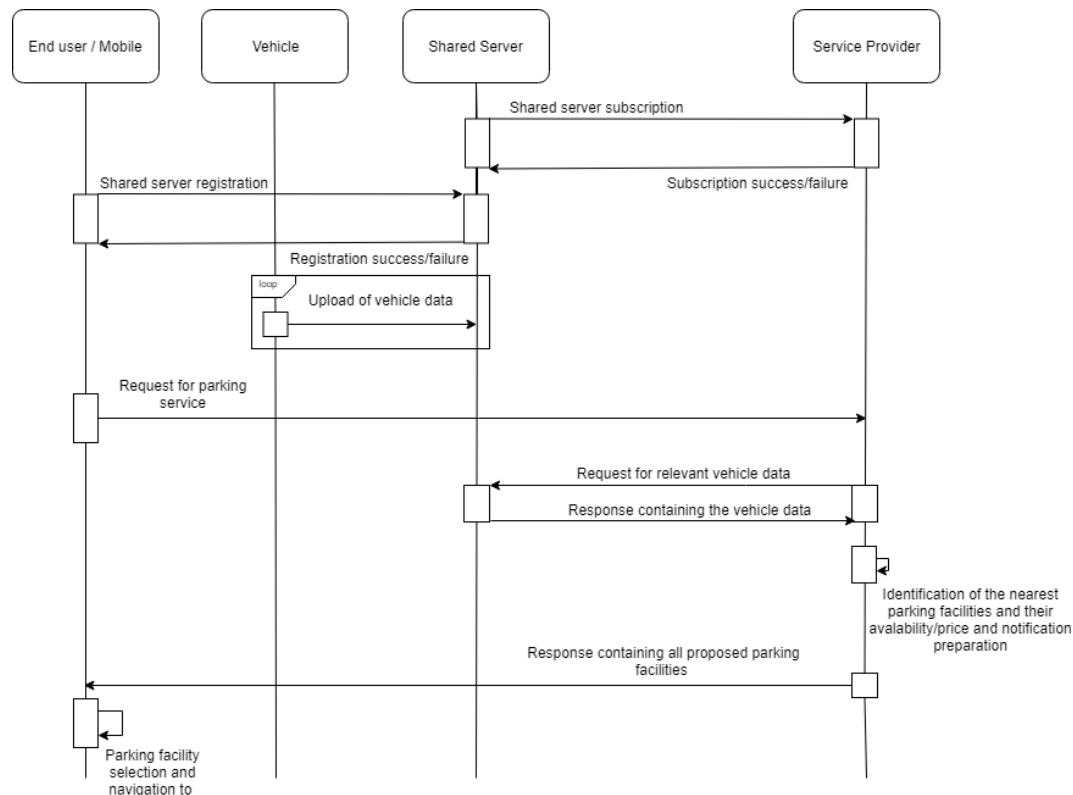
Key points:

- Stream data can be used for the identification of cars around the hazard point , limited latency
- Identification of Hazard points based on shared server data is a complicated task , unless we use ESP/ABS activation
- The notification to the drivers could be either personal or through cellular broadcasting

Data need:

- ✓ Car Location
- ✓ Location of the hazard Point
- ✓ ABS activation

Park and ride (or incentive parking): facilities are parking lots with public transport connections that allow commuters and other people heading to city centres to leave their vehicles and transfer to a bus, rail system (rapid transit, light rail, or commuter rail), or carpool for the remainder of the journey



Key points:

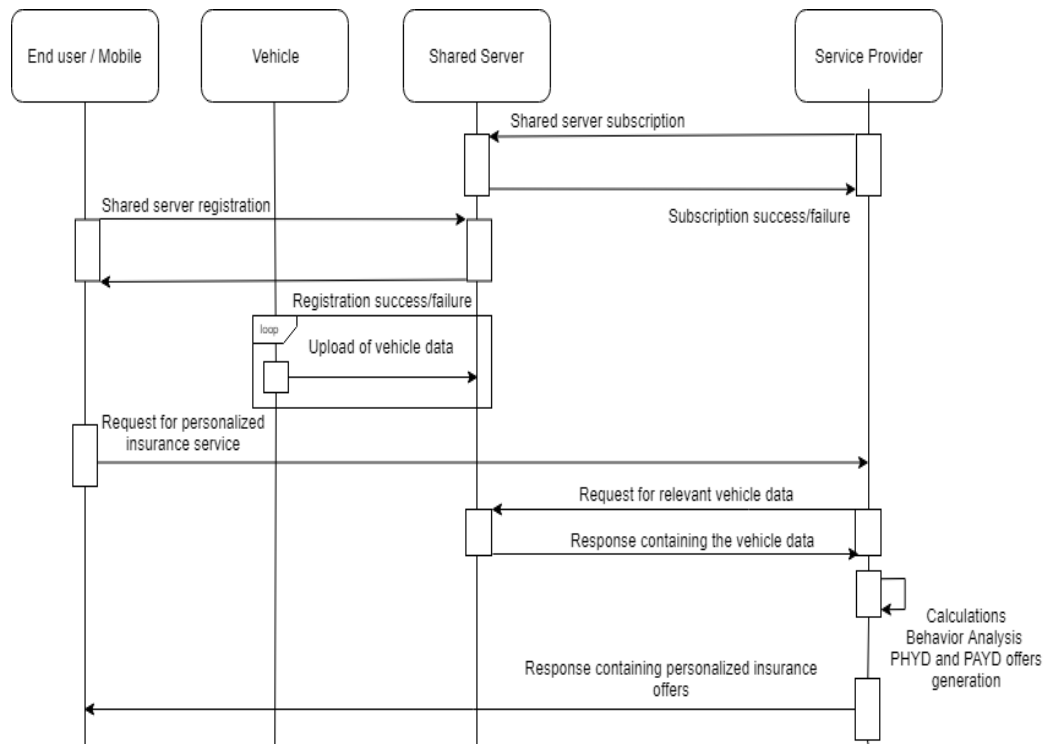
- Data at rest should be enough for the service
- The notification to the drivers should be personal

Data need:

- ✓ Car Location
- ✓ Location of Parking Slots
- ✓ Availability



Usage-Based Insurance : (UBI) also known as Pay As You Drive (PAYD) and Pay How You Drive (PHYD) is a type of vehicle insurance whereby the costs are dependent upon type of vehicle used, measured against time, distance, behaviour and location of driving



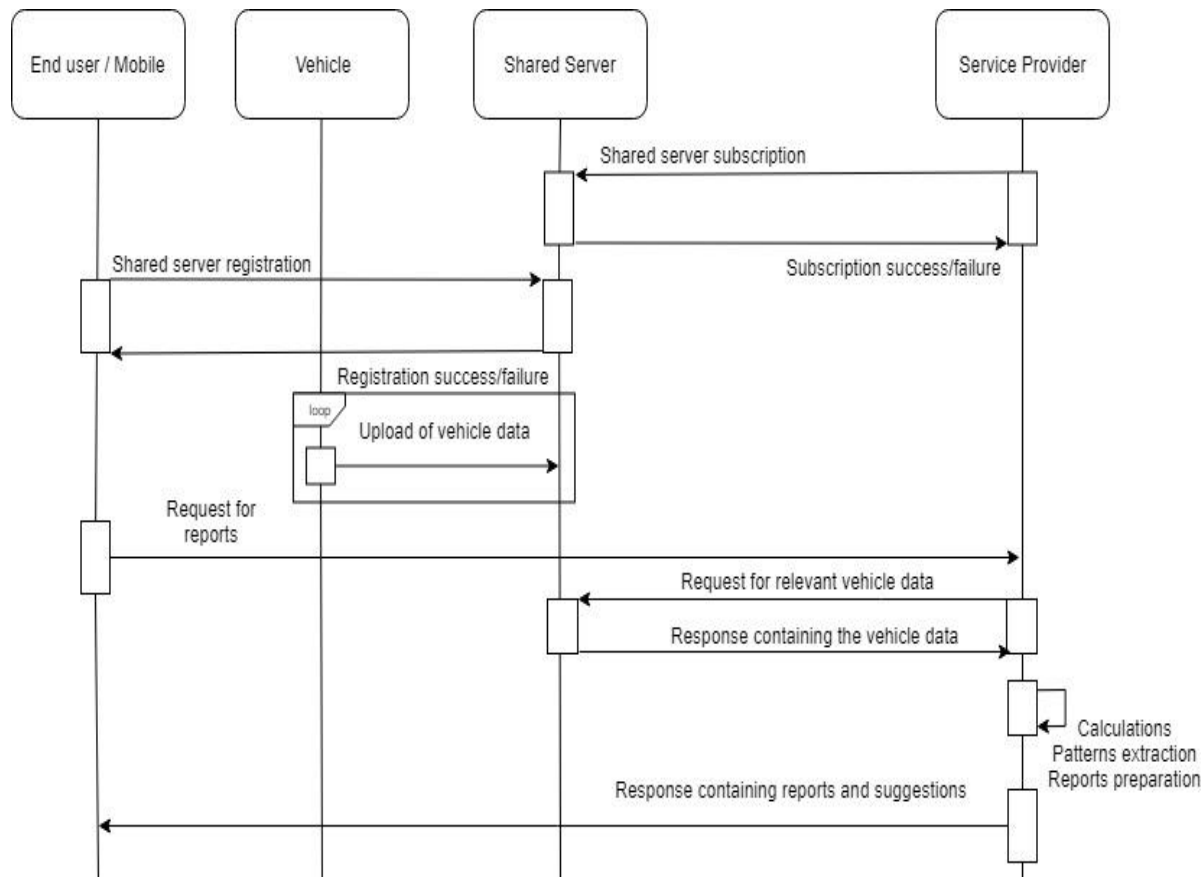
Key points:

- Data on rest to be used for the analysis
- Semantic annotation of data very important for processing by the SMEs
- Identification of the driver rather than the car should be considered

Data need:

- Distance driven
- Time of day the car is driven
- Location and routes that the vehicle is driven (GPS)
- Speed
- Acceleration (brakes etc.)

Usage monitoring and scoring: Driver behaviour monitoring and scoring services are identifying driving styles and propose a better driving based on the specific car data (more accurately the specific vehicle type approval), saving fuel and minimizing carbon footprint .



Key points:

- Data on rest to be used for analytics post travel
- Stream data could be used for the provision of near real time hints for improving the driving behaviour

Data need:

- Location and routes that the vehicle is driven (GPS)
- Speed
- Battery level
- Fuel Consumption
- ECO driving patterns
- Acceleration (brakes etc.)



Additional services that could be implemented with the new assumptions of stream data

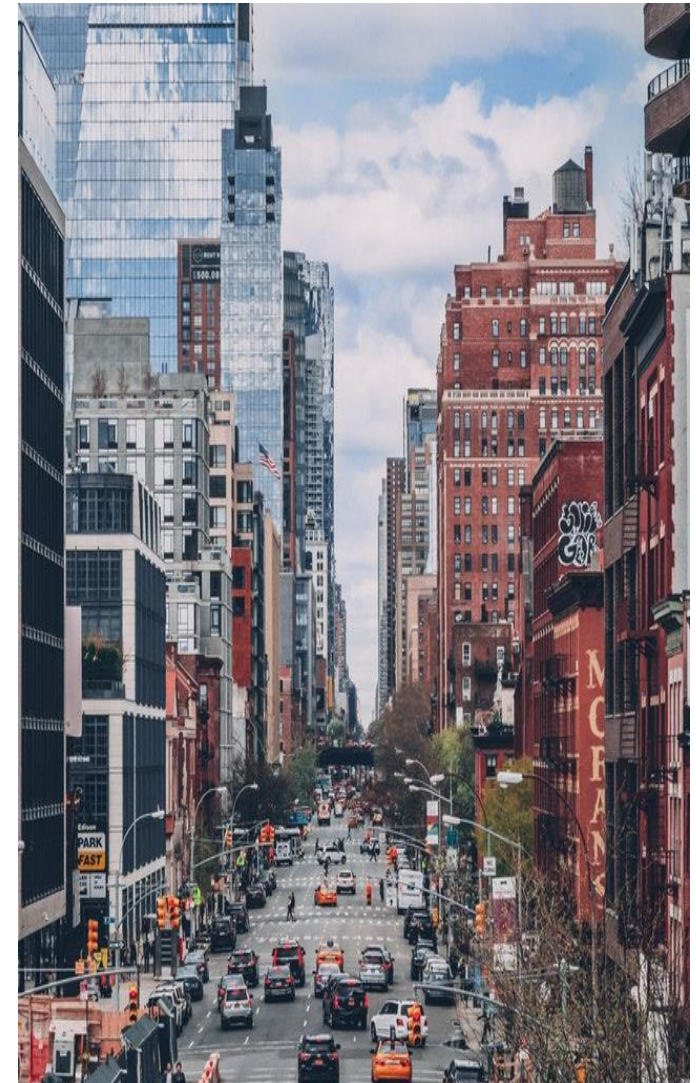
Green wave Traffic Lights: A green wave occurs when a series of traffic lights (usually three or more) are coordinated to allow continuous traffic flow over several intersections in one main direction.

Prediction on start/stop engine : a **start-stop** system or **stop-start** system automatically shuts down and restarts the internal combustion **engine** to reduce the amount of time the **engine** spends idling . Prediction on the traffic ahead or the traffic lights could enhance the usage of the system .

Eco Score in combination with fleet management: Near real time indications for the driving behavior could be provided , aiming to reduce fuel consumption and safety .

Day 1 ITS services- safety : The majority of the safety services can be implemented with higher precision and near real time response .

Additional services that require real time data for the implementation like **Intersection crossing** and use cases for **Automated Vehicles** should be further elaborated .





**Review of
dataset and
semantic
annotation**



MyCarMyData : *The exact number of collected data per manufacturer is not currently defined, as more and more sensors are added in the cars. However a first list is defined .*

CarDataFacts : *The type of data cars generate – and which thus can be used for providing certain services – differs from brand to brand, and even within brands, from model to model , but a first list is provided .*

Proposal for data in the Shared Server

Car Data	Value
Car Identifier	VIN
Time	Date / Time
Longitude	Quantitative Value
Latitude	Quantitative Value
Tyre pressure	PSi
Speed	Km/h
Fuel consumption instant	KMs Per Liter
Fuel consumption average	KMs Per Liter
Mileage	KMs
Oil	Quantitative Value
Start/Stop Engine	True or False

Car Data	Value
Engine Load	Quantitative Value
Acceleration	m/s ²
Engine RPM	RPM value
Battery charge status	(%)
Bearing	Quantitative Value
G(calibrated) (Cornering force)	Quantitative Value
Outside temperature of the vehicle	Celsius Degrees
ABS activation	True or False
ESP (Electronic Stability Program) activation	True or False
Error codes	Specific error code

W3C/AUTO group is currently ongoing based on the work presented till now
(*W3C VISS , Sensoris , ISO20078 , Neutral Vehicle , Caruso , Schema.org , BMW ontology based on VSS , W3C Web of Things*)

- ✓ **Data sampling**
- ✓ **Transmission**
- ✓ **Ontology**
- ✓ **Consent Model**

Important points to be considered for the shared server stakeholders :

- *With a view to increasing the interoperability of the car data, semantical annotation is needed and would be a success factor of common data sharing , especially for SMEs*
- *The frequency of uploads from the car to the shared server should be defined in order to ensure the appropriate Quality of Service ,data quality aspects to be considered*
- *A common Vehicle API for the OEMs would facilitate the usage of a common server , as the one of the Shared Server*

Overview of created data sets and additional data sources

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```



Example of JSON-LD file that could be used for the transmission of data to the Shared Server .



Such files created based on the data we have in our dataset could be used for the validation of the streaming technology

Overview of created data sets and additional data sources



The created dataset is based on the *Traffic simulation data for Antwerp with additional realistic data created based on the literature and previous experience .



This dataset is a **benchmark for mobility**, included in various publications\$ and it can provide a first round of safe results for the identified services . Considering the accuracy of the traffic data, it is ideal for the validation of the streaming scenario and the related services .



Additional data are collected by OBDs owned by the team aiming to experiment and collect data under specific scenarios , as well as subset of data from previous projects and few data from OPENAIRE for specific scenarios .

* *Simulation data of traffic in Antwerp during a typical day. Vehicle speed and position, as well as global indicators of transport reported every 60 seconds. The data is used for the analysis of the impacts of connected vehicles in the context of the exploratory research project ART (Autonomous Road Transport)*

\$ *Makridis M., Mattas K., Ciuffo B., Raposo M.A., Thiel C. (2018) Assessing the Impact of Connected and Automated Vehicles. A Freeway Scenario. In: Zachäus C., Müller B., Meyer G. (eds) Advanced Microsystems for Automotive Applications 2017. Lecture Notes in Mobility. Springer, Cham*



Questions
Answers