Data Categories

In order to drive discussions on security / access control, sensitivity in terms of privacy, and many other aspects, it is important to be able to categorize vehicle data in groups (including multiple and overlapping views / filters / layers).   Analysis of this activity is started on this wiki page

In the GENIVI Technical Summit (November 2019), it came to discussion, how different vehicle datasets could be defined in order to provide OEM guidelines.

> *"To define datasets that can be provided for specific purposes/use-cases to have consistent coverage from OEMs (bundling of data per use-case)"*

It should be kept in mind that different services have different data needs, and might need an expanded dataset in order to function. Still, sorting data points into different bundles makes the data use cases clearer compared to listing individual data points. Apart from these first data bundles, we should also consider different categories based on data sensitivity, privacy and regional laws.

Proposed Definitions

- **Data Category** = Data that belong together as part of a common technical scope.
  In the tree structure of VSS we see this natural subdivision using branches. In VSS a lot of the structure is mirroring the physical structure of a car, but occasionally other things like the organisational structure of automotive development companies or other divisions have also been influencing the category hierarchy. Categories could include larger groups that share a particular common characteristic, e.g. "Privacy sensitive data".
- **ExVe Container** = Grouping together previously unrelated data for a new purpose or to support a certain function or use-case (which suggests that ExVe Container definitions are frequently created, possibly short-lived, possibly locally defined, etc.) *The Extended Vehicle ISO standard speaks about "Containers" for this purpose.   We prefix the term with ExVe because "container" is a very frequent and overloaded term.*
  - Example: A pay-as-you drive insurance application may need approximate positional data (approximate for privacy) and the odometer data and some engine usage parameters. Those would normally
  - Such containers could also group together data that affect access permissions, or a logical group of information that a user gives consent to share.

Most services need data points from across different technical categories. E.g. a service might need charging.state_of_charge and engine.oil_temperature. It could be said that they need to access two different data categories. It could also be said that they need to access a "Container" that includes these two different data points. To build up consistency inside companies, but also across, it makes sense that common use-cases have pre-defined containers. These are typically called "Data bundles" or "Data buckets", which is like a template of a container that has other meta information attached to it like purpose of use, pricing and rate limits.

(When we speak about transferring measured values that are bundled together, note the related definition of a Snapshot)

Example Categories and Containers:

Personalised vehicle data – read-only

Name:	Pay-as-you-Drive (PAYD)	
Purpose:	Insurance services based on the vehicle mileage	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	24h

Name:	Logbook	
Purpose:	Automated trip logging for business vehicles	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	Trip end
Latitude	Vehicle latitude	Trip start/end
Longitude	Vehicle longitude	Trip start/end

Name:	Charging	
Purpose:	Services for electric vehicles	
Data point	Description	Update frequency
State of Charge	The state of charge percentage	On change
Estimated range	Estimated electrical range	On change
Charging state	Plugged in or charging	On change

Charging voltage	Charging procedure voltage	On change
Charging ampere	Charging procedure ampere	On change
Charging power	Current charging power (kW)	
Additional energy	Accumulated additional energy (kWh)	

Name:	Discharging	
Purpose:	Services for electric vehicles	
Data point	Description	Update frequency
Consumed energy	Total consumed energy (kWh)	
Saved energy	Total saved energy by braking (kWh)	

Name:	Fleet	
Purpose:	Fleet owners, car rental companies	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	Trip end
Latitude	Vehicle latitude	On change
Longitude	Vehicle longitude	On change
Fuel level	Fuel level percentage (State of Charge for EVs)	On change

Name:	Maintenance	
Purpose:	Aftermarket services.	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	24h
Fuel level	Fuel level percentage	On change
DTC	Diagnostic Trouble Codes	On change
Next service	Next service time or remaining kilometers	24h
Washer fluid	Washer fluid level percentage	On change
Engine oil temperature	Engine oil temperature in Centigrades or Fahrenheit	On change

Name:	Parking	
Purpose:	Automated parking payment services and locators	
Data point	Description	Update frequency
Ignition	The ignition state, on or off	On change
Latitude	Vehicle latitude	On change
Longitude	Vehicle longitude	On change

Name:	Pay-how-you-Drive (PHYD)	
Purpose:	Insurance services based on driving profile	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	Trip end
Latitude	Vehicle latitude	On change
Longitude	Vehicle longitude	On change
Acceleration	Vehicle acceleration	On change

API access – write

Name:	Car rental	
Purpose:	Car rental and carsharing fleet owners	
Data point	Description	Update frequency
Odometer	The mileage in miles or meters	Trip end
Latitude	Vehicle latitude	On change
Longitude	Vehicle longitude	On change
Fuel level	Fuel level percentage (State of Charge for EVs)	On change
Door locks	Lock state for each door	On change
Door positions	Position state for each door	On change
Lock/Unlock	Locking and unlocking of the doors	Write
Theft alarm	Theft alarm state	On change
Arm/disarm	Arming and disarming of the theft alarm	Write
Window positions	Position state for each window	On change