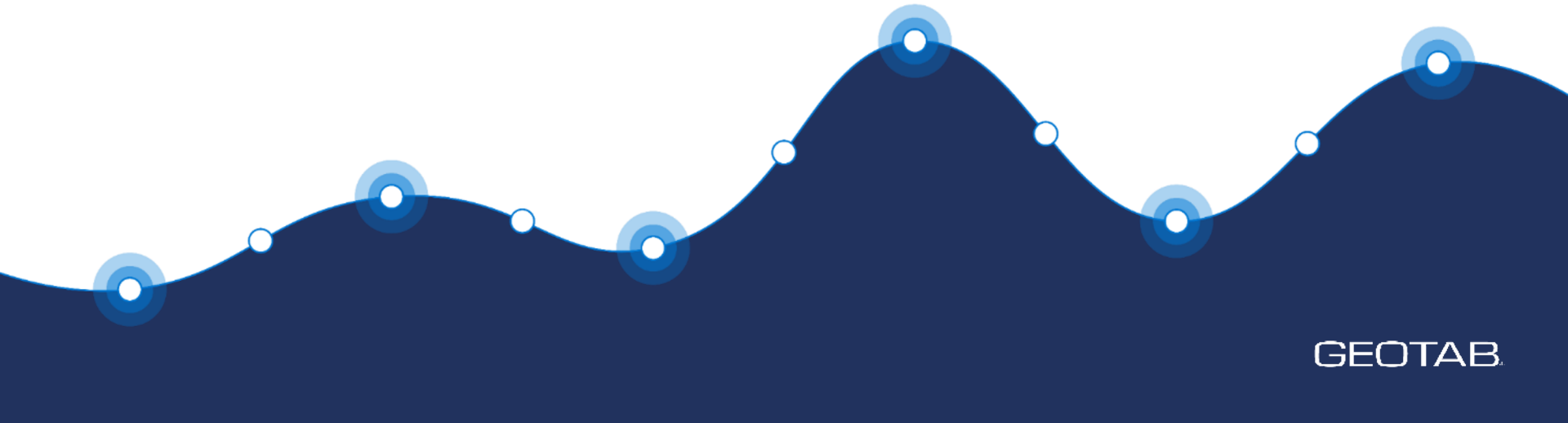
Fleet Telematics Data Recommendations

Using a standards-based approach to vehicle fleet telematics data to build a modern transportation ecosystem for all stakeholders.

October 2023



Agenda

1

The context:

why commercial customers need consistent data to manage their vehicle fleets

2

The approach:

An agreed “best practices” recommendation to be applied by the ecosystem

3

The benefits:

Value added products, reduced integration efforts, value for all stakeholders

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OEM Telematics

In near future, almost every new car will be“factory connected” and generate data!

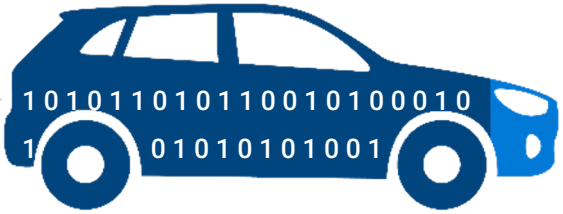
2021

≈ 50%

of **new sold** vehicles
are connected

Telematics of the future is a software application.

2030



≈ 95%

of **new sold** vehicles
are connected

Sources: ABI Research, Statista, McKinsey, …

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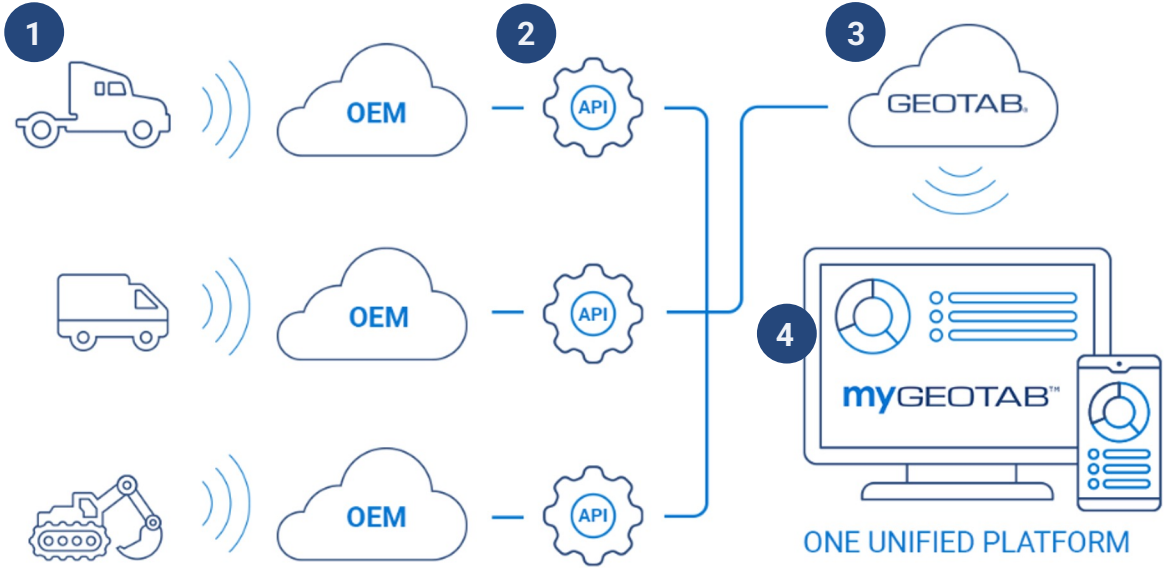
OEM Data Ingestion



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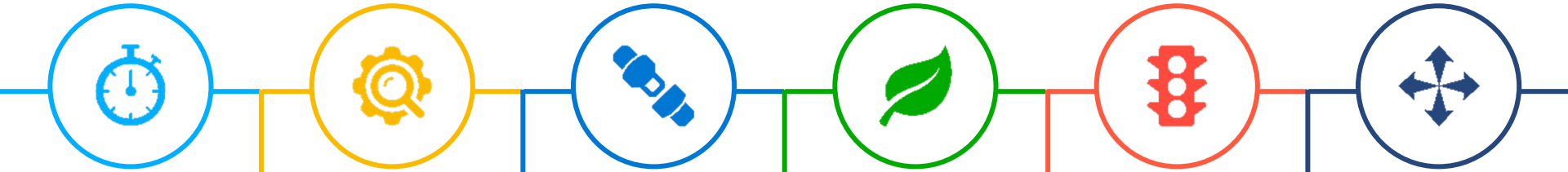
Commercial Fleets Run on Data

As data drives their businesses, they have come to rely on and will increasingly require reliable, secure, high quality information platforms



Productivity

- Customer service times
- Identify unexpected stops
- Accurate arrival and departure times
- Optimized routes
- Reduce time waste and inefficiencies

Optimization

- Manage vehicle maintenance
- Proactively detect electrical and other issues
- Advanced diagnostic data

Safety

- Collision notifications
- Driver risk management
- In-vehicle coaching
- Track speeding
- Seat belt use
- Driving in reverse

Sustainability

- Increase fuel efficiency. Decrease Idle
- Track CO2 emissions
- Fleet electrification
- EV performance monitoring and reporting

Compliance

- Electronic driver logs
- Tax reporting
- Vehicle inspection reports DVIR

Expandability

- E.g.
- Winter operations
- Cold chain
- Video
- …

OEM Data - Coverage

Today, some of the key data points relevant to fleet management are often **not collected** by several OEMs. Here are some examples:

- Seat belt
- Acceleration
- Engine RPM
- Engine hours

Goal: Ensure that all OEMs provide access to all relevant data points

OEM Data - Quality

Speeding Exceptions

Speeding

Dispatch 57	5m 11s 7 km	7
GM OEM Test1	1m 46s 3 km	2

GO device

06/05/20:		
12:14:52	44s	1 km 54 Cranston Dr, Caledon East, ON L7C 1P6, Canada 74 km/h > 60 km/h
12:31:06	31s	1 km 6 Simpson Rd, Bolton, ON L7E 1G9, Canada 63 km/h > 50 km/h
13:41:08	2m 4s	3 km 14057 Airport Rd, Kleinburg, ON L7C 0R9, Canada 81 km/h > 60 km/h
16:30:53	22s	0 km 15754 Airport Rd, Kleinburg, ON L0J, Canada 76 km/h > 60 km/h
16:37:32	38s	1 km 7048 Peel Regional Rd 9, Bolton, ON L7C 0S3, Ca... 88 km/h > 70 km/h
16:40:43	25s	0 km 30 Humbershed Crescent, Caledon, ON L7E 2X3, ... 76 km/h > 60 km/h
16:45:42	25s	0 km 10 Simpson Rd, Bolton, ON L7E 1E4, Canada 61 km/h > 50 km/h

OEM device

06/05/20:		
13:41:28	1m 15s	2 km 14198 Peel Regional Rd 7, Kleinburg, ON L7C 2W5, C... 96 km/h > 80 km/h
16:37:37	31s	1 km 7048 Peel Regional Rd 9, Bolton, ON L7C 0S3, Canada 83 km/h > 70 km/h

Seatbelt Exceptions

Goal: Ensure OEMs share the data with best in class precision and quality

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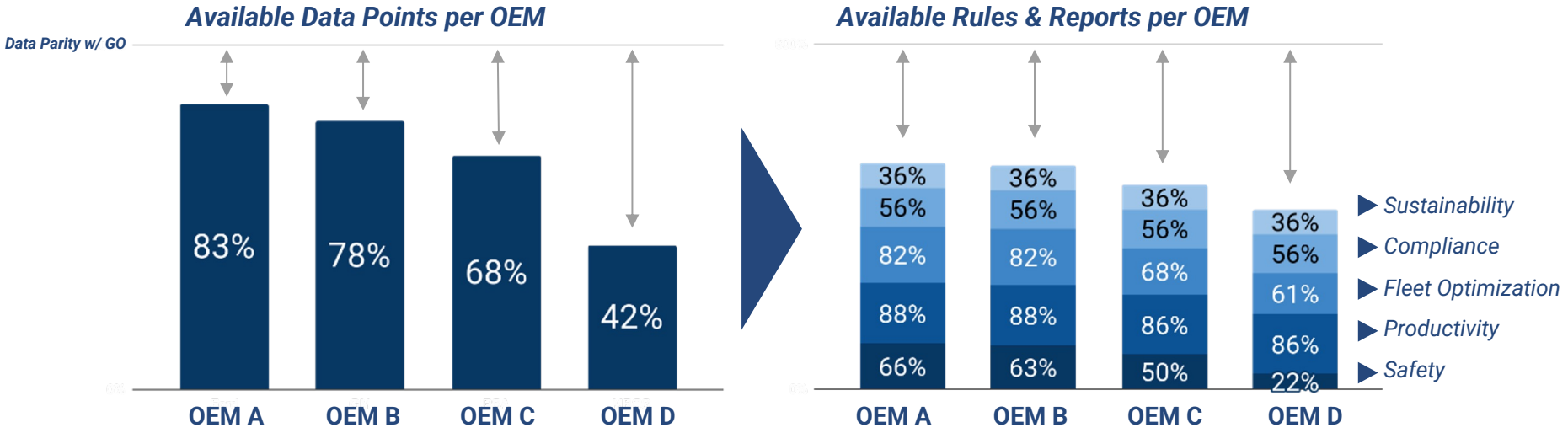
The Issue: OEM data currently not suited for all use cases and different across OEMs



To make best possible use of the OEM data, it has to match customers expectation (in quantity and quality)

**Note: percentages not current, analysis as of 2022*

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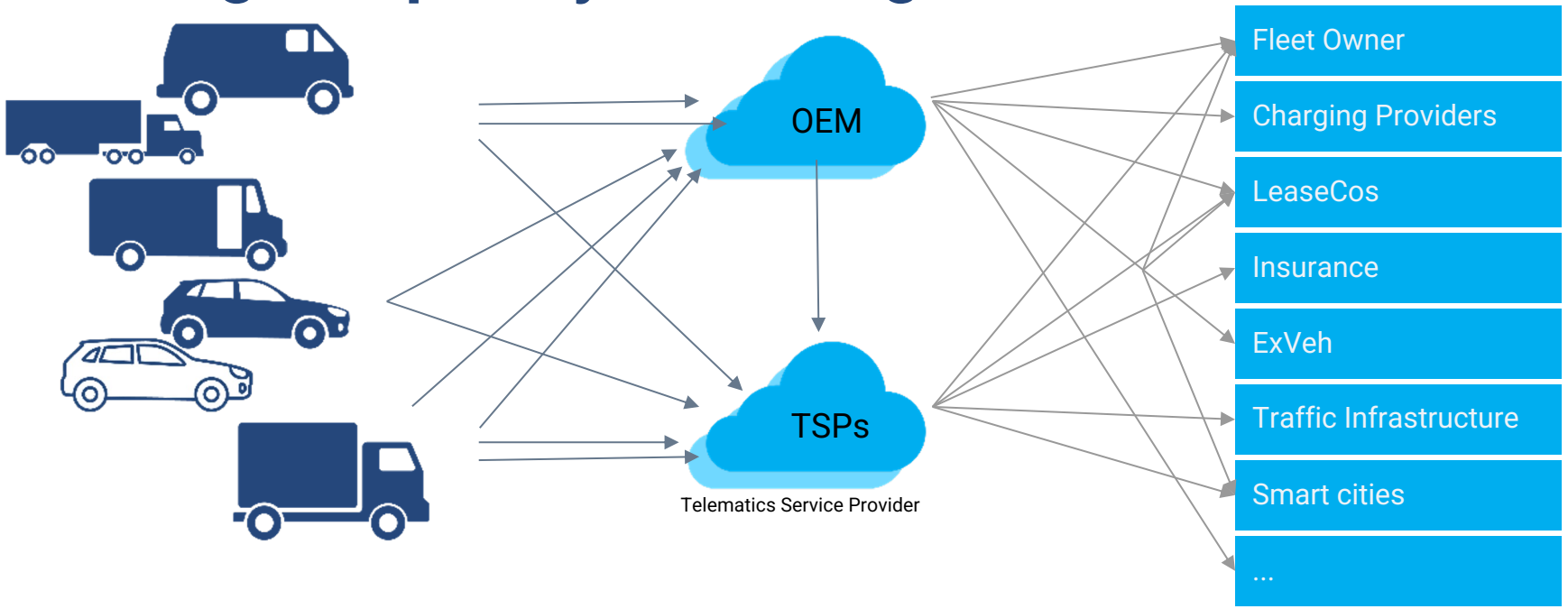
Today: Not leveraging the value of data, but creating complexity with integration efforts



Different types, makes, model, years - and data

X

Multiple OEM and TSP clouds

X

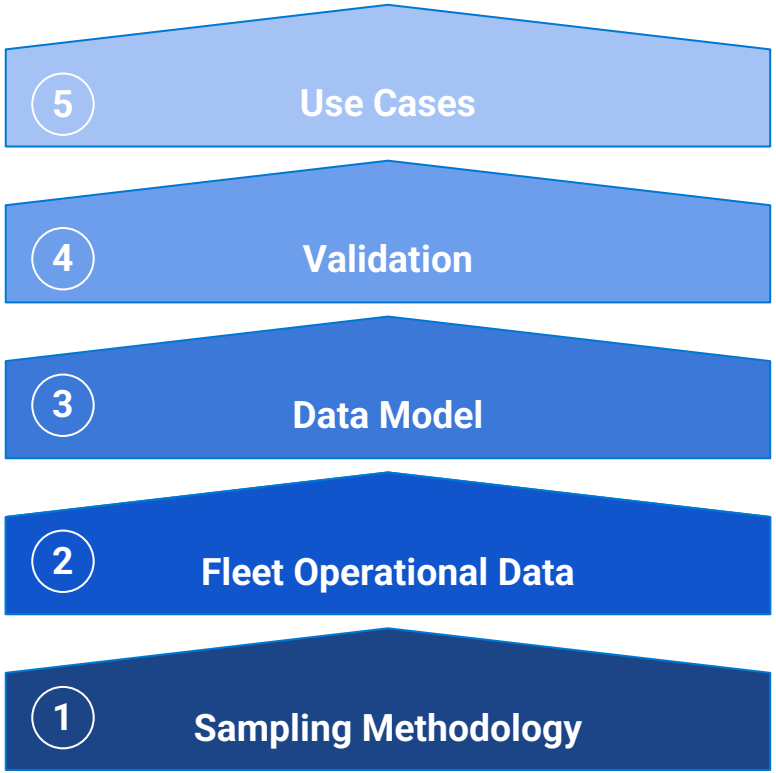
Multiple data users

So, What Does It Take? Three Things:

1. **The right data from all OEMs**
2. **The right data from all OEMs in a common format**
3. **The right data from all OEMs with best in class precision and quality**

The fleet telematics data recommendation and “standard” will help to achieve all three.

5 elements of the “recommended best practices”



Productivity, Optimization, Safety, Sustainability, Compliance, Expandability

Support customers by ensuring that fleet data requirements can be met with certain vehicles

COVESA / W3C Vehicle Signal Specification (VSS)

Modest set of specific vehicle signals and attributes including importance and preferred units

Curve logging (maximum error) vs fixed time

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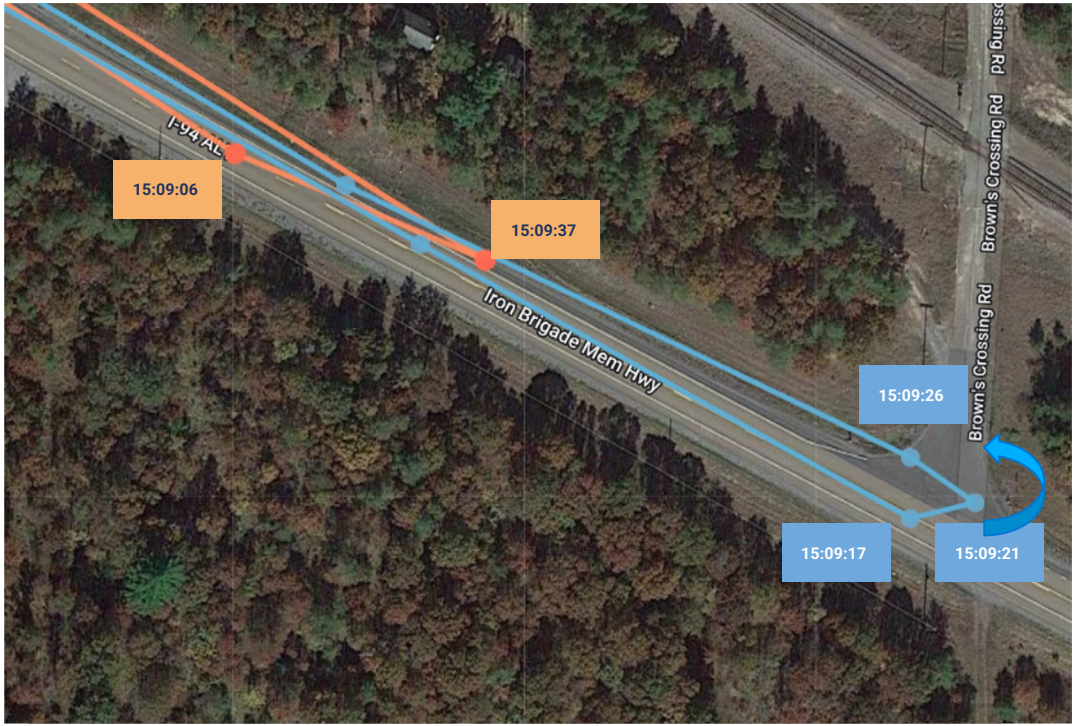
Animation - view in presentation mode

Example: U-Turn Detection



But the u-turn detected by Geotab on Go device indicates the u-turn was taken at the intersection

While the OEM data misses the context because of unavailability of data for 30 seconds

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How Curve logging works

- Patented method of moving data efficiently from vehicle to server
- Key value-add: Data is analyzed on the server rather than algorithms in the device

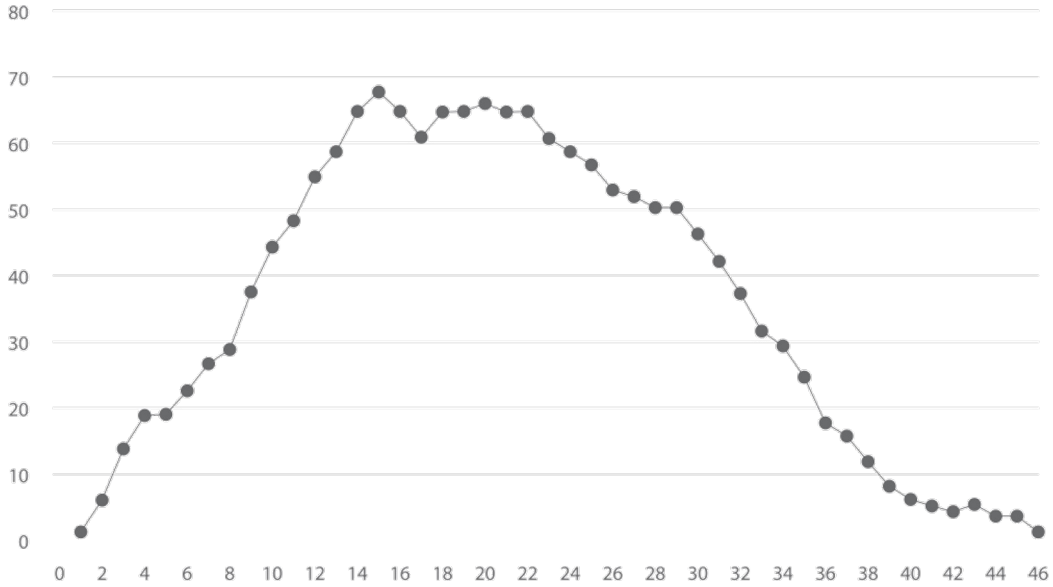
More Info:

How it works (blog post)

Whiteboard video with Neil Cawse

Curve Logging @ COVESA

Curve // Github



Curve logging can be implemented by OEMs on their embedded TCUs

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Most needed Data Points, ~80 to start with

Pillar	Use case #	Use Case	Data Point / Feature	Recommended Frequency / Data Reporting Logic	Importance*
Sustainability (EV)	SUSTAINABILITY05	- Identify opportunities for Fleet electrification	GPS	Ideal: smart/curve logic (https://github.com/Geotab/curve) to detect significant change in speed and/or direction and send corresponding data points If smart loggin isn't available, 1 Hz	Must Have
Sustainability (EV)	SUSTAINABILITY05	- Identify opportunities for Fleet electrification	Total fuel used (since activation) or Trip Fuel Used	every ignition event	Must Have
Sustainability (EV)	SUSTAINABILITY06	- Ensure EVs are appropriately charged and fleets can run efficiently	EV battery charge % / state of charge (SOC)	ideal: every 1% change during driving and charging min: every 1 min during driving and every 2 min during charging	Must Have
Sustainability (EV)	SUSTAINABILITY06	- Ensure EVs are appropriately charged and fleets can run efficiently	Range remaining	every 1 min during driving and every 2 min during charging	Must Have
Sustainability (EV)	SUSTAINABILITY07	- Optimize charging costs based on zones	GPS	Ideal: smart/curve logic (https://github.com/Geotab/curve) to detect significant change in speed and/or direction and send corresponding data points If smart logging isn't available, 1 Hz	Must Have
Sustainability (EV)	SUSTAINABILITY08	- Ensure EVs are appropriately charged and fleets can run efficiently - Identify and track charging events to control charging costs	Charging Status (AC/DC)	logged at start of charge (charging AC or charging DC) and end of charging (not charging)	Must Have
Sustainability (EV)	SUSTAINABILITY09	- Identify charging costs and optimize charging schedule	AC / DC charging energy in	every 2 min during charging	Must Have
Sustainability (EV)	SUSTAINABILITY10	- Identify electric energy economy and real-world range	Driving energy out	every ignition event	Must Have
Sustainability (EV)	SUSTAINABILITY10	- Identify electric energy economy and real-world range	Driving energy in (from regenerative braking)	every ignition event	Must Have
Sustainability (EV)	SUSTAINABILITY10	- Identify electric energy economy and real-world	Driving idle energy out	every ignition event	Must Have

Source: [Fleet Management Data Set](), including Use Cases, frequency and Importance

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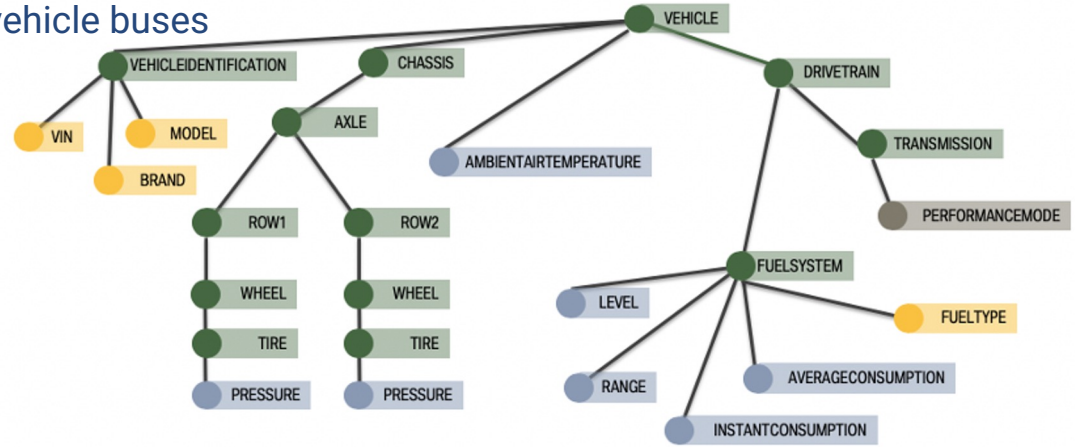
Proposal to use COVESA Vehicle Signal Specification (VSS)

The Vehicle Signal Specification (VSS) is an initiative by COVESA to define a syntax and a catalog for vehicle signals. In short this means that VSS introduces:

a. A syntax for defining vehicle signals in a structured manner.
b. A catalog of signals related to vehicles.

It focuses on **vehicle signals**, in the sense of classical attributes, sensors and actuators with the raw data communicated over vehicle buses



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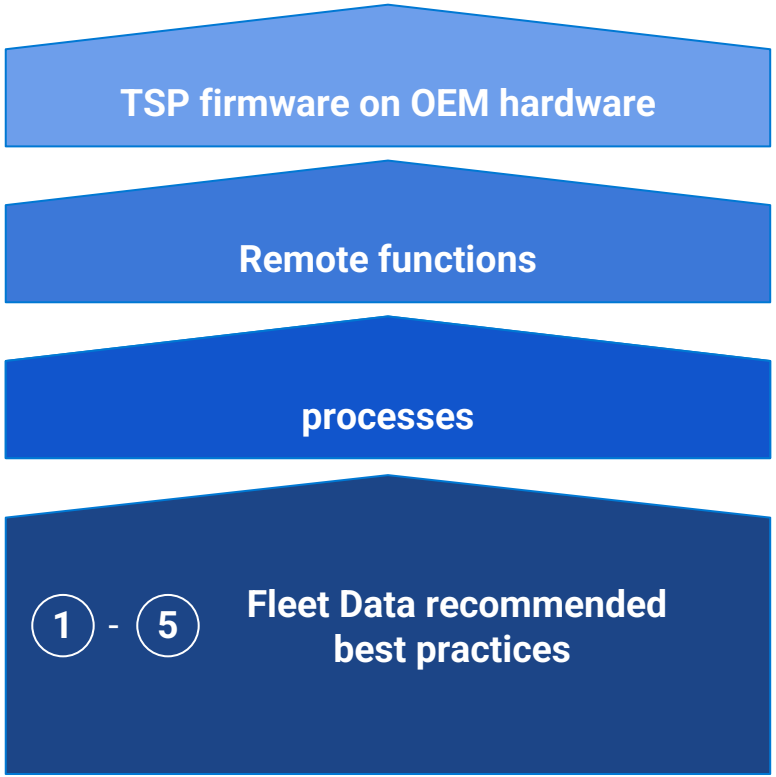
There is more to come...



HW integrated in vehicle E/E architecture

E.g. door lock / unlock, immobilizer, preheating, remote charging, charging presets, remote reset of headunit ..

Harmonized VIN eligibility and vehicles activation APIs + consent management

The so far proposed recommendations address only some fundamental data issues, more can be done to improve the ecosystem this industry needs

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“Agreed best practice” approach enables revenue generation, innovation and customer satisfaction

OEM

- ✓ **collect and provide** the right data for their customers’ needs, more efficiently (lower bandwidth and cloud storage)
- ✓ Safeguard future **vehicle sales** (customers demand data)
- ✓ **lower product development** and **integration costs** with standardized solutions

Fleet Customer

- ✓ get access to similar **data / frequency across brands**
- ✓ **improve** their **productivity, safety, sustainability, regulatory compliance** and **grow their business**
- ✓ **Interoperability** with other systems, beyond Fleet Telematics (e.g. ins, roadside assistance, fuel card, …)

TSP

- ✓ more pertinent insights and services for (the whole) fleet with the right data
- ✓ **Less investment** in API integration
- ✓ **New product** creation based on easy shareable data
- ✓ **Easier support** leads to better customer experience

easier for any prospective partner to **join the ecosystem** and to integrate with and consume data - robust **data marketplace** for all parties

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What can you do now?

1. **Inform yourself**

   OEM enabled Fleet Management Data Recommendations

   defined set of specific vehicle signals

2. **Contribute and provide feedback**

   COVESA Commercial Vehicle Birds of a Feather (BoF)

   Provide feedback to the COVESA BoF or directly to Ted Guild <edwardguild@geotab.com>

3. **Implement and endorse recommended best practice**

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Providing vehicle operators with easy, controlled, and standardized access to their vehicle data, builds trust with the fleet customer and at the same time provides advantages for vehicle manufacturers and owners alike. Only with the foundation of reliable standards can high-quality processes be implemented in a scalable manner.

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