COVESA – VSS – TESTABLE SPECIFICATION.

PROBLEM STATEMENT , DISCUSSION, CALL TO ACTION.

BMW AG

ABSTRACT: HARMONIZATION OF VSS BEHAVIOUR BY CERTIFICATION.

Abstract:

At BMW we face the situation, that applications can not rely on VSS behaviour over all derivatives.

The root cause for this is the different behaviour of the underlying E/E system.

We have ideas how to solve these "data quality issues" for BMW. But want to share them in order to strengthen the COVESA standard and generate a long term profit for all contributors.

Our goal is to discover the COVESA opinion and find partners accross industries to push a broad realization with the community.

PROBLEM STATEMENT: DATA CORRECTNESS.

1 ⟩ COVESA GOAL:

- standardization of vehicle data for common use.
- enable applications to run their business on VSS data

2 ⟩ OUR INTERPRETATION:

- VSS data shall show a consistent behaviour.
- applications can develop one code that runs using VSS data of all kind of vehicles.

3 ⟩ OBSERVED PROBLEM:

- Existing Implementations are not guaranteeing consistent behavior of VSS data quality.
- Current implementations do not supply always correct data.
- Our observation: behavior of VSS attributes varies across derivatives.

⟹ Data correctness and behavior is not specified and enforced by standard inside VSS.

⟩ Shall a behavioral specification come with the standard?
What would be the best approach to introduce a specification?

# ROOT CAUSE OF THE PROBLEM: DETAILS OF DATA LANDSCAPE.

Current Automotive Data Landscape.

favored long term goal.

1. Client applications may have to process differences in attribute behavior.

2. Cloud systems fix differences at many allocations to offer VSS format and behavior.

3. Car fleet sends E/E specific data to cloud systems

4. E/E systems are uniquely different from each other.

5. Car functions process their data depending on surrounding E/E system individualities.
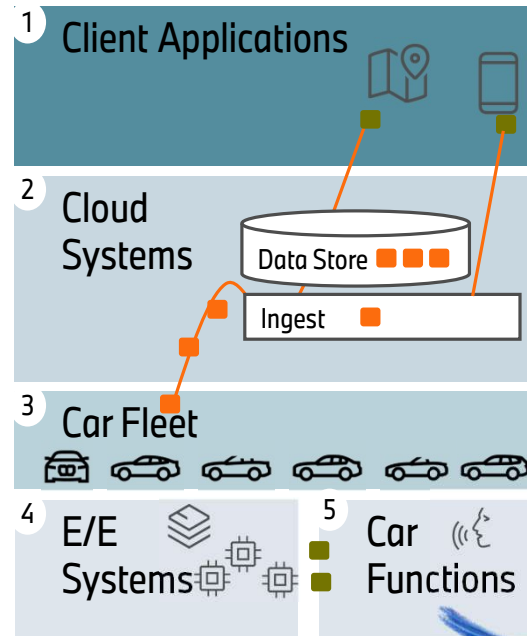
1. Behavior of VSS data attribute is similar and predictable for applications and cloud systems

2. All fleet sends the same data format and behavior.

3. Complexity of each E/E system is encapsulated in car.
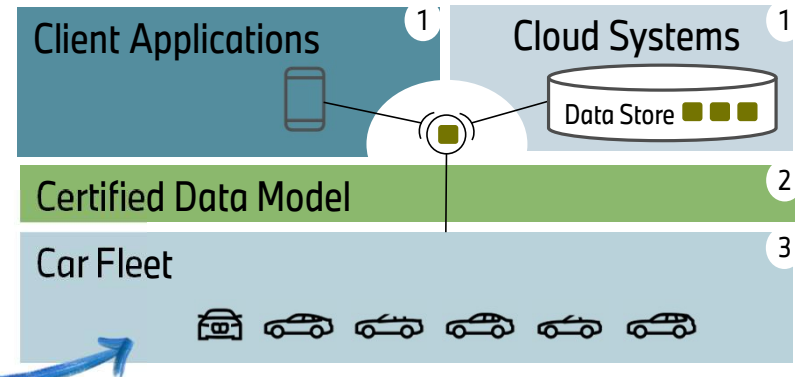
▶ What can a standard offer to help automotive industry to apply the same reliable behaviour?

SOLUTION IDEA: VSS CERTIFICATION BY COMMON TEST SUITE.

Targets

Solution

Visualization

Transparency about Data Quality and behaviour.

Adapt Board Net to VSS

Independent Board Net development.

Applications: Know on what VSS behaviour they can rely / not rely.

Certified VSS Access

VSS Compatibility Test Suite: Automated Test Execution.

Every VSS Attribute that passes all VSS test cases is VSS-certified.

custom✔	custom✔	custom✘	custom✔
custom✔	VSS✘	custom✘	custom✔
VSS✔	VSS✔	custom✘	custom✔
VSS✔	VSS✘	custom✘	VSS✘
VSS✔	VSS✔	VSS✔	VSS✔

Governed VSS Data Model

Adaption of E/E System

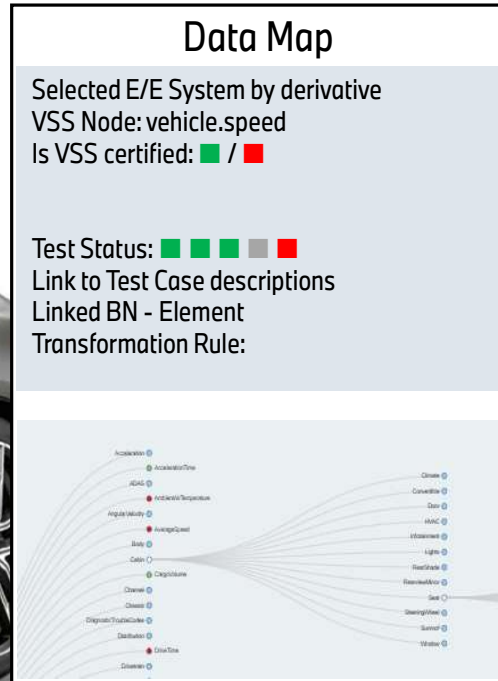Connecting BNE to VSS: and respecting independent development of both

Board Net [BNE]

Data Map

Selected E/E System by derivative
VSS Node: vehicle.speed
Is VSS certified: ■ / ■

Test Status: ■ ■ ■ ■ ■
Link to Test Case descriptions
Linked BN - Element
Transformation Rule:

legend ⬭ Data Model Attribute   ▬ BN tranformation   ▬ Test Case

David Matzek

DISCUSSION.

From …	… to
1 Quick definition of VSS Attributes…	… substantiated VSS definition, that can be tested.
2 Applications detect failures…	… test automation certifies standard behavior.
3 Ontological description…	… requirement- and test-based data model.
4 Dodgy data behaviour…	… applications rely on VSS standard behaviour.

▶ Is the creation of a testable behaviour specification in scope of COVESA VSS?

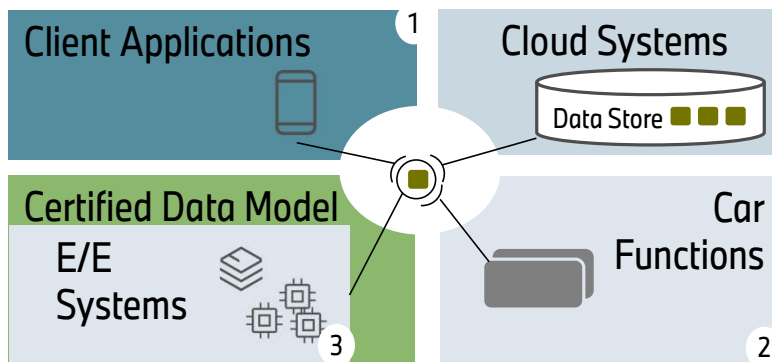▶ Who is interested in participating developing a testable standard?

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OUTLOOK INTO THE FUTURE: VSS FOR CAR APPLICATIONS.

Acceleration for car development

1. Client applications and cloud systems will profit from governed, reliable data model.

2. Car functions can use the VSS data model (under conditions).

3. E/E system components could provide VSS-attributes and do a certification for them. (e.g. AUTOSAR components could provide certified VSS-attributes)

> ▶ A standardized and governed database, developed and used by many could significantly speed up time to market and facilitate continuous integration in automotive industry.