



# COMMON VEHICLE INTERFACE INITIATIVE

for the automotive industry

## Introduction

---

Is it time to discuss the implication of having a common language to describe data and function interaction between *all* automotive companies and vehicle brands?

Is it time to commit to selected technologies, including open W3C protocols, to build *interoperable* solutions for vehicle data and service invocation?

Is it finally time to define the **industry-wide standard vehicle data model** ...and then do the same for service APIs?

The **Common Vehicle Interface Initiative (CVII)** was created because the industry answered yes to these questions.

Current initiatives in the area of data standards have mostly been individual projects that define data within a particular area, hoping that the data and the unique underlying model will become a de facto standard *on its own*, or being content with addressing only a particular part of the data landscape.

CVII explicitly reuses results from projects that have ended and seeks to have necessary conversations with still ongoing automotive projects that deal with the creation of data and service models. CVII is set up to seek alignment and move towards a unified industry-wide model.

## Mission

---

- Counteract fragmentation of data standards in the automotive industry so that it may achieve the full potential of vehicle data-driven opportunities.
- Establish an industry-common (meta-)model for describing many types of vehicle data.
- Establish a standard catalog of data and function-interface items across many functional domains. Standard catalog(s) define data/functions that are accessible with identical name and meaning from multiple vehicle brands.
- Promote the use of a single common data and interface standard throughout all parts of vehicle systems, for both the common and for extended/proprietary catalogs.

- Define and develop a preferred technology stack that executes the handling of data both in-vehicle, in the vehicle-to-cloud boundary, and in-cloud applications.

## What's different?

---

CVII is not only another technology proposal to either adopt or reject.

It is an *initiative*, spearheaded by W3C and GENIVI. The initiative is a discussion with other industry activities to actually reach alignment towards the goal of a fully shared model. It takes the necessary steps to consider work already done in the definition of multiple vehicle data models and catalogs. The outreach is intended to let many projects influence the end result.

## Benefits

---

The Common Vehicle Interface Initiative (CVII) is happening now, because automotive and cloud trends require immediate action.

These trends are a result of the needs of car manufacturer OEMs, many who have a crisis of expensive and slow development with difficulty to move at the pace of innovation, as well as from new and outside forces resulting from the growing reach and scope of vehicle-related technology:

- Development of **common infrastructure** to support **IoT** and **smart cities** that require a common way of communicating.
- A vibrant **3rd-party developer ecosystem** needs common APIs for all brands (compare the **success of Android** because of its App standard)
- The vehicle data market can only **reach its potential by removing fragmentation** and integration problems. Interoperability is the basis for fast growth in the vehicle data cloud market, and it accelerates innovation of the important (end-user) functions.
- A standard model + catalog of data and interfaces can be a **de facto common exchange language**, not only between technical systems but between humans and organizations. Using this, buyers and sellers in the entire supply chain can plan projects more accurately, increase use of off-the-shelf tech, and make development costs more predictable.

## Value proposition

---

### For Cloud-technology companies

- Reduced industry integration issues leading to a quicker growing data market
- Development of a vibrant technology stack to build solutions on
- Commonality of solutions to reduce the need for unique technologies for every customer

### For vehicle OEMs

- Software behavior can be defined by the data and functions they produce and consume. The CVII aims to promote de facto standards in both areas.
- Standard data and function catalogs can define commodity functionality for basic automotive parts, so that efforts can be spent on innovation.
- Shared models make up a formal language to describe data and functions including proprietary extensions. This common language is a more efficient way to define requirements for (sub) systems between OEM-Tier1 and between departments and teams.
- Joint development of a vibrant technology stack for base technology (e.g. data collection, transfer, and analysis, and inter-system function invocation)
- The created ecosystem increases 3rd-party function innovations that can be incorporated into OEM products.

### For Tier-1 Suppliers

- All requirements on data and functions described in an industry-common language
- Opportunity to develop a reusable technology portfolio by using standard, data and function catalogs
- Easier matching of incoming OEM requirements to what exists in supplier portfolio = more accurate project plans and quotations

### For Software Technology and Solutions Providers

- Develop software components that fit into emerging software platforms from OEMs and Tier-1
- Reach multiple OEMs with common solutions

### For Startups

- Create innovations on top of existing technologies and APIs and get the scale of deployment on multiple car brands (compare Android apps)
- Take advantage of the “common language” for buyer-supplier relationships described above
- Reach multiple OEMs with common solutions

## Approach

---

- **Seek alignment** between relevant alternatives from both existing and completed projects, in which **data/service catalogs and models** have been defined.
- Discuss with all company stakeholders, incl. OEMs and the supplier ecosystem, about *their* reality. What is achievable in the short term vs. long term. Where do **bridge solutions** or **translations** need to be applied? What is the **priority and outlook** for each company?
- Find, define, and develop a **Technology Stack**. It provides readily available, robust software *implementations* to transfer data and invoke functions, based on the common models.
- Continue improvement of the current **basic proposal**, one option of an agreed common rule-set (metamodel) for data and services, i.e. **Vehicle Signal Specification / VSS**, and **Vehicle Service Catalog / VSC**.
- Continue growth and improvement of a **standard catalog** of standard vehicle data and service/function catalogs.
- Investigate **extension to the truck/fleet industry** since the concepts are equally applicable

## Project status and next activities

---

- Active since 2020-Q2 with positive feedback from those who have been engaged so far.
- Online content [is available](#) for [OEM-led panel discussion](#), [CVII introductions](#), [webinars](#) and [workshops](#) and a comprehensive [Community Slide Deck](#).
- Continuous outreach to related industry projects inviting them to join the *alignment activity*
- Continued development of Vehicle Service Specification (VSS) and Vehicle Service Catalog (VSC) in open projects
- Next-step workshop preliminary date is February 18, 2021 at EU (afternoon/evening) and US (morning) friendly time.

## Contacts

---

- Ted Guild, Automotive Lead, W3C <[ted@w3.org](mailto:ted@w3.org)>
- Gunnar Andersson, Technical Lead, GENIVI Alliance <[gandersson@genivi.org](mailto:gandersson@genivi.org)>