# Vehicle Signal Specification

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Analysts estimate there are 100 million connected vehicles on the road worldwide today, with an expected 400 million by 2025. With each car capable of generating terabytes of data a day, the future is here. Data standards are imperative to efficiently reduce integration costs and complexity allowing focus on business value.

COVESA's Vehicle Signal Specification 4.0 (VSS) is a common approach for describing vehicle data. It is a widely adopted, developer friendly, extensible data model and catalog with industry supported tooling. VSS provides a common understanding of vehicle data across the connected vehicle ecosystem in- and out-of-vehicle. This improves interoperability and eases integration which ultimately saves time and cost, allowing companies to focus on business value creation and differentiating solutions.

VSS is openly developed by COVESA members with input from OEMs, suppliers, industry experts and standards development organizations including AUTOSAR and W3C. This global OEM-led dialog has resulted in joint development and adoption of common vehicle data models, access protocols and standard interfaces.
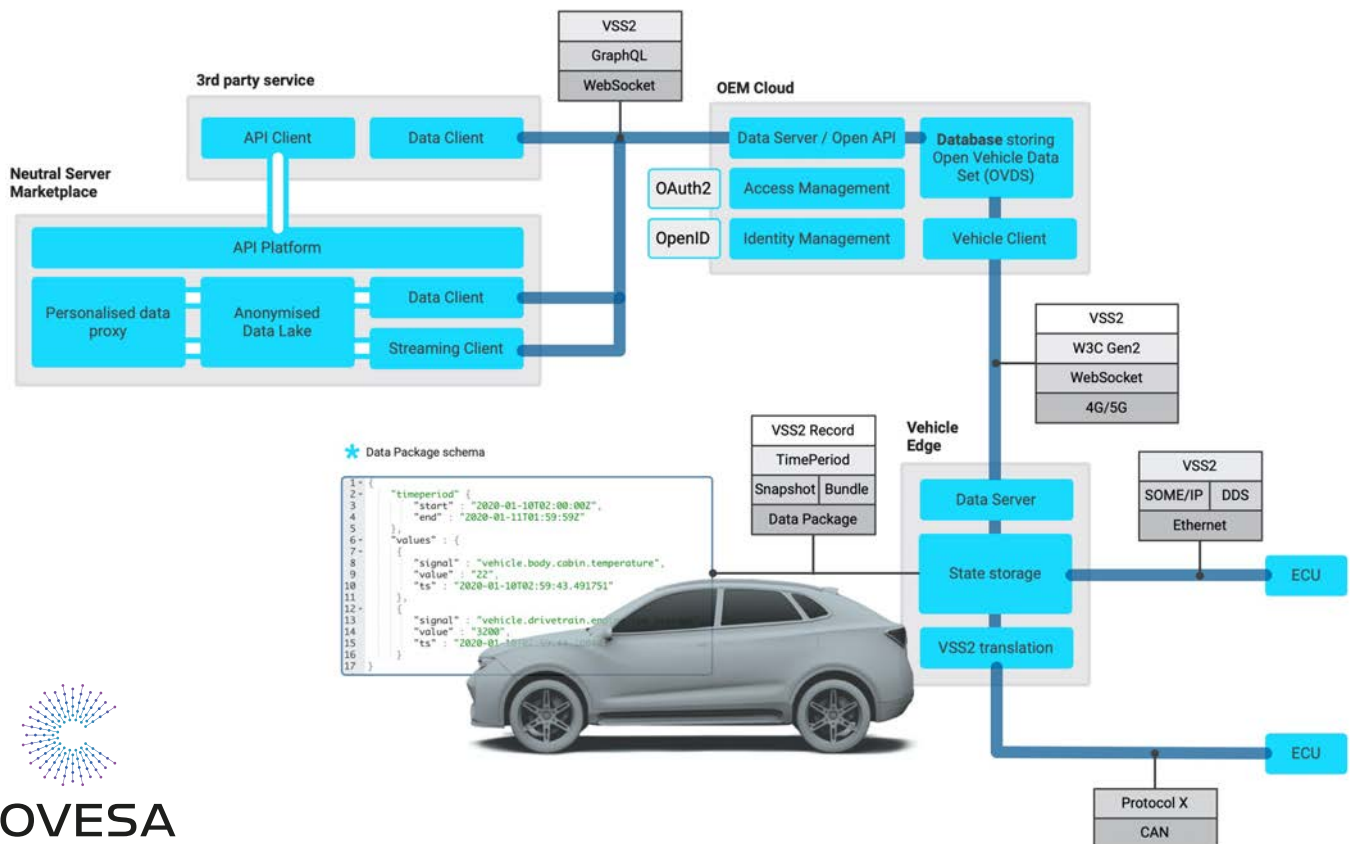
Why VSS?

Today's connected vehicles have multiple networks with hundreds of controllers and sensors producing thousands of individual data elements for operating, conveying state of, or otherwise providing information about a vehicle. An average vehicle generates terabytes of data a day and is capable of transmitting and receiving data to and from the cloud at high speeds by powerful edge computing devices over fast cellular networks.

VSS holds much promise for the creation of new business value and data-enabled service models. However, most of this data currently lives and operates in organizational silos and it does not conform to a common, adopted standard. Once the data crosses organizational boundaries, complex integration and interoperability challenges arise due to lack of common definition and understanding of the data. This costs an incredible amount of time and money, degrades quality and limits integration of connected vehicles in adjacent industries.

To reduce costs, enable scale, and realize new, compelling features, services and business models, these silos must be torn down and replaced with open standards that enable the industry to collaborate more easily and exchange data more efficiently. This will lead to shared understanding of the data across the connected vehicle value chain and enable new business opportunities.

Key Advantages

Enables Scalability

- Vertical integration and scaling into the cloud
- Collaboration and interchange of software & tooling
- Eases data aggregation and cleaning
- Faster large-scale analytics
- Application and code reuse

Faster Time to Market

- Faster product iteration
- Highly portable solutions
- Ease test and evaluation of new software
- Reduce vendor lock-in
- Enables on-demand real-time consumer personalization

Support Future Business

- Open-source collaboration leads to partnerships
- Big tech and cloud providers create new opportunities
- Increased access to data lead to innovation

Innovation

- Concepts and ideas driven by merit
- Increased developer and entrepreneur access
- Enables focus from different industries
- Facilitates exploration to support downstream adoption for commercial deployment

Why COVESA?

COVESA is a mature, open, collaborative and impactful technology alliance focused on accelerating the full potential of connected vehicles. COVESA members collaborate to deliver the software-defined vehicle's foundational data backbone. As a result, we have the most widely adopted, common approach for describing data and interfaces in the vehicle, from the edge to the cloud. This industry-driven approach has enabled innovation and integration across multiple industries and vehicle domains. The COVESA community is committed to open technology development in-vehicle and in-cloud:

- Methodologies for modeling and cataloging data and services
- Connected vehicle architectures
- Common platforms, interfaces, and integration
- Tooling support

Learn more about VSS and how to participate in COVESA technical projects on the **COVESA Wiki**.

Organizations interested in joining the Alliance as active members can visit **covesa.global/join**.

COVESA

Accelerating the future of connected vehicles