

# Standardization Approaches for Vehicle Data Specifications

Extension and convergence of vehicle data standards

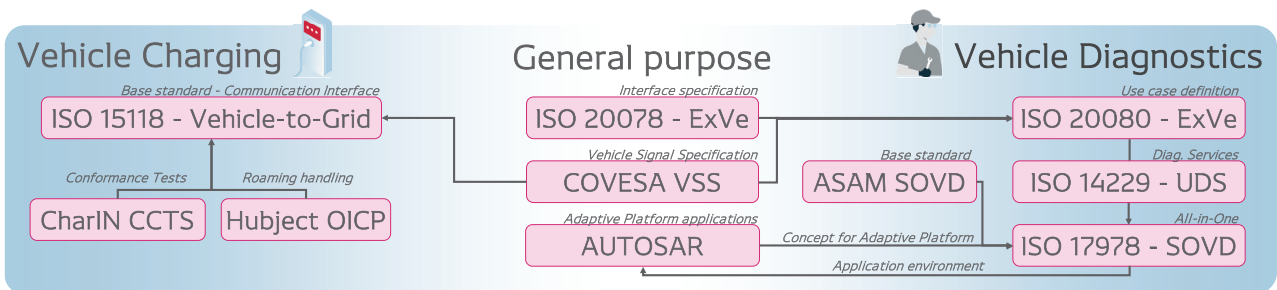
## Highlights

- Interoperable data-based services by a combination of de-jure and de-facto standards
- Two compelling case studies: 1) electric vehicle charging and 2) vehicle diagnostics

## Configuration

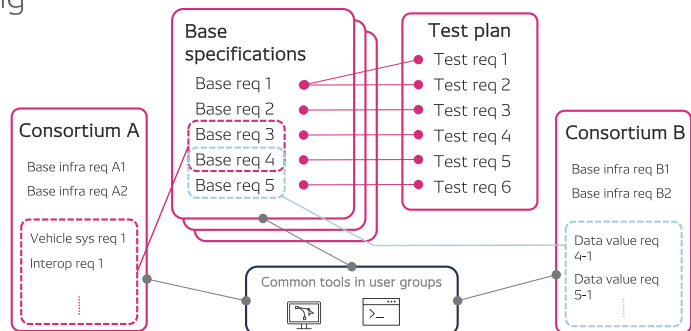
Network of international de-jure and de-facto standards

- Standardization and harmonization in vehicle data specifications plays a pivotal role in ensuring that different vehicle systems and data sources can communicate and exchange information, ultimately allowing interoperability of data-based services.
- Formal de-jure standards e.g., by ISO and CEN are complemented with industry standards e.g., by ASAM, CharIN and COVESA and enhanced by other means e.g., data and test specifications as well as application frameworks.



Separate specifications, common tooling

- Supplementary data specifications can be updated regularly and easily due to the clear separation towards stable base standards.
- Commonly used digital tools e.g., schema validators and API visualizations, guide and streamline the complex process of data specification and create a interoperable environment.



## Result



**Inside-out standardization:** Focus on stable base standards and supplement them by data-oriented specifications for flexible updates



**Multi-vendor interoperability:** De-facto test specifications increase the velocity to achieve interoperability of new implementations