

COMMON SEMANTIC APPROACHES IN & BEYOND VEHICLES



RAINER LANG
CHIEF DIGITAL OFFICE MOBILITY



DR. CHRISTIAN KERSTAN
TECHNICAL MOBILITY STRATEGIES

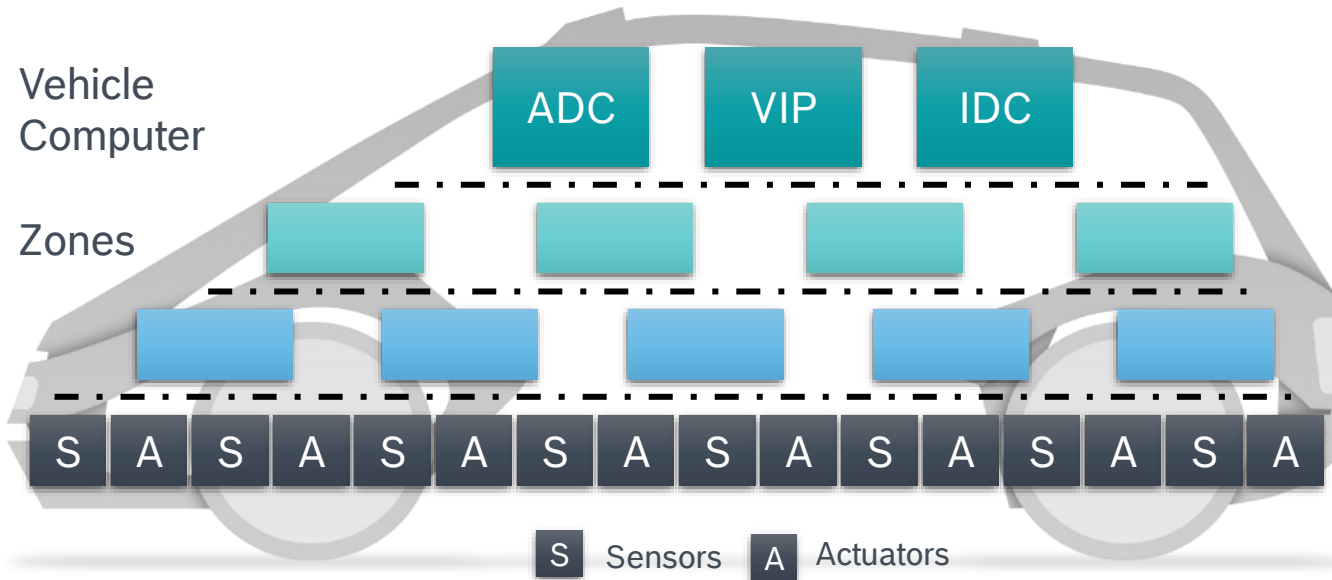
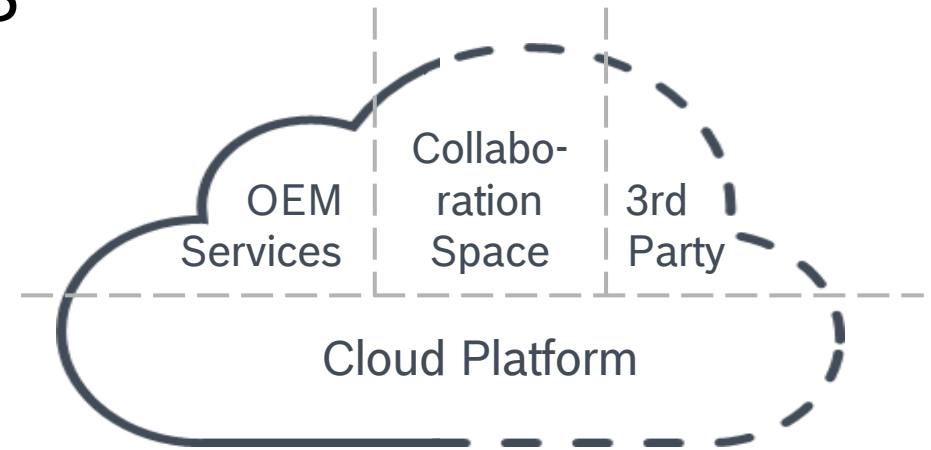
THE JOURNEY CONTINUES



COMMON SEMANTIC APPROACHES

SIGNALS AND SERVICES

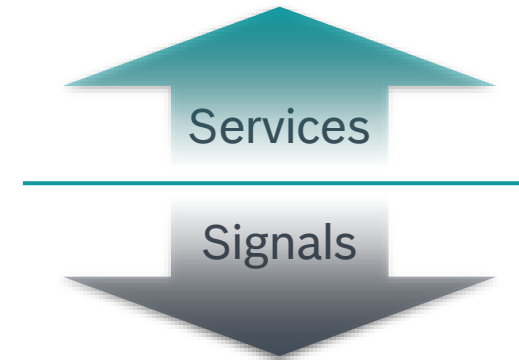
- > MODERN E/E ARCHITECTURES RELY ON SERVICES
 - > SERVICES SUPPORTS ABSTRACTION
 - > SIGNALS / DATA BECOME INFORMATION



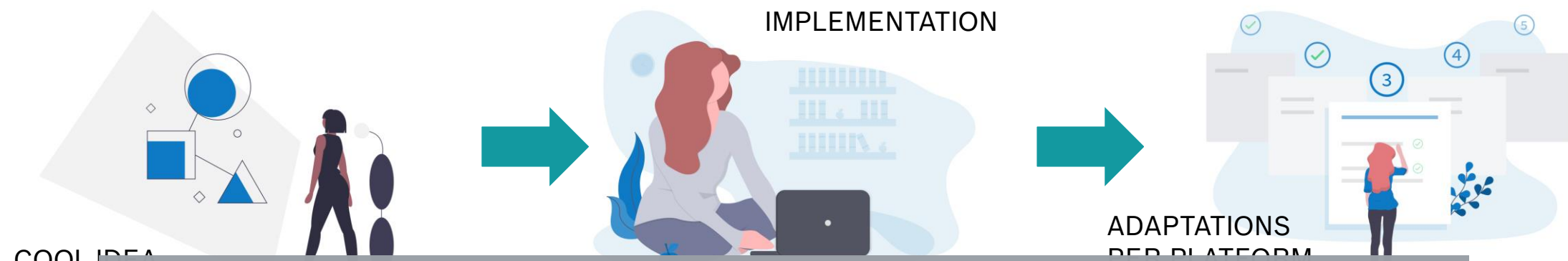
Service and data oriented

Signal oriented

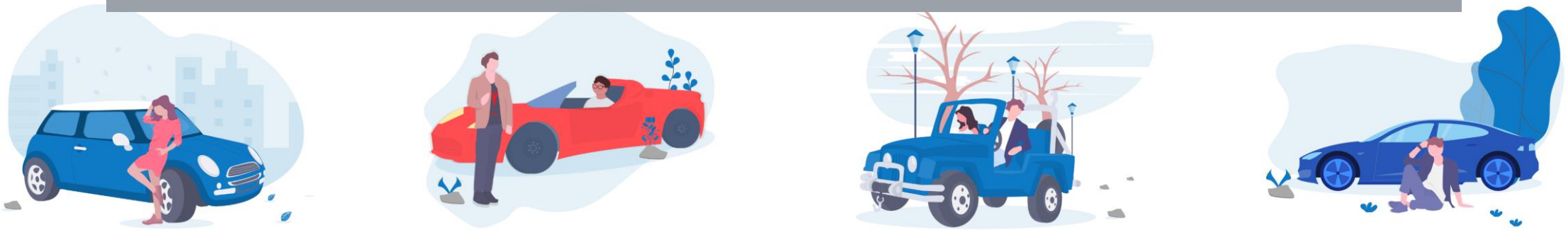
Proprietary



COMMON SEMANTIC APPROACHES COMMON VEHICLE INTERFACES ENABLES SCALABILITY



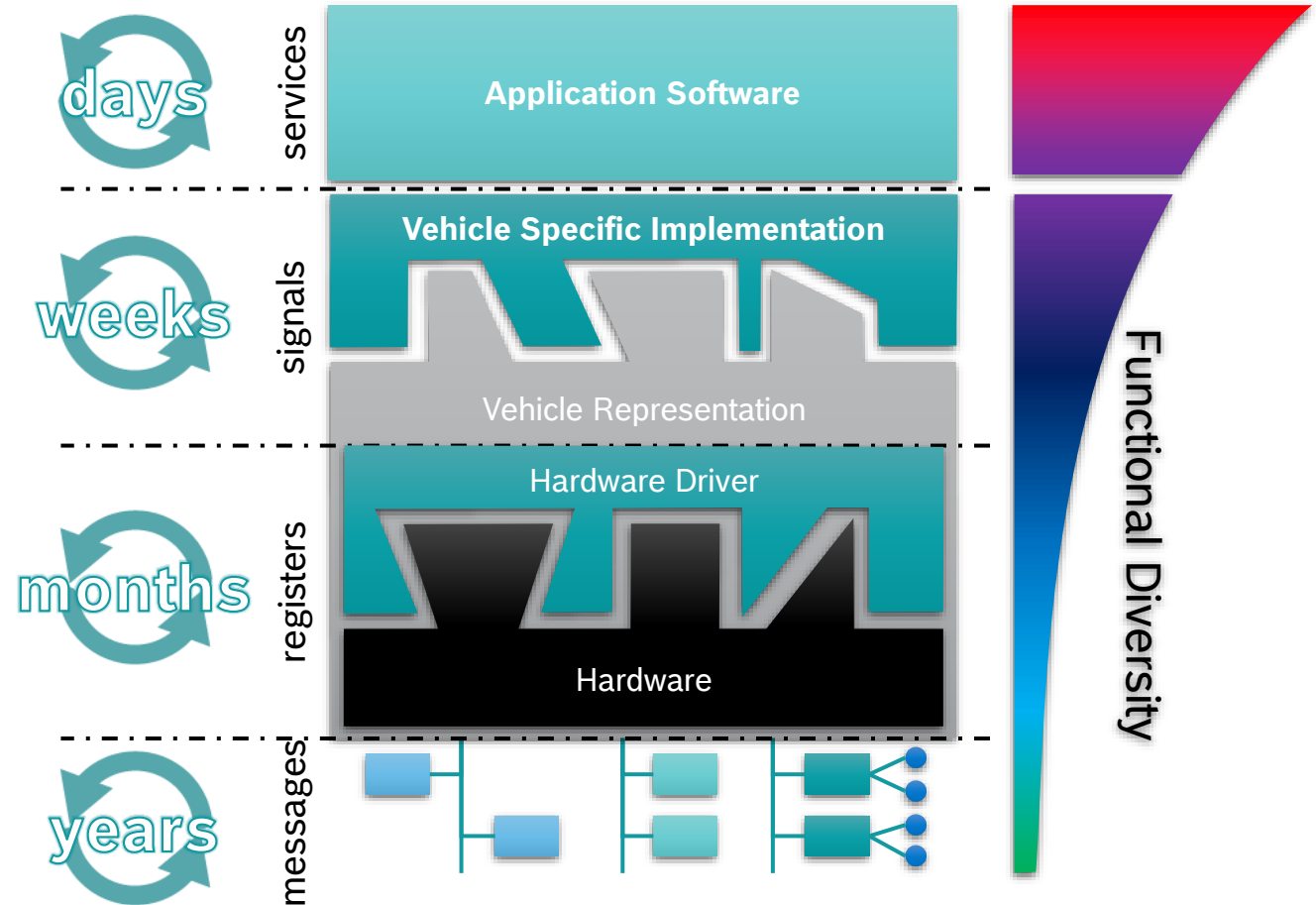
BUSINESS DOES NOT SCALE



COMMON SEMANTIC APPROACHES

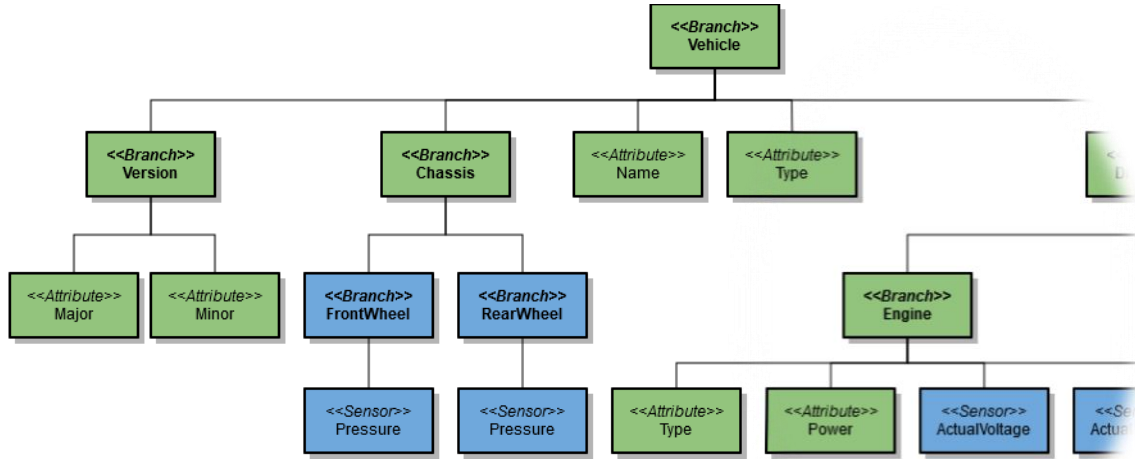
DECOUPLING OF DEVELOPMENT & DEPLOYMENT CYCLES

- › Decoupling of implementation
- › Decoupling of deployment cycles
- › Service development does not require knowledge of all future functionality
- › New business models possible due to independent deployment



COMMON SEMANTIC APPROACHES

COMMON VEHICLE INTERFACE INITIATIVE

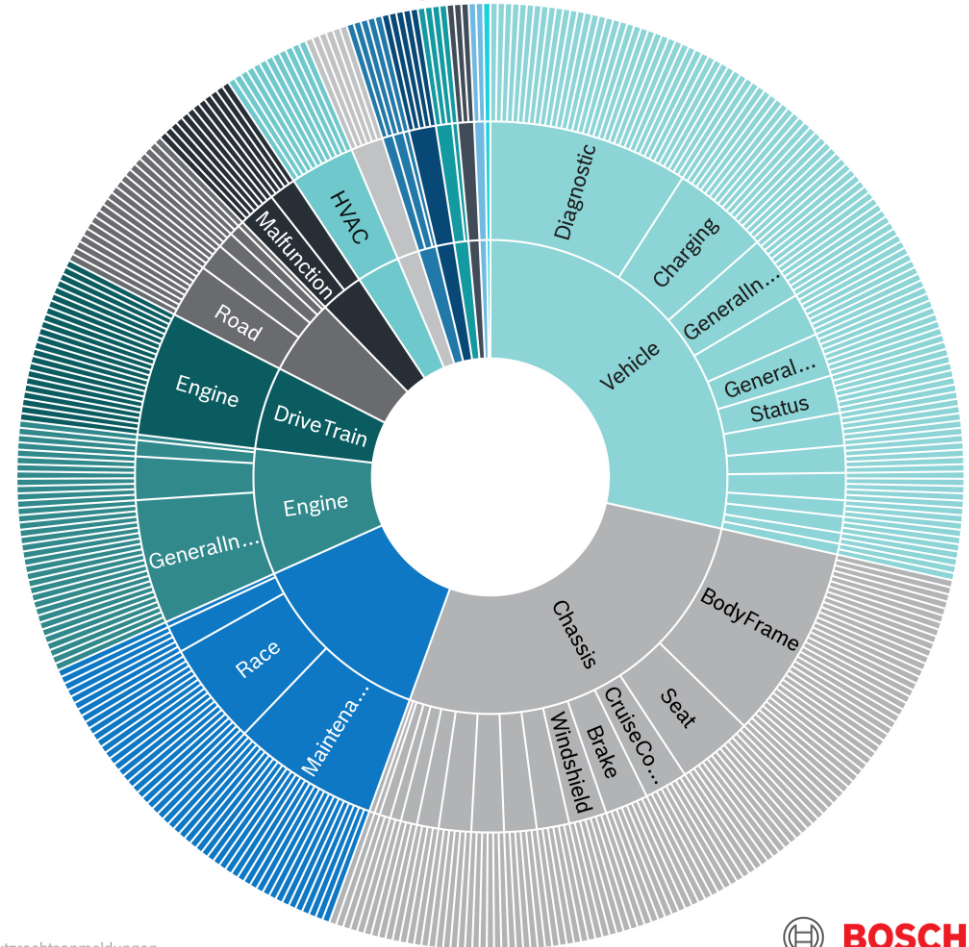


Specific data model = Vehicle + Profile + Extension
 (e.g. ebike) (e.g. EV)



Cooperate on standards,
 compete on implementation.

differentiating



DIGITAL TWIN CONCEPTS APPLIED TO VEHICLE DATA

WE ARE WORKING ON THE DATA DRIVEN LIFECYCLE

Closing the loop ...



As designed



As produced



As operated

Value Stream



Data integration across product lifecycle, enables **Data Driven Business and Operations**



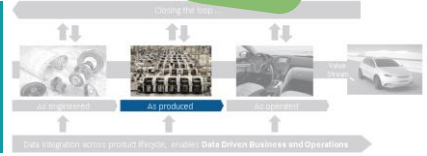
DIGITAL TWIN CONCEPTS APPLIED TO VEHICLE DATA

CLOSING THE LOOP NEEDS OPEN STANDARDS & PARTNERING

DATA AS PRODUCED – EXAMPLE: OPEN MANUFACTURING PLATFORM (OMP)



> BOSCH CONTINUES CONTRIBUTING TO OPEN SOURCE ACTIVITIES WITHIN THE INDUSTRY 4.0 ECOSYSTEM.

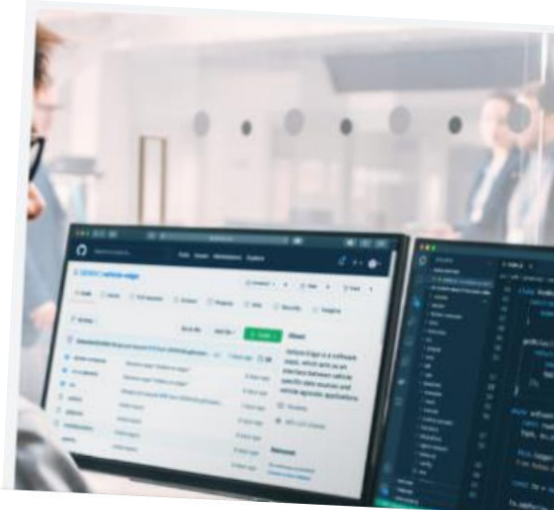


COMMON SEMANTIC APPROACHES

PARTNERING & OPEN SOURCE

Bosch teams up with Microsoft to develop software-defined vehicle platform for seamless integration between cars and cloud

collect download share



#DEVELOPER

Bosch contributes software to the Common Vehicle Interface Initiative

Gain insights into the open source contribution of Bosch to the Common Vehicle Interface Initiative (CVII) of

Bosch contributes Vehicle Edge and IoT Event Analytics to the Common Vehicle Interface Initiative (CVII)

Erstellt von Sebastian Schildt, zuletzt geändert von Gunnar Andersson am Mär 26, 2021

The fundamental shift from a hardware-based to a software-centric IoT device on wheels requires a rethink to address customer needs. Today, customer value is driven by software features such as infotainment as well as driver assistance and intelligent connectivity features rather than by mechanical functions. This presents a towering challenge, as no company is going to be able to transform the automotive industry on its own. Companies have to collaborate within the automotive ecosystem and build synergies with partners. This is why we believe that open standards and open source, as a model for collaborative development, offer a faster path towards new and rapid innovations.

As part of the CVII, Bosch has contributed and is working on the Vehicle Edge and IoT Event Analytics open-source projects.

IoT Event Analytics is an efficient stream processing and complex event processing (CEP) engine based on a publish/subscribe system. It can run inside a vehicle to (pre)process data and in the backend. IoT Event Analytics platform already includes SDKs for Node.js, Python, and CPP to implement "talents" extend and use the platform. A Visual Studio Code plugin helps you to get productive fast.

The **Vehicle Edge** is a software stack for vehicle computers. It acts as a bridge to signals and services from field buses and other ECUs. The Vehicle Edge stack combines various software components and is built around the IoT Event Analytics platform. Vehicle signals are abstracted using the GENIVI VSS data model. These VSS signals are made available to vehicle-agnostic applications running in the IoT Event Analytics platform via the KUKSA.val server implementing the W3C VISS standard.

Bosch supports the GENIVI and CVII goal of establishing an industry-wide common vehicle data language and invites the open source community to use and further develop the **Vehicle Edge** and **IoT Event Analytics**. In the CVII we look forward to sharing best practices across the industry and to further fruitful discussions and software contributions.

Join the CVII by participating in any of the active subprojects.

For further information regarding the **IoT Event Analytics** or **Vehicle Edge** you can contact [Lars-Erich-Kiefer](#), [Christian Kerstan](#) or [Sebastian Schildt](#)

COMMON SEMANTIC APPROACHES

OUR COMMON GOAL



TOGETHER

SHARE OUR **LOVE** FOR
OPEN SOURCES AND
STANDARDS AND BE PART
OF THIS JOURNEY.



TRANSPARENT

SPREAD THE
APPROACHES WITHIN OUR
NETWORK AND **BEYOND**.



TRANSFORMATIVE

LIVE THE
TRANSFORMATION AND
THE AGILE WAY OF
**MOVING THINGS
FORWARD**.

BE PART OF THE JOURNEY. BE PART OF THE LIFECYCLE.



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THANK YOU.