LET'S CO-CREATE THE

Software Defined Vehicle

Daniel Krippner

Enterprise Architect Bosch Connected Mobility Solutions

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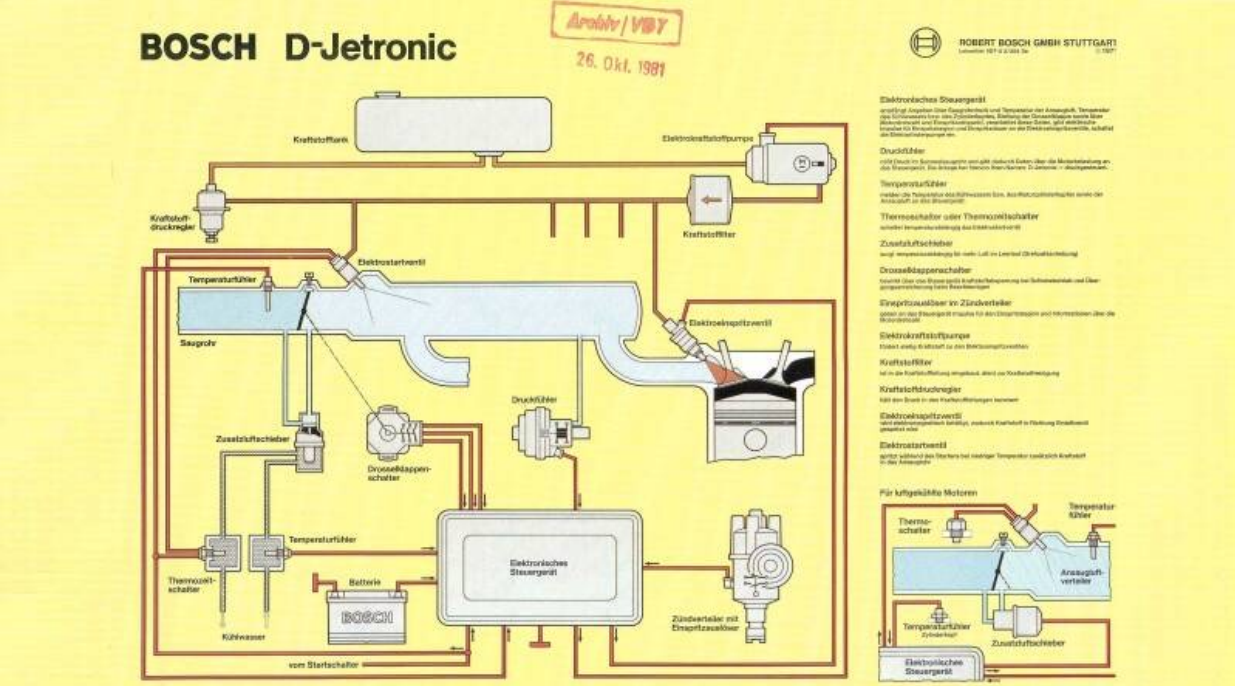
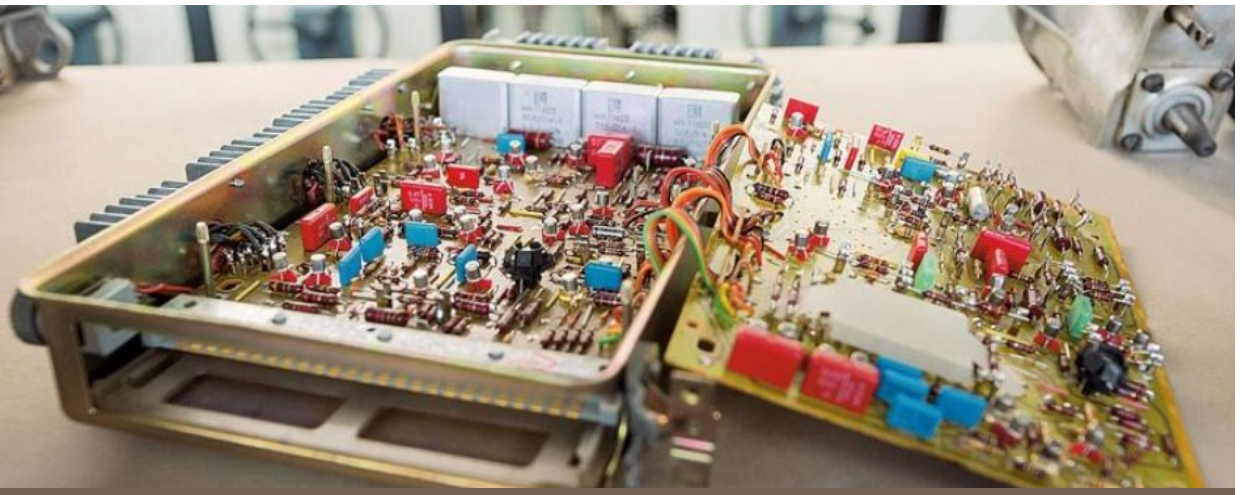


Wall chart from 1971. This chart describes how D-Jetronic works.



Images taken from A backbone of Automotive Electronics - 50 years of Bosch gasoline injection Jetronic | Bosch Global

How it started…

First electronic injection controller in 1969

01

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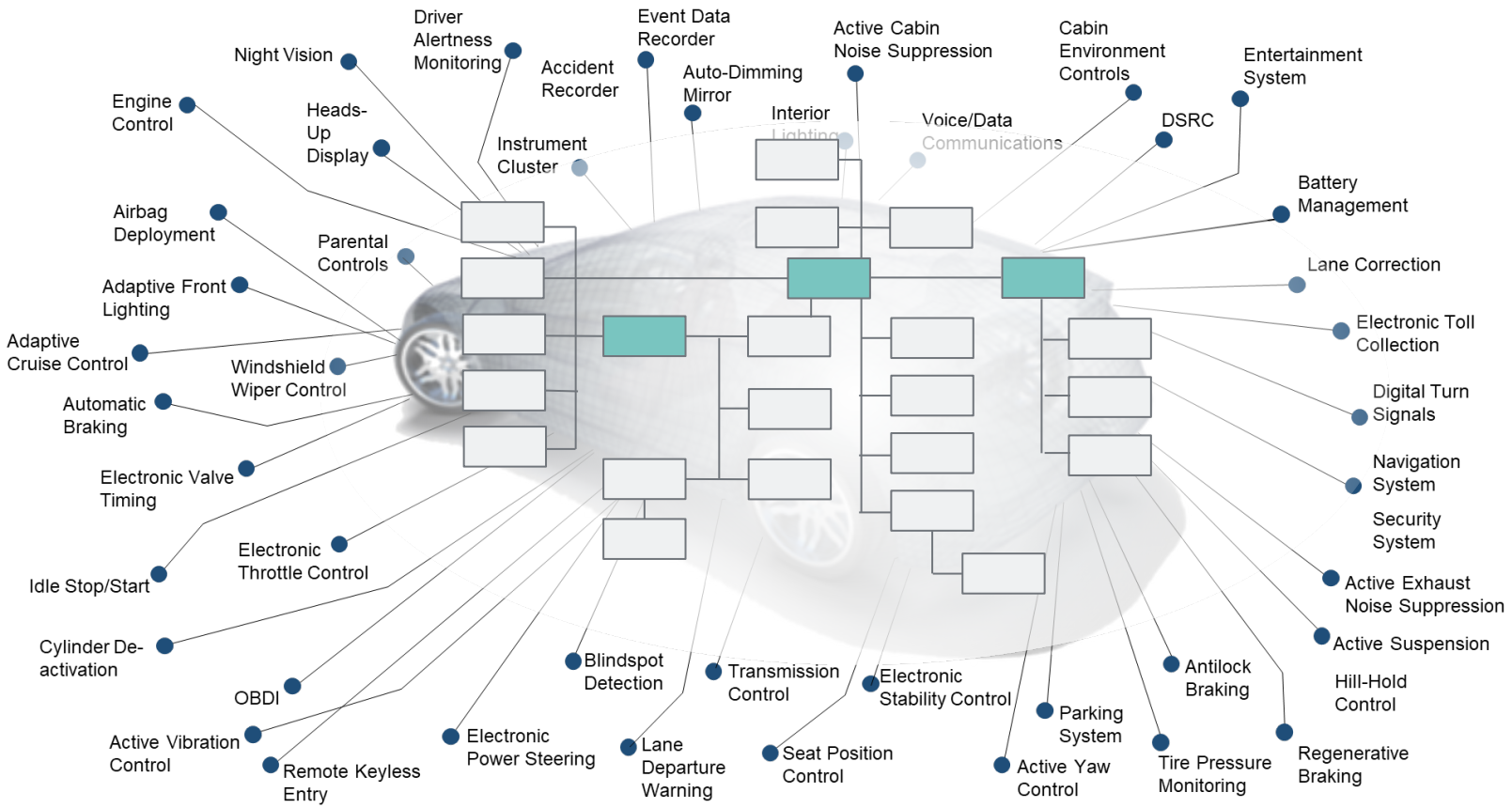

How it's going

Many dozens of networked controllers, many thousands of functions

02

Image/medley courtesy of and reused with permission from Blackberry/QNX

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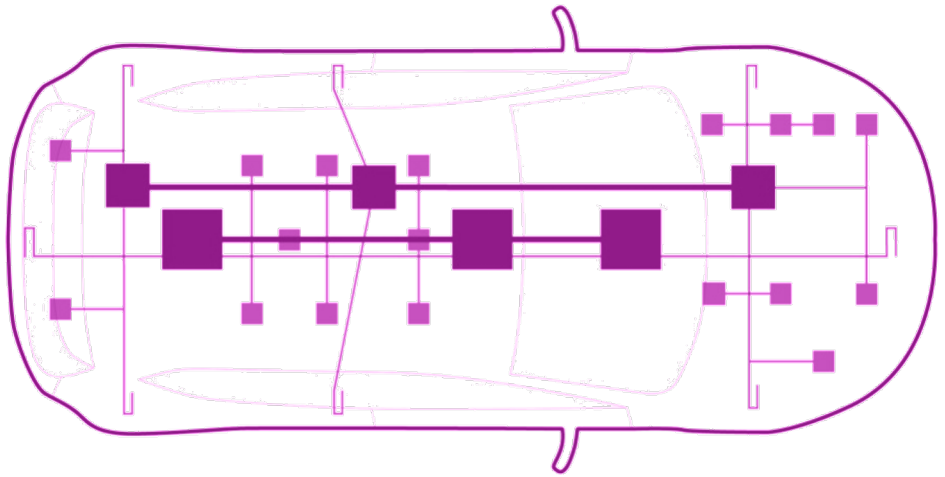

What's next?

Centralized compute architectures

03

Focus on few centralized, powerful vehicle computers…

… that implement & integrate higher-level vehicle functions

General shift from mechanical complexity to software complexity

→ **Software becomes the dominant asset in the product value chain**

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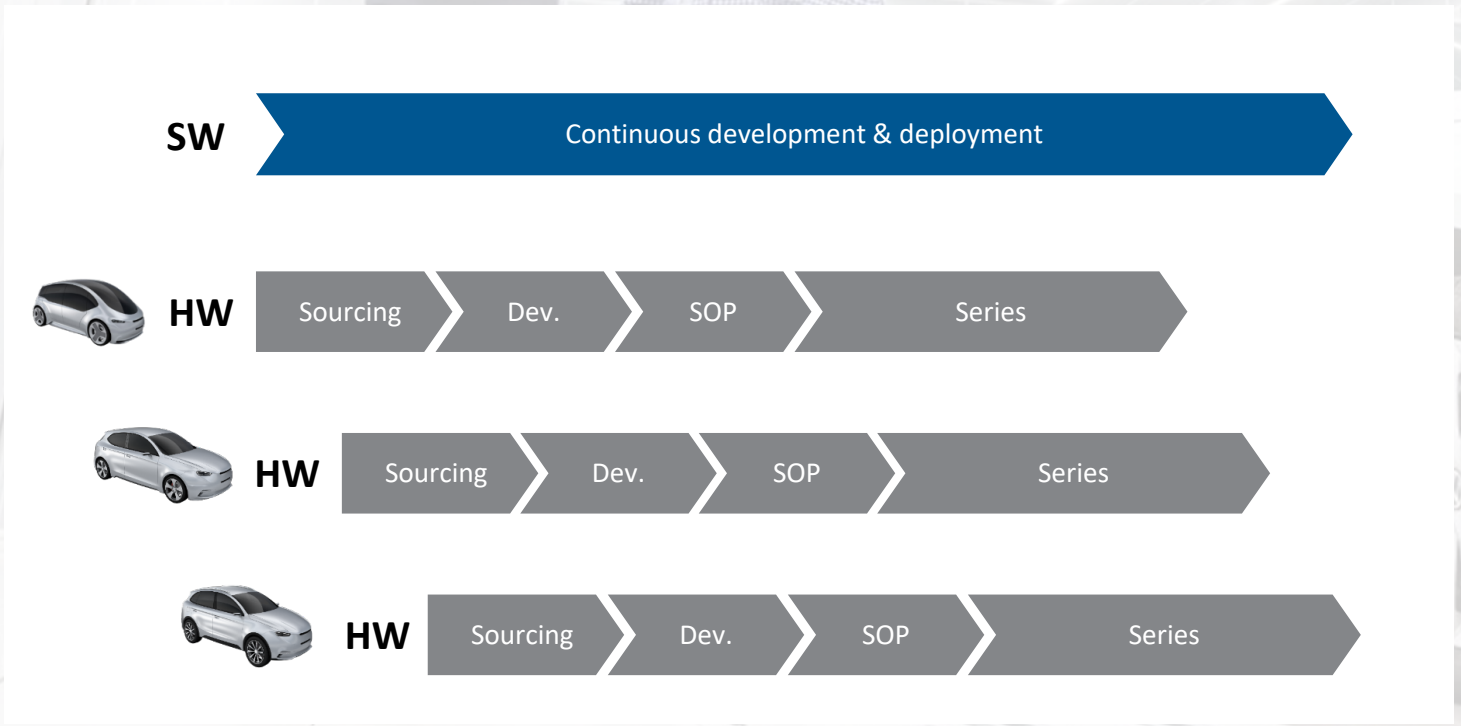
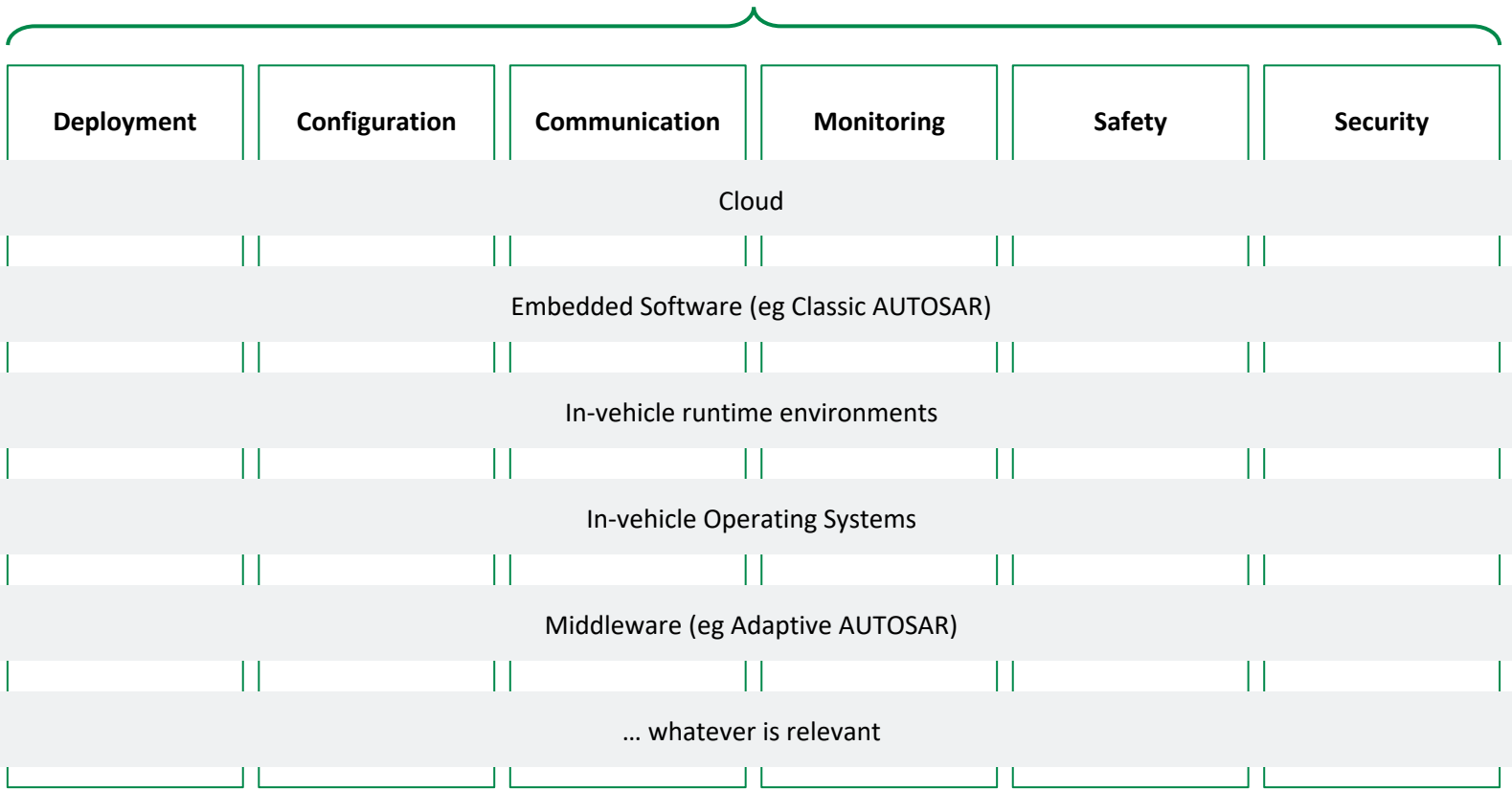
De-coupling of software and hardware

Paradigm shift in the automotive industry

04



vehicle-as-code, unified programming model, lifecycle management & DevOps



Software Defined Vehicle

: a Capability Matrix for

05

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18.02.2021 | Press release | #Connected mobility

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

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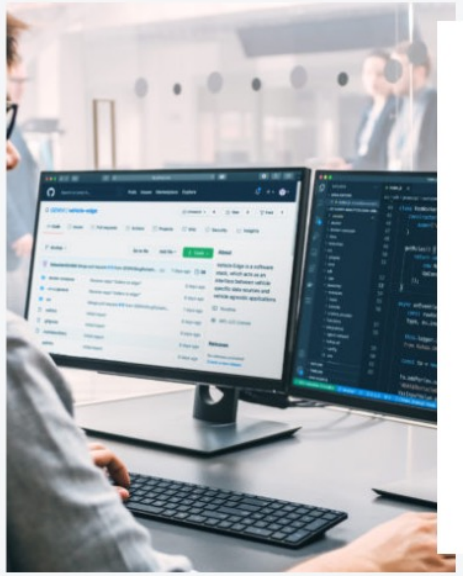

#DEVELOPER

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 GENIVI/W3C.

SEBASTIAN SCHILDT 2 MIN

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Microsoft

Bosch & Microsoft team up to **start** a software revolution in the automotive industry…

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

…but we need to **build this together,** as an open community!

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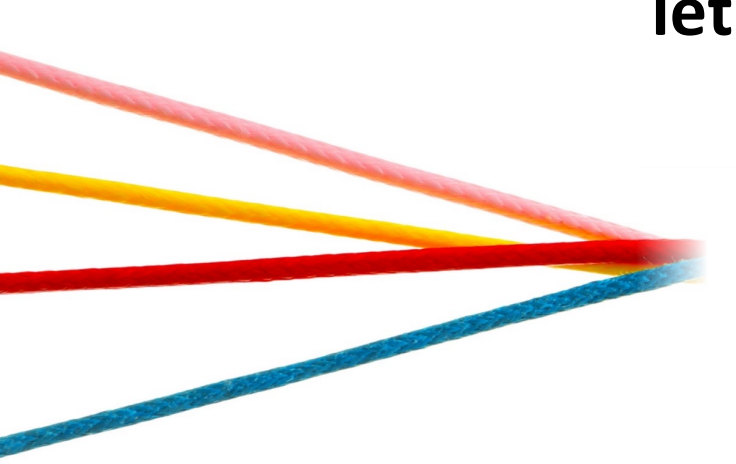
SDV needs new forms of collaboration –

let us build *one* community!



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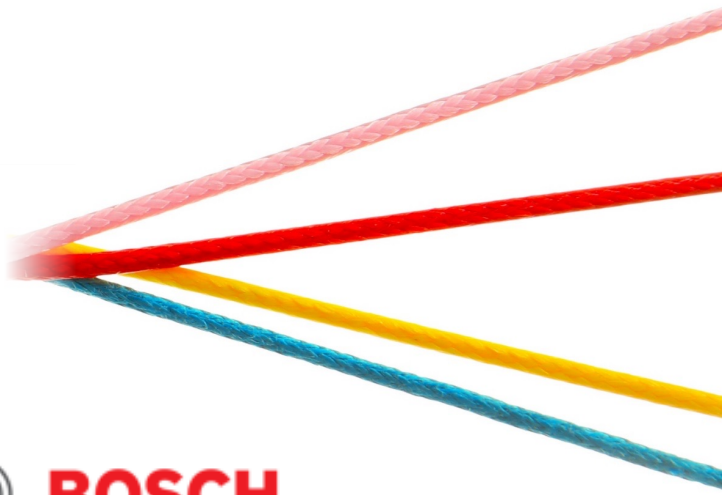

Microsoft

epam

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A portfolio of open-source components and activities, eg:

- W3C/GENIVI Vehicle Signal Specification (https://github.com/GENIVI/vehicle_signal_specification)
- W3C/GENIVI Vehicle Service Catalog (https://github.com/GENIVI/vehicle_service_catalog)
- W3C Vehicle Information Service (https://www.w3.org/TR/vehicle-information-service)
- W3C/GENIVI IoT Event Analytics (https://github.com/GENIVI/iot-event-analytics)
- W3C/GENIVI IoT Vehicle Edge (https://github.com/GENIVI/vehicle-edge)
- Eclipse OpenADx (https://openadx.eclipse.org)
- Eclipse Kuksa (https://www.eclipse.org/kuksa)
- Eclipse SDV Interest Group (starting November 2021)
- Eclipse Edge Software (in preparation)
- Eclipse Mobility Services API (in preparation)
- Apertis Linux (https://www.apertis.org)

THANK YOU