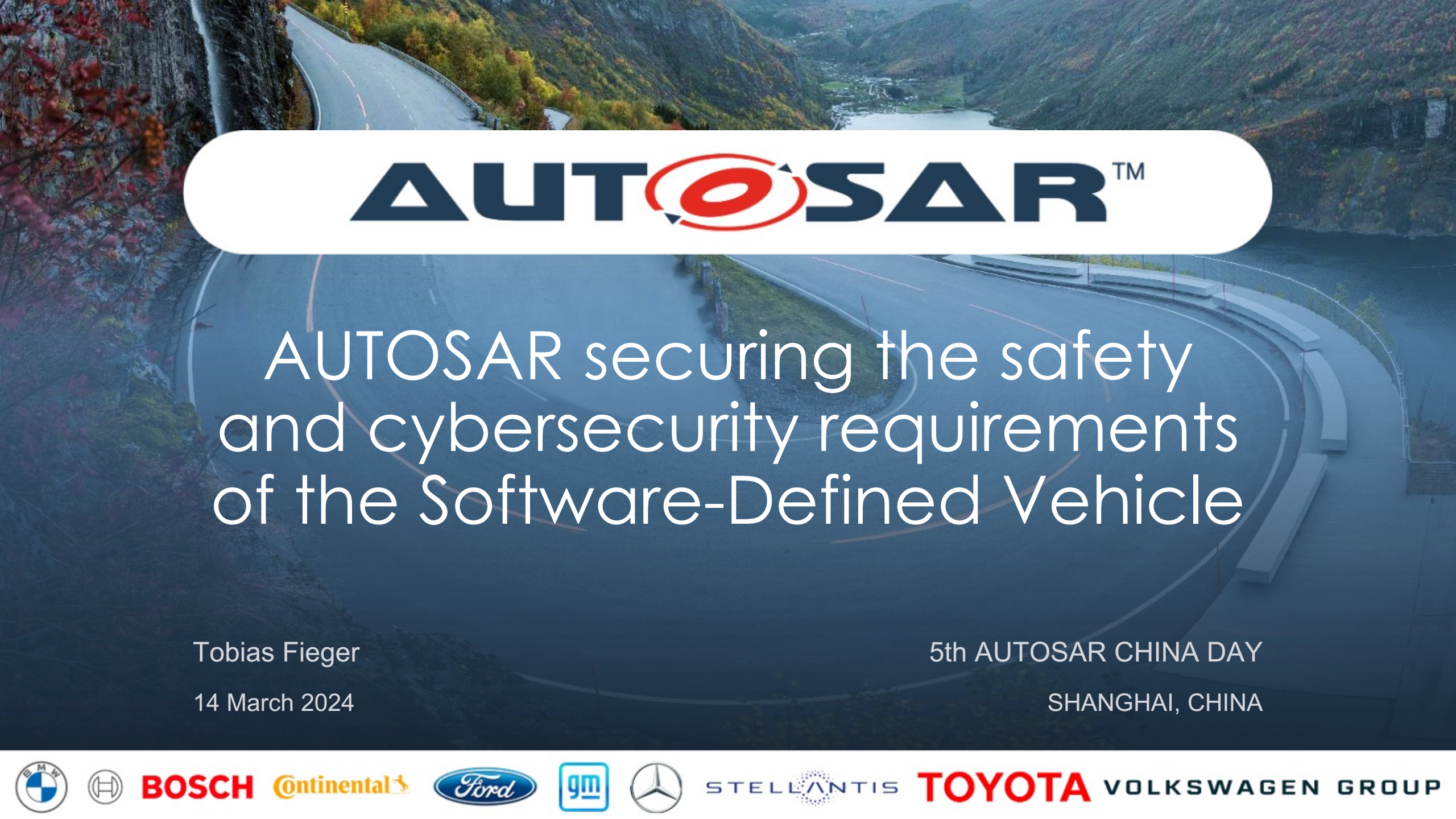


AUTOSAR securing the safety and cybersecurity requirements of the Software-Defined Vehicle

Tobias Fieger

14 March 2024

5th AUTOSAR CHINA DAY

SHANGHAI, CHINA

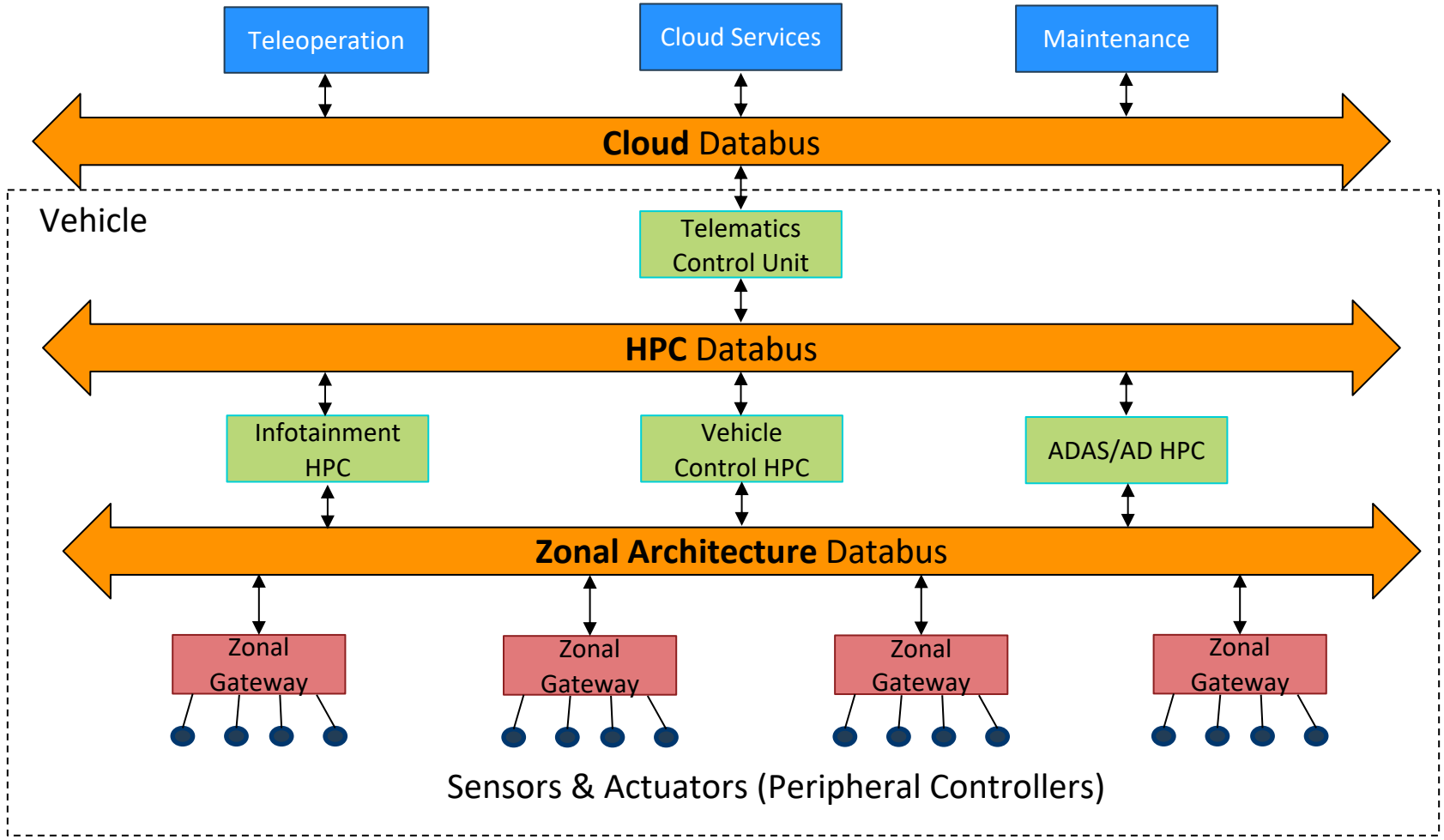
AUTOSAR securing the safety and cybersecurity requirements of the Software-Defined Vehicle

Agenda

- Modern Software Vehicle Architecture
- AUTOSAR as vertebration of in-vehicle architecture
- The role of DDS in AUTOSAR and benefits to the industry

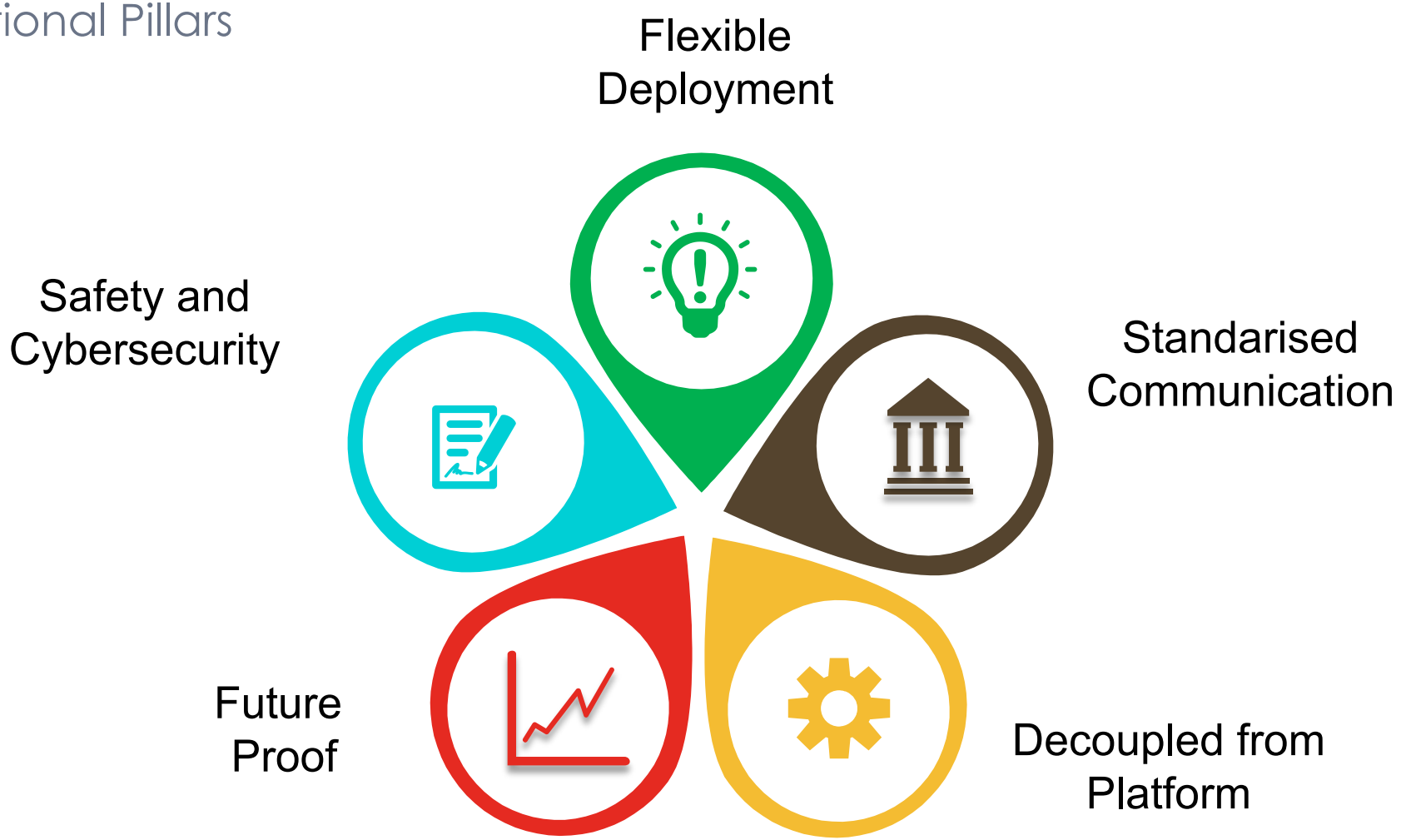
Modern Software-Defined Architecture

The SDV Dera



Modern Software-Defined Architecture

Foundational Pillars



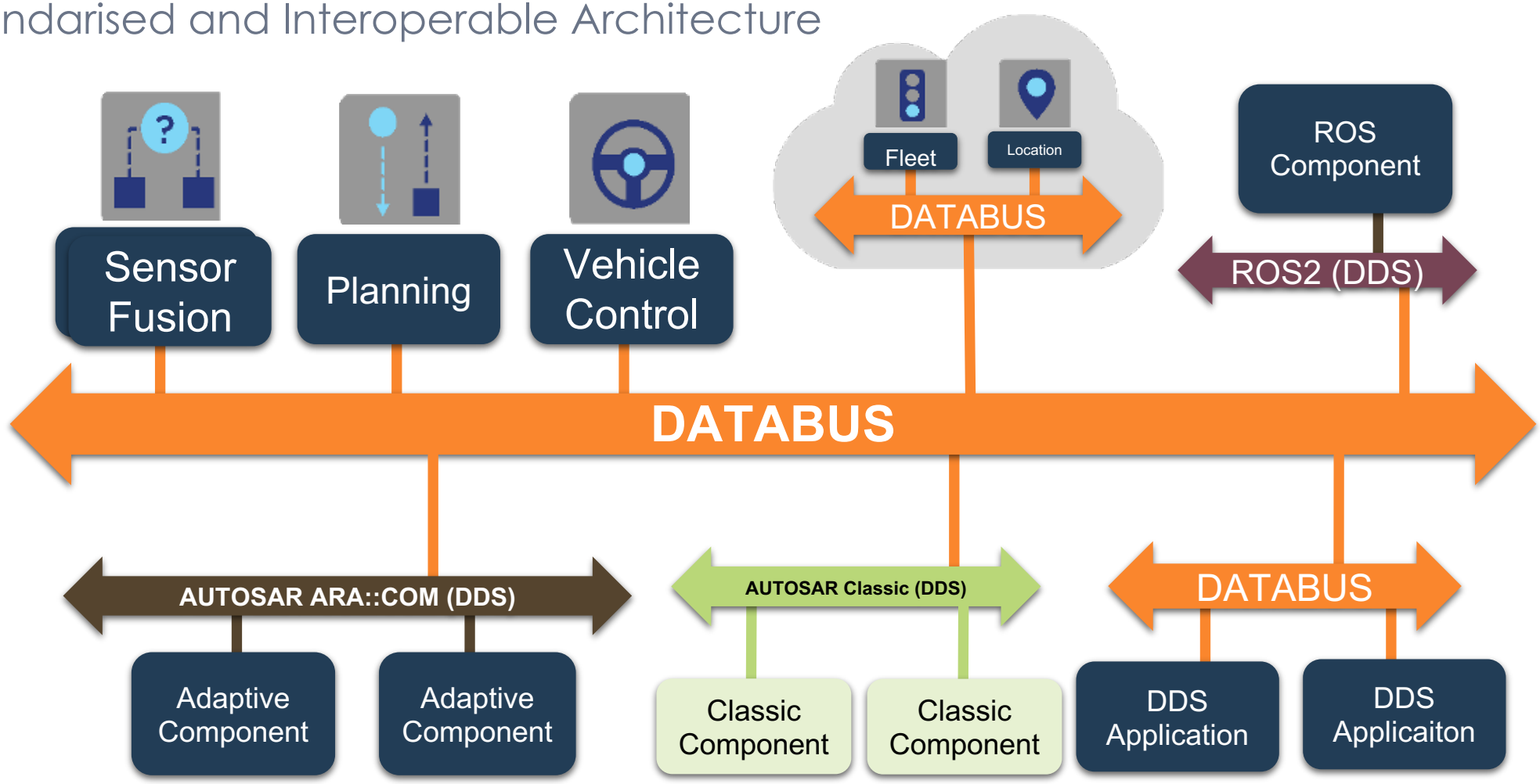
Modern Software-Defined Architecture

Challenges

- **Scalability** – Exponential system complexity
- **Interoperability** – Guaranteeing interoperability with legacy technologies and future high-performing domains
- **Updates** – Continuous development and systems updates
- **Safety** – Managing the path to Safety
- **Business Model** – Creating a Business model that adapts to the new paradigm and enable a heterogeneous supply chain

Modern Software-Defined Architecture

Standarised and Interoperable Architecture



AUTOSAR Classic

DDS Journey

2021
- Initiate development **DDS technology** specification

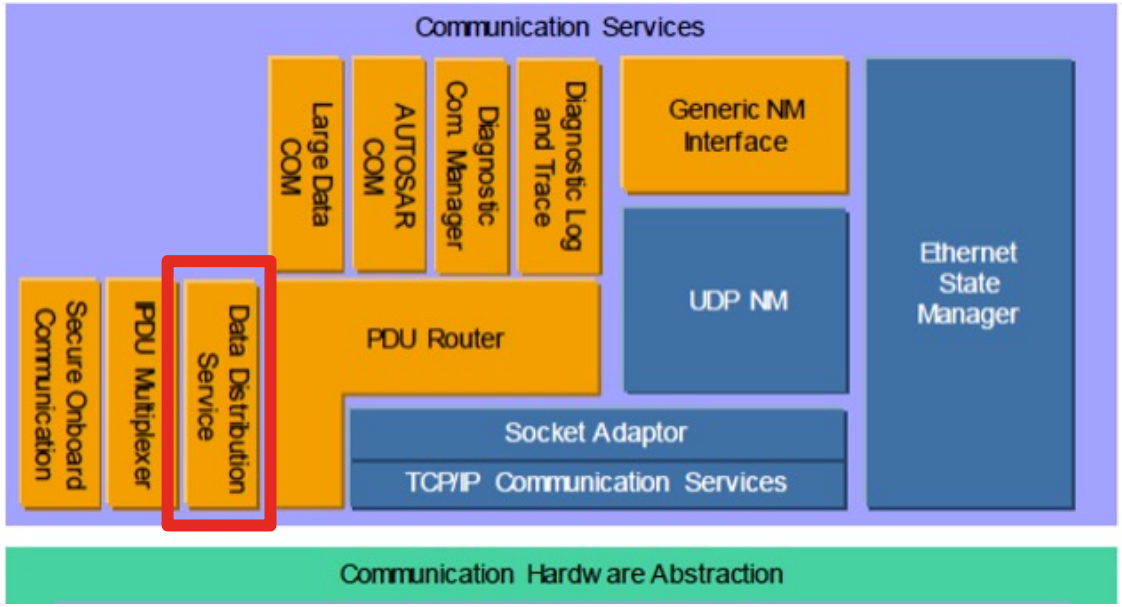
2022
- Incorporation of **DDS BSwM at ECU level**

2023
- Incorporation of **DDS at System level**

2024
- **Consolidation** of DDS protocols in Foundation

AUTOSAR Classic

The Role of DDS



The **DDS integration in AUTOSAR Classic** provides:

- DDS standard interface support
- Signal Based Publisher/Subscriber communication path
- QoS handling
- Full static configuration

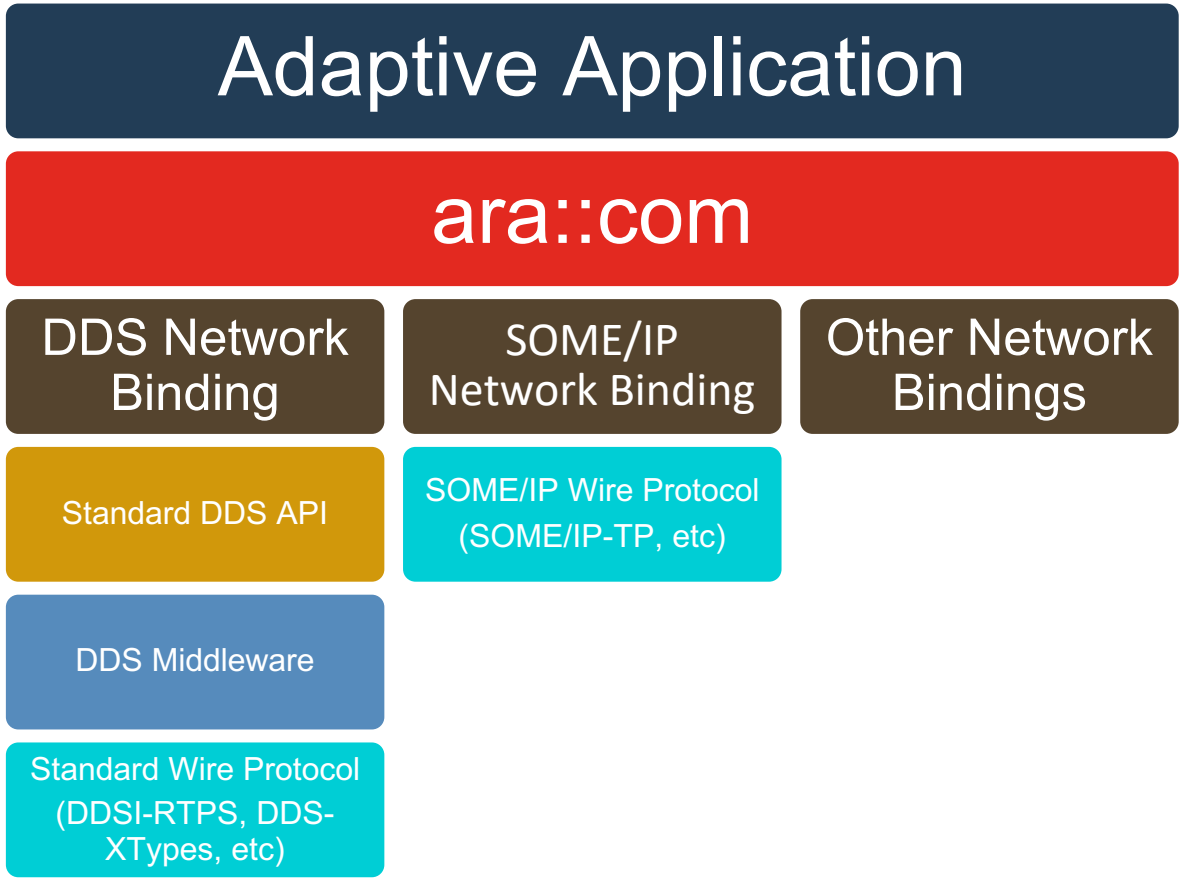
AUTOSAR Adaptive

DDS Journey

- **2016**
  - Initiate development **DDS technology** specification
- **2018**
  - Incorporation of **DDS Network Binding** within ara::com functional cluster
- **2020**
  - Incorporation of **Enhanced Discovery** for the DDS Network Binding
- **2021**
  - Incorporation of **DDS Security Integration** Technical Report
- **2024**
  - **Consolidation** of DDS protocols in Foundation

AUTOSAR Adaptive

The Role of DDS



- DDS data-centric publish-subscribe model is a super pattern
- Service-oriented architectures such as that provided by ara::com can also be deployed on top of DDS while leveraging its most important features

AUTOSAR & DDS

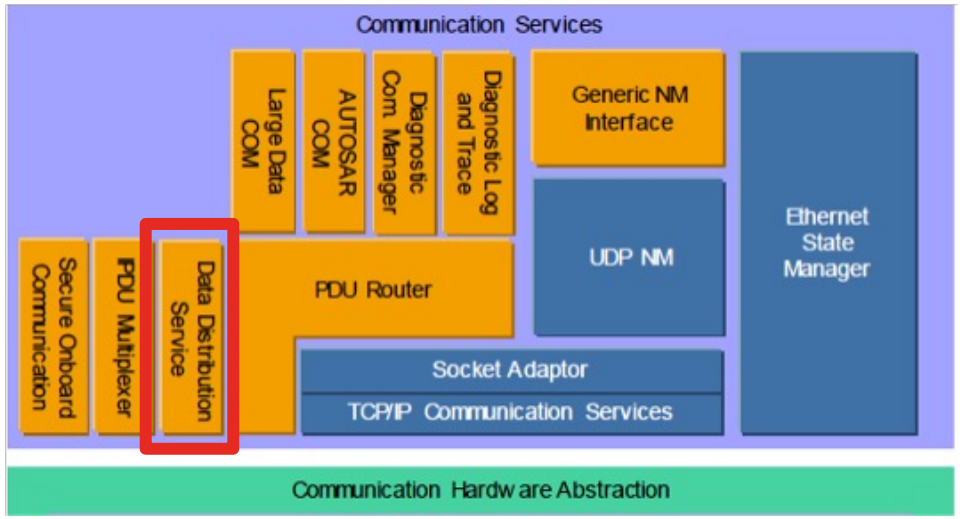
Benefits to the Industry

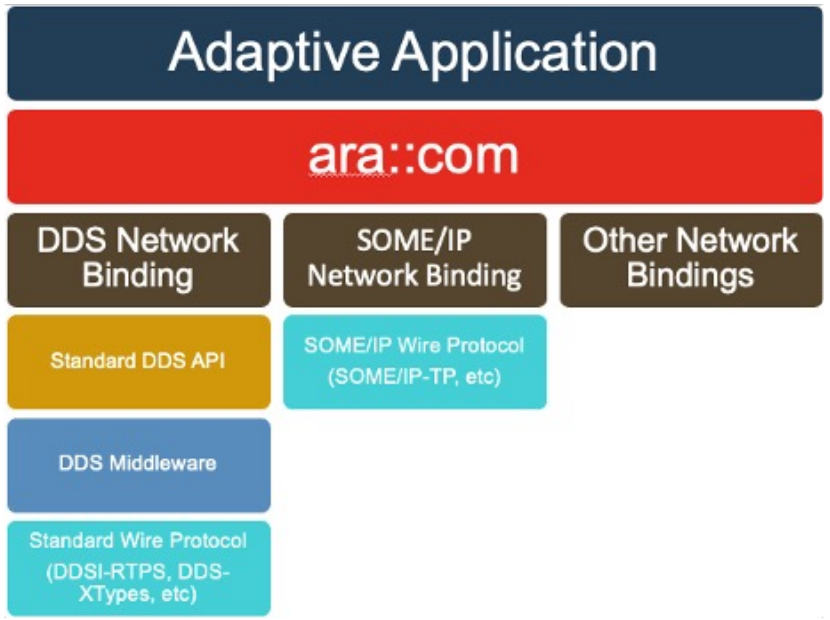
- **Performance** – Enable Real-time large data communication with low latency and high reliability
- **Interoperability** – Reach every ecosystem, platform and feature set in the vehicle
- **Scalability** – Ability to adapt to the increasing range of in-vehicle communication and processing demands
- **Functional Safety and Cybersecurity** – Leverage from a wide range of vendor implementations offering functional safety implementations up to ASIL-D certification and compliance with ISO21434
- **Business Model** – Enable Vendors inside and outside the OEMs' supply chains compete to provide built-in and off-the-shelf components that must integrate seamlessly

AUTOSAR & DDS

Summary

DDS standarisation enhances the already rich AUTOSAR technology offering, opening the door to one of the **most dynamic and growing technology ecosystems**





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