Towards the vehicle of the future: reflections from a European perspective

Eclipse Automotive Open Source Summit
Garmisch Partenkirchen, 6 June 2023

Dr. Max Lemke, Head of Unit Internet of Things, DG CONNECT

Open European software-defined vehicle platform | Shaping Europe’s digital future (europa.eu)
The challenge of the shift to software-defined vehicles

Mobility is increasingly:
- electric
- connected
- autonomous
- shared & servitised

Share of electronics in total cost of a car
- 22% in 2000
- 35% in 2010
- 50% in 2030

Evolution of e/e architecture
- **today**: distributed
- **tomorrow**: domain centralised, vehicle centralised

Lines of SW code in a car
- **Today**: 100 million
- 2025: 200 million
- 2030: 1 billion
Delivering on EU strategies in the automotive sector

EU Chips Act

Automotive HW platform (open-source): under discussion

Open Framework for SW-defined vehicle platforms (CarOS + Middleware): 1st Call under KDT JU 2023

New Industrial Strategy

Research and Innovation Policy

Data Strategy

European Green Deal

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Rationale for a European Software-defined Vehicle ecosystem

- European actors must master the glue of all digital components in the vehicle in order to maintain their lead role: the Software-defined vehicle platform (SDV)
- EU actors could join forces in an open and precompetitive set-up across OEMs and suppliers

Key challenges for OEMs and Tier-1 suppliers:
High effort and costs for managing SW complexity, backward compatibility, maintenance after SOP
For Tier-1 suppliers: High-share of non-value adding efforts, e.g., adaptation of applications & functions towards multiple OEM platforms/ standards
Increased dependency on tech companies who set de-facto standards
Delays in software projects are delaying new vehicle launches
High switching costs from legacy to new SW platforms

Unsustainable increase in SW development complexity

McKinsey

2010 2020

Complexity
Productivity

2.5 - 3x

Unsustainable increase in SW development complexity

McKinsey
Vehicle of the Future: Software Stack for the Software-defined Vehicle

CCAM
2ZERO
Partnerships

2024: Chips JU
SDV Focus Area
under consideration

KDT JU
SDV Focus Area
Call 2023

2024: Chips JU
Automotive HW
Platform under consideraton

Distributed HW: Sensors, Radar, Lidar, Cameras, Actuators
First characteristics of an open European SW-defined Vehicle initiative

- pre-competitive
- agility
- code-first
- level playing field
- open source
- non-differentiating elements
- framework of SDV architectures
- ecosystem
- common open APIs
- orchestration distributed development
- overcome fragmentation
- hardware agnostic but not hardware ignorant
- ecosystem
- shared goals
- abstraction layers
- building on existing initiatives

Conclusions from the Workshops of the Governance Group of OEMs and Suppliers