Beyond the Car
Advancing Commercial Vehicles
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Beyond the Car - Advancing Commercial Vehicles - The Transforming Software to Meet the Needs of Owners, Drivers and Fleet Managers
What makes commercial vehicles* unique? How can we as a community advance commercial vehicle needs?

*: Commercial Vehicles is a term that describes a wide variety – this presentation focuses on one type
Improving SW development process

- Physical implementation is transparent to features (application) development
- Enables fast turn around time for updates
- More efficient development and validation processes

Expanding the horizon of capabilities while increasing quality
Vehicle as a platform

Vehicle Control Services
- Vehicle Network Agnostic
- Decouple feature from IO devices
- Perform feature arbitration, request and response queue management

Commodity ECUs
- Handle time critical functionality.
- Maintain legacy features
- Perform final arbitration, hardware protection, regulatory requirements, functional safety, etc.
- Implements Service Handlers to expose input/output signals to vehicle services.

Apps/Features
- Implement domain agnostic business logic
- Decouple feature from IO
- Does not handle Time Critical, functional safety and regulatory requirements

Vehicle is a deterministic platform that enables evolving applications
Vehicle Signal Specification

VSS is a common approach for describing vehicle data

Source: covesa.github.io
A VSS Focus Expansion Needed

• VSS currently focused on retails (sedan) vehicles and usages
• Retail provides a more predictable problem to be represented in SW
Commercial Vehicles
Commercial Vehicles
Commercial Vehicles Importance

- Commercial vehicles market is a growing market
- Requires higher safety measures
- Reliability is more critical compared to retail
- Efficiency – every Dollar matters
- Highly competitive market

Source: media.ford.com

Commercial Vehicle sales in the US 2005-2022

Source: statista.com

Q1 2023 Results

| Wholesales (000) | 706 | 337 |
| H / (L) Q1 22 | 6 % | 18 % |
| Revenue ($B) | $ 25.1 | $ 13.2 |
| H / (L) Q1 22 | 21 % | 28 % |
| EBIT ($M) | $ 2,623 | $ 1,366 |
| H / (L) Q1 22 | 1,295 | 875 |
| EBIT Margin (%) | 10.4 % | 10.3 % |
| H / (L) Q1 22 | 4.1 pts | 5.6 pts |

Source: media.ford.com
Commercial Vehicles Introduce new challenges

- A product that its physical implementation complete by the end user
- Brings new use-cases and challenges:
  - Driver behavior monitoring
  - Increased safety and efficiency
  - Data analytics
  - Layered SW Updates
  - Etc..

Commercial vehicles introduce an open architecture challenge
Use-cases are driven by many entities

Open-source, data driven, collaborative environment is the key to success
Integral Device(s) in the platform

- Discovery - Meta-data, profiles, Identification requests.
- Identification – Device type, protocols, APIs, etc..
- Registration - Integral part of the full platform.
- Configuration – Network, authentication, FW updates and other enables to start working.
- Testing – does it meet the requirement of the full platform.
- Maintenance – SW updates to ensure functionality over time.
- Continuous data analysis
Summary

• Main objective – Increase the spectrum of capabilities – Enable developers
• Commercial vehicles bring a unique and important use-case
• VSS’s current focus on retail needs to expand
• Alignment is key
  – Adding and configuring new devices
  – Exposing new interfaces to developers
• Requires multi-entity collaboration
• We are not the first to do this
Call to action

• **Reuse available tools**
  - Don’t reinvent the wheel
  - Look into other industries (IoT as an example)

• **Collaborate**
  - Commercial Vehicles BoF, Ted Guild, Mondays 7:00am ET
  - AMM, Wednesday, 3:30-5:50pm ET

• **Thoughts for next time**
  - Bring retail to commercial – utilizing SW only for commercial

• **Start Contributing**