



## **Notes from the COVESA Software Defined Vehicle Birds of a Feather Session**

27 April 2022

Attendees:

NXP, Mercedes-Benz, Navtech, Continental, Bosch, University of Memphis, Renault Group, Hyundai Mobis, Ricardo

Steve Crumb, Executive Director of COVESA, opened the session with a simple statement that the dialog would focus on SdV as an industry opportunity that requires participation and coordination across many organizations. COVESA is only one of them. Others listed including AUTOSAR, Eclipse Foundation, and SOAFEE.

Steve asked whether there were other organizations to be considered in the context of SdV. Others suggested the following groups:

- Khronos Group
- Cloud-related initiatives like GAIA-X
- CATENA-X
- MONET - Japan
- National Technical Committee of Auto Standardization (China)
- Google (for Hyperscaling)
- Cloud Native Foundation.

A brief overview of the Eclipse SdV group was given. Eclipse seeks to integrate open source software with standards. They have a chartered group and the charter does not suggest just doing one thing, but making things work together.

A brief overview was also given on SOAFEE which is producing a reference architecture for SOA for the embedded edge. They are working at different layers with topics like hypervisors, VMs, containers and orchestrators. They have in their roadmap the idea of mixed criticality. Ultimately, they want to facilitate hardware that "just works". But the focus is on edge <-> cloud devices.

Bosch asked about a killer application for SdV. Renault suggested that one app is to enrich the user experience by accessing more data and evolving vehicle data over time. Currently, a vehicle's signal specification must be frozen, perhaps 5 years in advance, in order to meet safety requirements. This is a fundamental problem that must be addressed.

As CAN is replaced with Ethernet and zonal architectures are connected to a central computer, we must be able to look at different methods of managing vehicle data. Is CAN sufficient and untouchable? Can it be extended? Or must it never be touched?

There is a model of managing bandwidth such that configurable signals can be exchanged in this reserved bandwidth.

Continental suggested that if the physics of an ECU cannot be changed, then why introduce a new signal. New signals may enable new services, but the system may not be designed to enable all services at first.

There's always an automotive requirement to be as light-weight as possible, but additional business value (in the form of new services) may balance that drive to be lightweight.

For COVESA, the goal is to define enablers (like VSS), open source components and common interfaces to deliver services. Velocity may mean different things at different layers and COVESA wants to normalize this data.

It was suggested that according to a study, 70% of vehicle functions could be common across most car brands. COVESA's Vehicle Service Catalog (VSC) activity could become the opportunity to build these. We need to collaborate and build these together, aligning on services and APIs.

If 70% are normalized, the integration complexity significantly decreases. We have to get away from the "not invented here" syndrome both at OEMs and T1s. Implement once and share across many brands, resulting in shared cost of development. This enables OEMs to focus on differentiating functionality. The same model applied to Linux.

We need to develop use cases that drive the formation of a group that brings together OEMs, T1s and others. That group needs to leverage FOSS projects to build open components and then deliver reference implementations that can be showcased and adopted.

When and how do we get the representatives from the other organizations previously identified together? How do we get to an alignment and determination of what each organization will do?

It was suggested that some sort of summit be planned, maybe in the 2<sup>nd</sup> half of the year, to exchange ideas and proposals. Each organization needs to produce their view in open sessions like this one. Then, we come together for discussion and alignment.

It was suggested that we not ignore the academic aspect and proactively reach out to universities to obtain support. There are opportunities to invite internships that could be really helpful.

So the idea of opening new potential services or evolving existing services without having to change hardware seemed like the right scope of work for COVESA.

There is also an opportunity to align with the cloud industry toward a “function as a service” model (example given was MySQL). This abstracts from specific coding models that may or not be transferrable and allows for testing in the cloud. Can we realize safety as a cloud-tested result that runs in a vehicle?

Steve Crumb offered to type up the notes and distribute to all parties present.

We will explore additional meetings to refine our proposal for a 2H2022 summit of other organizations involved.