

CLOUD & CONNECTED SERVICES

Introduction

12 November 2019



Cloud & Connected Services – Objectives of the tech summit sessions



- Report on the project status
- Vehicle Data Models
 - Towards a common model ?
 - Discussion & consensus reaching
- The Value of Vehicle Data to Enterprises
 - Business use cases, business opportunities
- Vehicle Data Capturing Infrastructure / Vehicle Communication Framework

PROJECT CHARTER

- Cloud & Connected Services

Opportunity Statement

The project challenge is to enable the full data-oriented connected vehicle architecture. In just a few years, connected cars will become the predominant form of automotive transportation. A number of actors are now working at breaking down the barriers to adoption for mobility services based on automotive data and at helping drivers, communities, mobility services, aftermarket and repair services and automotive manufacturers extract the most value from that data. But this has already resulted in a somewhat fragmented ecosystem where different actors are using different solutions to access the data of connected cars.

As an example of the fragmentation, we have identified competing commercial initiatives that are developing mostly proprietary solutions, and more than one partly overlapping collaborative efforts. Several start-ups are already active for delivering data of production vehicles to the market place in the short term. We also have a list of collaborative projects that look at various facets of the same topic on a mid to long term.

More and more automotive functions exchange data with the cloud-based back-end or execute partly on using cloud computing. This back-end provides the basis for various innovative Applications and Functionalities. Functions that can execute with support of the cloud include for example for autonomous driving or multimedia, and security-related system behavior analysis.

project charter can be found [here](#).

Legend: [Work items addressed or in progress](#)



Intended Objectives:

In GENIVI we believe there is a need to join forces and harmonize activities when designing and implementing the full data-oriented connected vehicle architecture in order to

- Enable easy interoperability of building blocks, flexibility and choice
- Develop common solutions and software
- Enable access to all data we want to exchange
- Control access to data
- Enable user privacy and data security
- Clarify responsibilities
- Agree on names, roles, responsibilities
- Facilitate business opportunities and contractual agreements

The work on a data-driven connected vehicle software architecture GENIVI is undertaking is an important step towards achieving the seamless coupling of the in-vehicle and back-end architectures, and delivering an end-to-end vehicle computing platform. Existing standards and solutions may fill some of those gaps, but others remain open to be filled and overall interoperability is still far from achieved. We are convinced the GENIVI work will help the automotive industry take a big step toward the future when the in-vehicle software and E/E architecture and the back-end architecture will be moving closer together.

Proposed Areas of Project Focus

In order to achieve this, there are many areas to investigate

- [Reference software and system architectures for data exchange](#)
- [Data Model / representation](#)
- [Data protocols for requesting data \(low to medium speeds\)](#)
- Data protocols and software architecture for Big Data (high-bandwidth data streams, high-volume processing)
- Nomenclature, terms, names, definitions and contracts so that we understand each other in Technology and Business conversations
- [Use Cases & Requirements to drive the other work areas in the right direction](#)

Cloud & Connected Services (CCS)

Scope an SoW

Proposed Areas of Project Focus

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Cloud & Connected Services (CCS)

Scope an SoW

Challenge: **Enable the full data-oriented connected vehicle architecture**



- Enabling easy interoperability of parts, flexibility and choice
- Developing common solutions and software
- Enabling access to all data we want to exchange
- Controlling access to data and Enabling user privacy and data security
- Facilitating business opportunities and contractual agreements
- Align with other “Vehicle Data Projects” (W3C, Sensoris, ISO 20077)
- Data protocols and software architecture for Big Data (Fleet approach)

project charter can be found [here](#).

Cloud & Connected Services (CCS) – where are we after 6 months ?

Management Report

- Project was launched at the Spring AMM in Munich, Germany
 - Weekly calls scheduled on Mondays at 4pm CET
 - Participants: BMW, Bosch, High Mobility, “W3C friends”
 - Minutes : [link](#)
- Joint pilot project on Cloud Services with Autosar
 - Meeting with Autosar Steering Committee to explore areas of cooperation organized at the end of September
 - Decision to launch a joint pilot project made
 - (Internal) Pre-kick-off with Autosar Cloud Services Lead scheduled on Wed 13 Nov



Cloud & Connected Services (CCS) – where are we after 6 months ?

Technical Report

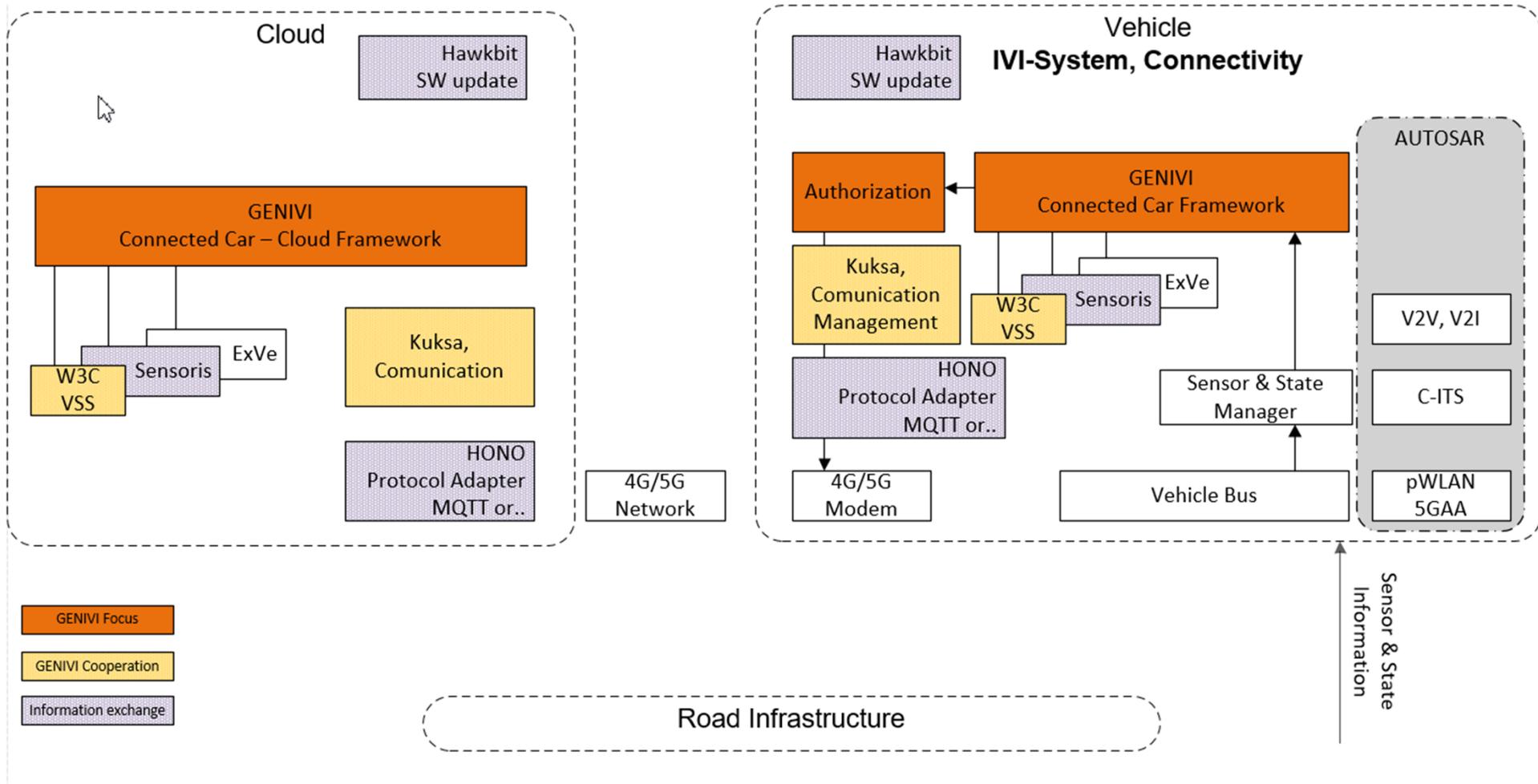
- Fifth sprint completed
 - Vehicle Data Models - Gap analysis deliverable, V1 produced
 - Vehicle Data Capturing Infrastructure
 - System design work-in-progress
 - End-to-end (i.e. cloud-to-vehicle) software system-level architecture
 - Various architectural design options depending on use cases
 - Use cases identification (so-called verticals) started
 - Relates to the value of vehicle data for the enterprise
- Next sprint focus:
 - Remaining ANALYSIS Stage work items: data categories and contracts, framework requirements, building software blocks, demonstrator scope, draft reference system architecture
 - Ramp-up of joint project with Autosar
 - Analysis of impact of the work of the AASIG Vehicle HAL project on CCS backlog



Cloud & Connected Services (CCS)



Exemplary End-to-end Software System Infrastructure



JOIN the CCS Design Workshop (Session Three) to-morrow morning !!

GENIVI Technical Summit ~ Troy, MI



On-line Program: <https://www.eventleaf.com/TechSummit19>

3 sessions on Cloud & Connected Services

- **Cloud & Connected Services Workshop Session One – Toward a Common Vehicle Data Model**
 - Workshop moderated by former PhD student working for BMW & W3C and GENIVI Development Lead –Today at 10:45am-12:15pm
 - Abstract: The GENIVI Cloud and Connected Services project intends to define an end-to-end reference architecture between vehicle sensors and the back-end cloud. Essential to this architecture is agreeing to a common method of representing in-vehicle data. This session will provide overviews of the W3C Vehicle Signal Specification (VSS), look at gaps existing with other data models and explore data in an Android Automotive context and consider ways of consolidating vehicle data modeling approaches. .
- **Cloud & Connected Services Workshop Session Two - The Value of Vehicle Data to Enterprises**
 - Workshop moderated by LG Electronics – Today at 1:45pm-4:15pm
 - Abstract: OEMs, suppliers and other industry participants have begun to realize the tremendous potential that in-vehicle data affords to their organizations, their customers and their partners. During this session, participants will hear from Ford, High Mobility and Geotab about the opportunities that vehicle data offers and how the industry can use data analytics to solve real challenges and offer new services.
- **Cloud & Connected Services Workshop Session Three - Capturing Vehicle Data and Communication Framework Design**
 - Workshop moderated by High Mobility – To-morrow at 8:30am-10:00am
 - Abstract: An essential part of an end-to-end, vehicle to back-end cloud reference architecture is the technologies used in the communication framework between vehicle and cloud. This session will focus on existing standards, solutions and gaps in that essential communication framework to roll-up into the planned reference architecture

Thank you!

Visit GENIVI:

<http://www.genivi.org>

<http://projects.genivi.org>

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