

Cloud & Connected Services

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Next Meeting(s)

Now back to regular schedule:

- Some Mondays 11:30 (when confirmed, for Asia-friendly time)
- Every Monday 16:00 CET

oom Meeting details:

- Meeting ID : 343 327 032
- [Join link](#) - if pass is requested, use CCSproj

Project Charter

Meeting Minutes (use link)

★ To look deeper into the **common data model** used by **CCS**, **W3C**, **AASIG-VHAL** and several other projects, you should be aware of the [larger initiative](#) around this topic [CVII home page](#). ★

Vehicle Data Models - Overview & Gap Analysis (use link)

Vehicle Data Full System Architecture (use link)

Data Categories (use link)

Access Control (use link)

Cloud & Connected Services Workshop - May 2020

Automotive World Webinar May 2020

Webinar hosted by Automotive World: Realizing an end-to-end vehicle-to-cloud communication framework - GENIVI Cloud & Connected Services Project

Monday, May 4, 1600 CEST

- presentation is [here](#)
- recording will be uploaded when available

Vehicle Data Models Overview and Gap Analysis - CES 2020 - deliverable (use link)

Technical Summit November 2019 - sessions on Cloud & Connected Services

| | |
|---|---------------------|
| Towards a Common Vehicle Data Model | pdf |
| Capturing Vehicle Data and Communication Framework Design | pdf |
| The Value of Data To the Enterprises | |

| | |
|--|-----|
| <ul style="list-style-type: none"> • High Mobility - Blueprint for Vehicle-Oriented, Data Strategy | pdf |
| <ul style="list-style-type: none"> • Geotab - Unlocking the Value in Vehicular Data Using Analytics | pdf |
| <ul style="list-style-type: none"> • Ford - Industry Standards for Advanced Vehicle Data | pdf |

Webinar June 2019

★ Webinar on W3C Auto WG & GENIVI collaboration, VSS and Vehicle Data definition future steps
Wednesday, June 12, 1300 CEST

recording is [here](#)

Spring 2019 AMM - sessions on Cloud & Connected Services

The process of scoping and defining a workplan for a cloud & connected services project followed the workshop organized at the Spring 2019 AMM (look at [presentations](#) of the sections called "Car2Cloud" and "Blueprint for a vehicle data oriented strategy")

| | |
|---|-----|
| Car2Cloud Introduction Session | |
| <ul style="list-style-type: none"> • Car2Cloud BoF Overview and Workplan | pdf |
| <ul style="list-style-type: none"> • W3C Automotive WG activities, and VSS Updates | pdf |
| Blueprint for Vehicle Data Oriented Strategy | |
| <ul style="list-style-type: none"> • Bosch / Kuksa project | pdf |
| <ul style="list-style-type: none"> • High Mobility | pdf |
| <ul style="list-style-type: none"> • Cloudera | pdf |

Team Skill Set

Backlog

Please at the various epics in [Jira backlog](#)

Purpose and Rationale

This is the home page for gathering information and links on topics related to:

- Big Data
- Car to cloud
- Vehicle Signalling, VSS, and specification work done in collaboration with W3C Automotive Group

Project charter (use link)



The sections below are purely informative and relates to work performed before launching the project

Introduction – Car2Cloud Solutions for car platforms

This introduction is taken from a note prepared by Bosch.

Introduction

- V2X Solutions (called C2X in Europe) are the key elements for the Connected Car of the future. Nevertheless, a width variety of overlapping standards and application are under development.
- Also the name “V2X” is used on the one hand for safety related applications based on dedicated radio links and on the other hand for IoT-style applications based on standard mobile radio links, IPv6 based data traffic and cloud data solution.
- An [overview](#) of these technologies could be found [here](#)[1]. Although not being a complete list, some of these aspects are discussed below
- [1]https://www.researchgate.net/publication/321088744_An_Overview_of_3GPP_Cellular_Vehicle-to-Everything_Standards

Safety related V2V, V2I and V2N

- For safety related V2X applications, a dedicated frequency range is reserved around 5.9 GHZ. ETSI and the Car2Car Communication Consortium developed a modified WLAN radio link (ITS-G5), whereas the 5GAA developed a 5G based radio link. Both use above this a common network layer.
- The Autosar consortium started to collect [requirements](#) for safety related V2X systems.

Information related V2X systems

- W3C together with GENIVI worked on defining signals and protocols to transfer vehicle state information to cloud based application.
- The [Sensoris](#) consortium defines standards for transferring vehicle sensor information to cloud based applications. They look at sensor-information sensing the surrounding of the car as well as those related to the movement of the car. Some OSS implementations of API’s could be found [here](#).

Automotive IoT and cloud solution

- Basic IoT technologies for automotive use cases are developed in several Eclipse projects
- The [Kuksa](#) project aims at developing a cross-vendor connected vehicle ecosystem that relies on open standards and utilizes open source software to leverage the potential of a large developer community.
- It comprises an in-vehicle platform, a cloud back-end building on [Eclipse IoT](#) technologies and an integrated development environment. for V2X scenarios.[2] It is based on an Open Source development model.
- [2] https://www.eclipse.org/community/eclipse_newsletter/2018/july/kuksa.php

Further GENIVI Activities

- GENIVI intends to define a reference SW architecture and middleware components to harmonize vehicle state and sensor information gathering with the generic IoT approach and cloud based application. The reference architecture targets also the infrastructure side of V2X scenario
- Doing this, it is a given that existing standards and protocols will determine the architecture. In addition, a close connection to existing alliances and working group will be perused.
- Consistency with safety related V2X application will be a major concern in this approach. Therefore the GENIVI V2X activities will be embedded into the GENIVI Domain interaction strategy.

Related Events

Keep a collection of events that are strongly or loosely related to these topics

Open Auto Drive Forum (OADF) and the Navigation Data Standard Association (NDS),
12-13 June, 2019, in Munich

- OADF Meeting, June 12, 2019
- 1st NDS Public Conference, June 13
- NDS General Assembly 2019, June 13 (NDS members)

Implementations

Links to related software implementations, such as FOSS licensed source code or other evidence (videos, demonstrations, ...)

History & Minutes of BoF discussions

23 January

Webinar on Eclipse Kuksa

In the first of a series of discussions on the topic of car to cloud connectivity, representatives from Bosch led a discussion focused on the [Kuksa project](#), an Eclipse project that unifies technologies across the vehicle, IoT, cloud, and security domains in order to provide an open source ecosystem to developers addressing challenges of the electrified and connected vehicle era. In-vehicle and cloud applications as well as their development infrastructure, maintenance approaches, security, and over-the-air (OTA) update and upgrade management are, with a few exceptions, completely within the scope of Eclipse Kuksa.

The slidedek on kuksa is [here](#)

A recording of the discussion is provided [there](#) as well (this a zip file, open it and click on zoom0)

21 January 2019

CES - Las Vegas debrief

Philippe had a short sync about the neutral vehicle data server in High Mobility booth at CES. Kevin said HM was just awarded by Daimler to provide Mercedes cars data to customers (like insurance companies) through their neutral server (look at: <https://medium.com/high-mobility/high-mobility-enables-third-party-services-to-mercedes-benz-customers-2d71eb7a005c>). The business model is HM paid Daimler for the vehicle data and charges customers for the vehicle data there can access. Kevin said also that Daimler awarded a similar contract to otonomo (<https://otonomo.io/pr/daimler-partners-with-otonomo-to-provide-connected-car-drivers-with-new-services-while-delivering-on-the-promise-of-data-privacy/>). It is worth noting that these contracts are not PoCs, there are a full-scale deployment of a neutral vehicle data server

19 December

- participants: Gerald, Steve, Philippe
- minutes:
- kuksa
 - Steve: the newsletter puts kuksa in the global context of car2cloud bof, I check the implementation in github, it seems it was performed by University of Dortmund
 - Gerald: I need to check who implements what in the eclipse kuksa project and related projects
 - look at [the big picture](#) shown at the board meeting
 - Gerald: kuksa were able to map themselves on the picture, authorization box is not covered by kuksa
 - Gerald: I had a look at RVI stuff, we could recycle it into kuksa
 - /TODO/ Philippe prepare a data package on RVI (links to github, security analysis) for the kuksa team
 - Gerald: kuksa work is licensed under EPL, it is compatible with the MPL license used by GENIVI
 - Gerald: there is a need to harmonize the authorization to fit with w3c and iso work
 - Steve: we need to keep in mind that the split of responsibilities within OEM organizations like BMW or Hyundai, IVI head unit is responsible for the sending of data, it is not responsible for the gathering of data
- High Mobility (HM)
 - Philippe: kuksa is a EU sponsored R&D project, HM is a commercial vendor positioned further down the road, I would like to understand their positioning w.r.t. to the car2cloud global picture
 - Gerald: we need to understand whom among OEMs they are working with and whether high mobility is willing to open up at concept level and at implementation level
 - Philippe: I will share the big picture and the info on the kuksa open source project with high mobility, it is worth noting that HM CTO will attend the GENIVI showcase at CES
 - Gerald: I would also be interested in having Sebastian Zimmermann (BMW) feedback on the car2cloud global picture (and in particular where the vehicle neutral server fits into it)
- activities for Mentor India
 - Philippe: I would like to orient Mentor India towards activities that could help us consolidating the big picture, any thoughts ?
 - Gerald: none yet
 - Philippe: one possibility is to make a GDP-based demonstrator of open source VISS implementation (as compared to the demonstrator foreseen by kuksa that will use AGL)
 - Philippe: will point Mentor India to the BoF wiki and asked for their feedback and experience with the topics presented there
- activities related to domain interaction
 - Steve: is there any activity relevant for the domain interaction strategy ?
 - Gerald: authorization / communication management / protocol adapter could run on a CCU platform (cockpit compute unit), safety stuff would run on an AUTOSAR stack
 - Gerald: it is a little bit of multi OS and we might be able to introduce some sort of split between Android as an OS for IVI and other OSes
 - /TODO/ Gerald draw a picture of the deployment of the so-called car2cloud global picture on a multi-OS environment including an Android based IVI system
- digital keys
 - Gerald: CCC + phone manufacturers are bearing the effort to open the doors and start the engine via the smart phone (and together with the body electronics)
 - Gerald: we will rather reuse what they will come up with concerning the key management
- AOB
 - Bof name: BoF is renamed as Car2Cloud BoF
 - next Car2Cloud call is scheduled on Monday 21 January at 10:30am CET

3 December

- call
- Participants: Philippe, Gunnar, Gerald, Guru
- Agenda
 - feedback about W3C calls
 - high-mobility
- discussion
 - Gerald was not able to join the call of the W3C data Task Force, this was carried over to the next call
 - Philippe browsed through the web site of High Mobility (HM) a company that Gunnar and he met in Berlin on November 6 prior to the board F2F
 - link: <https://high-mobility.com/learn/tutorials/for-carmakers/car-sdk/tutorial/>
- Philippe suggested that we have a closer look at how the so-called "abstraction architecture" described there fits with the GENIVI reference architecture; Gerald will have a look at it
- Gerald underlines that the auto-apis provided by HM include a section on digital key, the digital key topic is also addressed by the Car Connectivity Consortium
- This triggered then a short discussion on PKI (i.e. how to distribute security keys which is a different topic), there are currently several projects looking into this: CCC, Autosar, US DoT with the SCMS security model
- Gerald will try to understand how those projects complement or differentiate , hint - google search: "SCMS security model"
- Philippe: **we need to remember that both at BMW and Hyundai, the IVI teams do own the transfer of the data from the car to the cloud, but not in-car collection. Therefore we need to rethink the target area in the architecture and make sure it is owned by the IVI teams in our member companies.**

19 November

- call
- participants: Gunnar, Gerald, Guru, Philippe
- discussion
 - there was a consensus among participants that we should leverage on the work on-going at W3C
 - Guru is already following the Automotive WG work on vehicle data standardization
 - Gerald will join the Data Task Force weekly call which is more on the big data side of things to assess the maturity of the work done there
 - Gunnar will also catch up with what is going on by joining the call
- Philippe looked at high-mobility company web site and proposed (offline) that someone looks at <https://high-mobility.com/learn/tutorials/for-carmakers/car-sdk/> and deliver an overview, this tutorial sketches out the software architecture on the car side.
- Mentor (India) request for participation in car to cloud activities was discussed, Philippe will get back to them to ask about their particular topics of interest

16 November

V2X/Mobility - liaison with OCF

A call was scheduled on Friday 16 Nov at 4:30pm CET

- participants: GENIVI - Stacy, Gunnar, Philippe, OCF - Don Dulchinos <don@eonti.com>
- Don works as a contractor to eonti, a security company
 - <http://www.eonti.com>, eonti seems to have PKI management as their main focus, eonti is a contractor to OCF, Don is the OCF /Automotive team lead
- eonti is willing to enter the automotive domain
- Don's background = cable operators, hence Don has more of a smart home background, although he has been doing some work on automotive for two years
- Don is in contact with W3C/Ted Guild
- Don shows a slide deck he has prepared for an upcoming IoT meeting where he listed the questions he wanted to ask us about who is doing what in automotive cybersecurity. We tried to answer his questions
- Don mentioned the SCMS security model for automotive and noted that the smart home has its own security model, same for power utility
- Don noted also that the vehicle to urban infrastructure is becoming very important
- Don mentioned also that comcast (the former company he was working with) has an interest beyond video distribution and is moving to the telecom, automotive, energy retail domains.
- The work done previously by GENIVI & OCF together (data model transformation) seems not fully relevant to Don's focus on cybersecurity
- As a consequence, Gunnar and Philippe asked Stacy about what could be done with Don since Don's focus is really on cybersecurity. Stacy will follow up during the next weeks
- Don asked whether there was an official document describing how the liaison GENIVI-OCF works, Philippe sent the document to Don

7 November

- board F2F
- update to the board

V2X/Mobility/Smart City

- The [overview](#) of the ecosystem was completed by Gerald. Gerald will present after the update given by Philippe & Gunnar
- At the W3C meeting they decided the 2019 work will continue based on the VISS proposal made by JLR and GENIVI. **There is a need to reduce the gap between W3C and ISO Extended Vehicle identification. Ted Guild W3C acknowledged the need for closing the gap but underlined that the closing will be only partial.**
- VW wants to continue with VSS and VISS is the W3C spec that builds on the database of signals on the GENIVI repository. The future looks to be interesting in working on building this. Will there be a need for outreach? Gunnar says possibly in the near future but we need to set up a maintainer on genivi github
- Gerald browses through his overview
 - Connected Car and Cloud, what is it?
 - Safety related V2V, V2I and V2N. Based on dedicated radio technology.
 - Car status related to connected car systems
 - Automotive IoT, based on standard mobile radio IoT connection.

Radio Technology Standardization Organisations

- **5GAA - 5G Auto Alliance**
- Here the objective is to evolve test and promote communication solutions, to support their standardization and accelerate their commercial availability. Partners: > 40 members, founding members: Huawei, Nokia, Ericsson, Intel, Qualcomm, Audi, BMW, Daimler

C2C-CC - Car-to-Car Communication Consortium

- Objective: Development and contribution to C-ITS standardization, demonstration of technical and commercial feasibility.

ISO 20078 Extended Vehicle (ExVe)

- This is more data oriented, using standard radio technology, but there is no specified quality of service. There are several originations. Access 3rd party and aftermarket service suppliers via neutral server. Rules for data access still open

Sensoris

- Standardize collecting car data and sensor data. Mostly camera and they look for traffic sign recognition, lanes and maps. Capability to distribute sensing task to car fleets. They are aware of the other activities of GENIVI, W3C and Autosar.
- **C2C – Car to Car Communication Consortium**
- They used to be MirrorLink, and have added car data and digital key. You can send an SMS with the key to open the car. Gerald is not sure which companies are involved in this. Next year's meeting is hosted by Qualcomm. BMW, GM, Apple is on the Board, PSA, Samsung and LG are involved.

High Mobility

- Phillippe & Gunnar met with High Mobility, a company located here in Berlin and a neutral server provider for vehicle data

discussion

- Gunnar explained the exemplary SW Reference architecture as a place for GENIVI to be active. This touches different domains as all of the data collected is coming from other domains.
- Gunnar spoke about the High Mobility meeting. Insurance companies use neutral servers for their data, and the OEMs do not make a choice, they have to offer it and enable them to connect. That is why the API needs to be standardized. You have to get permission from the EU community. The concept is clear but the market is not being handled efficiently. Gerald says in all the necessary protocols there is a lot of redundant work because they overlap. His idea is to harmonize this a bit. You have to translate all of this. Does GENIVI supply the API for adoption? The API is provided to the server to those that provide service apps, a company like High Mobility says they are good for now but we did not convince them to work with us.
- **Peter expressed that the target area discussed in the architecture is not owned by the BMW IVI team. Car data collection is handled at the vehicle-wide area which is a different group in BMW. The BMW IVI team does own the transfer of the data from the car to the cloud, but not in-car collection. Hyundai also has a similar setup.**
- **The conclusion of the discussion was that we need to rethink the target area in the architecture and make sure it is owned by the IVI teams in our member companies.**

24 October

- call
- Participants: Philippe, Gunnar, Gerald
- Not present: Guru (Guru is at the W3C meeting this week)
- Agenda
 - The main objective is still to determine which project GENIVI should follow / cooperate with
 - sensoris
 - CC work (please have a look at Guru's email on W3C mailing list) (forwarded as a separate email)
 - ISO work on Extended Vehicle
 - BMW vehicle big data architecture
 - otonomo <https://otonomo.io/>
- Discussion

1- Existing ecosystem

- Gerald: presents a first attempt for describing the existing landscape: see [Gerald's slide deck](#)
- ISO ExVe
 - Gerald: I am in contact with the Bosch person attending the working group
 - they have already the idea of the neutral server, but OEMs are very careful about releasing the data, it seems that the BMW representative in ISO WG is not as open as you could expect when looking at Sebastian Zimmermann's presentation on the BMW big data architecture
 - Philippe: one reason might be that the people working in ISO have a traditional "under the hood" OEM culture and not fully aware of the opening of the connected services market place
 - ISO docs: iso.org
ISO 20077-1:2017 Road Vehicles -- Extended vehicle (ExVe) methodology -- Part 1: General information this doc can be purchased online and
ISO/FDIS 20078-1 Road vehicles -- Extended vehicle (ExVe) 'web services' -- Part 1: ExVe content this doc is under development and cannot be purchased yet
- Philippe: last slide shows the existing ecosystem, this is not an architectural design, however it would be interested to determine what would be the recommended architectural options / blueprints to provide the vehicle2cloud connectivity
- Philippe: do we move towards providing education in the vehicle2cloud connectivity, like we are doing in domain interaction with graphics sharing for instance ?
- Gerald: this means that we do not develop code and rather adopt code
- Philippe: for graphics sharing we rely on existing (upstream) code like Waltham and SafeRenderer and code developed by a member (Ramses)
- Gunnar: for HV, we work together with the vendors on a shared specification
- Gunnar: in order to develop blueprints and education, we need to have access to all of the specifications of the ecosystem, we must reach out the ecosystem and ask for the specs
- Philippe: when reaching the ecosystem, IMHO we can claim we have been successful in influencing W3C work, we would also claim that in the HV project we are bringing together the HV vendors into an active forum, same stands for graphics sharing with Tiers 1
- Gerald: I have already access to some specs, I need to check which ones can be used

2- Review of TODOs

- /TODO/ Gerald get feedback from Guru about the W3C F2F outcome
- /TODO/ All look at the sensoris specifications (Gerald will distribute them if it is possible)
- /TODO/ All look at the Israeli startup web site: <https://otonomo.io/>

19 September

- quick offline sync
- participants: Gunnar, Gerald, Philippe, Steve

- discussion

ISO work on Extended Vehicle

- @Gerald: what was the outcome of your Monday call on ISO work on extended vehicle ?

Hortonworks

- @Gunnar: did you reactivate your contact at Hortonworks ?
- Steve: said there is no point at following Hortonworks which went away from GENIVI in his opinion

BMW vehicle big data architecture

- /TODO/ all please check Sebastien Zimmerman [presentation](#) at last AMM

gavda project

- Steve reviewed the GAVDA website. Two quick comments. First, given that they are based in Washington DC, I would suggest that they are more interested in policy and regulations than in developing technology. Their members are largely fleet management companies (car rental brands, etc.) and associations representing other types of fleets. I see no pure tech development companies in their current membership. Finally, they seem to be all about citizen control on their data, which again suggests a regulatory mission, not a tech development one.

13 September

- call
- participants: Gunnar, Gerald, Philippe
- agenda
 - Bosch update
 - review of TODOs (getting info on other projects)
- discussion

1- Bosch update

- *what does AV mean ?* AV = Autonomous Vehicle and not Audio Video in the context of this BoF
- it is difficult for multimedia department at Bosch to work on autonomous vehicle platform, however cloud connectivity is needed for the autonomous vehicle which needs maps update and weather forecasts
- Bosch Autosar Project Leader confirmed Autosar V2X activity in the direction of dedicated G5 or subset of 5G (lower protocols layers)
- Autosar is looking into CCC for platooning & collision avoidance & enabling access for car sharing (virtual key) (i.e. the first use case of RVI as commented by Gunnar)
- Main focus is on safe driving (in particular in truck context)
- Gerald's conclusion is that there is enough space for GENIVI at application level

2- Review of TODOs

- ***OCF Automotive***
 - /TODO/ Philippe contact Sanjeev to know OCF Automotive status DONE
 - (Sanjeev provided the following feedback The project might get a new lead. I can introduce you to the person who will be in charge (not a Samsung person).
- ***Sensoris***
 - /TODO/ Gerald contact Sensoris
 - not done yet
- ***ISO Extended Vehicle***
 - Gerald will have a call about ISO work on extended vehicle on Monday 17/9, will be provide feedback on this during the next call
- ***W3C***
 - Gunnar is focusing rather on the vehicle interface (and not on the big data interface)
 - we look at the car to cloud connectivity diagram used by W3C in their data TF
 - https://www.w3.org/community/autowebplatform/wiki/Consent_Cases
 - what is BVW on the picture ? TBD
 - Gunnar: caruso puts itself in the man-in-the-middle position
 - Gunnar: do they need a complex language to describe which data can be shared ? likely yes, archi seems very natural
 - reminder: W3C considers Web standards are applicable to everything
 - Phil: is hortonworks using web standards ?
 - Gunnar: afaik no, w3C is not using a fairly efficient data transfer
 - hortonworks surely provides tool for modeling the data usage in the green boxes
 - /TODO/ Gunnar restart the liaison with horton works
 - Phil: reminds about the vehicle-to-cloud connectivity architecture brought up by the European Association of Car Manufacturers, it includes also the neutral server approach as in the caruso-dataplace diagram shown before
 - link: https://www.acea.be/uploads/publications/ACEA_Position_Paper_Access_to_vehicle_data_for_third-party_services.pdf
 - Phil: the question is to determine which interfaces GENIVI could work on and influence
 - Gunnar: GENIVI is looking for open work we might contribute to
- ***caruso***
 - Gerald: caruso is more for after sales and spare parts market
 - link to a paper in German: <http://www.aftermarket-update.de/2017/07/05/caruso-ist-offen-fuer-weitere-gesellschafter/>
 - (translates well in English)
- ***gavda***
 - link: <https://gavda.org/>
 - /TODO/ Steve check what gavda is about (it is a US organization)
- ***kuksa***
 - /TODO/ Gerald get more information about kuksa

- Gerald: no update

5 September

- call
- participants: Steve, Gunnar, Gerald, Philippe
- agenda
 - Ecosystem
 - how to establish / reactivate / continue the necessary liaisons with other projects
- discussion

1- Ecosystem of projects

- Gerald: has established the internal contacts at Bosch
- Gerald: we need to understand better the ecosystem, WLAN-G5 and 5G (telecom operators) and AUTOSAR consortiums are not enough, we need cloud providers
- we need also the sensors side like Sensoris (e.g. for map update (NDS), Sensoris knows about W3C work
- Gunnar: Sensoris was at the W3C F2F collocated with AMM in Munich, they provided me with proprietary stuff after this meeting
- discussion on how to work with a close community like Sensoris
- Gerald: talks about caruso (<https://www.caruso-dataplace.com/>), not much on the web site though
- Gerald: my objective is to harmonize initiatives, not to create yet another standard
- Phil: which OSI layers are we talking about ?
- Gerald: application layer, the underlying protocols are MQTT or alike
- Gunnar: mentions Nifi (used by Horton Works), it relies also on MQTT
- short discussion on Kuksa :<https://www.eclipse.org/kuksa/>
 - Gerald: participants = universities, FhF, some suppliers, NXP not so active
- Steve: shows slide on what the future looks like for GENIVI he has been discussing with some board members and also other parties
 - infotainment done
 - car2cloud and security are in scope
 - autonomy and mobility are not in scope (TBC)

2- Next steps - which projects to follow / work with

- Steve: what are the next steps ?
- Phil: we might consider putting together some of the relevant parties at CES to talk about the harmonization of effort (something like Inrix did in the past but less people involved)
 - too early
- Steve: Hortonworks has good connection with Ford
- Steve: we should identify 2/3 projects (including existing projects like W3C, kuksa) to follow / work with

3- TODOs

- /TODO/ Philippe contact Sanjeev to know OCF Automotive status DONE
 - Sanjeev said OCF Automotive Lead has changed
- /TODO/ Gerald contact Sensoris
- /TODO/ Gerald get more information on caruso project
- /TODO/ Gerald get more information about kuksa (since Bosch is a participant)
- /TODO/ Gunnar, Bosch continue participation in W3C work

8 August

During the board call, Gerald set the scope of the topic in his paper (see introduction on top of page). However, he saw the comments in the survey about Car to cloud and considers this part of the V2X topic. Autosar is already looking into this topic, and he does not think V2X is a focus for GENIVI. He believes that this needs to be interoperable. The W3C together with GENIVI is working on protocols and sensor information along with software elements and middleware. If we go with this topic, we need to define the architecture. Together with the infrastructure side, we could put something together with the Car to cloud topic. We need to think about this in a general context, and Steve asked if anyone is doing any work in this area. Bosch is involved in some of this and Siemens is also doing something on the infrastructure side of V2X. Harman is also working on this.

Steve asks if we attack this more broadly, does it seem like a compelling scope to work on ? Kyle says it's similar to how we approached instrument clusters, and he has some V2X people at Harman asking what they can get from GENIVI. We could do some reference apps around this, but it's different than what we have done before. Gerald says it would be hard to predict, but he feels some companies would embrace this. Should we offer this as a supplemental strategy, if yes how would we do that? The first step would be to tackle the Car to Cloud topic. Do we have a description of what's included so that we can combine this? Steve says it makes sense to combine this as it would be broadly attractive. We will get Philippe and Gunnar and some other Board members involved to see what is more implementable and communicate that.

Action: Gerald and Gunnar and Phillippe to convene and talk about more detail on the V2X/Cloud to Car topic and include any Board members who are interested.

27 June

During the board meeting, a decision to dig into V2XD/Mobility topic was made and Bosch volunteered to bootstrap on this

Materials

Links to related presentation material (anything publicly available)

- kuksa presentation
 - [Bosch slidedeck](#)
 - [recording](#) as well (this a zip file, open it and click on zoom0)

- https://www.researchgate.net/publication/321088744_An_Overview_of_3GPP_Cellular_Vehicle-to-Everything_Standards
- https://www.eclipse.org/community/eclipse_newsletter/2018/july/kuksa.php
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