



TECHNICAL SUMMIT '19



ANDROID™ AUTOMOTIVE SIG

Introduction

Technical Summit - 12 November 2019



Android Automotive SIG – Objectives of the tech summit sessions



- Report on the project status
- Vehicle HAL / Vehicle Data Capturing Architectural Design
 - discussion & consensus reaching
- Return of experience from production projects
- Prioritization of topics to be tackled next

PROJECT CHARTER

Android™ Automotive Special Interest Group (SIG)

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



Opportunity Statement

Automotive OEMs are increasingly adopting Android Automotive (embedded) as a solution for their IVI stack. This adoption has introduced a series of challenges around integrating the Android Automotive embedded solution into existing legacy software and into other systems present in the vehicle (security, vehicle data, etc.).

Through a GENIVI-hosted Android Automotive SIG project, OEMs, their suppliers and the broader cockpit software ecosystem can discuss requirements, identify gaps and provide an aligned, community voice for discussion with the Google Android Automotive team.

Intended Deliverables:

- Requirements definition documents for specified areas of focus
- [Architecture/API definitions \(models, diagrams\)](#) ← [AASIG Vehicle HAL project](#)
- Reference code for identified APIs
- Tech Briefs to inform the automotive industry

Proposed Areas of Project Focus

Current project focus areas include:

- Preliminary list of extensions required for Android in an automotive environment (additional extensions to be identified during project):
 - [audio management](#) ← [AASIG Audio HAL project \(when launched\)](#)
 - lifecycle, diagnosis and health monitoring
 - [multi-display support](#) ← [existing GSHA project on graphics sharing](#)
 - [cluster integration](#) ← [existing GPRO project on generic communication protocol and interface with Autosar](#)
- Platform requirements
 - [Access to vehicle information](#) ← [AASIG Vehicle HAL project](#)
 - [Security](#) ← [existing GPRO project](#)
 - Non-OEM validated 3rd party applications downloaded to the vehicle
- Responsibility for long-term maintenance
 - Defining boundaries where Tier 1s/OEMs must take primary responsibilities over Google Android Automotive team support
 - Keeping an automotive system updated to support new versions of Android
 - On software level (Treble)
 - On hardware level (“cartridge” concept).

Android Automotive SIG – where are we after 6 months ?



Management Report

- Project was launched at the Spring AMM in Munich, Germany
- AASIG “All-hands” calls : monthly report delivered on last Tuesday of each month at 5pm CET
 - Minutes: <https://at.projects.genivi.org/wiki/x/SIFoAg>
- Vehicle HAL project calls: every other week on Tuesday at 5pm CET
 - Participating OEMs: Mercedes-Benz Research NA, Renault SW Labs, BMW
 - Tiers, software vendors, integrators
 - Minutes: <https://at.projects.genivi.org/wiki/x/HYVoAg>
- 2 active threads of work
 - Reference Platform / Build Infrastructure
 - Vehicle HAL project
- 1 new thread of work initiated
 - Audio HAL project
- 1 completed thread of work
 - App Ecosystem
 - A survey of the app store ecosystem was performed
 - OEMs are now pursuing unilateral, bilateral or multilateral discussions with app store providers

Android Automotive SIG – where are we after 6 months ?



Reference Platform – Technical Report

- **Boards & Support**

- Both NXP & Renesas boards have reached Gunnar (GENIVI Development Lead) for initial set up and testing. (The Google default embedded board HiKey 960 also available)
- **NXP**: Needed files for i.MX8 for Android Pie/9.0 is available from support site.
- **Renesas**: Files available when the final EULAs have been clarified and signed (soon)
- **Android 10.0** was released to AOSP project in September and will be our next target, when BSPs support it.
- **Lava-based test farm** up & running at Renesas, tested with Yocto/Linux builds
→ We are now considering how to set up our Android tests on the same infrastructure
- No further efforts on **Qualcomm** after they stopped responding

- **Project Repository is up!** → https://github.com/GENIVI/aasig_dev_platform

- The GitHub repository is now populated with the initial scripts that help to set up, download AOSP source code, and define a shared development version.
 - Container setup (using Docker) is included, to get repeatable tests of build scripts in a stable environment
 - Now is the time for community (AASIG) input – test the scripts, check if the built versions are what you expect, and suggest updates and modifications accordingly.
 - The project is set up to support **Renesas R-Car starter-kit** with **Kingfisher** and **NXP i.mx8 EVK boards**, with potentially HiKey as a low-cost backup.
-
-

Android Automotive SIG



Vehicle Data APIs - Vehicle HAL – Technical Report

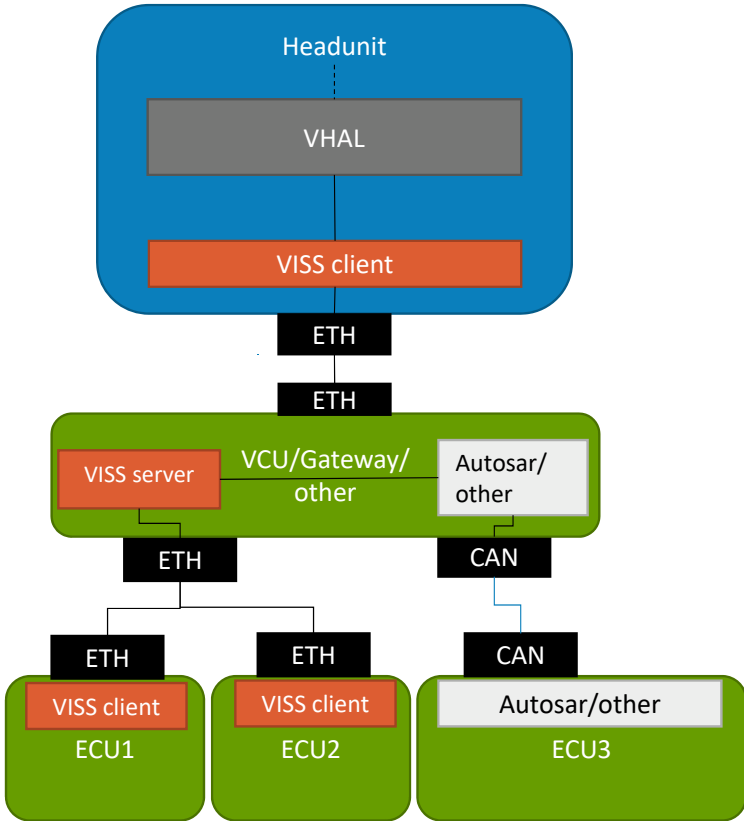
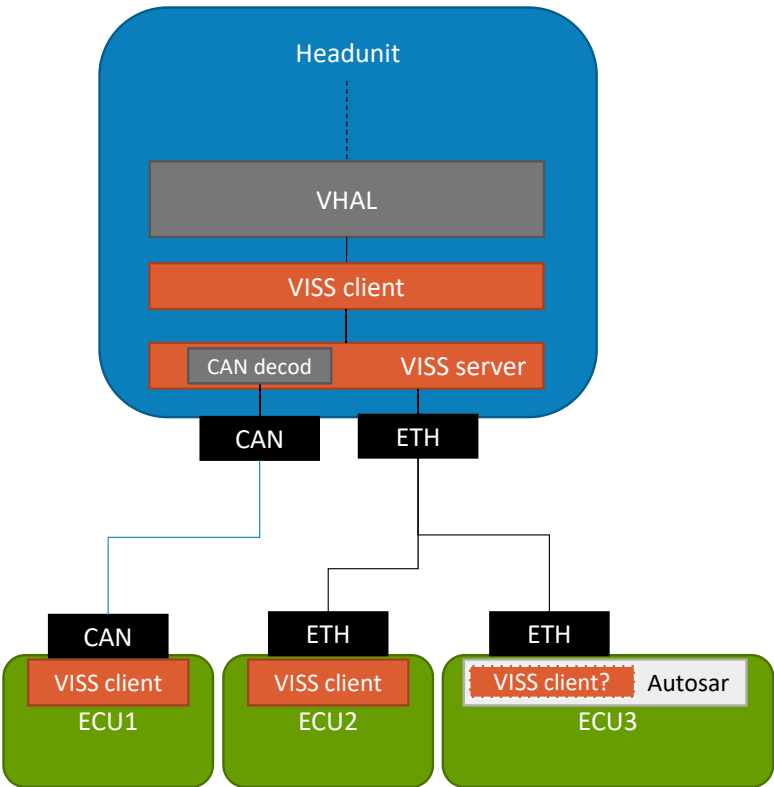
- Vehicle software system level
 - Task force on software architectural design launched at the end of September
 - Architectural concepts for the vehicle data capturing have emerged
 - Will be presented and debated at the Vehicle HAL Design Workshop (Session One) this afternoon, JOIN !
 - Questions to address:
 - VISS adoption (Vehicle Signal Specification)
 - Coexistence of Vehicle HAL and VISS client/server, etc.
- Other topics under investigation
 - Gap analysis between Android 9 & 10 – work-in-progress
 - System properties (e.g. boot sequence) – work-in-progress
- Backlog
 - Secure access control, e.g. in Some/IP for interfacing with Adaptive Autosar
 - Signal-to-Service translation (e.g. as specified in the upcoming Adaptive Autosar R19-11), analysis of impact on the architecture

Audio HAL

- First call with the initial set of interested parties (Analog Devices, Bosch, Harman, Tieto) on Thursday 7 November, first topics to be worked on jointly identified,
- Audio HAL is at the agenda of the session on additional challenges
- Audio HAL calls for scoping the project further scheduled every other week on Thursday at 11:30am CET

Android Automotive SIG

Vehicle Software System Level Architecture ideas (snapshot)



JOIN the Vehicle HAL Design Workshop (Session One) this afternoon !!

GENIVI Technical Summit ~ Troy, MI



On-line Program:

<https://www.eventleaf.com/TechSummit19>

3 sessions on Android Automotive SIG

- **Android Automotive SIG Workshop Session One - Vehicle HAL design**

- Workshop moderated by BMW and Mercedes-Benz Research NA –Today at 1:45pm-4:15pm
- Abstract: Active discussions in the Android Automotive SIG have centered around an expanded view of the vehicle hardware abstraction layer (HAL). This session will explore HAL properties, report on the details of work already done by the SIG and engage in design discussions around a vehicle software system architecture including the vehicle HAL.

- **Android Automotive SIG Workshop Session Two - Additional Challenges to Address when Adopting Android Automotive**

- Workshop moderated by Windriver & Tieto – To-morrow at 8:30am-10:00am
- Abstract: The first OEM production programs that adopted Android Automotive are done or soon to be over. What lessons were learned from these programs and what other issues are adopting OEMs facing in their planning and early deployment projects? Two experienced suppliers will present output from their respective production programs. Following the presentations, an open dialog on ways collaboration within the SIG can ease future adoption challenges will complete the session.

- **AASIG Activities Review & Planning Session**

- Birds-Of-a-Feather kind of session – To-morrow at 1:30pm-4:00pm
- Moderated by technical leads & GENIVI staff

Thank you!

Visit GENIVI:

<http://www.genivi.org>

<http://projects.genivi.org>

Contact us:

help@genivi.org

