

State of the AGL

Linux Foundation AGL Advisory Board

DENSO TEN Linux PF Project Leader

Yuichi Kusakabe

**掲載および発言内容は各個人の見解であり、必ずしも所属する
企業や組織の立場、戦略、意見を代表するものではありません。**

About Myself

- **Yuichi Kusakabe (DENSO TEN LIMITED)**
- **Software Engineer of IVI about 13 years
(for 16-bit and 64-bit architecture)**
- **Linux Software Engineer(2011–2013)**
- **Linux Software Lead Engineer(2013–Now)**
- **BSP Porting/Customizing**
- **Supporting for in-house software developers**
- **AGL(Automotive Grade Linux) Advisory Board member**



What is AGL?

- Non-profit
- Open source Linux-based collaborative project
- Hosted at Linux Foundation
- Focused on rapid innovation of vehicle software



AUTOMOTIVE GRADE **LINUX**

the only
organization
addressing
all software in
the car



Infotainment



**Instrument
Cluster**



**Heads-up
Display (HUD)**



**Telematics/
Connectivity**



**Functional
Safety**



**Advanced Driver
Assistance Systems
(ADAS)**



Autonomous Driving



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[2018 CES Demonstrator](#)

AGL Software

[Schedule and Milestones](#)
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Expert Groups

[System Architecture Team](#)
[App Framework and Security](#)
[Connectivity](#)
[Continuous Integration and Test](#)
[UI and Graphics](#)
[Virtualization](#)
[Navigation](#)
[Reference Hardware System](#)
[Architecture](#)
[Vehicle to Cloud](#)

The [Automotive Grade Linux \(AGL\) initiative](#) is

- driven by the Automotive Grade Linux Collaborative Project of the Linux Foundation
- about improving open source components for automotive use cases
- follows an upstream-first policy in publishing the improvements
- using a common reference platform for test and integration purposes

The overall direction of the Automotive Grade Linux Collaborative Project is set by the AGL Advisory Board and Steering Committee. All work is carried out by the Expert Groups.

You are cordially invited to join and contribute to AGL and this Wiki. See [Getting Started with AGL](#) to register for accounts to contribute to the requirements, source code, or documentation of AGL.

Weekly Developer Meeting held on Tuesdays at 14:00 UTC (6 am Pacific Standard Time)

Conference Info and Meeting Notes

News

You can find the latest AGL News [here](#).

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- ◆ [News](#)
- ◆ [Face To Face Meetings](#)
- ◆ [Important Links](#)
- ◆ [Getting started with DokuWiki](#)

start





Automotive Apps with HTML5, Qt OpenGL
Multiple platforms on a common code base
Free and open source

[GET STARTED](#)

[CONTRIBUTE](#)



Reusable code
across platforms



Support for
Connected
Vehicles



Security Built In

2018AMM@Dresden

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October 17-18, 2018
Hilton Dresden
Dresden, Germany
[#autolinux](#)

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2018AMM@Dresden

Welcome to AGL AMM Dresden 2018

150+ people across 53 companies and 19 countries!

Advanced Driver
Information
Technology

Advanced Telematic
SYSTEMS

AISIN AW CO. LTD.

美しい電子部品を完めます
ALPS

Continental

DENSO

Elektrobit

Eureka, Inc.

amazon

DENSO TEN

HARMAN

HI CORP.

NISSAN

HITACHI
Inspire the Next

HONDA

FORGEROCK

irdeto

Konsulko
Group

LINKMOTION

mazda

MEDIATEK

Mercedes-Benz

Mentor
Automotive

MICROCHIP

micware

MITSUBISHI
ELECTRIC

MITSUBISHI
MOTORS

NEC

NTT DATA
NTT DATA MSE Corporation

NXP

OPENSYNERGY

MICROCHIP

Qt
The Qt
Company

TOSHIBA

SUZUKI

Pioneer

REALVNC

Suntec

openinventionnetwork

RENESAS

SUBARU

TEXAS INSTRUMENTS

Ubiquitous

ELECTRONICS

QUALCOMM

Panasonic

SONY

Xevo

TELENAV

TUXERA

WITZ

TOYOTA

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LINUX
FOUNDATION

2018AMM@Dresden

Welcome to our special guests!



2018AMM@Dresden

25 New AGL Members in 2018



2018AMM@Dresden

AGL Members - Total of 132 companies!

Platinum



Gold



Silver



Bronze



Mercedes-Benz Vans uses AGL

Automotive Grade Linux Powers New Solutions for Commercial and Consumer Vehicles

By AGL | June 19, 2018 | Announcements

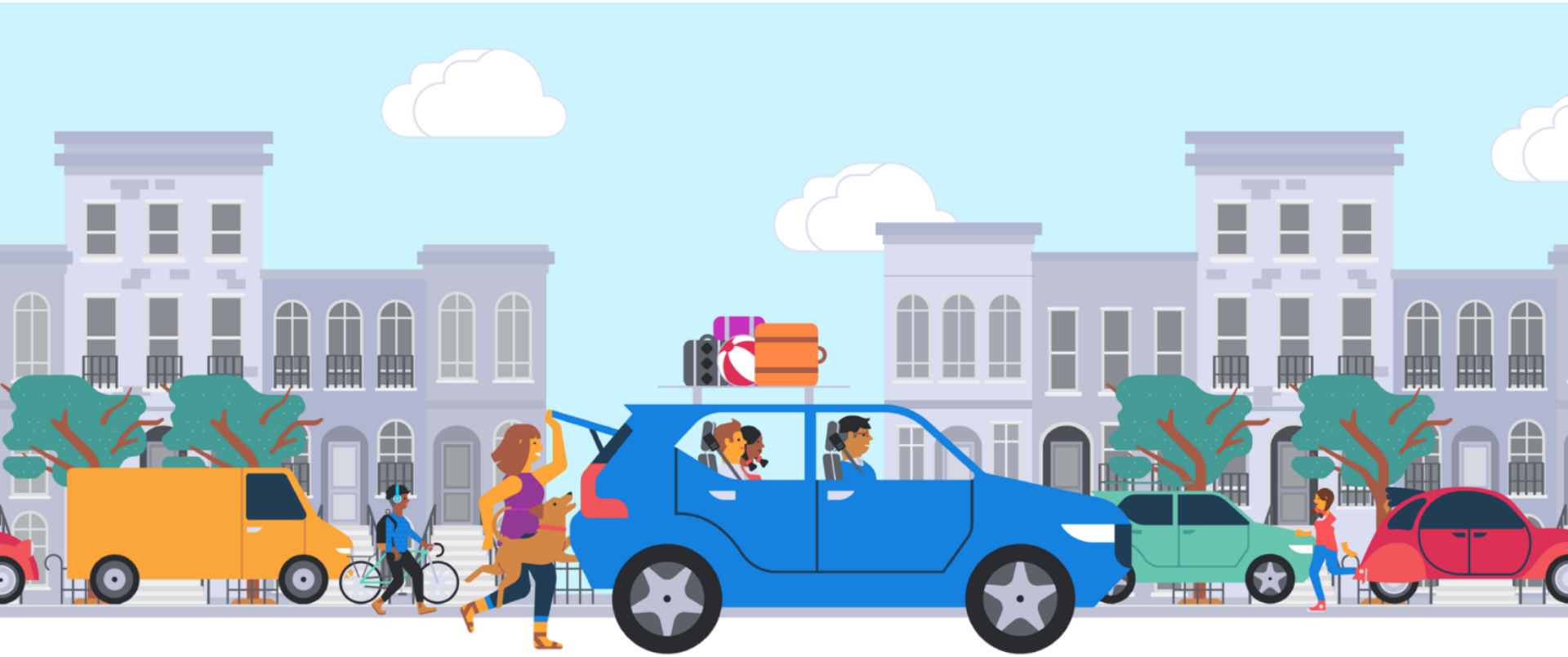


Mercedes-Benz Vans develops new onboard operating system using AGL; Toyota continues to roll-out AGL-based infotainment system to new vehicle models

TOKYO – Automotive Linux Summit, June 20, 2018 – **Automotive Grade Linux (AGL)**, a collaborative cross-industry effort developing an open platform for the connected car, today announced that Mercedes-Benz Vans is using AGL as a foundation for a new onboard operating system for its commercial vehicles.



2018AMM@Dresden



Multi-Assistant Considerations for Alexa on AGL

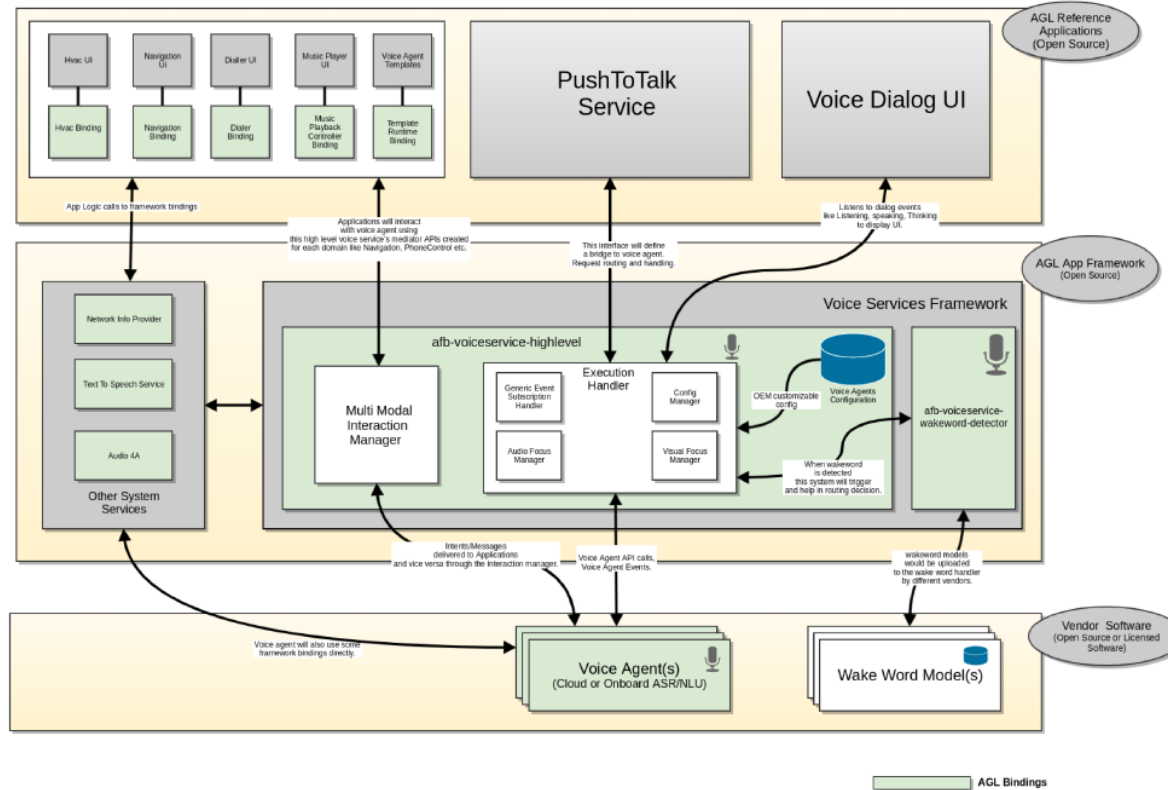
Ricardo DeMatos
Principal Solutions Architect
Alexa Automotive

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2018AMM@Dresden

AGL Voice Services Architecture – High Level Workflow



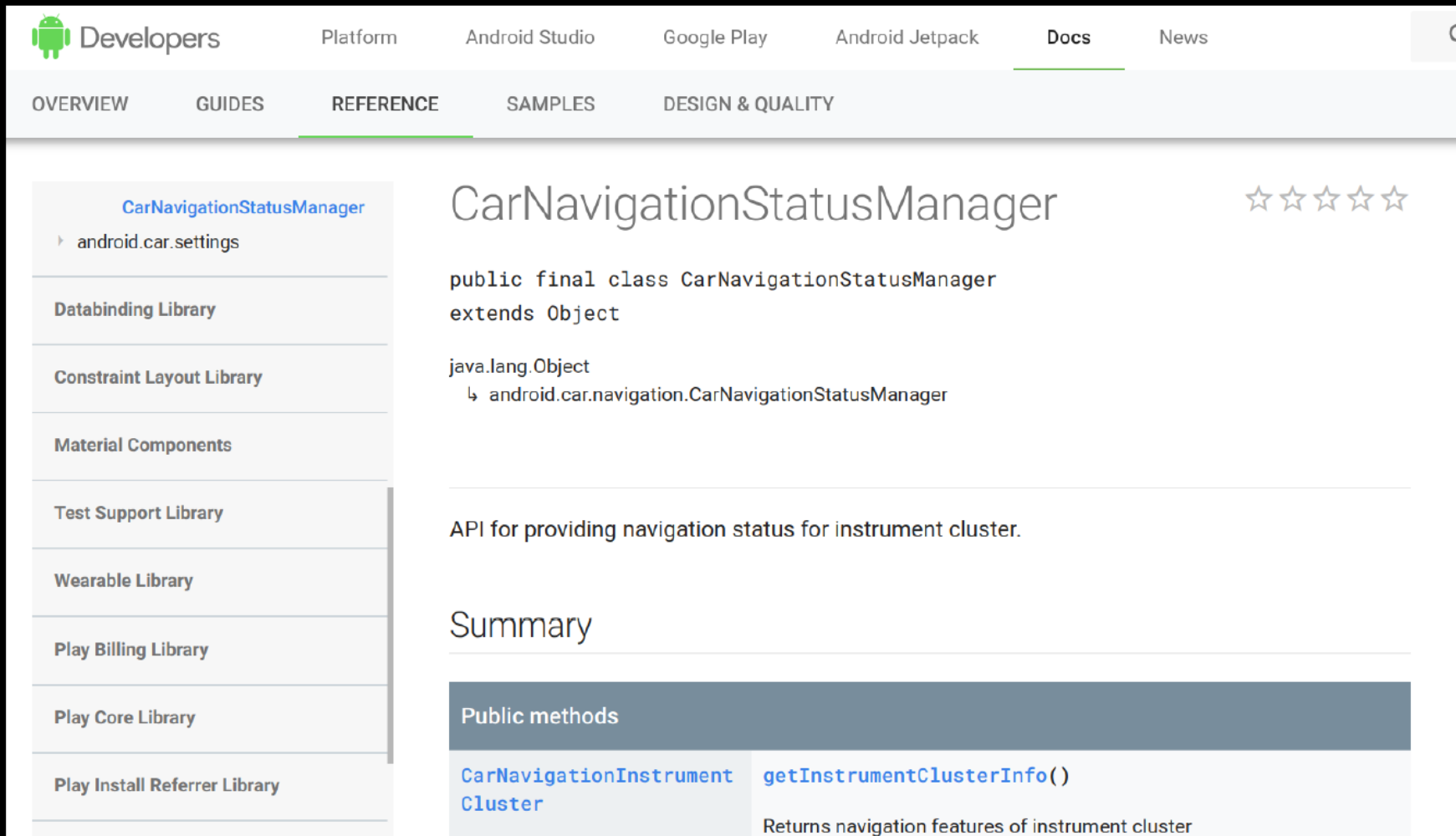
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https://schr.ws/hosted_files/aglmm2018/d0/AGL_Alexa.pdf

<https://confluence.automotivelinux.org/display/SpeechArch/Speech+EG+Architecture>

AGL need to declare solid Application API, and ...



The screenshot shows the Android Developers website. The top navigation bar includes 'Developers', 'Platform', 'Android Studio', 'Google Play', 'Android Jetpack', 'Docs', and 'News'. Below this is a secondary navigation bar with 'OVERVIEW', 'GUIDES', 'REFERENCE', 'SAMPLES', and 'DESIGN & QUALITY'. The 'REFERENCE' section is active, and the left sidebar lists various Android libraries, with 'CarNavigationStatusManager' selected. The main content area displays the class signature 'CarNavigationStatusManager' with a five-star rating. Below the signature is the code: 'public final class CarNavigationStatusManager extends Object'. The class is described as 'API for providing navigation status for instrument cluster.' A 'Summary' section follows, containing a table of public methods.

Developers Platform Android Studio Google Play Android Jetpack Docs News

OVERVIEW GUIDES REFERENCE SAMPLES DESIGN & QUALITY

CarNavigationStatusManager

android.car.settings

Databinding Library

Constraint Layout Library

Material Components

Test Support Library

Wearable Library

Play Billing Library

Play Core Library

Play Install Referrer Library

CarNavigationStatusManager

☆☆☆☆☆

```
public final class CarNavigationStatusManager
extends Object
```

java.lang.Object

- ↳ android.car.navigation.CarNavigationStatusManager

API for providing navigation status for instrument cluster.

Summary

Public methods	
CarNavigationInstrument Cluster	getInstrumentClusterInfo() Returns navigation features of instrument cluster

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13:00

AGL Application Design with AGL/FF Binding Version 3 - José Bollo, IoT.BzH

Improve CIAT Workflow: Build Once, Deploy Anywhere - Khiem Nguyen and Thuy Tran, Renesas Design Vietnam

Introduction to AGL - Walt Miner, The Linux Foundation

13:55

From "Connected Cars" to "Connected Boats:" Expanding AGL Adoption to Other Industries - Fulup Ar Foll, IoT.bzh

Open-Source Automotive Safety with the L4Re Microhypervisor - Michael Hohmuth and Adam Lackorzynski, Kernkonzept

Realization of a Remote Privilege Management for SDL-enabled Applications with SDL Server - Hiroto Imamura and Koichi Miyata, NTT DATA MSE Corporation

14:50

Google Summer of Code & Automotive Grade Linux Experience - Yordan Dimitrov, GSoC

Introducing a Secure Virtual Dynamic Sound Card for AGL - Mark Farrugia and Karl Gladigau, Fiberdyne Systems

State of Connectivity in AGL - Matt Ranostay, Konsulko

Grumpy Guppy

- Stay on Yocto 2.4 – Rocko branch
 - Semis aligned on rocko, skipping sumo
 - Focus on new features for CES rather than BSPs
- Speech Services Integrated
 - Speech Rec and TTS binders
 - Speech enablement in App Framework
 - Speech Enabled Apps for CES 2019

Grumpy Guppy

- Audio
 - Speech Enablement
 - Bluetooth SCO connection for HFP
 - Further hardening to make production ready
- Window Manager and Home Screen Service Evolution
- Application Lifecycle
- Vehicle to Cloud

Grumpy Guppy

- Instrument Cluster Reference Applications to replace CES demo unit

2018AMM@Dresden

Top 20 Git Committers in 2018

Commits	Name	Company
359	Romain Forlot	IoT.bzh
277	Jose Bollo	IoT.bzh
144	Kazumasa Mitsunari	Witz
144	Matt Ranostay	Konsulko
128	Jan-Simon Moeller	Linux Foundation
91	Ronan Le Martret	IoT.bzh
73	Changhyeok Bae	LG
67	Khang Nguyen	Renesas
57	Zheng Wenlong	Nexty
52	Matt Porter	Konsulko

Commits	Name	Company
52	Tadao Tanikawa	Panasonic
50	Loic Collignon	IoT.bzh
50	Sebastien Douheret	IoT.bzh
49	Jonathan Aillet	IoT.bzh
42	Stephane Desneux	IoT.bzh
39	Thuy Tran	Renesas
29	Yuta Doi	Witz
28	Clement Benier	IoT.bzh
28	Thierry Bultel	IoT.bzh
26	Kevin Hilman	BayLibre

1994 Total Commits
59 Committers
24 Companies

- 01 Jan 2018 – 10 Oct 2018
- Commits to master



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Commits by Company in 2018

Company	Commits
IoT.bzh	1000
Konsulko	222
Witz	173
Renesas	144
Linux Foundation	128
LG	73
Nexty	61
Panasonic	52
BayLibre	45
Collabora	20
Microchip	20
Mitsubishi Electric	11

Company	Commits
Xevo	11
Intel	7
Individual	6
AisinAW	5
FiberDyne	4
ADIT	3
Qt Company	3
AudioKinetic	2
Advanced Telematics Systems	1
Cogent Embedded	1
Nuance	1
Virtual Open Systems	1

1994 Total Commits

59 Committers

24 Companies

- 01 Jan 2018 – 10 Oct 2018
- Commits to master

2019CES@LasVegas

AGL Demo Plan at CES 2019

- 2019 Toyota Rav4 in the booth with AGL-based system and Amazon Alexa
- Two AGL main demos (Including Speech Rec)
- 16 member companies showing AGL demos:
 - AISIN-AW
 - Audiokinetic
 - Cognomotiv
 - DENSO
 - DENSO TEN
 - Fiberdyne
 - ForgeRock
 - Igalia
 - LGE
 - Microchip
 - NTT DATA MSE
 - Panasonic
 - Renesas
 - SafeRide
 - Tuxera
 - RealVNC Automotive



CES2019 Plan : Three demo sets

(1) W/W



- **FF stable Main demo.**
- Green Box from Japan(M3+KF), + RHTSA board(Intel Extension)
- Demo structure is consist of existing applications
- Target : stabilization and bugfix for AGL Apps from Sep to Nov.
- App Validation & Manager konsulko

(2) Europ



- **Speech focused PoC demo.**
- Green box from Germany + GG
- Team Europe (IoT.bzh, Microchip, Jan-simon) + Fiberdyne,
Speech EG (Amazon/Nuance)
- Manager : IoT.bzh

(3) Japan

- Japan Platinum/Gold PoC: Challenging(2 pattern demo)
- New Box and bare board + monitor panel. (M3,rpi3, etc)
- Target concept: New H/S design, Mapbox, SDL, New Apps, etc
- Manager : Kusakabe-san/Kurokawa

2019CES@LasVegas



2019CES@LasVegas



2019CES@LasVegas

AUTOMOTIVE GRADE LINUX IS THE ONLY OPEN SOURCE ORGANIZATION ADDRESSING ALL SOFTWARE IN THE CAR



2019CES@LasVegas



2019CES@LasVegas

CES2019 :

日本のAGLメンバーでコックピットを共同開発、量産車向けの機能盛り込む

🕒 2019年01月16日 06時00分 公開

[齊藤由希, MONOist]



印刷



通知



9



35



0



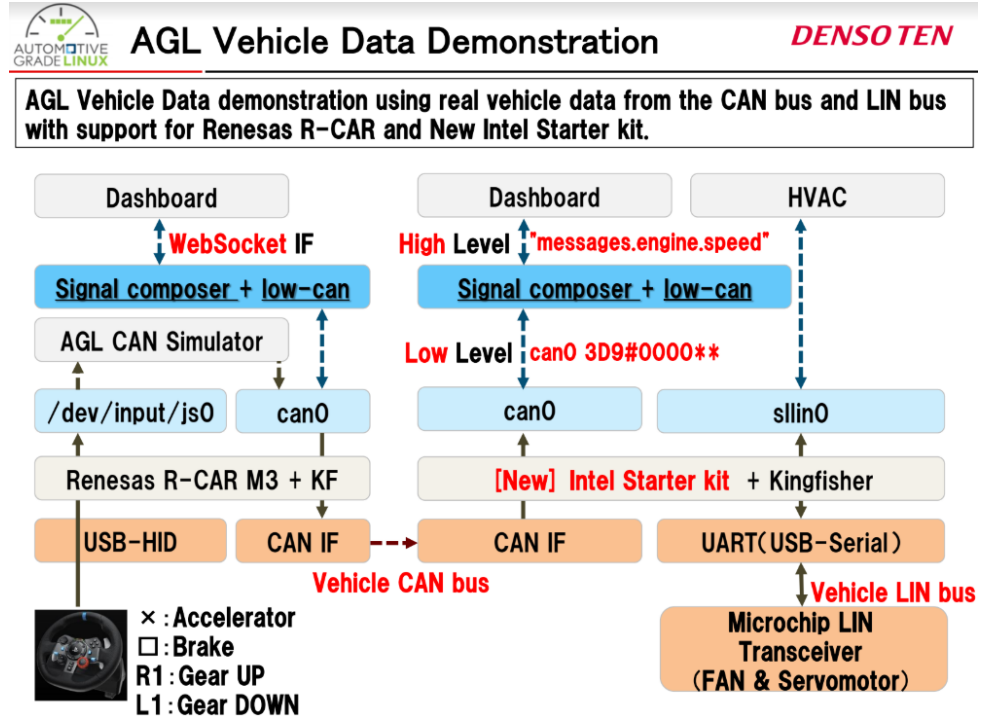
Linuxベースの車載情報機器関連のオープンソースプロジェクトAutomotive Grade Linux (AGL) は、消費者向けエレクトロニクス展示会「CES 2019」(2019年1月8~11日、米国ネバダ州ラスベガス)において、サプライヤーなど日系企業のAGLメンバーで開発したインフォテインメントシステムでデモンストラーションを行った。

デモ機には量産車にAGLを使っていくにあたって実現したい機能を実装した。日本向けの閉じた取り組みではなく、グローバルのコミュニティーとも成果や課題を共有してさらに作り込んでいく。



日本のAGLメンバーで共同開発したインフォテインメントシステム。写真左の横長のディスプレイがクラスター用。写真右の縦長のディスプレイはIVI用(クリックして拡大)

2019CES@LasVegas (New Intel board)



Thank you!!!

yuichi.kusakabe@denso-ten.com

2019FOSDEM

FOSDEM'19



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beer
open source
lightning talks



devrooms
8000+ hackers
742 lectures

Brussels / 2 & 3 February 2019

[schedule](#)

FOSDEM is a free event for software developers to meet, share ideas and collaborate.

Every year, thousands of developers of free and open source software from all over the world gather at the event in Brussels.

No registration necessary.