Automotive Grade Linux Developer BoF Session

Automotive Linux Summit

July 17, 2019

Walt Miner – AGL Community Manager
Twitter: @VStarWalt
wminer@linuxfoundation.org

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AUTOMOTIVE GRADE LINUX

What is AGL?

Collaborating to build the car of the future through rapid innovation

- Open source Linux-based collaborative project
- Hosted at Linux Foundation
- Focused on rapid innovation of vehicle software using the AGL Unified Code Base

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AGL Members - Total of 146 companies!

Platinum

DENSO

mazda

Panasonic

RENESAS

SUZUKI

TOYOTA

Gold

HONDA
The Power of Dreams

Silver

AISIN AW CO.,LTD.

amazon

Mercedes-Benz

DENSO TEN

DRIMAES

NTT DATA
NTT DATA MSE Corporation

QUALCOMM

VOLKSWAGEN
AKTIENGESELLSCHAFT

WIND RIVER

蓝星科技

Bronze

Total of 9 OEMs supporting AGL!

Accounts for approximately 50% of worldwide annual vehicle shipments*

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*Sources (42.8M vehicles out of 86.4M):
https://en.wikipedia.org/wiki/List_of_manufacturers_by_motor_vehicle_production
https://www.statista.com/statistics/275520/ranking-of-car-manufacturers-based-on-global-sales/

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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

AGL Unified Code Base

- Develop a single open source software platform for the entire industry, reducing fragmentation
- Provide at least 70% of the base platform for production projects
- Cultivate an ecosystem of developers, suppliers, and automotive expertise all using a single platform
- Reference hardware and applications available for adaptation

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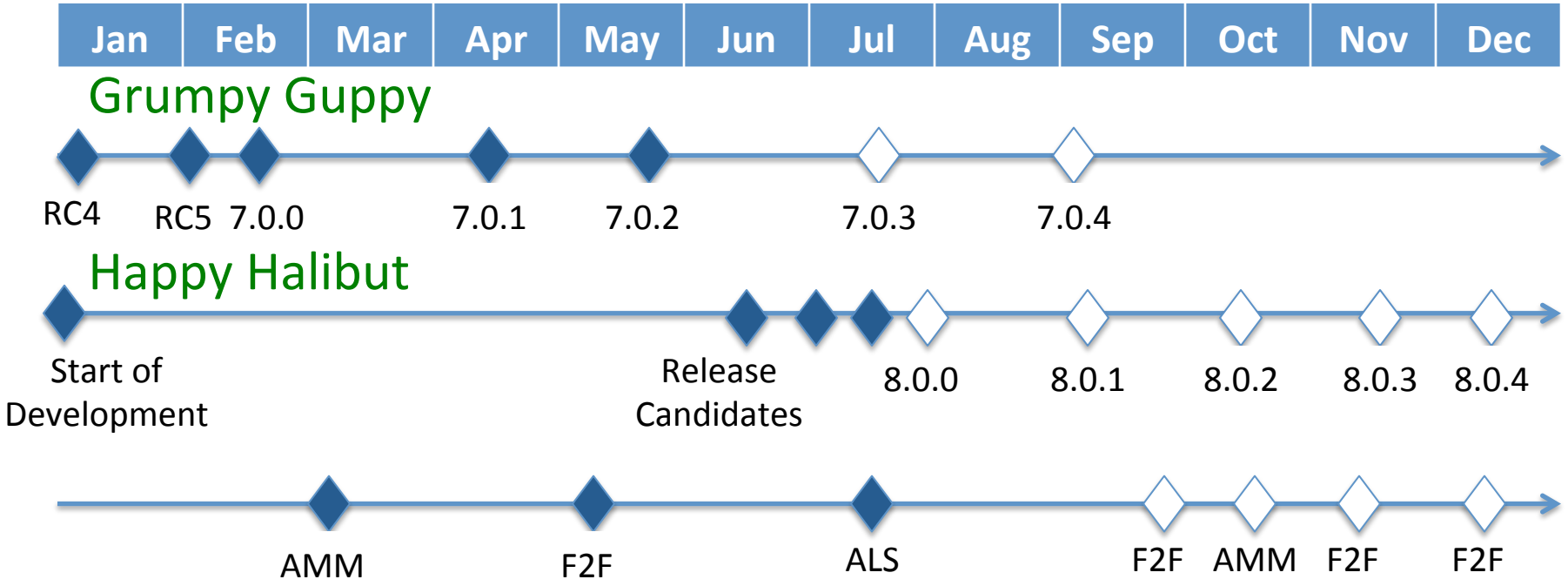
2019 AGL Schedule (Current)



See https://wiki.automotivelinux.org/schedule#latest_schedule for latest schedule information

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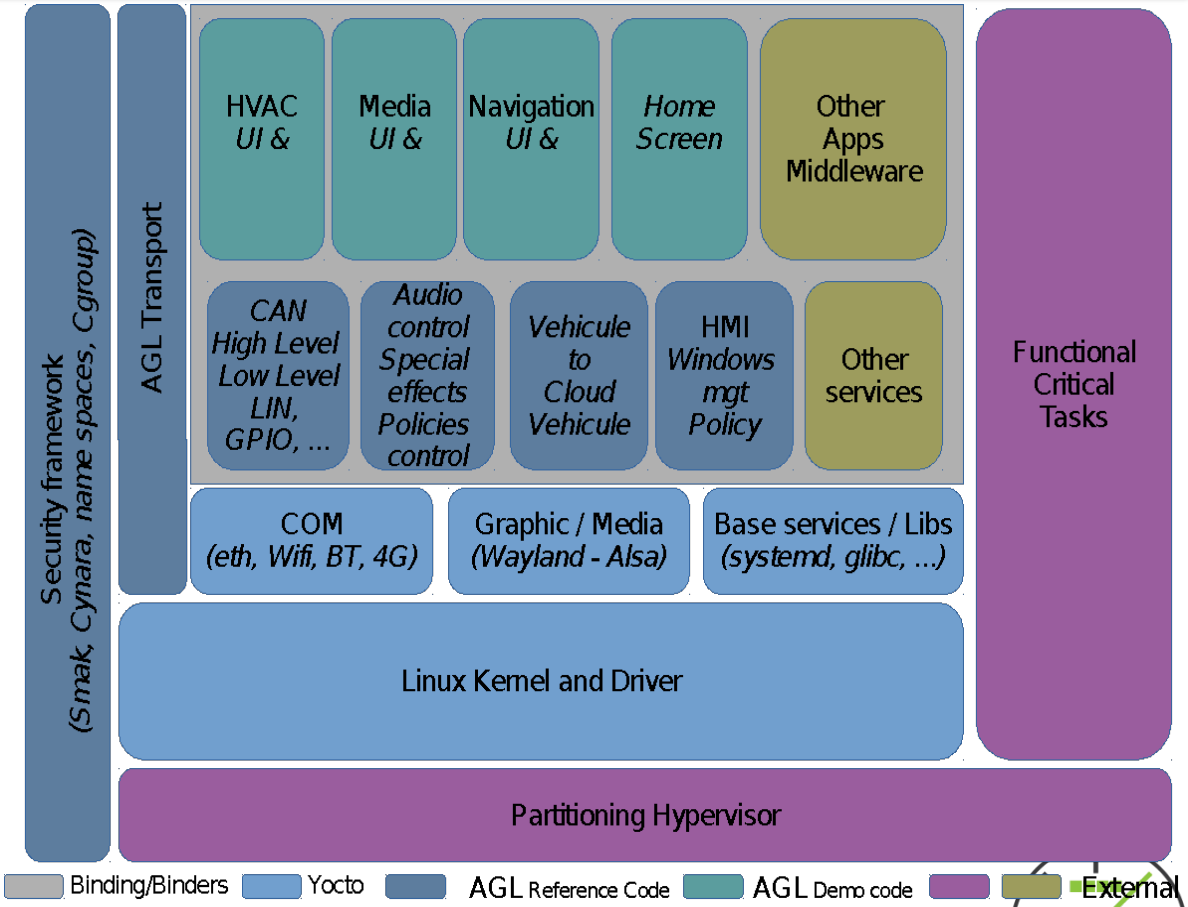
AGL Architecture

Platform

- Base BSP
- Security
- AGL transport

- **Micro Services based**
- Middleware and App Binding / Binder Model
- Downloaded on platform
- Multi-ECU
- Car to Cloud
- Car to Car

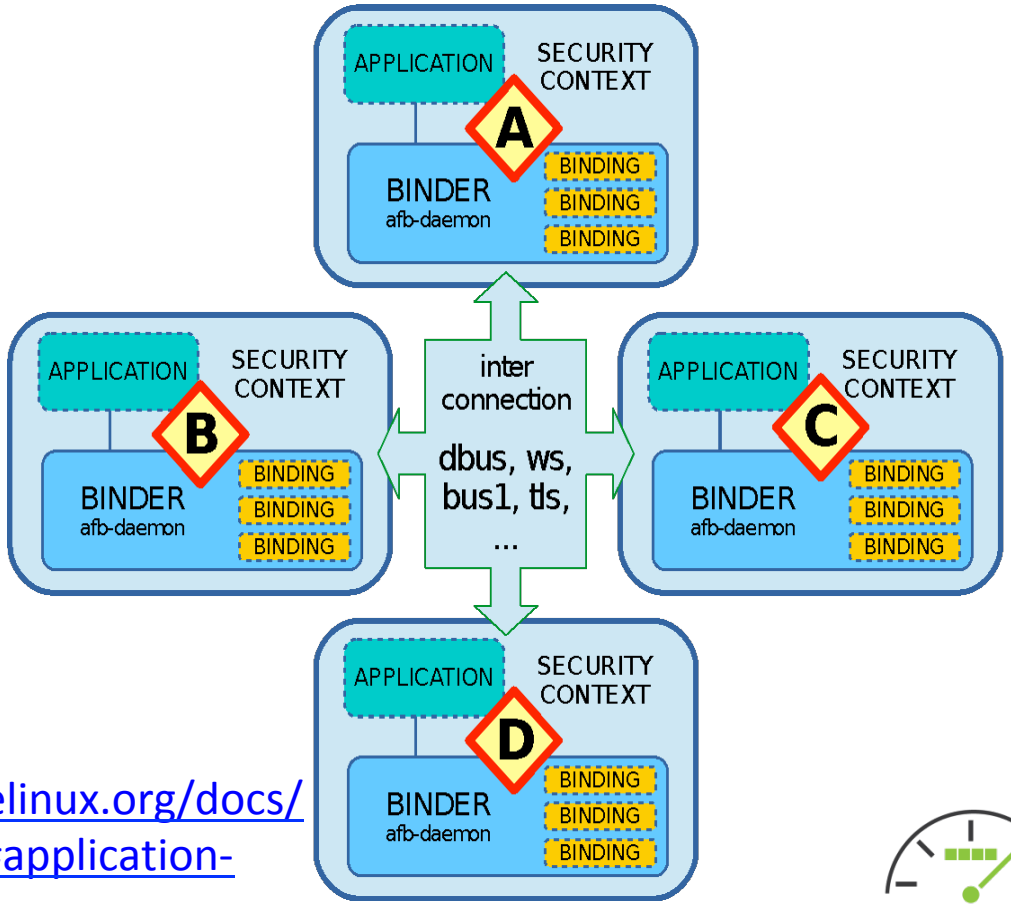


AGL Binder/Binding

Security Context
- SMACK based

Binder
- Secure environment for an App
- Container process
- Transport
- Security
- Standardized Async API structure

Binding
- Adds one API to the Binder
- Implements feature
- Multi thread support
- Standardized integration



http://docs.automotivelinux.org/docs/apis_services/en/dev/#application-framework-binder

AGL Binder/Binding

- Available binders include
  - Home Screen
  - Window Manager
  - Audio
  - Connectivity (Networking, Wifi, Bluetooth, Vehicle Signaling, Telephone, Phone Book, NFC)
  - Location (GPS, Geofence)
  - Media Player, Media Scanner, AM/FM Tuner
  - Signal Composer, HVAC

SDK for App Developers

- XDS Based SDK
- Docker image to eliminate host dependency issues
- Available for reference boards with published images that include graphics drivers
- Enables rapid AGL application development Support for Qt (HTML5 planned!)
- No Yocto knowledge is needed or assumed for SDK users

http://docs.automotivelinux.org/docs/devguides/en/dev/#development-kit-build-agl-application

DEVELOPER RESOURCES

AGL Documentation

- Getting Started

https://wiki.automotivelinux.org/start/getting-started

- AGL documentation site

http://docs.automotivelinux.org/

- AGL Wiki

https://wiki.automotivelinux.org/

- AGL Jira

https://jira.automotivelinux.org/

Get The Code

- Pre-built binaries and source tar balls available
  - https://www.automotivelinux.org/software/download
- Latest Source Code and Build Instructions
  - https://wiki.automotivelinux.org/agl-distro/source-code
- Release Notes

  https://wiki.automotivelinux.org/agl-distro/release-notes

AGL Code

- AGL gerrit

  http://gerrit.automotivelinux.org/

- AGL git

  https://git.automotivelinux.org/

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Ask Questions

- Weekly Developer Call on Tuesdays

  https://wiki.automotivelinux.org/dev-call-info

- IRC channel #automotive on freenode.net

Discussion about open source software for vehicles. No help for mechanical issues should be accepted from anyone on this channel.

- Weekly Newsletter

  https://wiki.automotivelinux.org/newsletter

- Discussions Mail List

  https://lists.linuxfoundation.org/mailman/listinfo/automotive-discussions

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2019 F2F Workshops

- Mar 5-7 – Tokyo AGL AMM
- May 7-9 – A Coruña, Spain (Igalia)
- July 16 – Tokyo - Day before Automotive Linux Summit
- Sep 24-26 – Berlin (VW/ Carmeq)
- October 21 - 24 – Monte Carlo – AGL Fall AMM
- Nov 12 – 14 – TBD – CES Integration Session #1
- Dec 10 – 12 – San Francisco – CES Integration Session #2
- Jan 7-10 : CES 2020

Q & A

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Q & A

- This is the segment where
  - You ask intelligent, well thought out questions
  - I ramble pointlessly and unintelligently
- And/Or
  - You ask “dumb” questions
  - I respond with concise, insightful, and well-reasoned answers

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THANK YOU

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