Automotive Grade Linux Developer BoF Session

Automotive Linux Summit
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Walt Miner – AGL Community Manager
Twitter: @VStarWalt
wminer@linuxfoundation.org
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
## 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
- DRIMRES
- NTT DATA
  - NTT DATA MSE Corporation
- Qualcomm
- Volkswagen
- Wind River

### Bronze
- Arm
- Astrolab
- AutoNavi
- Axiom
- BedRock
- Siemens
- Brights
- BrightFlight
- Brightsci
- Continental
- Copri
- Cosco Automotive
- Delphi
- ESg
- Enea
- ETRI
- Fujitsu
- GitHub
- IDEAS
- ICS
- Intel
- Indra
- IVIS
- KIO
- KONEX
- KONEX
- Lino
- Microsoft
- Mitsubishi
- Mitsubishi Electric
- NXP
- NEC
- Neufile
- NECOF
- NEXUS
- Nomura Holdings
- Oracle
- Oracle Silicon Valley Lab
- Oracle Redwood City
- Oracle Redwood Shores
- Panasonic
- PayPal
- Siemens
- Sony
- Synopsys
- Synopsys
- Toshiba
- TUItravel
- Velodyne
- Vereon
- Wipro
- Xevo
Total of 9 OEMs supporting AGL!

Accounts for approximately 50% of worldwide annual vehicle shipments*

*Sources (42.8M vehicles out of 86.4M):
the only organization addressing all software in the car
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
2019 AGL Schedule (Current)

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**Grumpy Guppy**
- RC4
- RC5
- 7.0.0
- 7.0.1
- 7.0.2
- 7.0.3
- 7.0.4

**Happy Halibut**
- Start of Development
- Release Candidates
- 8.0.0
- 8.0.1
- 8.0.2
- 8.0.3
- 8.0.4

**Itchy Icefish**
- AMM
- F2F
- ALS
- F2F
- AMM
- F2F
- F2F

See [https://wiki.automotivelinux.org/schedule#latest_schedule](https://wiki.automotivelinux.org/schedule#latest_schedule) for latest schedule information
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/
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
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

• 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
THANK YOU