Automotive Grade Linux
Production Readiness
Vision and Use Cases

Walt Miner – AGL Engineering Project Manager
Jan-Simon Möller – AGL Release Manager

October 6, 2020
AGL Vision For Product Readiness

• If we look at next generation IVI systems (MY25+)
  what will AGL provide
AGL Vision for Product Readiness

OEM

- OEMs have starting point for differentiation with competitors based on their own look and feel.
- Look and feel of the product is the same across an OEM product line regardless of the Tier One selected.
- Can use multiple Tier One suppliers for minimal additional NRE and schedule
- Avoid semiconductor vendor lock-in by having AGL provide a number of reference boards with BSPs from different vendors
AGL Vision for Product Readiness

Tier 1 Supplier

• Reuse a single platform across multiple OEMs to allow a single internal platform team rather than maintaining OEM specific platforms
• Excellent starting point for product specific OEM specific boards based on AGL reference design(s) and BSPs

Silicon/ Board Supplier

• Provide a reference hardware design and BSP that works for all members of AGL ecosystem.
AGL Vision for Product Readiness

• Developer experience
  • Easy to use SDK for rapid app development and deployment
  • Inexpensive and easy to obtain boards to get started (e.g., RPI4)

• Automotive Specific reference hardware to allow automotive suppliers to get a head start on product design
  • Open hardware design allows re-use by product designers
  • Well-tested, freely available BSP and base platform
  • Vertically integrated solutions in conjunction with ISVs

• Upstream First Open Source
  • Whenever possible use an open source component that is widely supported both in and outside of automotive (e.g., Linux, Weston, PipeWire, systemd)
  • Create new components that AGL must maintain only when necessary

• Product-Ready or Reference Applications?
What is required in a Next Gen IVI Product?

- Developer Experience – Download SDK and get image on target board within 15 minutes
- Modern UI and Graphics framework
- High end audio capabilities
- Camera and Video playback integration
- Bluetooth
- Tuner
- Virtualization / Resource sharing- VirtIO
- 4G/5G connectivity? Are moving to a world where this is not important locally but is provided entirely by the driver’s personal device?
- GPS and location-based services - Same question above.
- Extensibility into next generation mobile applications and services
- Using the vehicle in a cashless and contactless society
- Built-in Speech Recognition or mobile device based only?
What does AGL need to provide?

✓ Modern UI and Graphics framework
✓ High-end audio capabilities
✓ Camera and Video playback integration
✓ Bluetooth
✓ Tuner
✓ Virtualization / Resource sharing - VirtIO
✓ 4G/5G connectivity?
✓ GPS and Location-based services
✓ Extensibility into next generation mobile applications and services
✓ Using the vehicle in a cashless and contactless society
✓ Built-in Speech Recognition or mobile device based only?

SAMPLE – once we settle on the list of next gen features we can discuss what AGL should provide
Use Cases Decomposition

• Decompose required use cases further to identify:
  • What does AGL already provide
  • Work packages for future open source development
  • Components that will be provided by Tier One suppliers or ISVs in future products
Sample Use Case Decomposition

• Bluetooth
  • Bluetooth Profiles provided by AGL, Tier One, or ISV
  • Common Bluetooth API for App developers
  • Bluetooth Service
  • Integrated Bluetooth stack
Sample Use Case Decomposition

• Modern UI and Graphics Framework
  • Native or Web Based
    • If native what technology
  • AGL Compositor based on Weston
  • GPU integration for reference boards