Welcome & Opening Keynote
Technical Summit – Troy, Michigan
Michael Ziganek, GENIVI President | 12 November 2019
Agenda

- GENIVI History and Accomplishments
- GENIVI Current Activities
- Tech Summit Overview and Goals
GENIVI History and Accomplishments
GENIVI Accomplishments (2009-2017)

✓ Introduced open source software and Linux operating system into the automotive industry
  - Brought OEMs together to align requirements for IVI systems
  - Facilitated collaboration between suppliers to deliver reusable IVI software components and a reference platform based on open source software

✓ Built a global, collaborative community where standards and software could be jointly developed, demonstrated, and adopted in commercial products
  - GENIVI software in many brands worldwide

✓ Established a global, buyers/sellers network and facilitated high-visibility events where business relationships could develop and grow
  - Highly attended showcases & receptions at CES, TU-Automotive, and GENIVI annual events
So GENIVI declared victory and expanded scope

• Vehicle Software Domain Interaction Strategy (2018-2019)
  • Consolidation of infotainment, safety and connected device software “domains”
  • Example projects: Display sharing, Hypervisor deployment, cross-domain communication protocols, cybersecurity

• Multi-OS Integration (2019)
  • Next logical step to interaction → integration of operating environments running infotainment, safety and connected devices
  • Example projects: Android Automotive SIG, Interoperability with Adaptive AUTOSAR, System Health/Debugging/Analysis in a Multi-OS context, evolution of domain interaction projects
And revised our Mission

The GENIVI Alliance develops standard approaches for integrating operating systems and middleware present in the centralized and connected vehicle cockpit.

The alliance links adopters of Android™ Automotive, AUTOSAR, Linux, and other in-vehicle software with solution suppliers resulting in a productive and collaborative community of 100+ members worldwide.
Current GENIVI Activities
Driving Purpose Behind GENIVI Projects

• Delivering openly developed and shared solutions to the industry for adoption and enhancement to ease integration and save time and money

• In the forms of:
  - Technical Education in Tech Briefs and White Papers
  - API and Component definition in Specifications
  - Functioning Proofs of Concept in Reference code
  - Reusable software components in Project repositories
  - Developer efficiencies through Tooling
  - Eased integration through Shared Architectural Models.
Connecting GENIVI® and AUTOSAR

Automatic model transformation tool for integration of GENIVI models (Franca IDL) and AUTOSAR Adaptive services

AUTOSAR Adaptive model (arxml) → transformation → GENIVI interfaces model (Franca IDL)

- AUTOSAR-based target system
- GENIVI-based target system

Data exchange via car network (SOME/IP)

Built by itemis

Code generator (AUTOSAR tooling)

Code generator (CommonAPI C++)
Cloud/Connected Services Project Goals

• Primary Goal: To align, combine and integrate technical standards and solutions to achieve a seamless coupling of in-vehicle and back-end architectures resulting in an end-to-end, vehicle computing platform

• The platform shall leverage existing standards but also identify gaps and work collaboratively to fill them

• To achieve this, GENIVI will investigate:
  - Reference software and system architectures for data exchange
  - Data models and their representations
  - Data protocols for requesting data (low to medium speeds)
  - Data protocols and software architecture for big data (high-bandwidth data streams, high-volume processing)
  - Nomenclature, terms, names, definitions and contracts so that we understand each other in both technology and business terms
  - Use cases and requirements to drive the other work areas in the right direction.
Automotive Cybersecurity

- Expanded through June 2018 acquisition of FASTR (Future of Automotive Security Technology Research) and their deliverables in secure SOTA
- Also expanded by recent new member joins with strong cybersecurity portfolio
- Established active liaison relationship with AUTO-ISAC
- Current activities related to threat analysis tooling and relationship to ISO and SAE standards activities
- GENIVI has history of training developers on writing more secure code
- GENIVI is currently viewed as a viable community to develop security approaches for making in-vehicle software more resilient to attack
Tech Summit
Overview & Goals
HEH, MAYBE WE SHOULD COLLABORATE.
What is collaboration?

“Collaboration is a way of working that attracts and involves people outside of one’s formal control, organization and expertise to accomplish common goals. Many of today’s most important challenges are so complex and multifaceted that they can only be tackled by teams of experts from disparate domains. To solve them, professionals must be able to harness ideas, people, and resources from across disciplinary and organizational boundaries.”

Summit Goals

• Establish new relationships and mutually-beneficial dialogs
• Raise the level of active collaboration in the industry
• Put forth GENIVI as one (of many) organizations in which this collaboration can occur
• End with specific work to do in each of the three topics, not a feeling of just having talked
Program Overview

Tuesday Agenda

0900-1015  Introductions to Active GENIVI Projects
1015-1045  Networking Break
1045-1215  Cloud & Connected Services Session 1
1215-1345  Networking Lunch
1345-1615  Cloud & Connected Services Session 2
           Android Automotive SIG Session 1
           (1500-1530  Networking Break)
1630-1900  Welcome Reception

Wednesday Agenda

0830-1000  Cloud & Connected Services Session 3
           Android Automotive SIG Session 2
1000-1030  Networking Break
1030-1200  Automotive Cybersecurity Session 1
1200-1330  Networking Lunch
1330-1600  Automotive Cybersecurity Session 2
           Breakouts on other topics as needed
           (1430-1445 Networking Break)
Thank You for Attending!

• All sessions are open
• GENIVI leaders welcome interaction
• Enjoy the Summit!
Thank you!

Visit GENIVI:
http://www.genivi.org
http://projects.genivi.org

Contact us:
help@genivi.org
Results of Vehicle Domain Interaction Work (2017-2019)

- Developing or Extending Hypervisor APIs
  - Convened strong group of commercial and open source HV providers
  - Publishing a single specification (Automotive Virtualization Platform) delivered openly and with multi-OS support

- Graphics Sharing and Distributed Compositing
  - Comprehensive categorization of how graphics can be shared in cross-domain contexts
  - Tech Briefs published for each category & Ramses code published

- Determining Preferred Generic Communication Protocols
  - Results published from broad survey of protocol usage and preferences
  - Delivered a prototype tool for enabling Adaptive AUTOSAR interop with non-AUTOSAR system (GENIVI IVI) through IDL transformation (Tech Brief published and demo shown at CES) (see next slide)

- Vehicle Data / Cloud Service Models
  - Supported W3C publication of Candidate Recommendation for Vehicle Interface Service Specification (VISS)
  - Developing reference implementations of W3C VISS and Sensoris specs
## Parties involved on Domain Interaction: SW vendors, Tiers 1, OEMs

### Graphics Sharing & Distributed Compositing (GSHA)
- The Qt Company
- Mentor
- ADIT
- Bosch
- Harman
- Alpine
- Allgo
- Renesas
- BMW

### Developing or Extending Hypervisor APIs (HV)
- Opensynergy
- EPAM
- Green Hills
- Perseus
- Xen, Xvisor - open source
- Elektrobit
- ADIT
- Bosch
- KPIT
- Alpine
- ARM

### Determining Preferred Generic Communication Protocols (GPRO)
- Itemis
- Mentor
- Visteon
- Bosch
- Renault
Connected Car and Cloud
Exemplary SW Reference architecture

Cloud
- Hawkbit SW update
- GENIVI Connected Car – Cloud Framework
- Kuksa, Communication
- W3C VSS
- ExVe
- HONO Protocol Adapter MQTT or...

Vehicle
- IVI-System, Connectivity
- Authorization
- GENIVI Connected Car Framework
- Sensor & State Manager
- Sensor & State Information
- V2V, V2I
- C-ITS
- pWLAN 5GAA

Road Infrastructure
- 4G/5G Network
- 4G/5G Modem
- HONO Protocol Adapter MQTT or...
- W3C VSS
- Sensoris
- ExVe

GENIVI Focus
GENIVI Cooperation
Information exchange