Agenda

- GENIVI over the years
- Perspectives of early leaders
- Results from 2018 to Present
- GENIVI Scope Expansion and New Projects
- GENIVI Board Expansion
- Upcoming Events
- Google Summer of Code
- Compliance Approvals
GENIVI Over the Years
“Let’s get to work and make this thing happen!”
2010 – AMMs in Munich & Detroit

No cool photos available, but great meetings!
First CES Showcase - 2011

“Ah....Vegas. How’s the wine?”
2011 AMMs – Dublin & Shanghai

“Let’s make an Android-based compliance program”

“Wasn’t the Reception at the Guinness Brewery awesome?”
2012 AMMs in Paris & San Jose

“GENIVI is NOT a Micky Mouse organization!”
(Event held at Disneyland Paris)
"GENIVI Software in production! Go team!"
San Diego AMM 2013

“This cruise reception is really cool!”
“Being on the GENIVI Board is awesome...you should try it!”
“GENIVI did it...Linux is in the car. Now, let’s get it connected!?"
Compliance & Most Valuable Contributor (MVC) Awards

“We are GENIVI Compliant”

“Thank you, Tack, Danke”
Detroit AMM 2014 & Casino Night Reception

“Wait, Oktoberfest in Detroit...what’s wrong with this picture?”

“Thanks for the honor of serving as GENIVI President”
“This GDP stuff is awesome! Thanks for the training”
Seoul AMM 2015

“I can’t believe this building floats!”

“Welcome to the GENIVI-equipped Genesis”
“GENIVI receptions rock! Thank you to all our sponsors”
Paris AMM 2016

“I’m German and I have to drink French beer!?”

“PSA welcomes you to Paris…and let us give GENIVI a few more things to do.”
San Francisco AMM 2016

“Check out these cool styrofoam letters”

“Smart Cities like Las Vegas need help from the automotive industry”
“First year in the Bellagio, this is great!”
“Stay tuned, a new approach is coming”

“Enjoy a hands-on GDP experience”
“This Domain Interaction strategy is spot on”

“Why can’t all events have chairs like this?”
[“loud noise from over 1000 people talking at the same time”]

2017 Automobility LA
“Long time, no see”
“songs...songs”
Perspectives of Early Leaders
In the Early Days

Graham Smethurst
Founding GENIVI
President and Board Chairman

Markus Boje
Founding GENIVI
Technical Steering Committee Lead

Other Very Confused and Amused early leaders
Results from 2018 to Present
GENIVI Vehicle Domain Interaction Strategy - Achievements

Deliver open standard interfaces and code that bridge multiple car software domains

- Enables cross-industry, collaborative effort
- Addresses an industry-wide challenge of domain interaction
- Simplifies development and improves solution quality
- Leverages expertise already existing in GENIVI community
Results of Vehicle Domain Interaction Work (2018-2019)

• 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) (picture on 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
Connecting GENIVI® and AUTOSAR

Automatic model transformation tool for integration of GENIVI models (Franca IDL) and AUTOSAR Adaptive services
Parties involved on Domain Interaction: SW vendors, Tiers 1, OEMs

Graphics Sharing & Distributed Compositing (GSHA)

Parties involved:
1. The Qt Company
2. Mentor
3. ADIT
4. Bosch
5. Harman
6. Alpine
7. Allgo
8. Renesas
9. BMW

Developing or Extending Hypervisor APIs (HV)

Parties involved:
1. Opensynergy
2. EPAM
3. Green Hills
4. Perseus
5. Xen, Xvisor - open source
6. Elektrobit
7. ADIT
8. Bosch
9. KPIT
10. Alpine
11. ARM

Determining Preferred Generic Communication Protocols (GPRO)

Parties involved:
1. Itemis
2. Mentor
3. Visteon
4. Bosch
5. Renault
2018 Events

Munich AMM & Open Community Days

Technical Summit in Bangalore, India

GENIVI Networking Reception @ TU-Automotive
CES2019 Connect2Car Program

Connect2Car: A sixth year collaboration comprised of GENIVI, SAE, SEMA, and MEA. Each year Connect2Car introduces new thought leadership topics in a moderated panel format to a diverse CES audience seeking a deeper understanding of the current status, trends, opportunities, and challenges facing our connected ecosystem. This year the main sessions topics included:

- Connecting the Autonomous World
- The Future of In-Vehicle Infotainment
- Machine Learning & Artificial Intelligence
- Wireless: DSRC/5G, Bluetooth, WiFi
- Government vs. OEM Development
- Connected, Assisted and Automated
GENIVI CES2019 Networking Reception and Showcase Highlights

- 1200 in attendance
  - 161 representatives from 16 OEMs
- 16 Sponsors
- 65 Showcase tables taken
- 33% larger facility than 2018
- Revenue positive
- 2 New Members joined
Organizational Metrics

• Membership
  - 15 New Members Joined (Currently we have 101 members)
  - Members are equally distributed over North America, Europe and Asia/Pacific

• 2018 Financial Results
Scope Expansion & New Projects
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
Vehicle Domain Interaction (2017-2018)

- Essential vehicle software architecture & software required for cross vehicle domain functions

![Diagram of Vehicle Domain Interaction]

- Cluster/Combi
  - Graphics
  - Video
  - Audio
  - Signals/Messages

- IVI
  - Linux
  - Android
  - QNX
  - Signals/Messages

- CE Device
  - Video
  - Audio
  - Signals/Messages

- AUTOSAR
  - Signals/Messages

- Network/Hypervisor
  - Non-safety Domain
  - Safety Domain
  - External Domain
Future Vehicle EE and Software Architecture (GENIVI 2018+)

Roadmap E/E architecture
Up to now

Additional Discussion during 9:00am panel tomorrow
The Future is Multi-OS Domain Integration (2019++)
Revised 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.
A United Cockpit Computing Software Ecosystem is Possible

- Android Adaptors
  - "Android Automotive SIG"
  - "Multi-OS Integration"
  - QNX Adaptors
  - Linux Adaptors
  - AUTOSAR Adaptors

- Google

- Linux Vendors
- AUTOSAR Vendors
- GHS/Other Vendors

OEM-Led Projects
Strong Foundation Laid for Multi-OS Integration Work

OEM-Led Projects

“Android Automotive SIG”

“Multi-OS Integration”

Previous & Current Domain Interaction Work

More on these two projects in the next panel session
Implications of new strategy on GENIVI Development Platform (GDP)

• GDP will continue to be available in the GENIVI github and will include the GENIVI Baseline (consisting of all mandatory GENIVI software components for GENIVI compliance)

• Continued contributions to GDP are welcome; however, several other Linux platforms are good candidates for integration and therefore, GDP will not be as actively maintained as in the past

• GENIVI will use other in-vehicle platforms as needed based on the intended purposes of the (multi-OS) integration activities
  - Other Linux platforms such as Apertis, webOS, AGL
  - Android Automotive OS platform
  - Adaptive AUTOSAR
  - Others as needed

• Gunnar Andersson continues to be primary contact point for GDP-related topics (gandersson@genivi.org)
But let’s not forget the Future … Vehicle Cloud Computing

Connected Car and Cloud

Exemplary SW Reference architecture

Attend the Car2Cloud BoF @ 11am on Thursday
Scope Expansion Summary

- GENIVI has had a productive and impactful past
- Trends toward domain fusion and centralization has led GENIVI to pivot toward a mission of easing integration of multiple in-vehicle operating system present in the vehicle cockpit
- Two new projects are being launched this week to explore needed extensions for Android Automotive deployment and to focus on challenges faced by multi-OS integration
- Domain Interaction work completed and in progress lays a strong foundation for the new projects
- GENIVI to consider usage of other development platforms as appropriate for each project
- We invite you to attend new project kick-off activities:
  - Multi-OS Integration Panel: Next Session
  - Android Automotive SIG: 9:00 am Wednesday
  - Multi-OS Future & System Integration: 2:00 pm Wednesday
  - Car2Cloud BoF: 11:00 am Thursday
- GENIVI welcomes additional project ideas within the expanded scope of multi-OS integration in the cockpit
GENIVI Board of Directors Expansion
2019 Board of Directors

Jochen Böhm
Area-Lead Development LINUX-/GENIVI-Platform
BMW CarIT

Dr. Andree Zahir
Senior Vice President, Head of Business Unit CI1 (Automotive Navigation and Infotainment Systems)
Robert Bosch Car Multimedia GmbH

Michael Ziganek
General Manager, Automotive Business Unit
Mentor a Siemens Business

Sujal Shah
Android Automotive CoE &
Advance Market Product Management at HARMAN International

Hyungjin Jeon
Research Fellow, Advanced Research & Product Planning / Vehicle component Solution Company at LG Electronics
Expanded Mission means Expanded Leadership

- Annual Board election in March resulted in one new Board member (Congrats to LGE!)
- **Opening a new Board nomination period effective today that will close on 21 June**
- Board seats are now available to Charter, Core and Associate members
  - Elected Associate members receive a 6-month term, after which they must upgrade to Core or Charter level to remain on the Board
- Bylaws-required “Board adder fee” has been waived for 2019
- **Nominations should be sent to the Executive Director (scrumb@genivi.org) by not later than 21 June**
  - Should include: Company Name, name & title of representative that will sit on the Board
- Election held in early July and first Board meeting is in late July
  - Board Officer Elections will be held during the July BoD meeting (new Board members eligible)
- Contact Steve or any Board member this week if you have questions
Next Event
TU-Automotive Detroit Activities

June 4th

- 12:00 – 3:00pm 2nd Annual “Future of Radio Workshop”
  - Presentations, panels and open dialog discussions
  - Expecting 50+ in attendance

June 5th

- 2:30 – 4:30pm NAB VIP Tour of TU-Detroit Show Floor (GENIVI & NAB guided)
- 4:00 – 6:00pm SDLC & Detroit Regional Partnership (startups) VIP Networking
- 6:00 – 9:00pm GENIVI TU Networking Event (Michigan Beer Company)
  - Expecting 750+ in attendance (OEMs, Tier 1s, etc.)
  - 11 Event sponsors
Google Summer of Code – 2 projects to be started

• 1. RAMSES 3D Graphics  (Project Mentor: Violin Yanev, BMW)
  - Improve RAMSES by connecting a 3D design tool
    • Previous discussion to connect Qt Designer tool seems stalled
    • **Blender** is a well established, often professionally used 3D modeling tool, which is 100% open source
    • Main task: Develop a plugin for **Blender** to output graphical designs in a format appropriate for **RAMSES**
    • Secondary task: Use the framework to extend the Helsinki Navigation demo with graphical content (for example advertisements on buildings)

• 2. Speech control and machine learning  (Project Mentor: Gunnar, GENIVI)
  - Phase 2 of previous year’s project – extending understanding of natural speech by machine learning algorithms
  - Will target alternative GDP platform (e.g. Apertis)
Compliance Approvals
## RECENT COMPLIANT APPROVALS

Since the last AMM

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What is the Ask Me! Initiative?
Introducing the GENIVI Ask Me! Experts

Bevan Watkiss
Irdeto
Security Team

Marc Bellanger
Renault Software Labs
Franca-ARA Project

Gunnar Andersson
GENIVI Development
Lead
Multi-OS Integration

Stephen Lawrence
Renesas
Graphics Sharing &
HMI Composting Project

Eugen Friedrich
ADIT
Graphics Sharing &
HMI Composting
Project

Giovanni Vergine
Visteon
Generic Protocols Project
Thank you to our Sponsors

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| GENIVI |
Thank you!

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http://projects.genivi.org

Contact us:
help@genivi.org