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Interview: Joel Hoffmann Discusses Infotainment And The GENIVI Alliance

Joel Hoffmann and William Wong

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If you are hoping for an open platform in your car then you might want to know about the [GENIVI Alliance](#). It is turning Linux into the In-Vehicle Infotainment (IVI) platform for the automotive space. The alliance has the backing of major players in this space including companies like Intel, Texas Instruments, Freescale, STmicroelectronics, the BMW Group, Bosch and Delphi just to mention a few.

Linux is just the basis of the platform and tools that the GENIVI Alliance members build and deliver. The framework ([Fig. 1](#)) addresses a range of services from navigation to consumer electronic (CE) device connectivity.

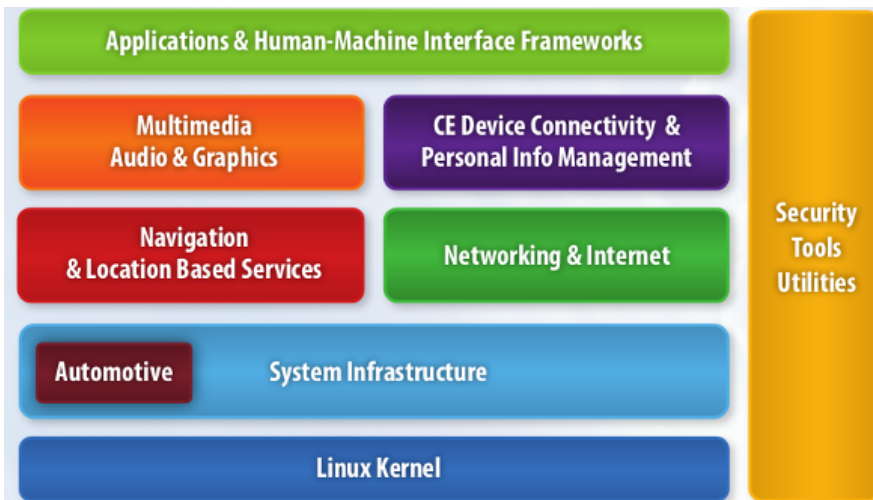


Figure 1. The GENIVI projects are built on top of Linux and provide In-Vehicle Infotainment services using public APIs.

Joel Hoffmann is the Automotive Strategist for Intel's expanding Automotive Solutions Division. He is a spokesperson for the Alliance. I asked Joel to fill us in on what the Alliance is and what it is doing for the auto of the future.

Wong: What is the GENIVI Alliance?

Hoffman: GENIVI Alliance is a non-profit consortium of over 170 automotive industry companies promoting the collaboration and deployment of open source software in the automotive electronics business, specifically infotainment. GENIVI members produce

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and maintain the code, while the alliance hosts technical workgroups and develops recommendations that are designed to avoid fragmentation between commercial implementations. The objective is to provide the industry a more competitive environment for faster innovation and lower cost of software development.

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by the System Architecture team. This document provides a clear definition of what the middleware components need to be included to achieve GENIVI Compliance. A few examples of included components are an automotive audio manager, graphical layer manager, and a diagnostics log and trace component capturing car sensor information. Additionally, the GENIVI Compliance program enables GENIVI members to promote themselves for the effort they've invested in their software stacks and services. In support of this GENIVI also provides project hosting services for automotive related code development, regardless of whether the software component is required for compliance.

Wong: How is a platform developed and delivered?

Hoffman: Expert Groups align requirements from OEMs and Tier 1s and adapt open source code available in upstream projects to meet the requirements. Where no code exists, GENIVI will sponsor and launch a new project to develop the needed software. A special team called Baseline Integration Team (BIT), collects the software components listed in the specification and builds a functioning baseline that serves as a reusable platform for organizations to use in development and commercial activities. GENIVI has public projects from which anyone can build a GENIVI compliant baseline using the Yocto and Baserock build systems.

Wong: What advantages does GENIVI have to application developers?

Hoffman: Apps developers traditionally had to work directly with the OS supplier tools, possibly under a paid support arrangement. With Linux and the open source components, developers have access to the original maintainers of each piece of software. While GENIVI does not currently include apps as part of its scope, the open source community has a very robust apps ecosystem, since a large number of mobile device apps are built on these open frameworks. As GENIVI members evolve the alliance, new areas of interest are heating up, such as application frameworks, while will impact and accelerate app development across the industry.

Wong: How does a developer get started working with GENIVI?

Hoffman: Start by reviewing the developer site: projects.genivi.org, where a number of key components are managed. Access to these projects is available to anyone at no cost, and use of the tools is sponsored by the alliance. If the developer wants to participate in requirements alignment, or have their work become part of the compliance specification, they will need to join at an associate or higher level, currently \$5000 per year. Benefits of the membership also include access to several major conferences that rival any industry

Wong: GENIVI is based on Linux but what does the rest of the GENIVI software platform look like?

Hoffman: Linux is the basis for the platform and all software components defined by GENIVI are hosted through the Linux Foundation in GENIVI repositories, or are already in place in other open source projects elsewhere in the community. Approximately 140 different components make up what is called the GENIVI baseline, to which Tier 1s and OEMs add a combination of open and closed code to meet the OEM system requirements.

Wong: What are the major deliverable components?

Hoffman: GENIVI collaboratively develops its compliance specification, a detailed document derived from the work of GENIVI Expert Groups and reviewed

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event in popularity and opportunity to advance their business from a marketing perspective. GENIVI marketing serves to both promote the alliance and increase its membership, as well as promote the members visibility to customers and the industry.

Wong: How would an application be deployed? Is this something that must be done in conjunction with the car manufacturer? Is there a common app store scenario for making applications available?

Hoffman: While some car makers are experimenting with user installable apps in the car, most applications must be deployed with participation from the car manufacturer. App stores for cars may be coming, but a number of issues need to be dealt with before this is common. GENIVI does not play a role in this area at this time.

Wong: How is compliance testing done?

Hoffman: In the current release, Compliance 4.0, a combination of self-validation by members, and expert review is implemented by the system architect team. Full system level compliance testing is typically performed at the OEM/Tier1 level, not by GENIVI.

Wong: What type of licensing is involved?

Hoffman: GENIVI encourages use of a number of acceptable open source licenses, and provides training to members to help them understand the essential processes to maintain license compliance. Several companies offer licensing scanning as a service, a number of which are GENIVI members, such as Black Duck.

Wong: What is the time line look like for delivery of GENIVI compatible platforms, development tools, etc.?

Hoffman: BMW is the first major OEM to develop a complete infotainment platform based on GENIVI compliance and leveraging suppliers that have committed to supporting the new open model. A demonstration of the production head unit was presented in Ludwigsburg, July 2013 and will be delivered in future vehicle models to be announced later in the year. Other OEMs belonging to GENIVI are actively developing similar production systems, but have not made any public announcements yet.

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