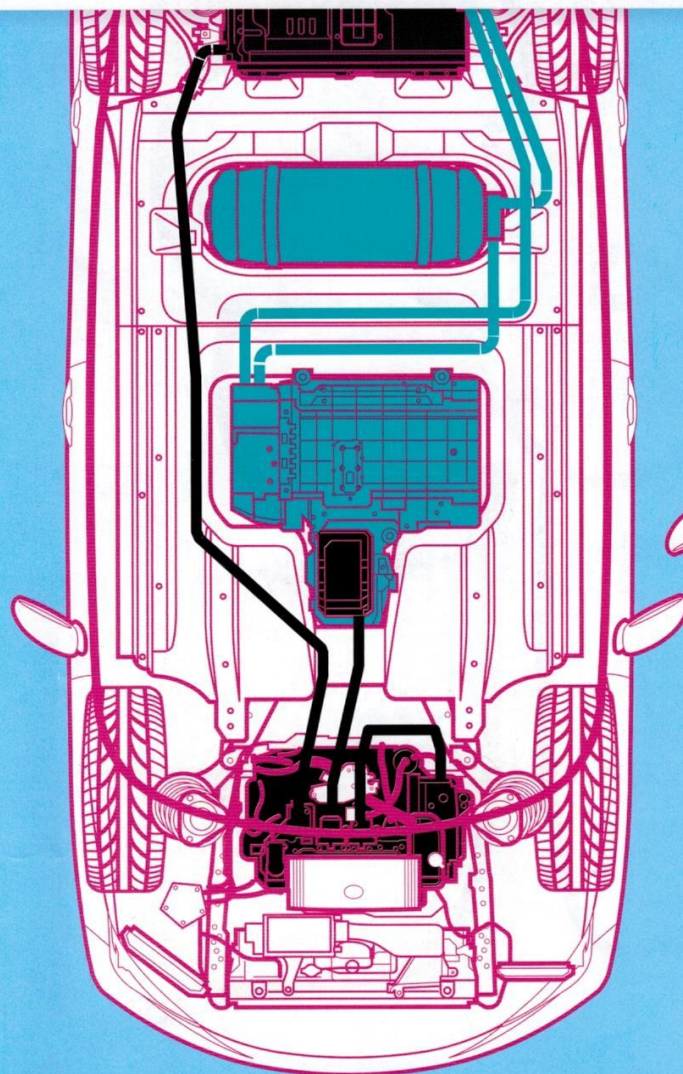


Automotive ENGINEER

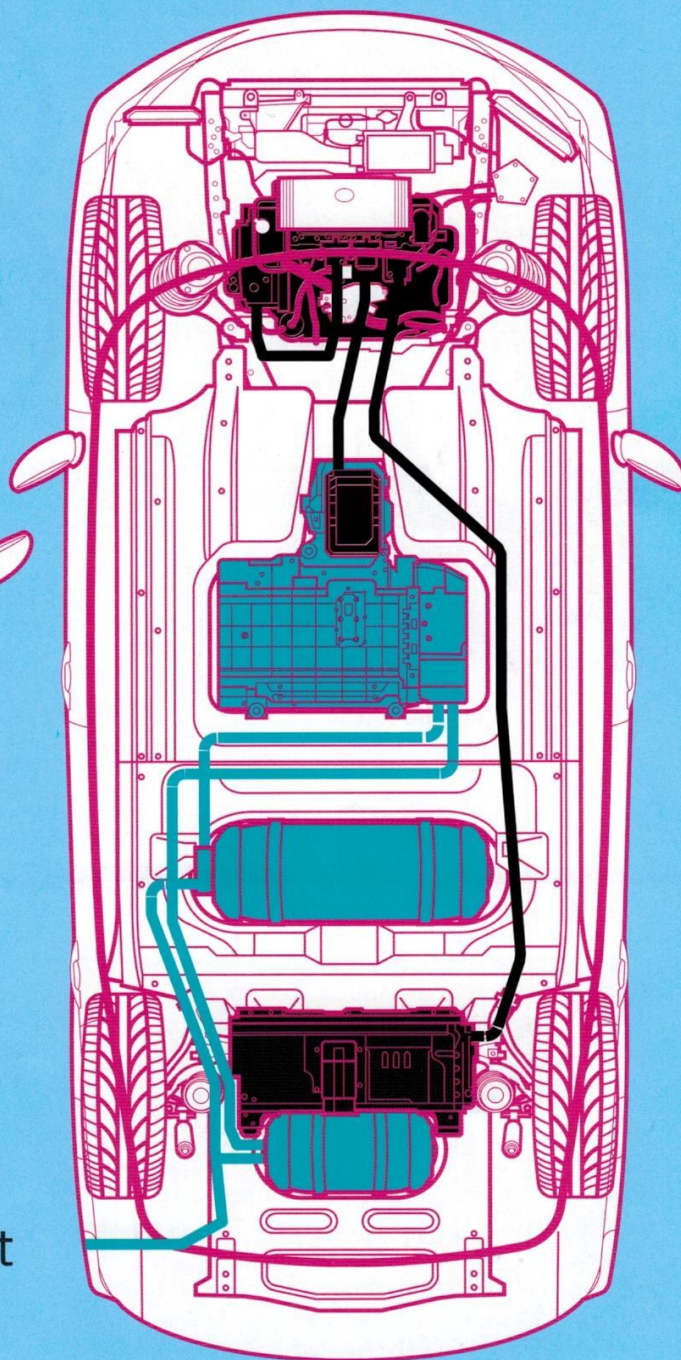
Europe's automotive engineering magazine www.ae-plus.com

April 2015



DREAM MACHINE

How Toyota brought its first
hydrogen fuel-cell vehicle
to mass production



Ford's first performance diesel > Genivi's open-source challenge

Kyle Walworth

Genivi director and secretary

Software has become an important differentiator for infotainment systems. The Genivi Alliance wants its Linux-based open-source platform to be adopted by more OEMs and Tier Ones

By James Scoltock



Q How is the industry developing to better design and implement vehicle software requirements?

A Genivi was started five years ago to work on the middleware, the pieces that are non-differentiating, so when you connect your MP3 player you just want the music to come out of the speakers.

BMW said that 60% of the code for an infotainment system was middleware. And an infotainment system from ground up would cost between \$60 million and \$100 million to develop.

If I was a Tier One and I could take what I had already developed for OEM A, and sell it to OEM B, I could probably reuse some of that, and I have an advantage over another firm.

And that 60% is really what consumers don't care about and it's non-differentiating. So Genivi was born.

Now Genivi takes all of the code and puts it out completely open-source, so you don't even have to be an alliance member to access the code base.

And now there is a shift in the OEM sourcing cycles. Quite a few of them are getting involved in the selection of the silicon, the operating system and specific components.

The direction that I've seen is that those that really want to be involved in the software development of their infotainment system have gone to Linux because it is completely open and they can pick and choose what they want.

What are the next stages of development for Genivi?

We started as an automotive open-source community. We were all auto guys and we brought in some traditional automotive operating styles - top-down type of

development. We very quickly figured out that was not really the open-source way of development. We have reorganised Genivi and let the expert groups decide what packages they're going to work on instead of the board dictating what requirements would build up the system.

But although the final code is open to the public, the development of that code is still behind the Genivi firewall. I think what you're going to see next year is the majority of development done in an open manner. You're going to see a lot of cooperation between automotive-grade Linux and Genivi, and I think you'll see an even tighter relationship.

How closely do you work with colleagues developing the automotive-grade Linux platform?

Automotive-grade Linux is a little bit different to Genivi. Genivi concentrates on the middleware, while automotive Linux goes further than the middleware, all the way up to the HMI.

But we've decided to work closely with them on a series of projects. In the first we jointly developed a media manager. It was developed completely in the open, which has driven us towards trying to get everything open.

Is there a shift away from proprietary software?

That's what I've seen. Firms really want access to the full stack, so tend to be moving in the direction of a Linux.

Will there be movement into other areas of the vehicle?

Within our scope there isn't an active move into safety-critical areas such as ADAS, so that is not being pursued by Genivi right now. Moving into safety is a different ball game, and we are trying to get the infotainment right.

I've seen numbers saying that as much as 70% of the lines of code in a vehicle are in the infotainment system. You need to support all these different codes, audio and video, you need to be able to play all these different legacy devices. It's about trying to keep up with the consumer electronics world.

How will infotainment development change over the next 5-10 years?

A lot could change with regards to whether other big consumer electronics firms try to get into the embedded OS space, which hasn't officially happened yet. Even Google has only come up with Android Auto, which is a projection mode of the handset into the vehicle.

These are the questions for the next five years: what comes into the infotainment space with regards to the embedded OS, what are the implications on how the user experience is defined, is the OEM allowed to put their own fingerprints out there or are they asked to use a different look and feel as dictated by these solutions?

Again that today is a big draw for Linux because it's completely within their control. ■

"Those that want to be involved in the software development of their infotainment system have gone to Linux"