

News from FOSDEM

The most recent FOSDEM conference is over and I hope to review some presentations done there for those who couldn't make it. Lots of GENIVI members were there, both presenting and participating in various meetings. I hope to bring everyone up to date with a series of blog posts so without further ado I'm going to start by blogging my recent article for the GENIVI Newsletter below.

GENIVI Bridging the Automotive Industry and Open Source at FOSDEM

GENIVI members were widely represented at FOSDEM this year and while there were fewer pure automotive talks this year, there was still a great deal of discussion on automotive open source from GENIVI members and the open source community.

Of note were a number of talks that clearly show in what direction our community is headed. That direction is broadly called "upwards" on the stack toward a more connected car and "downwards" toward the Linux kernel. GENIVI, of course, is focused on commodity middleware in the head unit, but there is a lot of open source work in automotive being done in the Linux kernel and on the network side in the cloud that connects to the GENIVI middleware.

GENIVI's GDP team lead, Zeeshan Ali, presented Creating the open connected car with GENIVI (<https://fosdem.org/2017/schedule/event/openconnectedcar/>) in the embedded devroom. Many sessions in this devroom attracted a full house at FOSDEM and the GENIVI GDP talk was no exception. Zeeshan went through a little history of GENIVI then spoke about various GENIVI components coming into the GDP and went a bit deeper into several of them. GENIVI's spins were mentioned as were the Google Summer of Code proposals, the Smart City pilot project as well as a call for volunteers made to the wider open source community. Right after the GDP talk, Konsulko's Leon Anavi held a talk on creating hardware for the Raspberry Pi board-- it was also very popular and well done. A number of other highly relevant talks were covered in the embedded devroom:

- Open Source Car Control (https://fosdem.org/2017/schedule/event/open_source_car_control/) by Josh Hartung, PolySync
- Success and Failure in Building an Open-Source Software Platform for Autonomous Driving Systems (https://fosdem.org/2017/schedule/event/success_failure_autonomous_driving/) by Lukas Bulwahn, BMW Car IT
- Kernel DLC Metrics, Statistic Analysis and Bug-Patterns (https://fosdem.org/2017/schedule/event/kernel_dlc_metrics/) by Nicholas McGuire, Open Source Automation Development Lab

The first of these talks was astonishing. The people at PolySync reverse engineered CAN signals to enable control by wire functionality on a name brand car. They created an automated system to control the throttle, brakes and steering. All of this was done with as much "off the shelf" hardware and software as possible and when they couldn't find hardware to fit their needs they created it. GENIVI member PolySync is a startup that wants to build up an ecosystem around these technologies and by the looks of it they've had some success so far. One of the big takeaways from the talk was not how a company like this might disrupt the relationship between automotive OEMs and their suppliers, but how easy it is to reverse engineer automotive protocols and how quickly and cheaply the work can be done. The automotive design and development process is laborious, but it is that way for a reason. Those reasons, i.e., quality, safety, robustness, are unlikely to disappear anytime soon, but it's clear that there are ambitious attempts out there to do "permissionless innovation" around the CAN network as well as other control systems in modern vehicles, and not just using software.

Lukas Bulwahn's talk was very enlightening. It provided a look at future plans around Adaptive AUTOSAR and CommonAPI and what direction they plan to take. It also spoke about a distinction between "control" and "cognitive" software and how traditional automotive software development is changing into a new paradigm that incorporates more powerful SoCs, artificial intelligence, and a more dynamic software structure. Many will find the paper (<http://www.bmw-carit.com/downloads/publications/ResearchOnAnOpenSourceSoftwarePlatformForAutonomousDrivingSystems.pdf>) that was the basis of this talk interesting reading.

Lastly, the talk by Nicholas McGuire and an additional talk by another Open Source Automation Development Lab member on statistical quality measurements in Linux provided a good overview of the discoveries from the process of preparing Linux for functional safety certification. This is a hot topic among OEMs and other GENIVI members as they look to take advantage of the significantly greater power that modern silicon offers them in the vehicle overall.

From Zeeshan's talk which spoke about the open connected car to the talks from BMW and Open Source Automation Development Lab, we can see that interest in open source and in GENIVI components is growing to embrace the cloud and the cluster. It feels like GENIVI members are pushing open source automotive software in both directions.