Software development in the automotive sector has been undergoing a process of radical change for many years. Markus Blonn heads the "Software Network" at IAV and wants to position the company even better as a software provider. In the automotion interview, he and Prof. Dr. Dirk Riehle from Friedrich Alexander University Erlangen-Nuremberg discuss new requirements and processes as well as the role of open-source software for automotive engineering.

Software is playing an ever more important part in the automotive industry. How is IAV positioned in this regard?

Markus Blonn: Of course, we are still developing a lot of software for classic control units. But for years there has been a trend towards high-performance computing in the vehicle. For the new domain controllers – e.g. for driver assist systems, infotainment as well as drive system and chassis – we need other competencies, such as in software architecture. Today, we need to accommodate 40 to 50 functions on a single control unit. That's a challenging integration task and a new role for a development partner like IAV. Some new functions are also demanding software solutions on a one-stop shop basis – for instance, when computing-intensive parts run on the back end or in a cloud, making it necessary to develop various modules. On top of this, updates "over the air" are also making new business models possible. We can well imagine becoming a product supplier in future and offering specific functions for downloading. To realize all this, we are constantly training our one thousand or so software developers, e.g. in the fields of software engineering, software architecture and software requirement analysis.

How are the processes changing in software development?

Prof. Dr. Dirk Riehle: They are getting much faster. We are already seeing this today with companies like Amazon, Google or Netflix. As soon as software development is no longer bound to specific hardware, development times fall dramatically. In some cases, new functions are deployed every minute. Companies like IAV can also learn from this "continuous deployment", and it can help them to remain competitive in the long term.

Blonn: We are already right on track because the subject is important for us too – e.g. from the aspect of being able to quickly provide patches to rectify safety problems. We are already practicing "continuous integration": we are constructing and testing software continuously. Then, continuous deployment is the logical continuation, and for this, we will also be setting up a production-ready process in future.

Open-source software is another hot topic. How important is it for the automotive industry?

Prof. Riehle: These days many companies are drawing a very precise distinction between what their core competency is and what isn't. As such, they make increasing use of external software modules, not only from classic providers but also from the open-source world. They are free of charge, but demand a certain input on the part of the user. He or she must at least keep a close eye on projects and should – if the component is important – also actively contribute to it. But this means building up new competencies.

Do you have any security misgivings?

Prof. Riehle: No, because on the one hand the quality of open-source projects is meanwhile very high. Many companies pay professional developers to get involved. And, on the other hand: the more eyes there are reviewing the open source code, the faster faults can be identified. For this reason, open-source software is already used in car infotainment stacks. Here, 80 percent of the codes can be open-source, with the OEM developing the rest itself and adapting the software to match its branding.

How is IAV using open-source software?

Blonn: At the moment, we are mainly using open-source methods for in-house software development. This "inner sourcing" is about developing software modules at cross-divisional level and making them available across the company. This is also the job of the "Software Network" at IAV: we want to promote a cultural transformation.

What will the new world of software development look like?

Prof. Riehle: Open source provides a large testing ground for new software development processes. For instance, it's about different forms of communication. Openness is particularly important, and nobody must be excluded through traditional power structures. Companies benefit from inner sourcing by breaking down silos. Today business units still like to hide their source codes from other departments, which there is a lot of redundant development effort. This is no longer possible through the new form of collaboration. It makes software development more efficient and produces better results.

In the AMOS project, IAV is working with Friedrich-Alexander University Erlangen-Nuremberg. What's behind it all?

Prof. Riehle: The abbreviation stands for "Agile Methods and Open Source". Companies can set the students tasks which they complete in agile teams within a semester. This makes teaching much more attractive because it involves real-world challenges which, in addition, are tackled in a team. IAV really is a fantastic partner for us. The company is extremely experienced in software development and sets realistic tasks.

Blonn: For us, this is also an excellent way of realizing new ideas for which we ourselves have no capacities. So far, we have placed three subjects, among them our Side Window Entertainment. We regard the results as a kind of crystallization point. It also provides a basis on which we can take ideas forward. In addition, AMOS offers a very good way for students and IAV to get to know each other at a very early stage.

Thank you for talking to us.

Contact:
markus.blonn@iav.de
dirk.riehle@fau.de