Press Release

March 2022

AUTOSAR announces new Working Group for Programming Language Rust in Automotive Software context

Rust is a multi-paradigm, general-purpose programming language designed for performance and safety, especially safe concurrency.
Rust is syntactically similar to C++, but can guarantee memory safety without garbage collection. Rust has been called a systems programming language, and in addition to high-level features such as functional programming it also offers mechanisms for low-level memory management.

First appearing in 2010, Rust designers refined the language while writing the Firefox browser engine. It has gained popularity and investment from the industry, including Amazon, Discord, Dropbox, Facebook (Meta), Google (Alphabet), and Microsoft.
Repeatedly, Rust has been voted the "most loved programming language" in the Stack Overflow Developer Survey.

As Rust is built by its community, each major decision in Rust starts as a Request for Comments (RFC). Everyone is invited to discuss the proposal, to work toward a shared understanding of the tradeoffs. Though sometimes arduous, this community deliberation is Rust's secret sauce for quality. Therefore, it is important to bridge among communities. The future AUTOSAR Working Group Speaker is a lucky catch for this task.

Christof Petig, well known in the Rust community, has agreed to take over the subgroup speaker role. He has 25 years of C++ experience and has become a Rust enthusiast in the meantime. "The code written in Rust is checked to be memory safe and free from data races. At the same time, since all possible checks are checked at compile time, there is negligible runtime overhead. This means that the performance of Rust is comparable to C++", Christof summarizes during the initial talks. As other standardization bodies such as Khronos or SAE in the automotive field are in line with such assessment, the Embedded Software focus is to combine efforts for efficient standardization.

All this is not new to The AUTOSAR (AUTomotive Open System ARchitecture) development partnership and its community. Experienced in ramp up of C++14 Coding Guidelines AUTOSAR want to keep alive its tradition of innovation and being a Functional Safety and Automotive Cybersecurity focused standardization body. The decision to form a subgroup within the Working Group for Functional Safety (WG-SAF) and to investigate the utilization of Rust in AUTOSAR Adaptive Platform is a consequence. The subgroup will officially get started on April 2022 and plans to produce two documents. One of the documents will be providing guidance on how Rust

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can be utilized in the context of AUTOSAR Adaptive Platform projects. The other document will propose Coding Guidelines on Rust.

Additionally, the AUTOSAR Adaptive Demonstrator could be used as code base for hands-on implementations. If your company wishes to be a part of this activity, join as an AUTOSAR-Partner or stay tuned for the first release on www.autosar.org.

About the AUTOSAR Adaptive Platform

AUTOSAR first released its Adaptive Platform on March 31st, 2017 as a standardized integration platform for electronic control units (ECU). The AUTOSAR Adaptive Platform is based on POSIX operating systems and is the ECU standard for new automotive megatrends. It combines the safety and security of microcontroller-based ECUs with the high performance provided by microprocessor-based multimedia ECUs. By doing so, the new standard avoids the costly alternative of OEMs and their suppliers repeatedly developing the critical and complicated functionality of such a software platform with proprietary and individual approaches.

About the AUTOSAR Classic Platform

The AUTOSAR Classic Platform is a well-established standardized software framework and methodology for deeply embedded electronic control units (ECUs), which offers OEMs and suppliers a stable foundation to build their distributed software systems on. By using a layered software architecture with a compatible methodology, the AUTOSAR Classic Platform supports all kinds of microcontroller-based ECUs. In the future, AUTOSAR plans further specification updates to fulfil the needs of embedded system architectures.

About AUTOSAR (AUTomotive Open System ARchitecture)

AUTOSAR (AUTomotive Open System ARchitecture) is a global development partnership of car manufacturers, suppliers and other companies from the electronics, semiconductor, and software industries. Since 2003, they have been working on the development and introduction of several open standardized software platforms for the automotive industry. By simplifying the replacement and update of software and hardware, the AUTOSAR approach forms the foundation for reliably controlling the growing complexity of electronic and software systems in the vehicles of today and future. In addition, AUTOSAR improves cost efficiency by enabling its partners to cooperate in a competitive way. The "Core Partners" of AUTOSAR are the BMW Group, Bosch, Continental, Daimler, Ford, General Motors, the PSA Group, Toyota and the Volkswagen Group. In addition to these companies, more than 320 partners play an important role in the success of the partnership and can use the standards free of charge.

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