Preparing next generation of Zonal EE architectures

OpenSynergy's Automotive Virtual Platform supports Hardware Virtualization of Stellar Automotive MCUs

Berlin, March 1, 2023. OpenSynergy announces the successful porting and availability of its COQOS Hypervisor SDK to the STMicroelectronics Stellar family of Integration MCUs. The Berlin-based software company has worked closely with STMicroelectronics to demonstrate that its automotive virtual platform "COQOS Hypervisor SDK for real-time processors" picks up the hardware virtualization in the Stellar products and extends it. With this virtualization technology automotive manufacturers can reliably execute multiple functions and various software services on a single piece of hardware, securely separated from other functions. This approach forms the technical basis for the coming generations of domain and zonal architectures.

Separation of functions by hardware virtualization alone is not sufficient to fully exploit the enormous power of the new class of automotive MCUs. Additional virtualization technology, like COQOS Hypervisor SDK, further enables the integration of numerous applications and runs several operating systems, on which the various functions are located, side by side. In addition to the hypervisor, the virtual devices that OpenSynergy offers on its COQOS Hypervisor SDK allow the systems to communicate without additional hardware. Thus, physical CAN buses are replaced by VIRTIO-CAN (a CAN implementation in shared memory instead of wires). The exchange between virtual machines is also possible via VIRTIO-vsock or VIRTIO-net depending on the application. For the development of these virtual devices, OpenSynergy has been an active member of the OASIS Open consortium since 2018 and specifies the most important devices according to the open VIRTIO standard.

COQOS hypervisor in combination with STMicroelectronics Stellar virtualization technology completely separates all software components from the hardware and enables both the operating systems and the applications running on them to be completely independent and without influence on each other. They can also be updated modularly.

"We developed Stellar Integration MCUs for Software Defined Vehicles specifically to deliver hardware virtualization able to integrate many real-time and multi-ASIL vECUs," said Philippe Prats, Vice President of Automotive Marketing and Applications, EMEA Region, STMicroelectronics. "The port of the popular COQOS Hypervisor from OpenSynergy to Stellar is a great addition to the comprehensive hardware virtualization features of Stellar."

PRESS RELEASE

Hardware virtualization enables all functions of a domain (e.g., body control, power distribution, GW functions) to run together and simultaneously on a single Stellar MCU. With Stellar's high-performance, multi-core design, the number of integrated functions can still be expanded for a zonal or domain approach. Future architectures will favor the spatial aggregation of functions, such as zonal computers as it reduces the cabling throughout the vehicle. The savings of harnessing through zonalization and virtual ECUs can result in reduced vehicle weight and lower integration effort.

An example of an application with COQOS Hypervisor SDK running on the Stellar is the Zonal Front Computer. This Board is in the front of a vehicle (meaning zone). It allows manufacturers to consolidate all functions of the body -- I/O, power distribution, and part of the ADAS sensors -- on this single powerful hardware.

"We look forward to the successful cooperation with STMicroelectronics and the first joint customer projects that have already resulted from this collaboration. By using a Stellar together with the COQOS Hypervisor, OEMs are now able to develop secure virtual domain or zone controllers for the first time. The consolidation of control units from different tier1s and the associated high ROI plays an important role here.", said Matthias Stumpf, Vice President Global Sales, OpenSynergy.

This next generation of EE architectures can thus address the growing complexity of vehicles, changing the vehicle architectures of the future. Virtualization is the key technology for these architectures.

On top of the announcement of COQOS Hypervisor SDK for Stellar, OpenSynergy has extended its long-standing relationship and collaboration with STMicroelectronics by joining the STMicroelectronics Partner Program, which helps customers reduce development effort and accelerate time to market by enhancing the ecosystem around STMicroelectronics' broad product portfolio.

About OpenSynergy

OpenSynergy provides embedded software products for the next generation of vehicles. Its hypervisor and communication products pave the way for an integrated driving experience.
The automotive virtual platform COQOS Hypervisor SDK integrates a mix of real-time applications and open source solutions on powerful domain controllers. It supports a large bundle of features corresponding to the virtualization standard VIRTIO, creating maximum flexibility: guest operating systems can be used and reused on different Systems on Chips.
The automotive leading Bluetooth® stack Blue SDK is one of OpenSynergy's communications platforms. It is the reference Bluetooth® implementation for many OEMs around the world.
OpenSynergy further provides complimentary Automotive-Grade software components tailored for the Android™ Open Source Project (AOSP) to boost Android's adoption in the automotive domain.
OpenSynergy also provides engineering services to support the customization of its products.
Read more on www.opensynergy.com

Contact:
OpenSynergy GmbH
Sabine Mutumba
Director of Marketing

Rotherstr. 20
D-10245 Berlin
Tel.: +49 (0)30.60 98 540-41
Email: marketing@opensynergy.com

PRESS RELEASE