Safe Instrument Cluster on Linux

OpenSynergy Presents Cockpit Controller Integrated with Rightware's Kanzi UI

Helsinki/Berlin, Juni 06, 2017. Embedded automotive software specialist OpenSynergy has teamed with automotive UI leader Rightware to present a new safety feature for instrument cluster running on OpenSynergy's COQOS SDK at the 7th Annual Connected Car Conference and Expo TU-Automotive Detroit 2017, June 7-8. The architecture is based on OpenSynergy's hypervisor technology COQOS SDK and includes the new instrument cluster guard mechanism. The demonstrator is equipped with Rightware's Kanzi-powered "Poseidon" instrument cluster user interface.

COQOS SDK is OpenSynergy's product family that provides virtualization for the car. At the core is COQOS Hypervisor: OpenSynergy's highly efficient and reliable hypervisor that has been built to meet the specific requirements of demanding automotive applications. COQOS Hypervisor creates virtual machines (VMs) that can host multipurpose operating systems, such as Linux, and real-time operating systems. This makes it possible to run functions with different requirements on real-time behavior and functional safety on a single SoC (System-on-Chip). COQOS Hypervisor also provides freedom from interference between the virtual machines and controlled communication between them. The virtual machines provides an additional layer of protection against malicious attacks.

This new approach has been realized by integrating the 3D instrument cluster, developed by Rightware with the Kanzi UI development tool, into a virtualized Linux guest in one of the VMs created by COQOS Hypervisor. Some elements of the instrument cluster are safety-critical and require qualification up to ASIL-B, such as tell tale warnings for failure of airbags, brakes, ABS, engine, etc. OpenSynergy has integrated a Linux subsystem in a second VM on COQOS Hypervisor. It is used to render all graphical elements for the instrument cluster, including the safety-critical tell tales. An RTOS subsystem also running in a separate VM is used to independently run and verify the safety-critical subset of the graphical elements rendered by Kanzi on Linux.

By separating the instrument cluster software and the guard mechanism into different VMs, this safety feature is protected from interference. In case of any software failure in the VM running the instrument cluster, the guard mechanism would activate near-immediate recovery of the instrument cluster.

"Automotive safety is a critical topic in the steady transition to a digital in-car user experience," said Derek Sellin, Marketing Director, Rightware. "We are delighted to see OpenSynergy, an innovative Kanzi Technology Partner, introduce functional safety into the automotive Linux environment. This will allow our joint customers to design for safety while developing stunning digital instrument clusters with Kanzi."

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"This concept takes advantage of existing Linux based frameworks. Compared to traditional approaches this safety function is concentrated in a very small subsystem, reducing the qualification effort," emphasizes OpenSynergy's CEO Rolf Morich. "Our proposal allows functional changes in the instrument cluster client (i.e. the rendering) without requalification".

The demonstrator will be available for viewing at Telematics Update in Detroit from June 7 to 8, 2017 at OpenSynergy's booth B98.

About OpenSynergy
OpenSynergy is a high-tech company specializing in embedded automotive software for in-car cockpit solutions. The core products are the modular software development kit COQOS SDK and the leading Bluetooth™ stack Blue SDK.
Our products enable the convergence of instrument cluster, head unit, driver assistance and connectivity systems. Essential technologies are virtualization and Open Source software. Our solutions comply with requirements of standards like AUTOSAR and Bluetooth™. By doing, so we pave the way for autonomous driving.
OpenSynergy is an independently managed company headquartered in Berlin with further locations in Munich and the U.S. We continue to grow through the strong demand for our products. Our company's team consists primarily of highly qualified engineers. Our corporate culture is inspired by the international character that defines our employees, partners and customers.
Read more on www.opensynergy.com

About Rightware

Rightware® is the leader in advanced user interface technology, serving automotive and other embedded markets with its Kanzi® software for rapid user interface design and deployment. Our passion is to unleash creativity to enable fantastic user experiences. As a Thundersoft® company, Rightware is a wholly owned subsidiary of Thunder Software Technology Ltd. Co, a world leading smart device operating system and technology platform provider focused on Automotive, Mobile, and IoT. Rightware is headquartered in Finland and has a presence in the United States, Germany, the United Kingdom, Italy, China, South Korea, and Japan. For more information, visit www.rightware.com or follow @RightwareLtd.

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