

Demonstrator for car driver assistance systems

Inchron, iSystem, Opensynergy, and Renesas teamed up to developed the shown demonstrator at the Embedded World. It features CAN connectivity between the control units.

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(Photo: Inchron)

[Zoom](#)

For this demonstrator several RH850/F1x micro-controllers (MCUs) for automotive applications were networked via CAN. In the illustrated application two MCUs were used as a control unit for a camera and a radar sensor respectively. Additionally, crash detection was also carried out on the radar sensor controller. A third MCU, functioning as a central control unit, combined the sensor data fusion with body functions, such as the central locking system and the activation of brake and direction indicator lights.

Opensynergy's Coqos Micro hypervisor run on each of these MCUs enabling the integration of multiple real-time operating systems (such as Autosar software) on a single processor. Each controller application run in its virtual machine so that applications with different Asil levels could not interfere with one another. All essential information about the behavior of the hypervisor, virtual machines, applications, and event chains in this system were captured and recorded by iSystem's iC5700 on-chip analyzer. Furthermore, the CAN/LIN add-on module for iC5700 was used to record trace logs of the communication on the CAN network.

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The demonstrator comprises multiple boards with RH850/F1x micro-controllers by Renesas (Photo: Inchron)

[Zoom](#)

The Inchron tool-suite analyzed the information recorded by the iSystem tools, with all MCU and CAN network traces visualized against a common time base. One can use it to identify event chains, to calculate statistics of run time values and other timing parameters, as well as to check compliance with predefined timing requirements. The data so obtained can be used to feed a model of the entire system with realistic values into the tool-suite simulation environment. Finally, such a model can be utilized for dedicated optimization of the system and its timing parameters as well as for cost-effective and automated verification of changes in the system.

The company is part of the [Embedded World 2017](#).

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