eSOL's eMCOS Scalable RTOS Platform Supports Xilinx Zynq UltraScale+ MPSoC for Next-Generation ADAS and Industrial IoT

Support for Heterogeneous Multicore Configurations with Single RTOS to Enable High-Speed Inter-Core Communications and More Efficient Development

Tokyo, Japan. March 13, 2017 - eSOL, a leading developer of real-time embedded software solutions, today announced that its software platform based on eMCOS, a world-first commercial real-time operating system (RTOS) that provides scalable support from single to multi- and many-core processors, now supports the Zynq® UltraScale+™MPSoC from Xilinx, Inc. that incorporates multiple multi-core processors. The new distributed microkernel architecture employed by eMCOS provides the scalability to enable the same RTOS to support the heterogeneous configuration of the Zynq UltraScale+ MPSoC, which combines an ARM® Cortex®-A53 quad-core processor and an ARM® Cortex®-R5 dual-core processor. This provides powerful support for both seamless high-speed communication between cores and more efficient development. It facilitates high reliability, real-time capabilities, and safety on a wide variety of systems, including advanced driver assistance systems (ADASs) and the industrial IoT.

The Zynq UltraScale+ MPSoC has a heterogeneous multi-core configuration made up of an ARM Cortex-A53 quad-core processor with the latest ARMv8 architecture and an ARM Cortex-R5 dual-core processor with the ARMv7 architecture. The ARM Cortex-A53 quad-core processor supports both 32-bit and 64-bit operation. Compared to the previous Zynq-7000 All Programmable SoC, the ARM Mali™GPU and H.264/H.265 video codec have been added to enhance high-definition graphics and video processing performance.

The distributed microkernel architecture of eMCOS allocates a microkernel to each core. Because communication between microkernels is via message-passing that is ideal for distributed computing, applications can communicate with each other at high speed, even when running on different cores or processors. eMCOS provides the thread pool library and Fast Messaging library that allow concurrent thread execution, synchronization, and communication with low overhead for highly parallelized applications, including codecs and image processing. eMCOS features its unique Semi-priority-based Scheduling algorithm (patent numbers 5734941 and 5945617) that enables high performance, scalability and real-time

capabilities essential for embedded systems. eMCOS facilitates the reuse of existing software and makes development more efficient by adopting the same programming models and interfaces as used previously on single or multi-core processors.

eSOL's eT-Kernel RTOS with proven track record in a wide variety of applications also supports an ARM Cortex-A53 core processor (32-bit mode) and an ARM Cortex-R5 core processor in the Zynq UltraScale+ MPSoC. eT-Kernel also runs on the Zynq-7000 All Programmable SoC. eT-Kernel consists of three different profiles that provide seamless support extending from small-scale systems right up to large systems that incorporate memory protection, process models, and POSIX compliance. Out of those profiles, eT-Kernel Compact excellent real-time capabilities and a small memory footprint with supports the Zynq UltraScale+ MPSoC in 32-bit mode. eT-Kernel Compact has been certified for ISO 26262 Automotive Safety Integrity Level (ASIL D) and IEC 61508 Safety Integrity Level 4 (SIL4).

The eBinder integrated development environment is offered for eMCOS and eT-Kernel application development for both the 64-bit and 32-bit modes of the Zynq UltraScale+ MPSoC. Specifically designed for real-time application development using RTOSs, eBinder enables efficient development of high-quality software.

"Heterogeneous computing is one of the most promising options for the next generation of embedded systems such as ADAS and the industrial IoT," said Nobuyuki Ueyama, Executive Vice President, eSOL Co., Ltd.. "By offering scalable RTOS platform that provides high performance and real-time capabilities for the Zynq UltraScale+ MPSoC, we are underpinning both software development with excellent quality and real-time capabilities and more efficient development."

About eSOL

Founded in 1975, eSOL is a leading developer of real-time embedded software solutions that seeks to create a rich IoT society using its innovative computer technologies. eSOL's software platform products and professional services, centered around its real-time operating system technology, are used worldwide in every field, starting with automotive systems, which conform to the most stringent quality standards, and including industrial equipment, satellites, and digital consumer electronics. In addition to the research and development of its own leading-edge products, and joint research with major manufacturers and universities, eSOL is actively engaged in AUTOSAR and Multi-Many-Core technology standardization activities. For more information, please visit http://www.esol.com/