eSOL Announces eSOL eMCOS Many-Core Real-Time OS Support For Tilera's TILE-Gx Processor Family

eSOL eMCOS Evaluation Kit for TILE-Gx to be Released in First Quarter of 2014

SAN JOSE, California, and Tokyo, Japan. November 19, 2013 – eSOL, a leading developer of real-time embedded software solutions, and Tilera® Corporation, developer of the industry-leading TILE-Gx™ family of 64-bit many-core general purpose processors, today announced that eSOL eMCOS many-core real-time OS (RTOS), believed to be the world's first commercial RTOS for embedded many-core processors, now supports Tilera's TILE-Gx processor family.

eSOL is scheduled to launch the eSOL eMCOS evaluation kit—consisting of eMCOS for the TILE-Gx processor, software development plug-in tools and middleware components—in the first quarter of 2014. This kit will allow efficient evaluation of the TILE-Gx processor together with the eMCOS environment. TILE-Gx processors running eMCOS will be used in embedded systems requiring extremely high computing capability, including network devices providing cloud services as well as advanced video devices such as broadcast equipment, industrial robots, semiconductor manufacturing equipment, and medical systems.

eSOL will demonstrate eMCOS running on the TILE-Gx8036 in its booth at the Embedded Technology 2013 Conference and Exhibition (ET2013), November 20-22, in

Yokohama, Japan. eSOL will also co-host the free multi-core/many-core seminar presented in parallel with the ET2013 on November 22, along with Renesas Electronics, TOPS Systems Corporation, the Multicore Association, and the Japan Electronics and Information Technology Industries Association.

Multi-core processors are now widely used in embedded systems, but manufacturers of advanced devices need processors offering even higher performance while using less power. To meet this insatiable market demand, Tilera offers many-core processors with the highest performance, leading scalability, and greater power efficiency. Tilera has achieved numerous design wins, especially in network devices: its TILE-Gx processors deliver the highest performance per watt per square inch and include memory and I/O controllers as a system-on-a-chip (SoC). The TILE-Gx family includes processors with 9, 16, 36, or 72 identical processor cores (tiles) interconnected with Tilera's fast iMesh™ on-chip network. eMCOS will initially support the 36-core TILE-Gx8036™ processor.

eMCOS employs a distributed microkernel architecture that is different from any existing single-core or multi-core RTOS architecture. One microkernel is allocated to each core, offering basic services including inter-core message passing, local thread scheduling, and thread management. Server threads that run on the same microkernel are allocated to multiple cores and offer other advanced OS services such as file and network services. This OS architecture leads to less sharing of data among multiple cores, reducing the demands on the slower shared main memory and the cache coherency mechanism. This provides improved scalability and system performance by varying the number of cores in use. Moreover, eSOL's unique, patent-pending eMCOS Semi-priority-based

Scheduling™ algorithm ensures fast real-time response as well as the high throughput that is expected from many-core processors.

eMCOS offers several features that help software engineers to develop their programs consistently—without worrying about which cores will execute their applications. Among them: eMCOS deploys the same application programming model as eSOL's eT-Kernel Multi-Core Edition real-time OS; eMCOS APIs have normal C function interfaces; eMCOS inter-core messaging is processed internally in the C-based API.

Tilera's Eclipse-based integrated development environment (IDE) and eSOL eMCOS IDE plug-in tools are utilized together in developing eMCOS-based applications. The eMCOS plug-in tools include eMCOS-specific system analysis tools and utility software. In addition to eMCOS and eMCOS IDE plug-in tools, the eSOL eMCOS evaluation kit will contain middleware components including network protocols, file systems, and USB stacks. eMCOS's POSIX and T-Kernel API support enables using and evaluating Linux, uITRON, and T-Kernel software assets. eSOL also offers professional services including driver development, application porting, and consultation services.

eSOL has taken the initiative in driving many-core technology by working closely with both academic institutions and industry groups. eSOL is working with Waseda University to develop software parallelization support services for Waseda's Optimally Scheduled Advanced Multiprocessor (OSCAR) parallelizing compiler. eSOL's Software Chief Technology Officer, Masaki Gondo, chairs the Software-Hardware Interface for the Multi-Many-Core (SHIM) working group in the Multicore Association® (MCA).

"eSOL is an important partner with us in leading the development of many-core technologies for embedded systems," said Fahd Abidi, Software Product Line Manager, Tilera Corporation. "Having eMCOS support for the TILE-Gx processor and the eMCOS evaluation kit accelerates time to market for our mutual customers. We expect our joint products to be used in video devices that provide image recognition as well as computer and machine vision, network devices, and cloud equipment."

"Tilera is the leading many-core processor developer: their products are used in many systems already on the market," said Masaki Gondo, Software Chief Technology Officer and General Manager of Technology Headquarters at eSOL. "eMCOS's support for the commercially available TILE-Gx8036 brings improved performance together with easy evaluation of many-core processors running eMCOS in embedded systems. We see many-core technologies as promising and efficient choices to increase performance in embedded systems with strict power and cost constraints. We believe our collaboration with Tilera will promote the proliferation of many-core processors."

About Tilera

Tilera® Corporation is the developer of the highest performance, low power, general purpose many-core processors. Tilera is headquartered in San Jose, California, with additional locations worldwide. For more information, visit www.tilera.com or follow Tilera on Twitter @Tilera.

About eSOL

eSOL is a leading embedded software developer that enables customers to accelerate

development of applications based on high-end single-core, multi-core, and many-core embedded processors. eSOL's advanced, scalable, multi-profiled real-time operating systems are tightly integrated with development tools and middleware components to create flexible development platforms used by OEMs and ODMs worldwide in competitive vertical markets such as automotive, consumer electronics, industrial and medical equipment, and aerospace. Founded in 1975, eSOL is based in Tokyo, Japan.

For more information, please visit http://www.esol.com/