

ET International Announces First Commercial Implementation of ParalleX Execution Model

E.T. International today announced that its SWARM (SWift Adaptive Runtime Machine) technology is providing the first commercial implementation consistent with the ParalleX execution model, an open parallel execution model designed to eliminate the primary constraints of conventional programming methods and more flexibly manage application algorithm parallelism to enable the development of scalable applications for many-core systems.

As HPC more fully integrates the use of hybrid and multicore architectures, development of parallel applications that can effectively scale for optimal execution on many-core systems has presented a daunting challenge. ParalleX represents a paradigm shift from traditional message-passing computing to a message-driven model that utilizes dynamic scheduling and resource management instead of the static scheduling conventional of today's programming models. This open execution model for parallel computation is designed to enable developers to exploit the full processing power of many-core systems with an unprecedented degree of parallelism through fine-grain, decoupled transaction processing with asynchronous event-driven execution.

ETI's SWARM technology provides the first commercially available product exhibiting the power of the ParalleX execution model to offer a full system software solution boosting the performance and efficiency of parallel computing on many-core architectures. In contrast to the standard execution model of communicating sequential processes, this design serves to expose multiple forms of parallelism, thus hiding latency and reducing overall overhead. For the first time, SWARM is bringing ParalleX to conventional system platforms to help solve the massively parallel, data-intensive problems faced by scientific and industrial communities right now.

"As Intel Labs works toward the era of many-core computing, we have been excited to partner with ETI on software development to aid in our R&D efforts around HPC," said Wilfred Pinfeld, Director of Extreme Scale Programs, Intel Corporation. "ETI's SWARM technology, based on the principles of the ParalleX execution model, is an important step in moving this many-core programming technology to widespread availability and adoption at the commercial level."

The SWARM runtime environment, developed specifically to address the performance challenges presented by the intersection of massively parallel software applications and hybrid many-core computing systems, is built on a fine-grain execution model that is characteristic of the ParalleX methodology and is a natural fit for enabling many-core efficiency at the programming level.

"ParalleX has the potential to completely transform the way we program

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applications for HPC systems,” said Thomas Sterling, Professor of Informatics and Computing, Indiana University, and a leader of the ParalleX Research Group. “Today’s programming execution models are not built for parallel development, and as the world moves increasingly toward many-core, a shift in development approach is vital to ensure continued efficiency and improvement of advanced applications on multicore machines. ETI’s SWARM technology is purpose-built for exactly this charge, and provides a tremendous opportunity to utilize the power of ParalleX with a pioneering system solution for the commercial market.”

The SWARM technology is one of many components of ETI’s industry-leading system services, including benchmarking, hardware and software design, performance-critical programming, consulting, and more. As a software partner in the Intel-led team for DARPA’s Ubiquitous High Performance Computing (UHPC) program, ETI has applied SWARM to the UHPC initiative and has worked to bring its technology to bear on wider parallel computation needs in HPC through the ParalleX open model.

“Our SWARM runtime environment demonstrates the proven viability and superiority of the ParalleX execution model for parallel, multithreaded application development for advanced hybrid machines and devices,” said Rishi Khan, Vice President of R&D at ETI. “We are excited to bring the benefits of the ParalleX execution model to wider industry through SWARM.”

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