MATLAB and Simulink Debut New Capabilities

MathWorks today announced major new capabilities for the design of advanced signal processing and communications systems with MATLAB and Simulink. The new SimRF product lets system architects use Simulink to design and verify complete wireless communication systems with true-to-form RF subsystem models and advanced circuit-envelope and harmonic-balance methods. A major update to Simulink HDL Coder adds critical path analysis and area-speed optimizations for automatic HDL code generation, along with a new Workflow Advisor for FPGA implementations.

Enhancements to Communications Blockset, Signal Processing Blockset, and Video and Image Processing Blockset add over 250 new algorithms to MATLAB for processing streaming data. MathWorks C code generation tools now support the Eclipse IDE, Embedded Linux, ARM processors, and the SystemC TLM 2.0 standard. Together, these new capabilities enable more advanced system analysis early in development, streamline algorithm design and implementation, and provide smooth integration with commonly-used tools and standards.

“Wireless, sensor processing, and streaming media capabilities are integral to today’s embedded systems, and engineers need design tools that can simulate digital, analog and software components simultaneously” said Ken Karnofsky, senior strategist at MathWorks. “These new capabilities for signal processing systems in MATLAB and Simulink unify and automate critical tasks in the design workflow. This is a major advance that accelerates algorithm IP development, system design and verification, and collaboration between engineering teams.”

The latest innovations for next-generation signal processing design include:

• Introduction of SimRF, which brings circuit-envelope and harmonic balance simulation techniques to the Simulink environment, and provides a large component library for modeling RF system architectures. SimRF supports

multifrequency RF signals for diverse interference simulations, and multiport architectures for true-to-form RF transceiver representations. Communications system architects can now perform realistic simulations early in development to design, optimize, and verify wireless systems with digital baseband, analog baseband, and RF subsystems. SimRF subsumes the functionality of RF Blockset.

• Major update to Simulink HDL Coder, which automatically generates VHDL and Verilog from Simulink models. Simulink HDL Coder now supports rapid design iterations by highlighting critical paths in the model and estimating hardware resource utilization. It also supports optimizations such as serialization, resource sharing, and pipelining. An FPGA Workflow Advisor automates synthesis and implementation on Xilinx and Altera FPGAs. New verification features include code traceability support for the DO-254 standard.

• Enhancements to Communications Blockset, Signal Processing Blockset, and Video and Image Processing Blockset, now with more than 250 algorithms with a standardized interface to efficiently process audio, video, and other streaming data in MATLAB. The resulting MATLAB programs can also be used directly in Simulink models for system design, simulation, and analysis. These algorithms are available as System objects, a new class of MATLAB objects that facilitate algorithm design and re-use.

• New support for Eclipse IDE, Embedded Linux, and ARM. MathWorks code generation products now automate targeting, real-time performance analysis, and verification of C code for the Eclipse integrated development environment (IDE), Embedded Linux, and the ARM Cortex-A8 processor. EDA Simulator Link now supports the generation of SystemC TLM-2.0 components for verification in virtual platform environments.

Learn more about new MathWorks Signal Processing System Design capabilities by visiting www.mathworks.com/discovery/signal-processing-system-design.html [1].

For additional information, visit www.mathworks.com [2].

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