



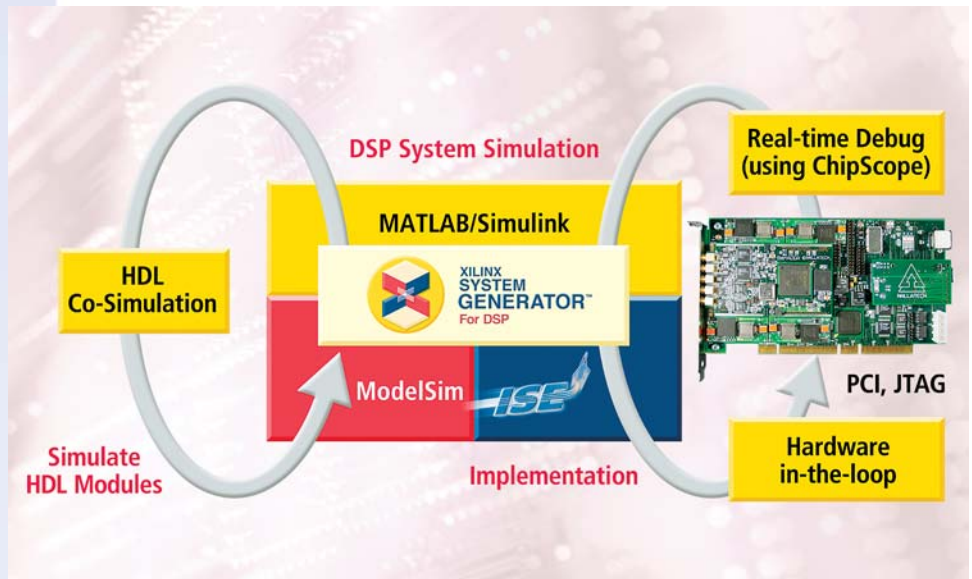
Push-button Performance using System Generator for DSP

Push-button bitstream generation from Simulink to FPGA

Xilinx FPGAs have become the preferred choice for many high-performance, programmable DSP applications. However, you may not be familiar with our FPGA design tools and processes. So, how do you make the best use of our DSP technology with the least amount of effort?

The System Generator for DSP tool allows you to easily target your high-performance DSP designs to Xilinx FPGAs, directly from the familiar MATLAB®/Simulink® environment of The MathWorks.

Using this platform, your designs will make efficient use of the Xilinx device architecture without the need for hardware description languages like VHDL or Verilog. With System Generator's hardware-in-the-loop co-simulation interfaces, you can import HDL code directly into Simulink, as well as accelerate your system-level simulations.



Get the DSP Advantage

System Generator for DSP is a software platform that uses Simulink to represent a high-level, abstract view of your DSP system. It then automatically maps your system to a predictable, highly efficient hardware implementation, enabling you to customize the Xilinx architecture to suit your DSP algorithm.

Model and Implement High-Performance DSP Systems

- **Create multi-rate and high-performance data paths** and develop 300 MSPS real-time processing systems, using our highest performance Virtex-II Pro™ Series FPGAs. For cost-sensitive DSP applications, you can implement programmable designs on Spartan™ Series FPGAs to get the industry's highest ratio of MACs per second per dollar.

Reduce Development Time and Cost

- **Accelerate and verify designs on actual hardware using hardware-in-the-loop.** This enables real-time verification on the actual FPGA, greatly accelerating simulation for complex designs – in some cases, from days to minutes.
- **Incorporate and simulate legacy designs using HDL co-simulation.** Bring in your existing HDL via the black box capability and use Mentor Graphics' ModelSim tool to simulate your legacy code. The link between Simulink and ModelSim is dynamic, allowing simulation data to pass between the two programs.
- **Simplify debug of your real-time system**
By inserting special low-impact IP debugging cores directly into your System Generator design, you can debug and verify all the internal signals and nodes within your FPGA, capturing signals at or near system operating speeds.

A Powerful, High-level DSP Modeling Environment

System Generator for DSP provides bit-true and cycle-true Simulink libraries for DSP functions, math and digital logic operators, and memories. The co-simulation interfaces allow the hardware designer to seamlessly import HDL code into the system simulation, enabling a much closer coupling with the system architect.

- Block customization allows the user to apply MATLAB code to parameterize the Simulink model. System Generator also supports automatic translation of a hardware-centric subset of the MATLAB language into Simulink and synthesizable HDL. This is especially useful for state machines and other control logic.
- Arithmetic abstraction automatically provides arbitrary precision fixed-point functions, including quantization and overflow.
- Simulation of double-precision, as well as fixed-point operation, lets the user determine the quantization error at any point.
- Interfaces to the Xilinx ISE environment and the Xilinx CORE Generator™ enables the use of our latest portfolio of hand crafted DSP algorithms when implemented as IP cores.

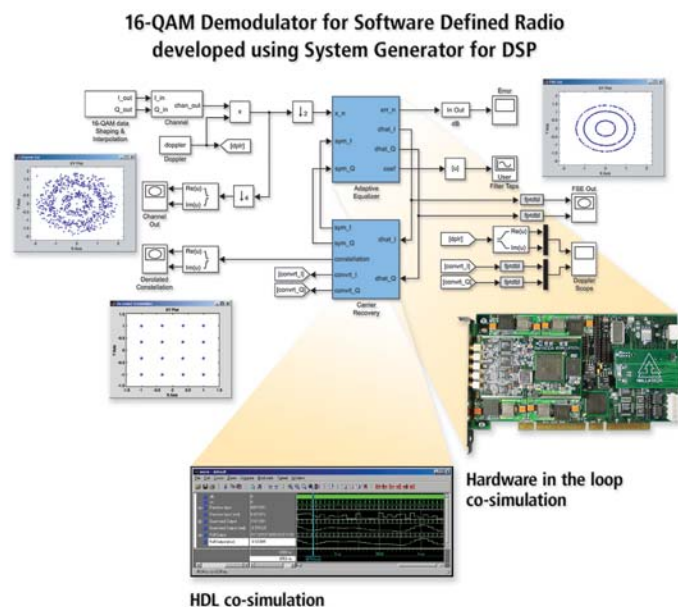
Industry's Best Productivity

The System Generator for DSP generates highly optimized VHDL code and IP cores with the hierarchy preserved. It also generates a number of helpful files, including:

- ISE project generation to simplify design flow
- HDL testbench and test vectors along with .do files for simulation
- Constraint files (.xcf, .ncf) for timing constraint information and I/O allocation
- ModelSim script files for behavioral simulation
- Mixed-language support for Verilog, supporting a dual synthesis flow
- Project files for Synplify Pro, Leonardo Spectrum, and Xilinx XST (a part of the ISE Foundation™ software)
- Multiple demos/tutorials such as 16 QAM demodulator, discrete wavelet transform and Costas loop

System Generator for DSP comes with an unprecedented range of award-winning services and support such as DSP education classes, DSP design services, on-site Xilinx DSP Specialists (via the Titanium service), and personalized web support. Visit www.xilinx.com/dsp

Design Example:



Access to Key Device Features

System Generator for DSP is part of the XtremeDSP™ solution which also includes IP cores, DSP classes, DSP boards and the industry's leading FPGAs, with features such as:

- Up to 556 embedded 18x18 multipliers, operating at speeds of 300MHz
- Up to 10 Mbits of on-chip block memory
- SRL16 shift-register logic
- Optional control signals such as clock enable and reset

Take the Next Step

The Xilinx System Generator for DSP is fast, easy to use, and very powerful. (Part # DS-SYSGEN-4SL-PC). For the full details, and access to a **60 day evaluation**, go to:

www.xilinx.com/systemgenerator_dsp. Or, you can place your order at: www.xilinx.com/store. Register for our DSP training classes and training bundle (Part # DS-SYSGEN-4SL-T) at: www.xilinx.com/support/training/training.htm



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