Unit / Module Description:	Sundance <> Simulink <> Xilinx System Generator Toolbox for VHDL code generation and co-design
Unit / Module Number:	SMT6041
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Application Note for SMT6041

Abstract

The SMT6041 is a SW tool that translates automatically Simulink® diagrams into an optimized FPGA bitstream using Xilinx® SysGen and Xilinx® ISE in the process. It also includes libraries providing Simulink blocks to support Sundance hardware.

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Revision History

Issue	Changes Made	Date	Initials
1.0	New document	20/07/2007	GM

Table of Contents

1 Supported Boards

The product can support almost all the Sundance boards. At the moment it supports the following modules:

FPGA boards: SMT358, SMT398, SMT398-VP, SMT338, SMT338-VP, SMT368

DSP/FPGA boards: SMT365, SMT365E, SMT395-VP, SMT374-300

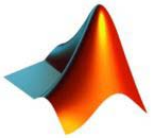
DAQ boards: SMT370, SMT364, SMT350

Video boards: SMT319, SMT339

Systems: SMT8036, SMT8039, SMT8096

The product can be upgraded to support most of the Sundance modules on request.

2 Tools involved in the process



Simulink® from The Mathworks is a powerful graphical modeling system that allows complex projects to be designed with simple block diagrams. It works with *Matlab*®.

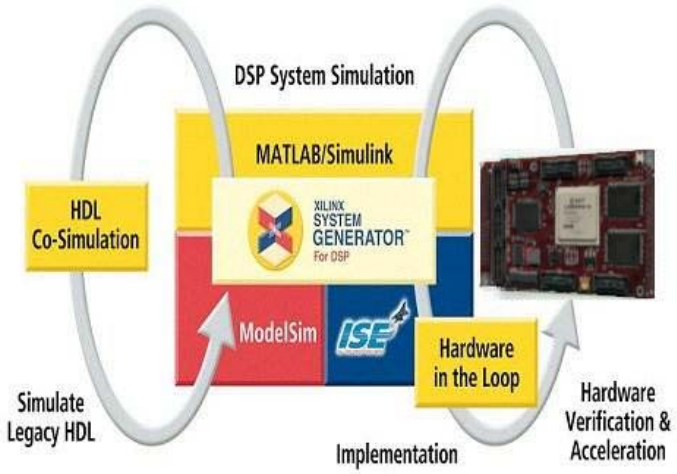
Xilinx® *System Generator* is a blockset add-on for Simulink which enables support for fixed-point systems.

Xilinx® *Integrated Software Environment* (*ISE*) is an IDE solution for FPGAs providing HDL synthesis and simulation, implementation and device fitting.

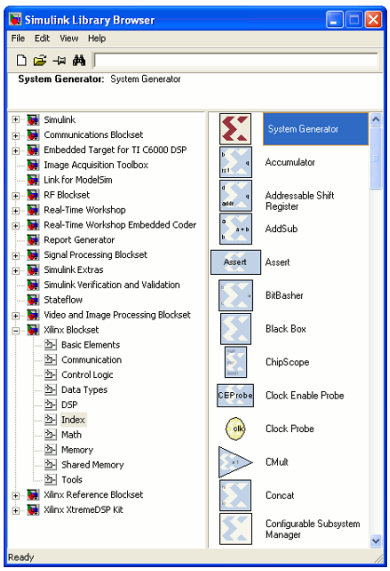
The above tools are not included in the SMT6041 and shall be purchased separately.

3 Basic operation

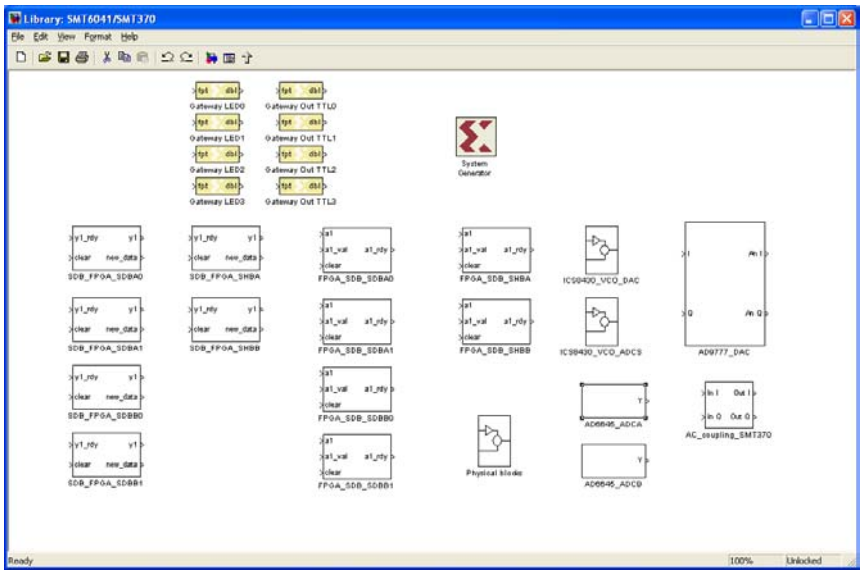
The SMT6041 is a fully featured SW tool providing libraries of Simulink blocks. It greatly speeds up development with Sundance boards. HDL Co-Simulation is also possible.



The SMT6041 enriches the basic Simulink toolbox with customized blocks to support Sundance modules specifically:



Simulink standard library

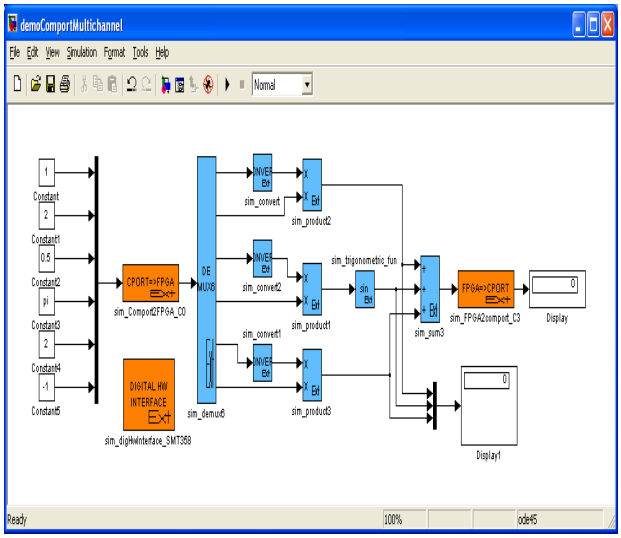


Some SMT6041 customized blocks for SMT370

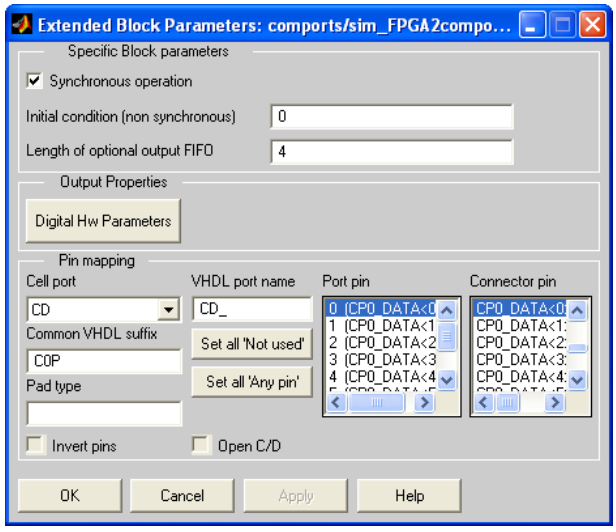
The blocks included support:

- ✓ ComPort Read and ComPort Write
- ✓ SDL Read and SDL Write
- ✓ SDB Read and SDB Write
- ✓ SHB Read and SHB Write
- ✓ ADC and DAC for Sundance boards
- ✓ Clock Generator
- ✓ Led
- ✓ ZBT RAM

The user is freed from all low-level hardware details and can concentrate on his project. When high-performance is needed, the user can still fine-tune the hardware via simple block-level dialogs.

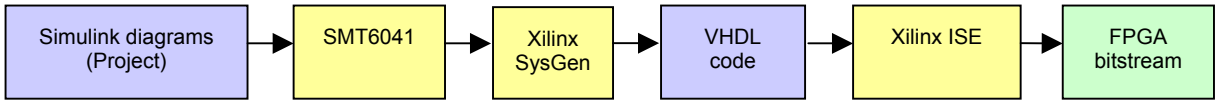


High-level project



SMT6041 lets the user fine-tune the hardware

The generated VHDL code is then synthesized into an optimised FPGA bitstream by means of Xilinx ISE.



4 Requirements

Matlab® 7.1

Simulink® that comes bundled by default with Matlab 7.1

Xilinx® System Generator 8.1

Xilinx® ISE 8.2

5 Useful resources

5.1 Links

SMT6041 Webpage:
http://www.sundance.com/web/files/productpage.asp?STRFilter=SMT6041

SMT6040 Webpage:
http://www.sundance.com/edge/files/productpage.asp?STRFilter=SMT6040

Xilinx® SysGen: http://www.xilinx.com/products/software/sysgen/sg_intro.htm

5.2 Contact

Contact Person:

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