Altair | HyperWorks®

VisSim/C-Code™

Automatic C Code Generation Software

Key Highlights

- Generates ANSI C code directly from block diagram
- Host PC supports standalone .exe, add-on DLL, or simObjectt
- Supports conditional subsystems
- Supports multi-rate subsystems
- Simulations run up to 10x faster
- Generates code for user-written blocks
- Automatically generates VisSim-callable DLLs
- Retains variable names used in diagram
- Targets available for QNX, PC Windows, TI MSP430, LF240x, F280x, F281x, F2823x, F2833x, C67xx
- Supports Euler, Runga Kutta 2nd and 4th order algorithms

System Requirements

- Professional VisSim v9.0
- Microsoft Visual Compiler 6.0+
- Windows XP, Vista, 7, or 8
- 128 MB RAM
- 125 MB hard disk space

Support Library Source Code

The source code for the Support Library is a separate product that can be purchased from Visual Solutions. Source code for the Support Library is required for unsupported platforms. It allows compiled control designs to be targeted to any platform.

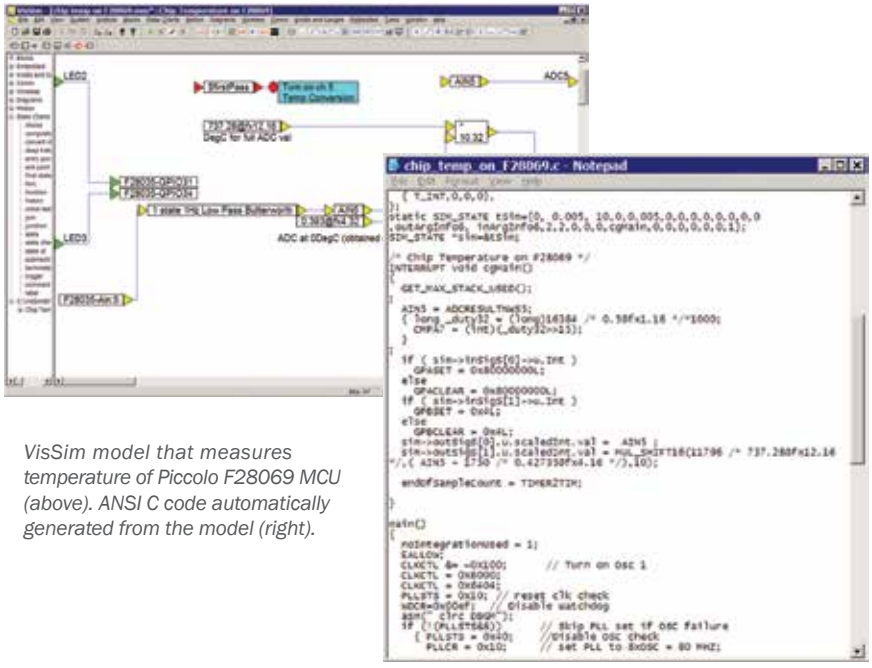
Introduction

VisSim/C-Code automatically translates VisSim models into highly-optimized, ANSI C code that can be compiled and run on any platform that supports an ANSI C compiler.

Optimized code: Using "constant folding," the generated code is optimized for speed by eliminating multiplications-by-one and additions-by-zero, as well as other identity operations. In addition, the number of function calls and array references are minimized to increase code efficiency. The resulting executables run up to five times faster than their block diagram counterparts, which is particularly useful for applications with high sampling rates.

Readable code: VisSim/C-Code preserves variable names in block diagrams to make it easier to identify signals in the generated code. Comments can be inserted to indicate the hierarchical level of the diagram from which the code is generated. All C code is formatted, including line length control, to improve readability and maintainability.

Automatic DLL generation: VisSim/C-Code can automatically generate DLLs from any portion of a block diagram. For complex, multi-level diagrams, using DLLs rather than the corresponding blocks can significantly increase simulation speed and efficiency.



VisSim model that measures temperature of Piccolo F28069 MCU (above). ANSI C code automatically generated from the model (right).

We create realistic VisSim models of different human physiologies as well as pathologies. Once we have the models, we use them to validate our control algorithms with pure simulation, and we generate C code to run on the PC for speed-up, or RTI-Linux for real-time operation of a customized test lung. ResMed sees its continuing use of VisSim as beneficial in simultaneously maximizing quality, minimizing development time, and enhancing customer experience through the use of realistic patient models.

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