Abstract

The size and thus the complexity of many systems, that use an intellectual property component (IP), have reached a level where design validation with mere testing and simulation does not deliver the required quality any more. Obtaining a formal model from a non-formal one is a complex and error prone task. A logical step is therefore to try to generate automatically a
formal description from an existing non-formal system model, thus making this step faster and more reliable. In this paper, we describe a methodology to automatically generate formal synchronous models from existing non-formal system level design descriptions that integrates smoothly into existing co-design flows. We exemplify the approach with the popular system design language SystemC and the flexible and expressive synchronous dataflow formalism SIGNAL. SystemC is an HDL which allows for modeling systems in behavioral level, it is a set of library routines and macros implemented in C++, it is a good language for input of design flow for the systems which requires verification, but it is not a formal language.

Reference


Index Terms

Computer Science Programming Languages

Key words
SystemC SIGNAL

Pointers

Analysis

Static Single Assignment

Functional and Compositional Correctness