SystemC AMS Day 2011

Industry Adoption of the SystemC AMS Standard

BLOCK 3: SYSTEMC AMS DESIGN METHODOLOGIES, EDA TOOLS AND FLOWS

Introducing Analog Parts into TLM Virtual Platforms

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As embedded systems are now ubiquitous, any design process should interact in some way with the "physical (analog) world". System design is now moving more and more on the virtualization path, where entire systems can be modeled and simulated with a virtual platform, mainly using SystemC. Hence, there is a growing need to be able to model and interact with physical (analog) interfaces. This should allow system specification phases, as well as architectural considerations and embedded software integration. SystemC AMS offers a natural expansion to the current ESL and TLM design flows which are the de-facto standard.

SystemC AMS allows to model, plug-in and monitor analog mode of computation without losing simulation speed, and to understand the impact of such analog behavior in the context of embedded systems, timing, power, and software execution. Using such virtualization approach, internal aspects of the system can also be modeled. A state of the art example is an adaptive power control that samples the power consumption or temperature and makes the appropriate dynamic voltage frequency modifications. We will present an environment that allows to design naturally mixed TLM and AMS parts in a scalable way that supports both LT and AT simulations.