C/C^{++}: Progress or Deadlock in System-Level Specification

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The lack of a general methodology and notation has been identified as one of the main obstacles bedeviling system-on-chip designers. Nevertheless, there is a lot of confusion about what SLD (System Level Design) means and which SLDL (System Level Design Language) is the most appropriate.

With SOC demands there has been recently high interest in system level design, particularly, HW/SW co-design. In order to accommodate SW, the system companies as well as EDA vendors would like to use C as the language for System level Design. Many people are trying with subset of C and others with C++ by introducing classes that correspond to HW (VHDL/Verilog) concepts. C/C++ syntax has become the most popular for defining new C/C++ language extensions for system-level specification and design. A wide community of system designers and EDA suppliers believe that C/C++ is the most appropriate vehicle to use as a next-generation language. However, there are many challenges and open problems.

This special session will address all these issues promoting answers to the following questions:

- What are the requirements for a SLD language?
- Do we understand system level issues?
- Is C/C++ the best solution for system specification and design?
- Is there space for a widely accepted system-level specification standard?

The Session will start with an embedded tutorial addressing SW/HW models of computations, modeling levels for system design, guidelines and refinement rules for successful synthesis and discuss possible methodologies for SLD. Also, the talk will address several existing efforts in SLD (including SystemC, SpecC, Superlog, Cynapps and others) methodologies and tools, their strong and weak points and give a forecast based on needs for SLD.

After the embedded tutorial, the main questions raised will be stated. The panelists will present their personal answers and positions. They represent the main cross section of system design companies, standardization bodies and universities addressing system-level specification and design methodologies. The audience will be invited to participate with their own comments and questions.