SystemC AMS Day 2011

Industry Adoption of the SystemC AMS Standard

BLOCK 4: SYSTEMC AMS IN WIRELESS AND WIRED COMMUNCATION SEMICONDUCTOR INDUSTRY

SystemC AMS Modelling of a Metallic Line Testing System

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For telecommunication systems it is very important to be able to test the copper line to the subscriber to ensure the quality of service. For Next Generation Networks there will be a move to pure digital transmission (DSL) to the subscriber where voice service will be provided by voice over IP technology. In such an “All Digital Loop” scenario the metallic access to the subscriber line will be lost because there is no more POTS or ISDN equipment in place. To still be able to test the copper line the so called “Metallic Line Testing” (MELT) is introduced. A SystemC AMS model of such a metallic line testing system was implemented.

The system consists of a line test controller, an analog mixed signal part, a high voltage subscriber line interface and a multiplexer for 16 channels in front. In addition to the line testing system the subscriber line with all kind of possible terminations (DSL equipment, telephones, signatures, …) and error cases (ground fault, short circuit, foreign voltage, …) had to be modeled. One big advantage of SystemC AMS is to combine different models of computation which can be mixed inside the model like: timed dataflow, electrical linear networks, linear differential equations and the SystemC event driven simulation. As everything is based on C++ it was also easy to include the C code of the line test controller into the model and so this model was extensively used to develop the line testing algorithms.