

6. Summary

An object-oriented behavioral simulation system called Alecsis has been described. Its main advantages over the existing solutions are generality, wide range of application, object-oriented approach and C++ - based hardware description language AleC++. The system provides for separate compilation of analog, digital and hybrid modules, as well as C/C++ functions, and their storage in design libraries for further usage. The simulation engine contains the analog, digital and mixed-signal simulation algorithms. The hardware description language serves for problem description and also as the simulator engine customizing tool. The capabilities of Alecsis are demonstrated on digital, analog, mixed-signal, mixed-domain, and hardware/software modeling and simulation examples.

One of the specific features is the possibility to use AleC++ in interpreted mode, which simplifies model development. Language interpretation is fast, since the code that is interpreted is optimized.

Alecsis uses the concept of concurrent processes and signals similar to the one in VHDL. At the moment we are developing a VHDL compiler that will output standard Alecsis libraries. It will enable VHDL entities and architectures to be imported and used as regular AleC++ modules. Another compiler will import

SPICE input files. Both tools are expected to further increase applicability and flexibility of the Alecsis simulator.