

Keynote Talk

Programming customized parallel architectures in FPGA

Ivo Bolsens

Xilinx

San Jose, California, USA

e-mail: ivo.bolsens@xilinx.com

Abstract

CPUs are multicore (and multi-cache) supported by a coherent, global, shared memory model. FPGAs offer a vast number of distributed programmable function blocks and distributed memory blocks across distributed memory spaces. This presentation will discuss a hybrid computing architecture that unifies the development of applications for a combined CPU-FPGA platform. The proposed programming model is based on message passing (MPI) and distributed memory. NoCs are at the heart of the hybrid platform managing the control and data flows. NoCs are implemented through shared memory buffers on the CPU portion of the hybrid computing platform. On parallel hardware, NoCs are implemented as application-specific point-to-point networks exploiting the abundant routing and switching resources of the FPGA. NoCs enable application-specific memory models while keeping with standard, familiar programming models such as MPI.

Brief Bio

Ivo Bolsens is vice president and chief technology officer (CTO) at Xilinx. He is responsible for identifying Xilinx technologies and talent as well as heading up the Xilinx Research Laboratories, which focus on advanced research in the area of programmable logic. Ivo Bolsens is vice president and chief technology officer (CTO) at Xilinx. He is responsible for identifying Xilinx technologies and talent as well as heading up the Xilinx Research Laboratories, which focus on advanced research in the area of programmable logic. Bolsens came to Xilinx in June 2001 from the Belgium-based research center IMEC, where he was vice president of information and communication systems. His research included the development of knowledge-based verification for VLSI circuits, design of digital signal processing applications, and wireless communication terminals. He also headed the research on design technology for high-level synthesis of DSP hardware, HW/SW co-design and system-on-chip design. Bolsens holds a PhD in applied science and a master's degree in electrical engineering from the Catholic University of Leuven in Belgium.