

ASAM

Automatic Architecture Synthesis and Application Mapping

EXECUTIVE summary

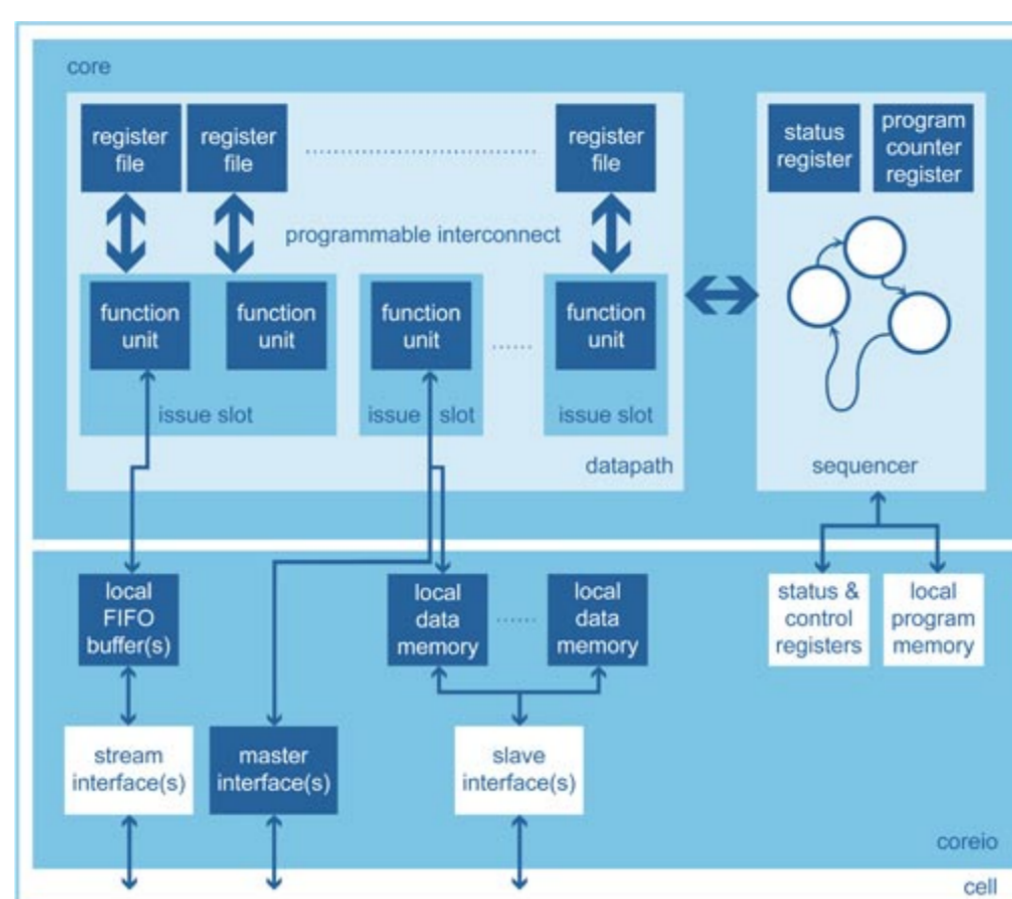
ASAM targets a uniform process of automatic architecture synthesis and application mapping for heterogeneous multi-processor embedded systems based on adaptable Application Specific Instruction-set Processors (ASIPs). It aims to define a new unified design methodology, as well as, related synthesis and prototyping tool-chains that will reduce the system development time and cost.

RELEVANCE CALL 2009 objectives

Priority 3.1.3: Methods and tools, providing a complete flow and design space exploration for Systems-on-Chip, at a high level of abstraction.

Priority 3.1.1: Reference designs and architectures, in particular through composability and resulting predictability and design safety.

Sub-programme ASP5: Computing environments for embedded systems.



MARKET innovation

The new embedded system design technology is relevant for a very broad range of applications (in consumer electronics, multimedia, entertainment, telecom, medical imaging and instrumentation, advanced machinery, military, etc.), and is applicable to several implementation technologies (e.g. SOC or ASIC, structured ASIC, and FPGA). It fulfils the needs of multi-domain and cross-domain applications, and addresses fundamental development challenges for electronic systems of the future. In all these markets application-specific systems play a major role. The rapid changes in these markets' requirements and demands of high performance and low energy consumption dictate that solutions need to be programmable, but highly efficient at the same time. The project aims to facilitate this.

TECHNICAL innovation

Formalisms for high-level description of processors of any nature (RISC/CISC/DSP, SIMD/VLIW, etc.) and SoCs involving processors, networks-on-chip, memories and other blocks exist. Tools are available to generate synthesizable hardware designs, multi-processor compilers and simulators from these high-level descriptions. What is needed are effective methods and tools to support the actual construction of the high-level system and processor designs. The ASAM project will deliver new capabilities to automate the construction of the SoC and processor designs through an advanced design-space exploration. This will involve the combined macro- and micro-architecture exploration necessary for SoCs based on adaptable ASIPs, and will account for the actual constraints of modern SoC design (power, performance and area). The project will also advance the state-of-the-art in application parallelization, partitioning, scheduling and mapping, needed to facilitate the design-space exploration and to deliver applications running efficiently on the constructed heterogeneous multi-processor platforms.



PROJECT COORDINATOR Lech Jozwiak	START May 2010
INSTITUTION Eindhoven University of Technology	DURATION 46 months
	TOTAL INVESTMENT €5.38 M
EMAIL l.jozwiak@tue.nl	PARTICIPATING ORGANISATIONS 8
WEBSITE www.asam-project.org	NUMBER OF COUNTRIES 4

