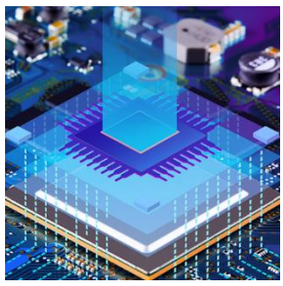
SOFTWARE-DEFINED COMPUTING

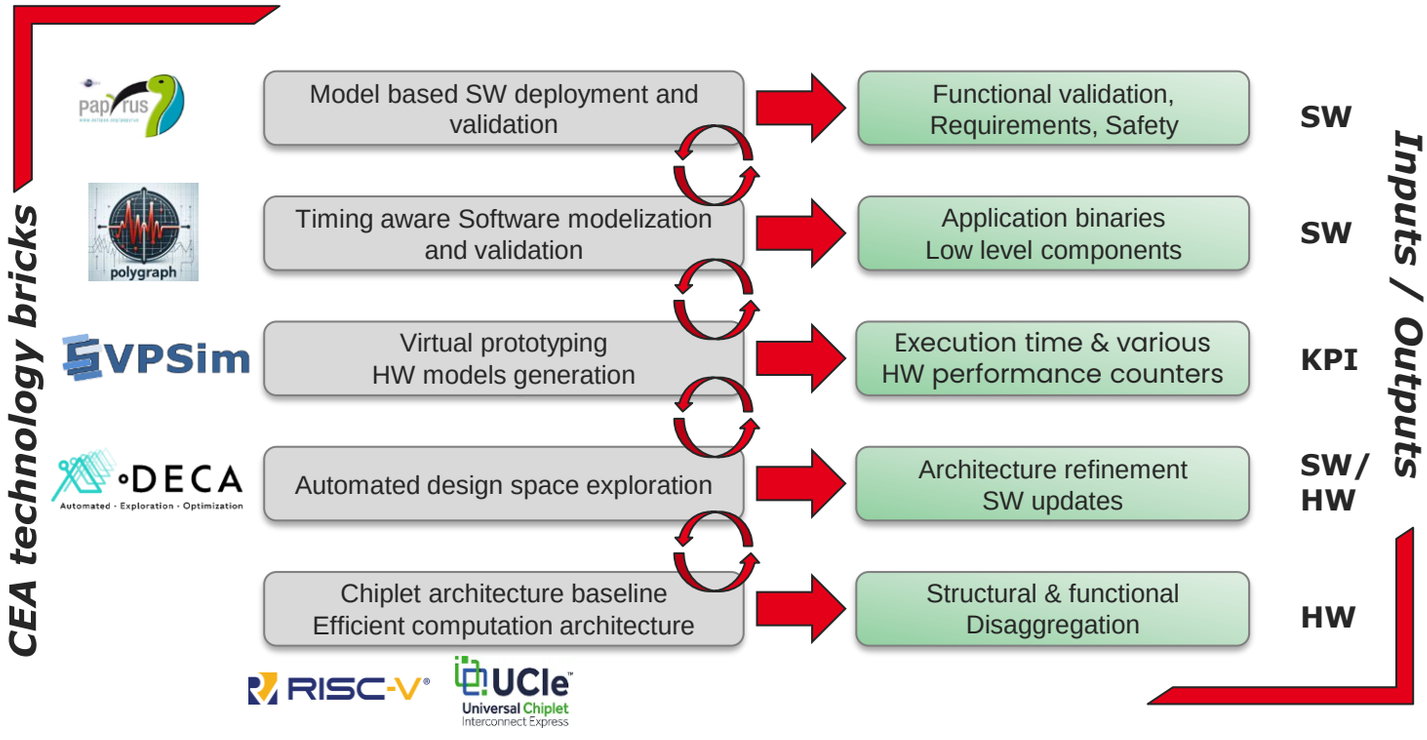


OVERVIEW

With the rise of chiplet-based computing architectures, designers must navigate the growing complexity of integrated circuit and system design. To meet demanding specifications for energy efficiency, compactness, performance and heterogeneous chiplet integration, they must also consider software workloads early in the design process. CEA proposes a set of tools to answer this challenge.

BENEFIT : HARDWARE SOFTWARE CODESIGN

We propose early stage exploration of software workloads with chiplet-based architectures, reducing iteration loops in design flow. Early alignment helps mitigate the risk of rework and shortens development cycles by collaboratively refining hardware and software requirements before committing to physical design: teams can address performance bottlenecks and compatibility issues upfront, ultimately delivering more efficient, reliable, and agile solutions.



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KEY FEATURES

- A-DECA - Design Space Exploration

Decision making tool enabling automated exploration of the design space, multi-criteria analysis of architectural choices. A modular approach for automating the exploration of design parameters

- VPSim - Virtual Prototyping

Open source virtual prototyping tool based on SystemC/TLM models enabling simulation of architectural configurations to quickly evaluate performance. Best compromise of simulation time and accuracy

- Polygraph - Software Modelling

Computing and communication model allowing to conduct fine-grained software exploration to provide insights into computations and scheduling. Timing aware Model based SW deployment and validation

- Papyrus - System Modelling

Open source model-based software engineering, single, shared model for broad range of analysis: SW, HW architectures, Safety, Cybersecurity

APPLICATIONS

Design chiplet-based computing architecture for applications in automotive (software defined vehicle), energy (software defined power), and other software-defined systems.

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