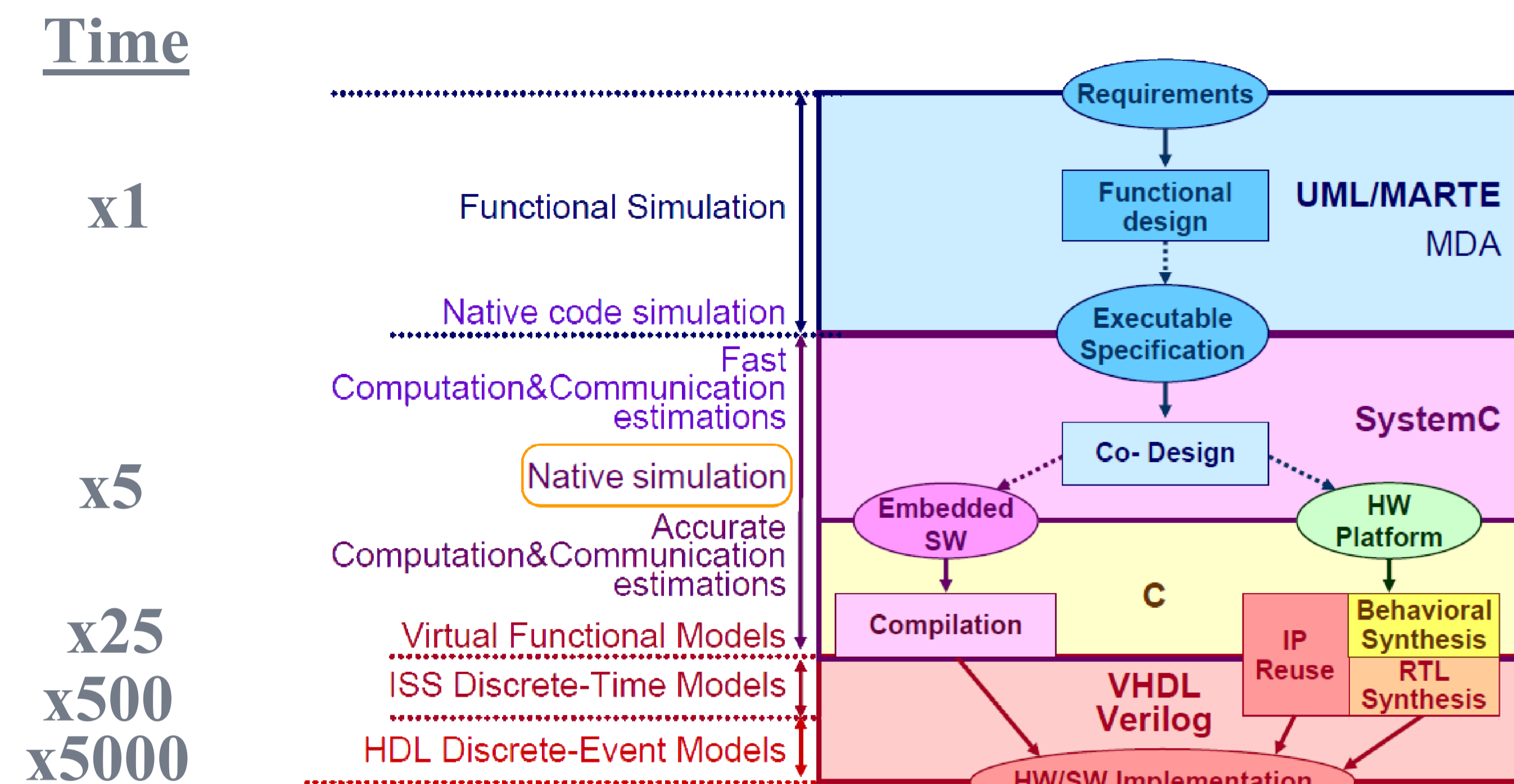# SCoPE: SystemC Cosimulation and Performance Estimation
Application to Power and Thermal Aware Design

D.Calvo[1], P.Gonzalez[1], P.Sánchez[1], E.Villar[1], A. Acquaviva[2], E.Macii[2], C.Parrella[3], M.Giaconia[3]

[1]University of Cantabria, [2]Politecnico di Torino, [3]STMicroelectronics
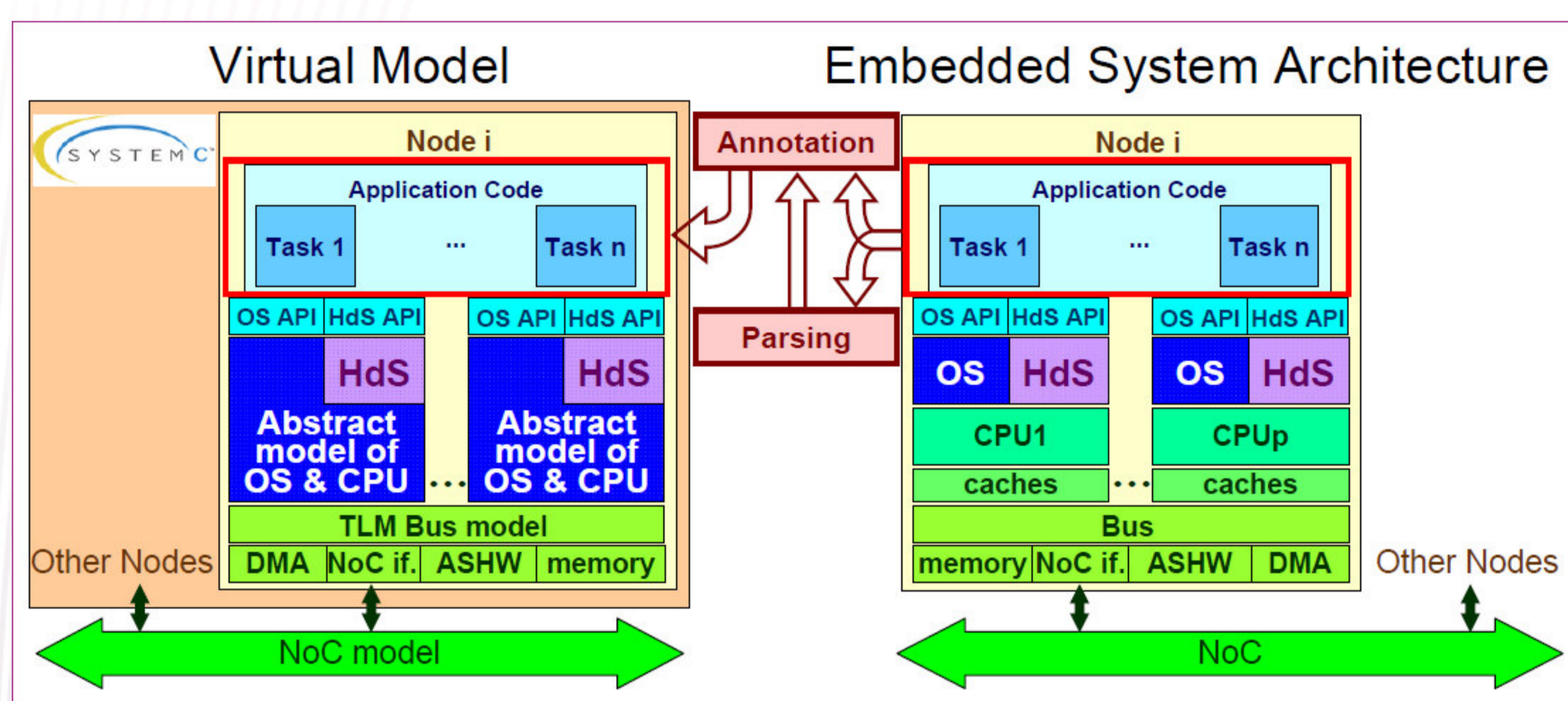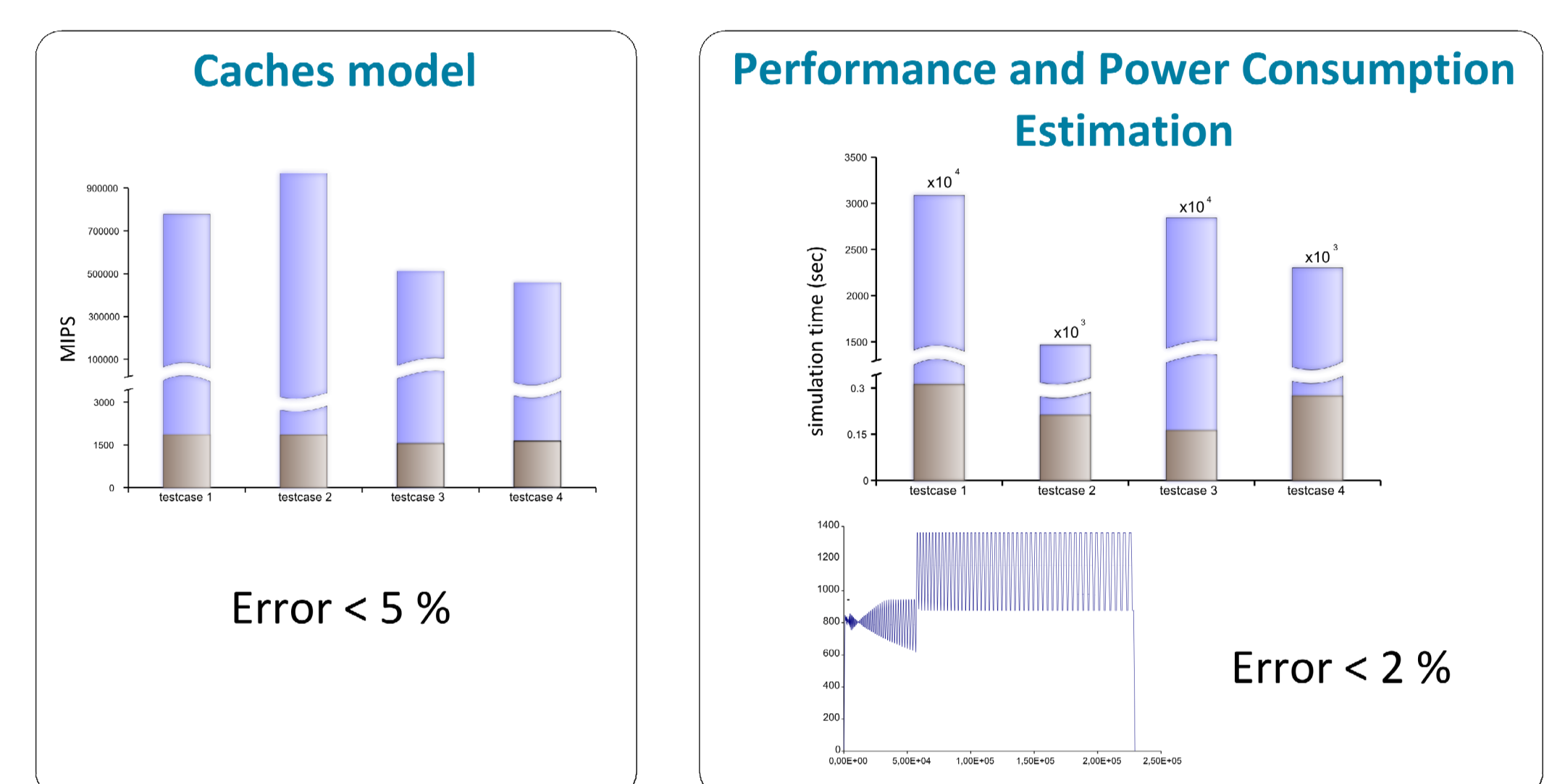
MPSoC Embedded Systems Design Flow

Objectives

- Good trade-off accuracy vs simulation time:DSE.
- HW components impact (caches, memories, network).
- Performance, power consumption and thermal estimation.

SCoPE
Native Simulation based on OS API

Results

Caches model

Error < 5 %

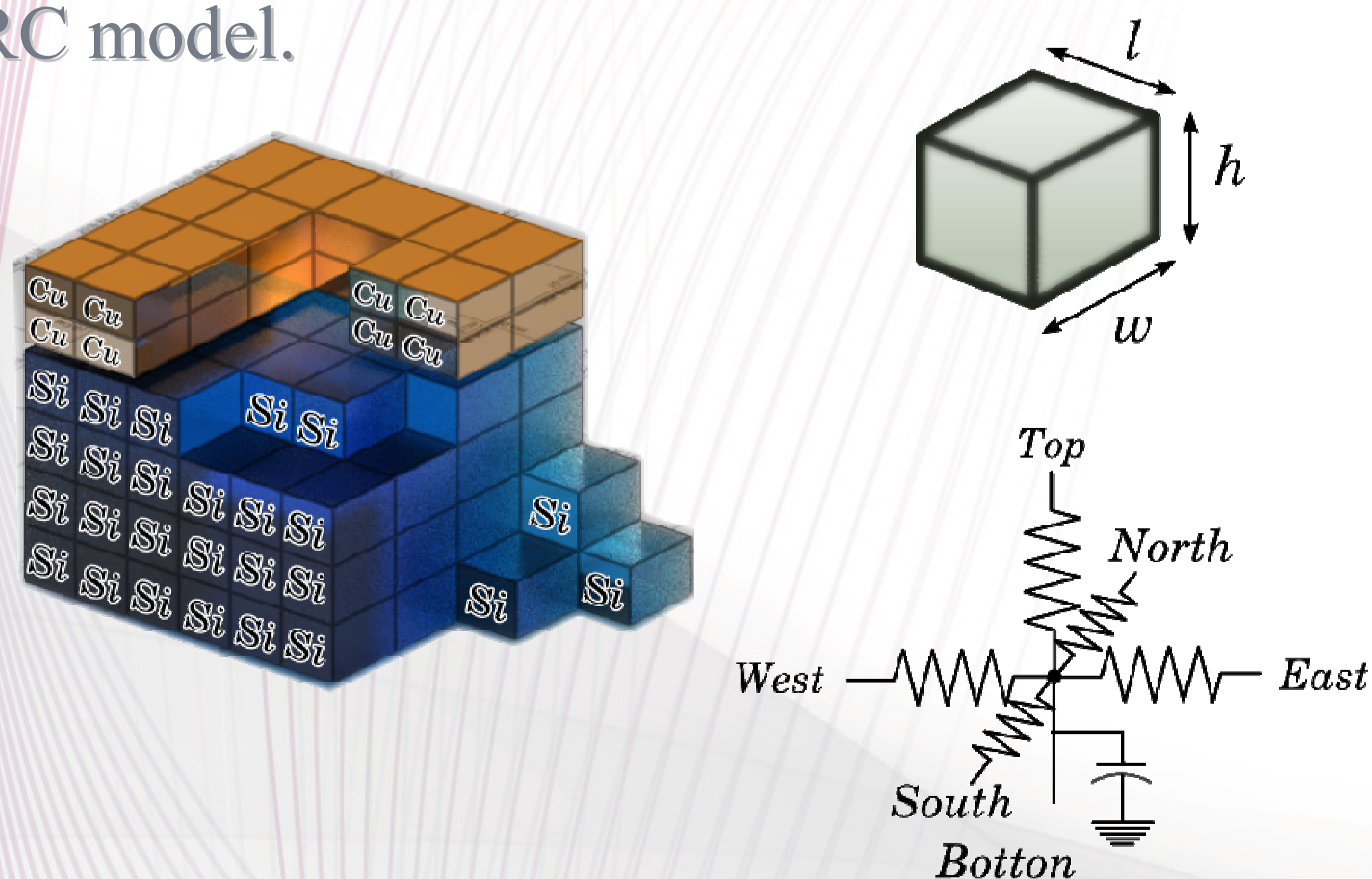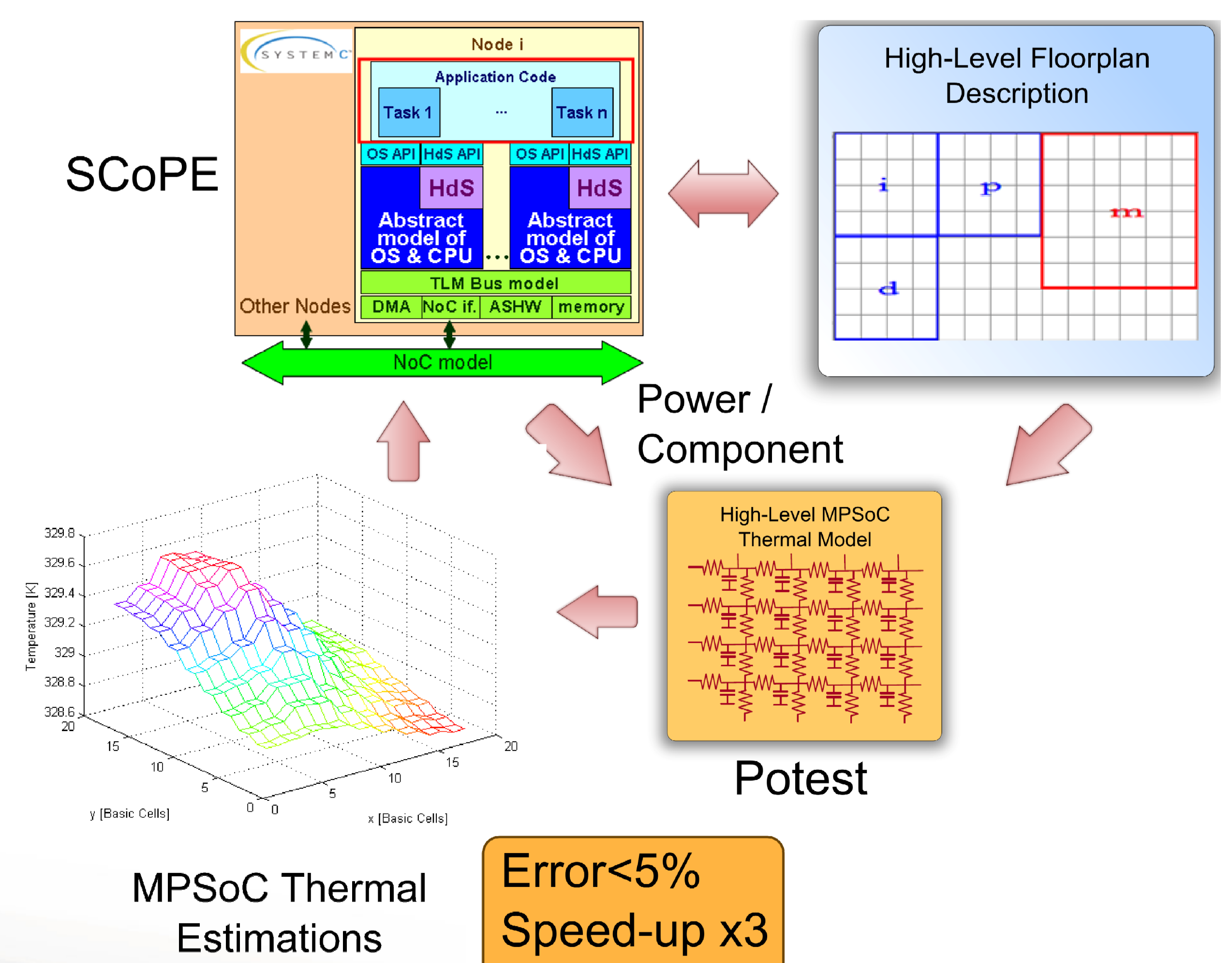Performance and Power Consumption Estimation

Error < 2 %

Potest:
High-Level MPSoC Thermal Model

To model the heat flow: Equivalent electrical RC model.

Simulation Framework for Power and Thermal-Aware Design

SCoPE

High-Level Floorplan Description

Power / Component

High-Level MPSoC Thermal Model

Potest

MPSoC Thermal Estimations

Error<5%
Speed-up x3

STMicroelectronics MPSoC Modeling Example