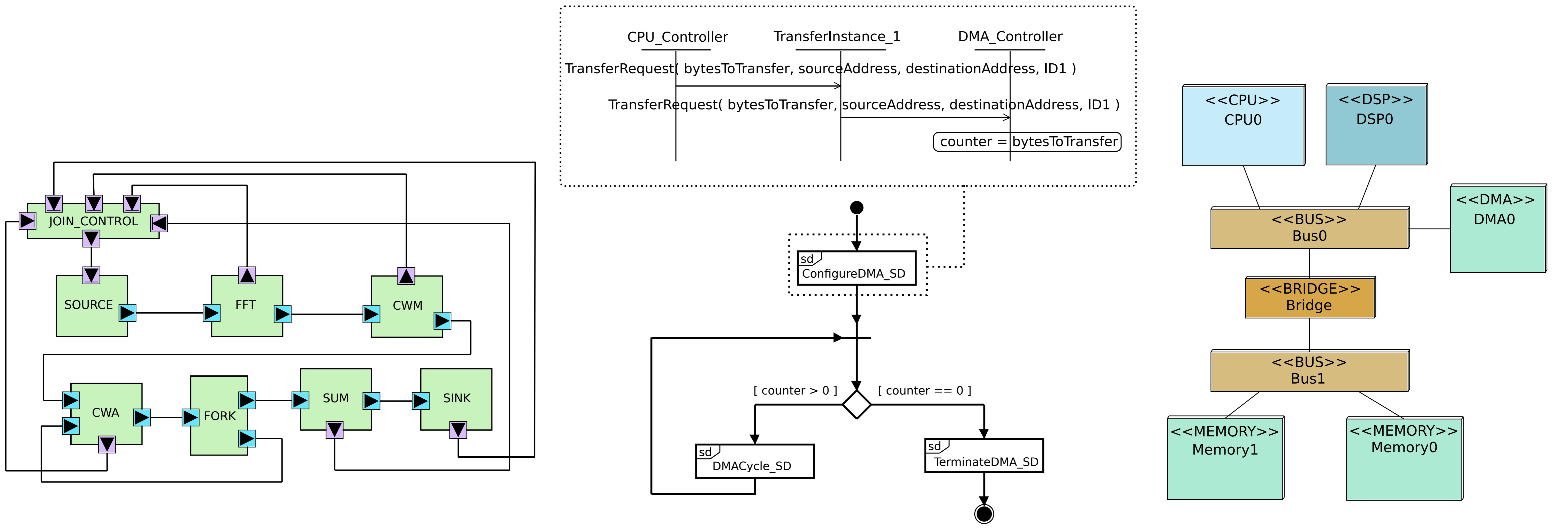


System Level Modeling with the Ψ -chart: Application, Communications, Architecture and Mapping



Application (what):

Dataflow graph with data and functional abstractions, where algorithms are described using abstract cost operators

Communications (how):

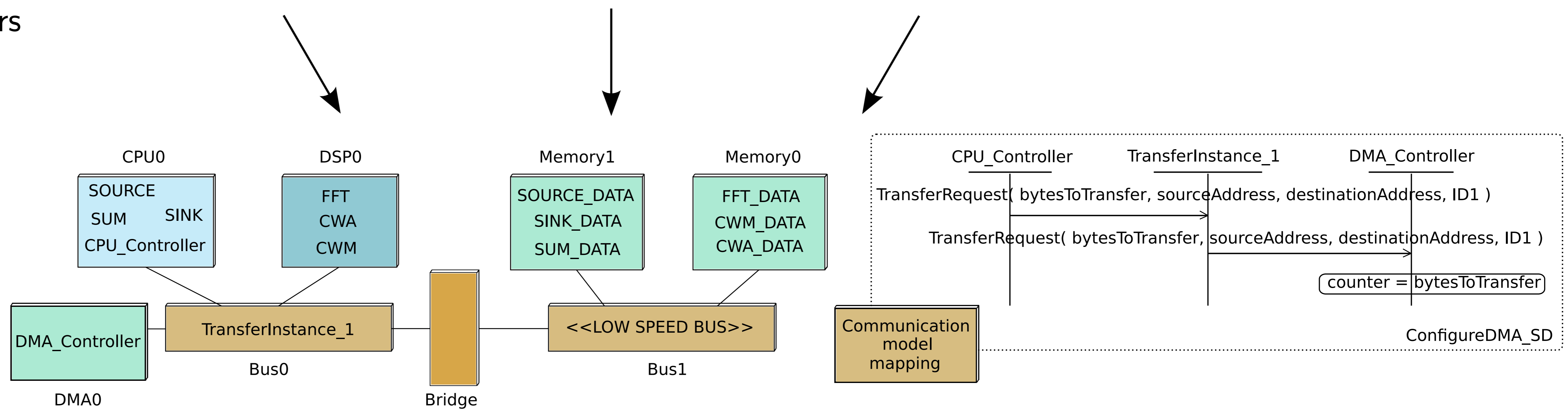
Behavioral model of generic communication protocols that are described independently of the application and architecture models

Architecture (who):

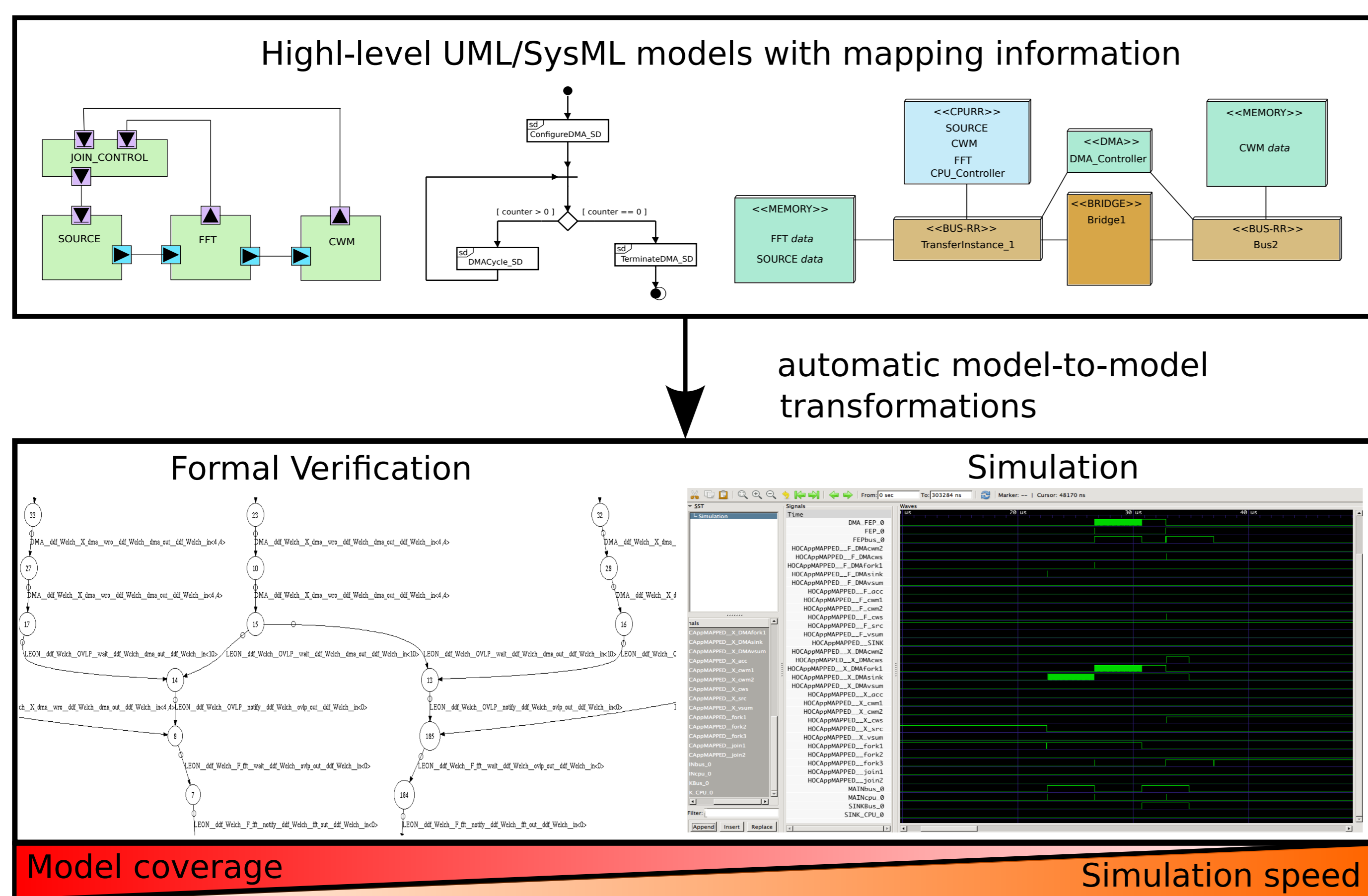
Set of interconnected generic hardware nodes, decorated with parameters, e.g., bus width, arbitration policy

Mapping (where):

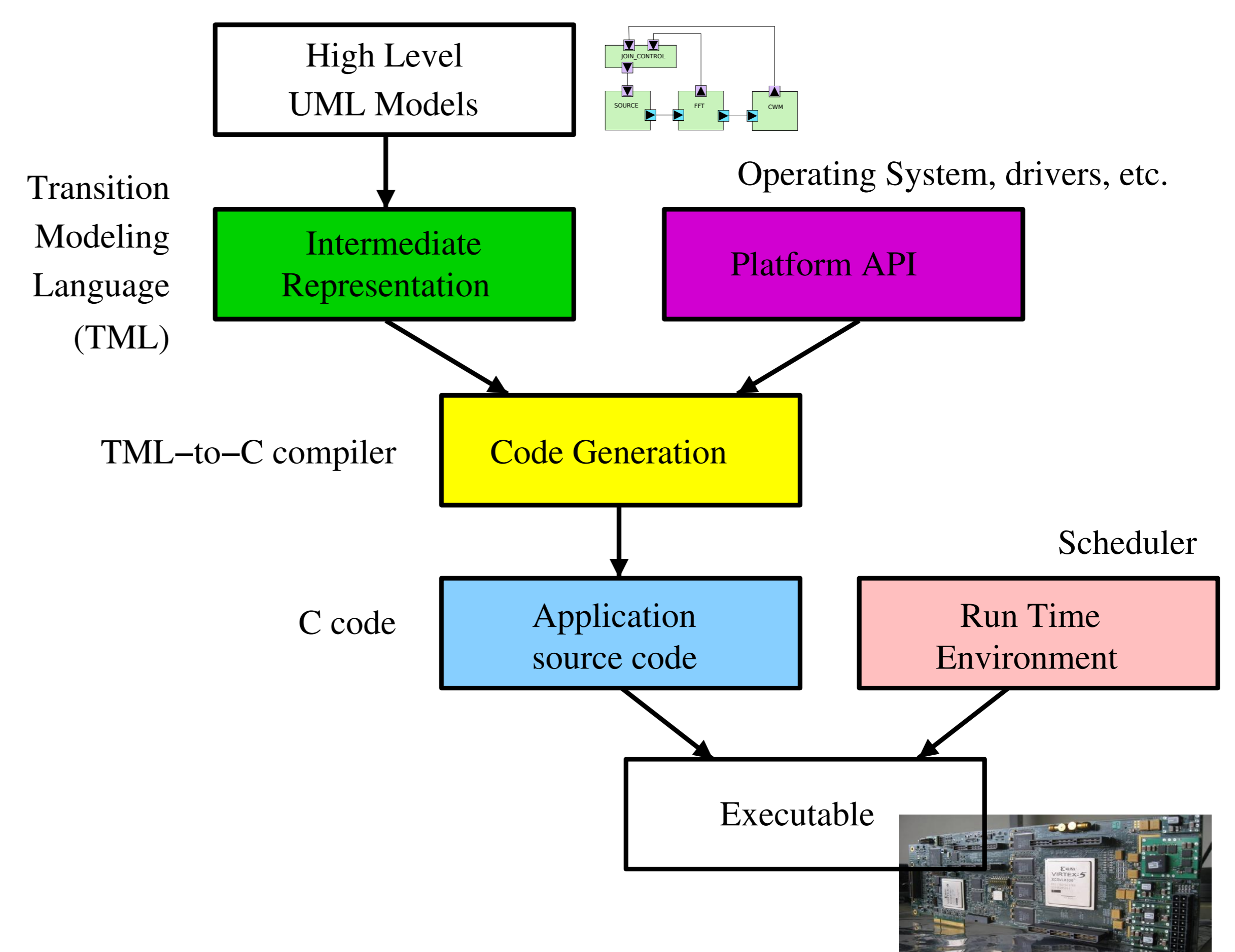
The workload of an application and the behavior of communication models are associated to the architecture units



Design Space Exploration: Simulation and Formal Verification at the push of a button



Automatic Generation of Executable Code from High Level Models



- **Model-checking** of system properties (e.g., safety, schedulability, performance) with LOTOS and UPPAAL
- **Functional simulation** interactively, with graphical interface and debug facilities (e.g., breakpoints, simulation traces)

An **executable implementation** of the application is **automatically generated** for rapid prototyping on the real hardware: only memory allocation and data-blocks addresses must be manually encoded