TTool/DiplodocusDF: a UML Environment for Hardware/Software Co-Design of Data-Dominated Systems

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System Level Modeling: Application, Architecture, Mapping

Application (workload): Dataflow graph with data and functional abstractions. Algorithms are described using abstract cost operators that process the amount of data exchanged between nodes.

Mapping (workload + structure): The workload of an application (data, control) is associated to the architecture units (computations, communications).

Architecture (structure): Set of interconnected generic hardware nodes, decorated with parameters (e.g., bus width, arbitration policy) for simulation and code generation purposes.

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)
- Interactive simulation with graphical interface and debug facilities (e.g., breakpoints, simulation traces)

- An executable implementation of the application is automatically generated: only memory allocation and data-blocks addresses must be manually encoded.

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