UML to VHDL in Gaspard

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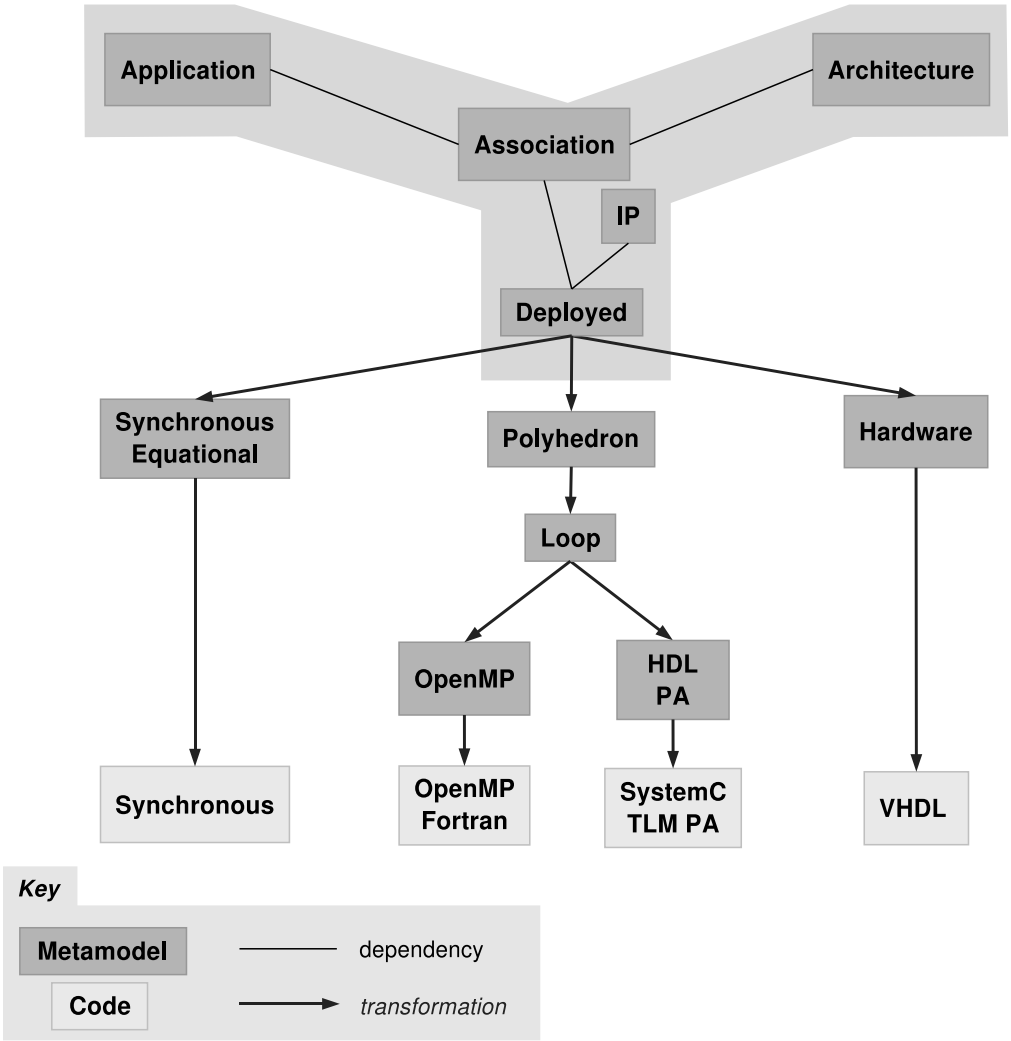
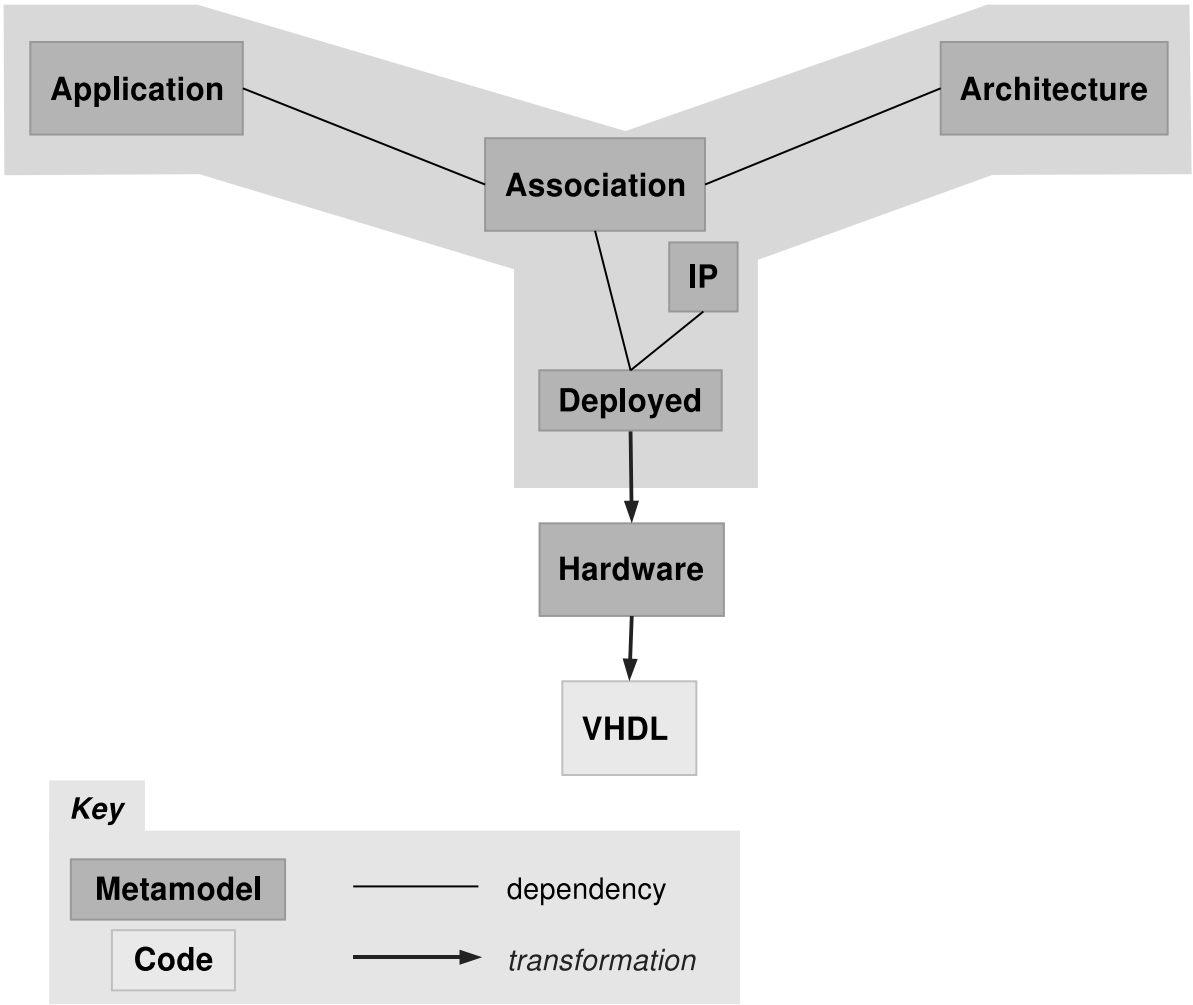
The Gaspard Framework



Gaspard targets VHDL code generation



MDE Methodology

- Developer point of view
  - MetaModels specification in UML
  - Transformation rules
    - specified in TrML
    - implemented in MoMoTE and MoCodE
    - in Eclipse environment
- User point of view
  - Model specification in UML (application being described with Array-OL)
  - A simple launcher button in Eclipse that generate VHDL

Gaspard2 MM

Demonstration...

Experimentation

- VHDL code
  - Simulation
  - Synthesis
- Synthesis results for the correlation
  - 20% more resources than the one done by hand
  - Possibility to enhance model and synthesis results
  - Equivalent maximum frequency
- UML model vs hard coded VHDL
  - UML model is easier to modify
  - UML model is easier to reuse
  - Types and arrays are much more easy to manipulate with models
- Also tested on:
  - Matrix multiplication
  - Picture filtering
  - Nearly on video processing