

Generation of Functional Mock-up Units from Causal Block Diagrams

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Different models in different formalisms

Problems:

- Exchange models
- Exchange solvers
- Co-simulation

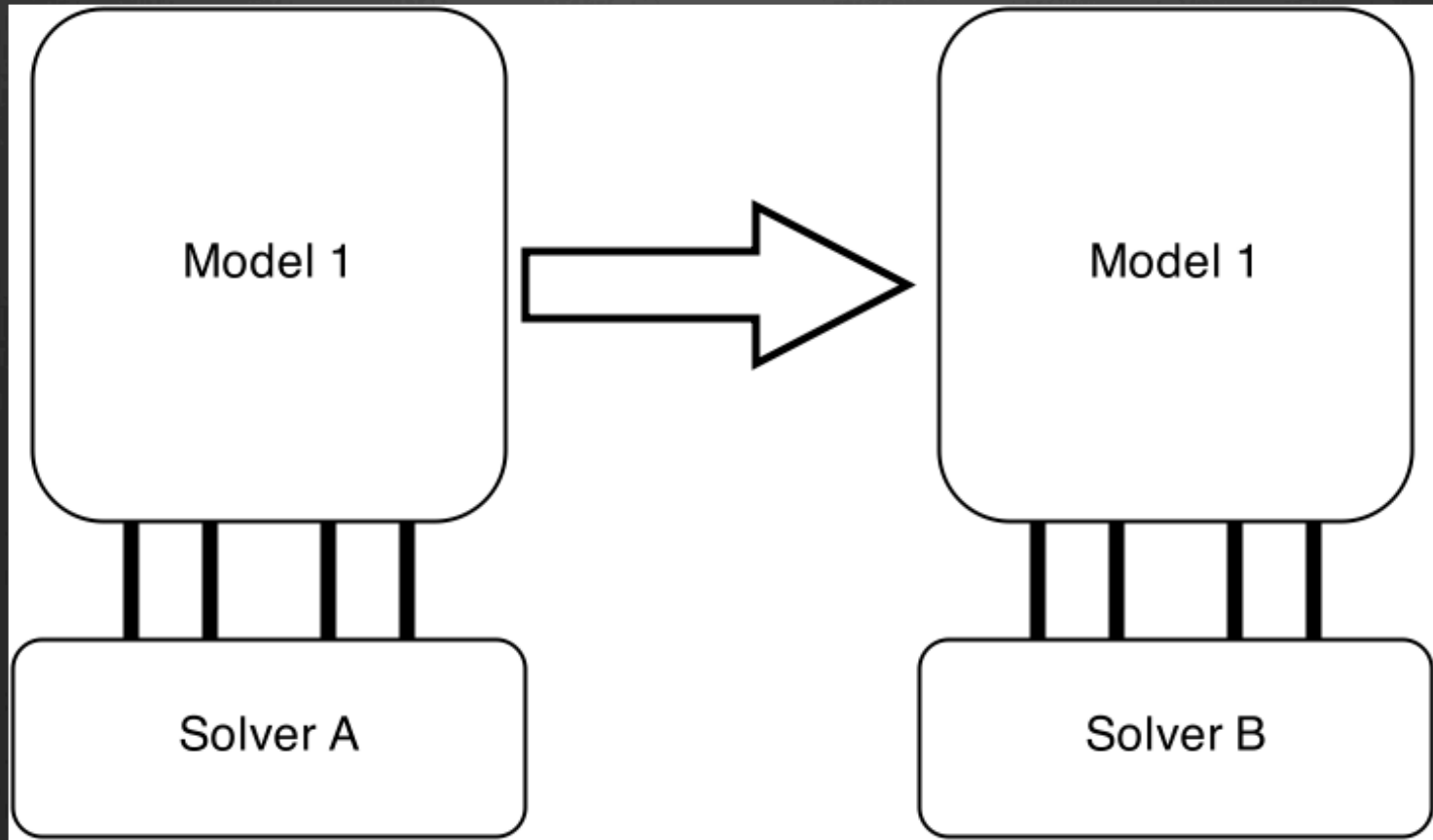
FMI^[1]

Solution: Functional Mockup Interface

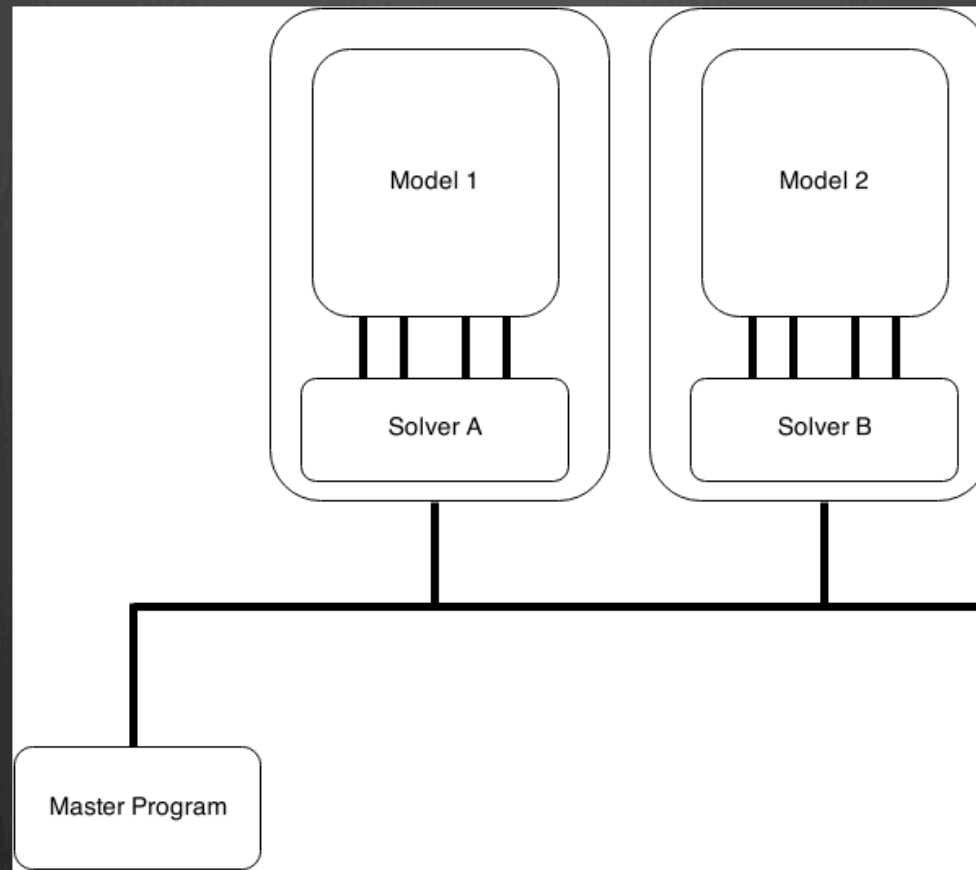
- *FMI for Model Exchange*
- *FMI for Co-Simulation*

[1] T. Blochwitz, M. Otter, M. Arnold, C. Bausch, C. Clauss, H. Elmqvist, et al., The functional mockup interface for tool independent exchange of simulation models, in: Modelica'2011 Conference, March, 2011, pp. 20–22.

Model Exchange



Co-Simulation



Functionals Mockup Unit

FMU consist of:

- Compiled C program
- XML file

Project^[2]

From Causal Block Diagrams:

- Replace every integrator and derivative
- Flatten the hierarchical CBD
- Optimize CBD
- Generate C-code + XML file
- Compile FMU

[2] B. Pussig, J. Denil, P. De Meulenaere, H. Vangheluwe, Generation of co-simulation compliant functional mock-up units from simulink® , using explicit computational semantics (2013).

Questions?