Efficient Model Transformation Languages

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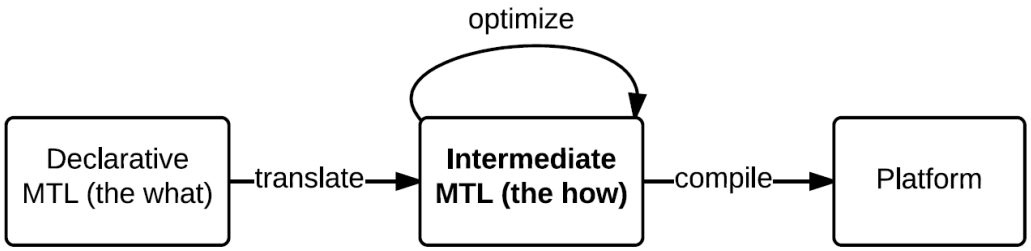
TrNet: A Language and a Workbench for Efficient Model Transformations

- Efficient declarative model transformation languages
  - Explicitly model the pattern matching process
  - Develop analyses and optimizations



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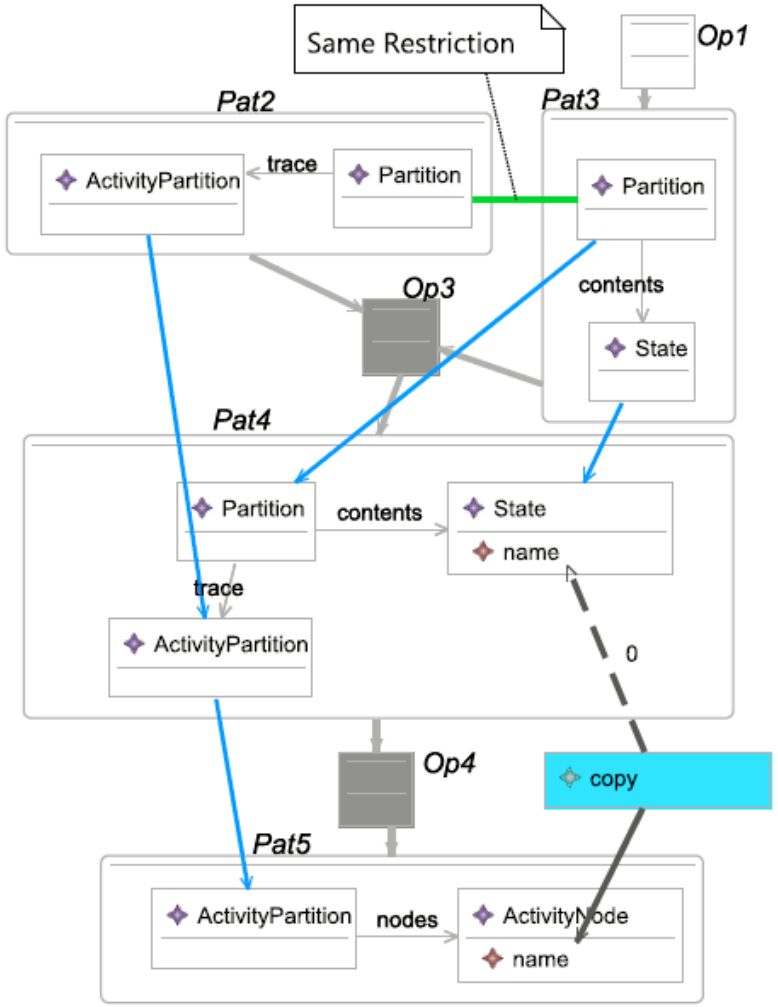
TrNet: Syntax & Semantics

- Network of sets of pattern instances
- Operators combine source sets to create new sets subject to semantic conditions and functions



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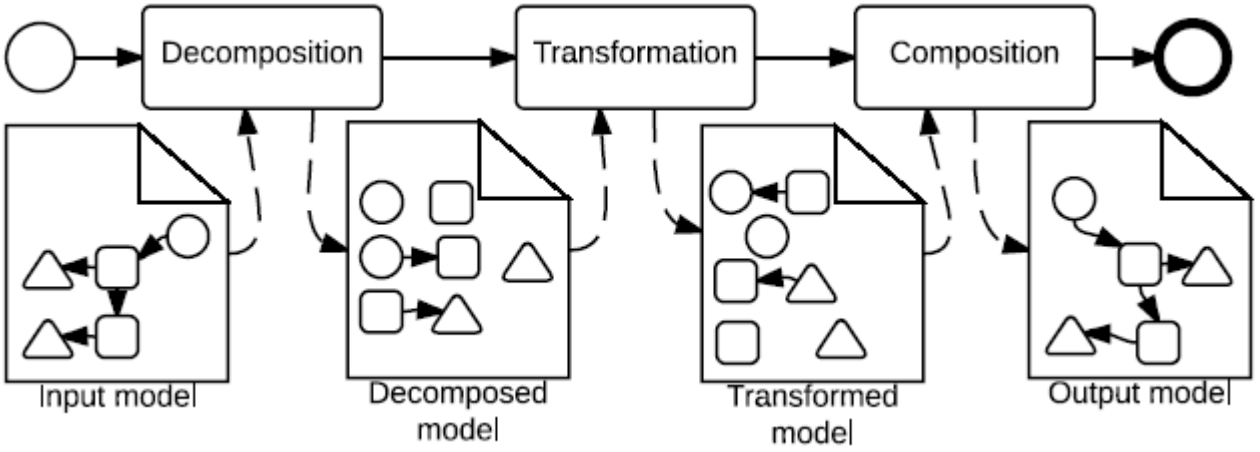
Typical Transformation Process



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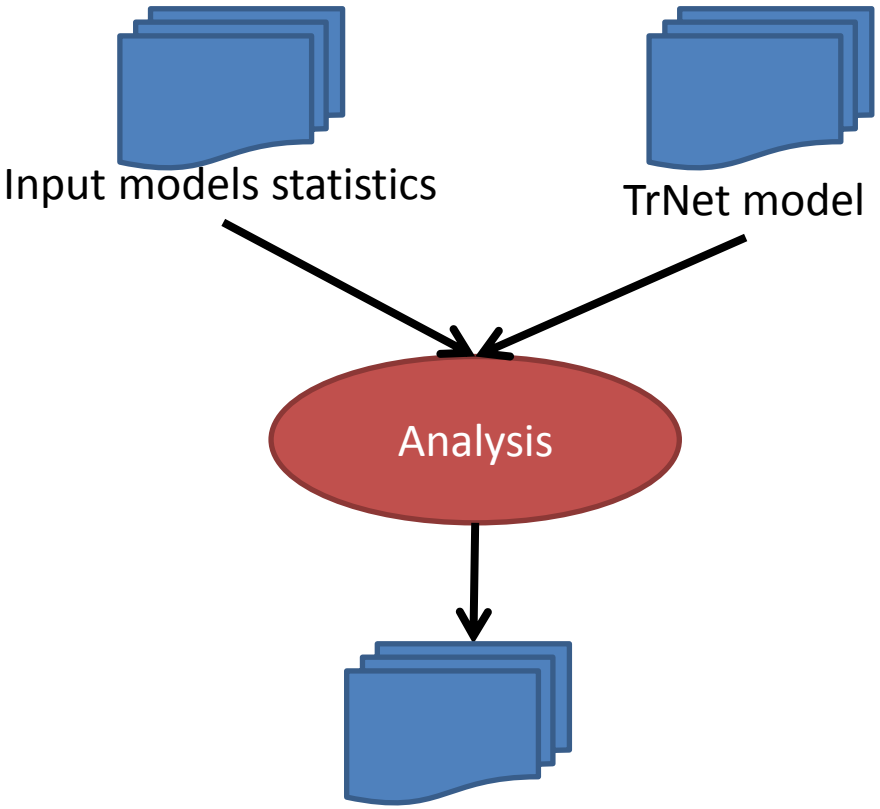
Analyses



Estimated number of instances in each set,
i.e., approx. size of output model

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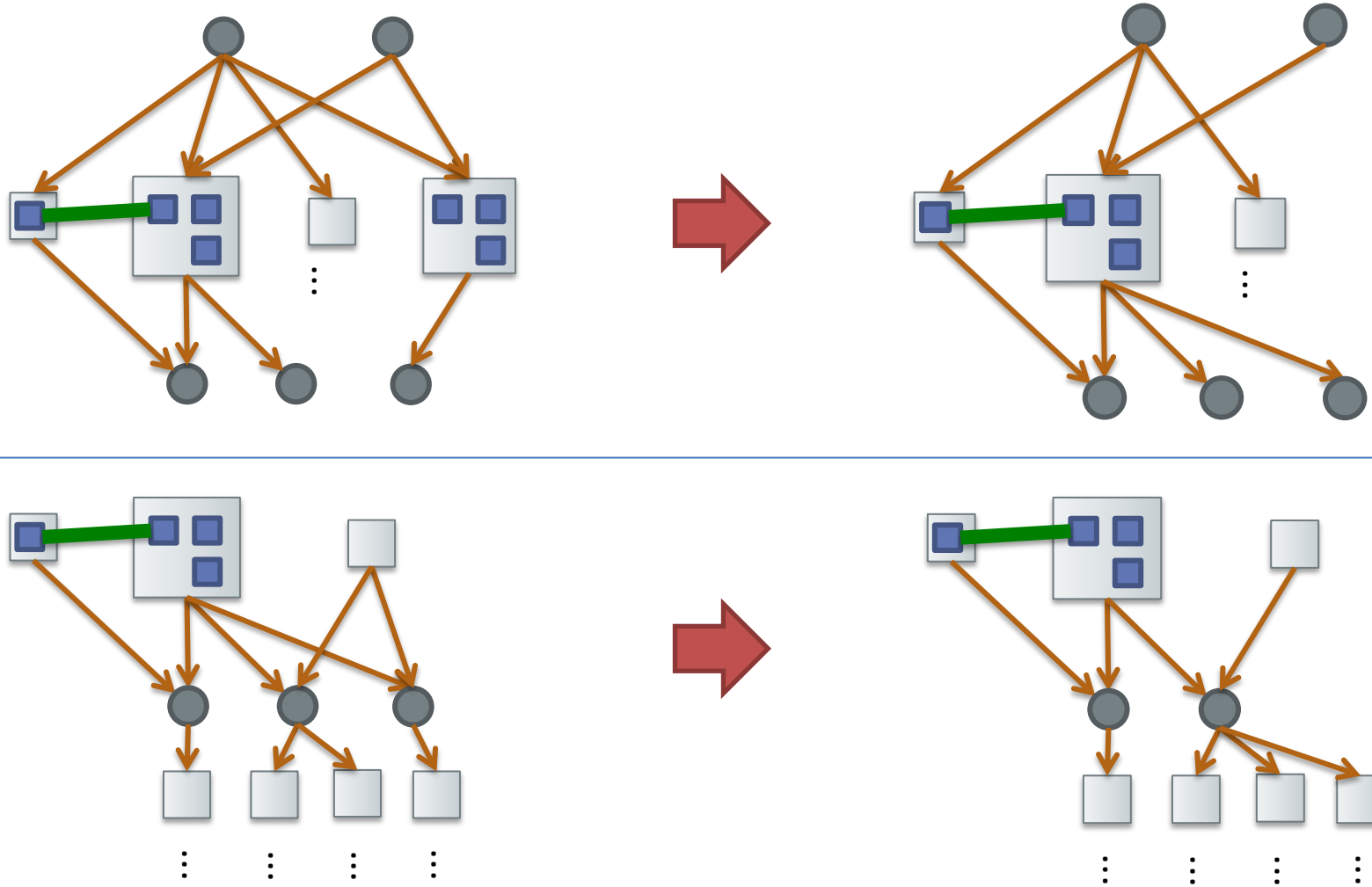
Optimizations



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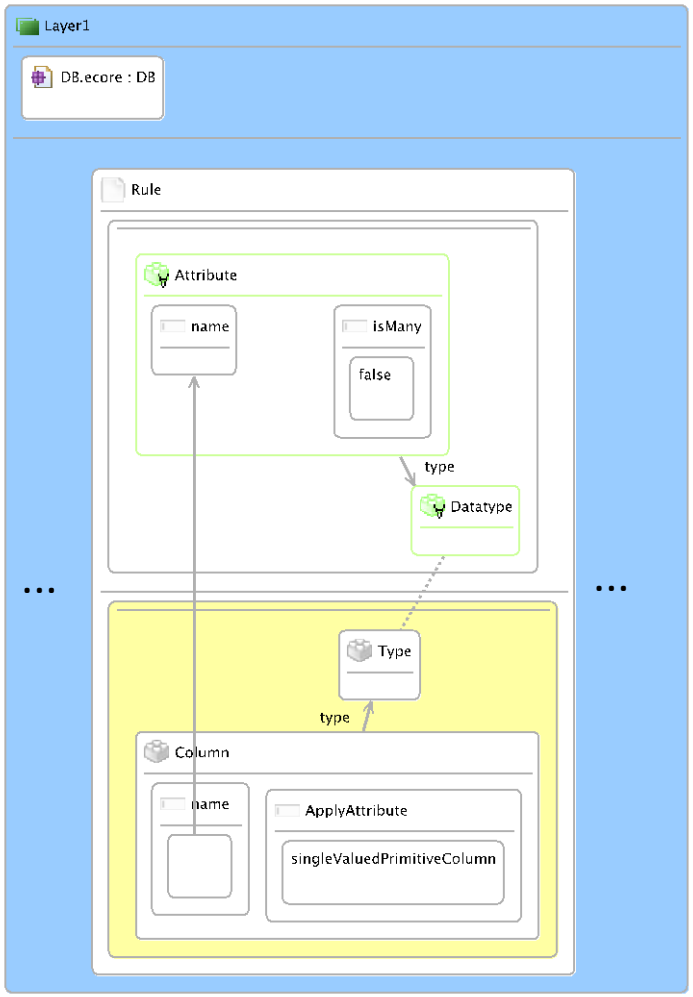
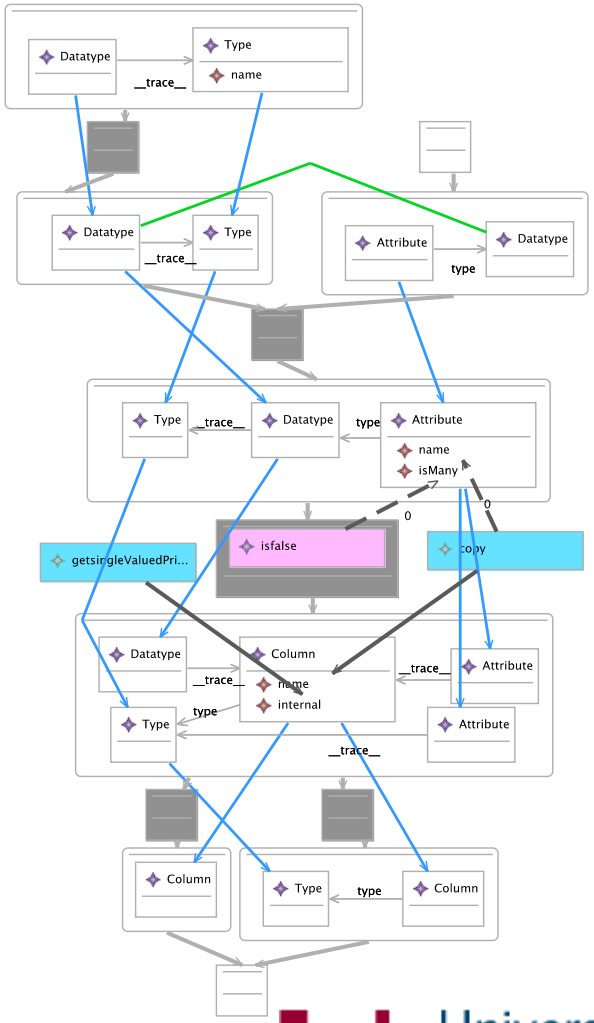
Case Study: DSLTrans Compilation





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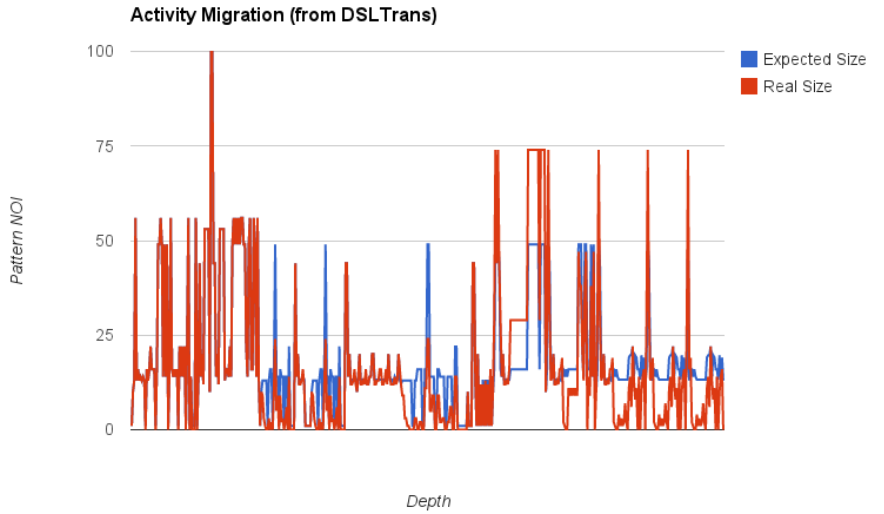
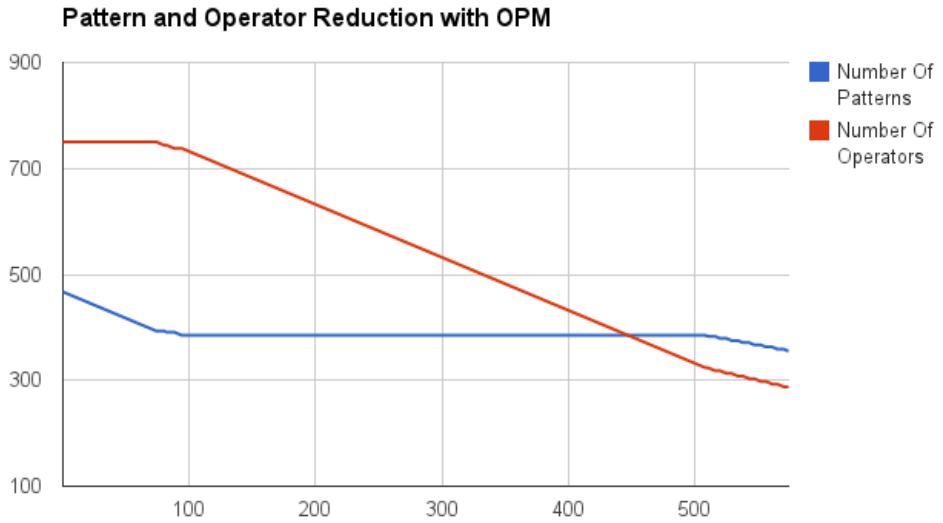
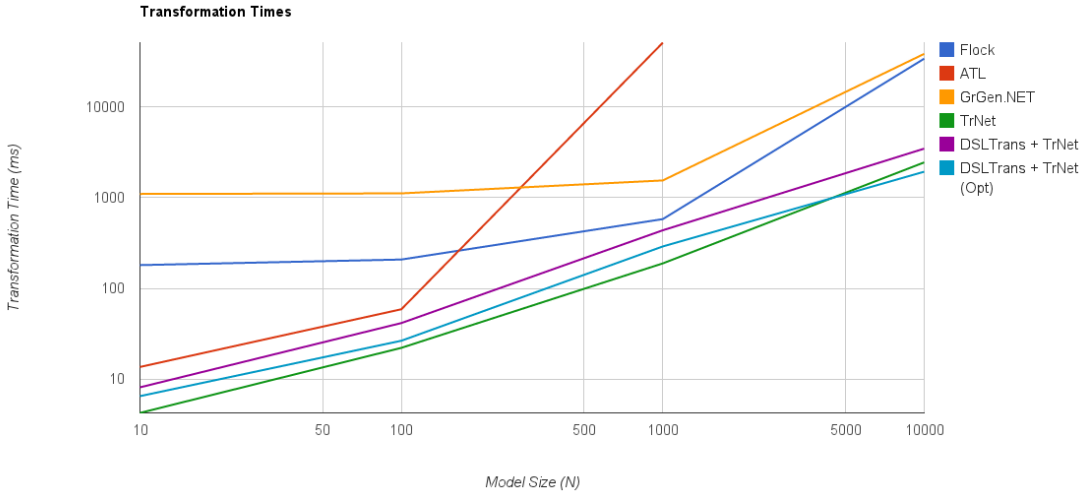
Evaluation







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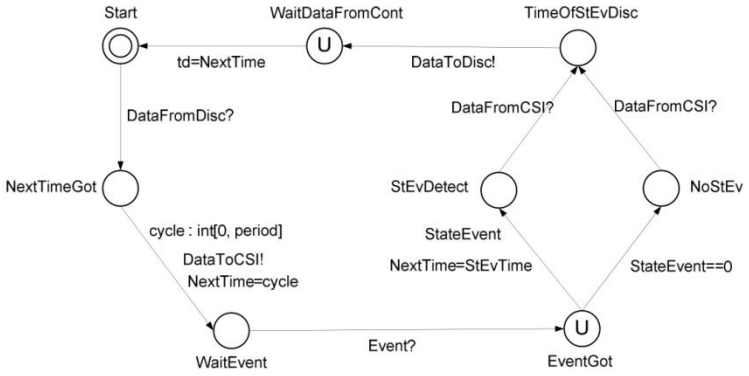
Conclusions

- Mitigate performance impact of high level languages
  - ++Productivity
  - ++Performance
- Domain specific optimizations can be applied as HOT*

Current & Future Work

- Co-simulation of FMUs
- Correct co-simulation
  - Absence of deadlock
  - State events are detected
  - Correct synchronization between interfaces
  - Etc...
- Efficient co-simulation



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Thank you!

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