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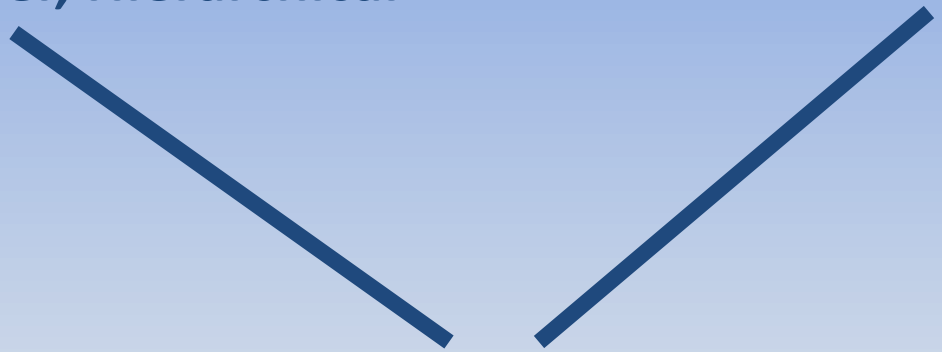
MY RESEARCH

Model Transformation

- Programmed (Controlled) Graph Transformation
- Synchronization + 2-way transformation
- Higher-Order, Hierarchical

Simulation

- Time: discrete time, real-time
- Parallelism, Distribution



⇒Aim for an industrially scalable model transformation

MoTiF

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MoTiF [2]

- **AtomicRule (*ARule*):** transformation rule application

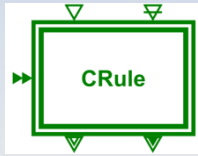
- **ForAllRule (*FRule*):** apply on all matches (parallel independent)

- **TransactionalRule (*XRule*):** control backtracking enabled

- ***Selector*:** At most 1 rule is applied

- ***Synchronizer*:** synchronize (merge) "threads" of rule applications

- **CoupledRule (*CRule*):** parallel composition of inner models



[2] Syriani E. and Vangheluwe H.: *Programmed Graph Rewriting with DEVS*. AGTIVE 2007, *LNCS* (2008)

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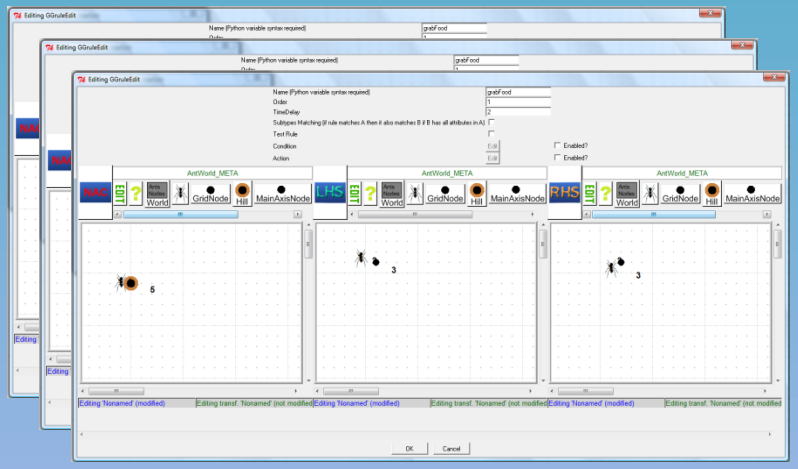
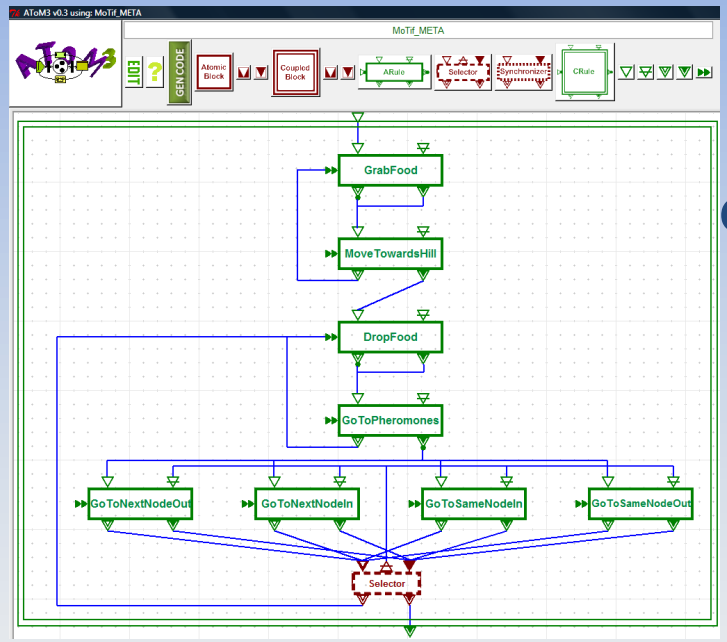
MoTiF EXECUTION



COMPILE

```
class Grabfood:
    def match():
        ...
    def execute():
        ...
```

IMPORT



GENERATE

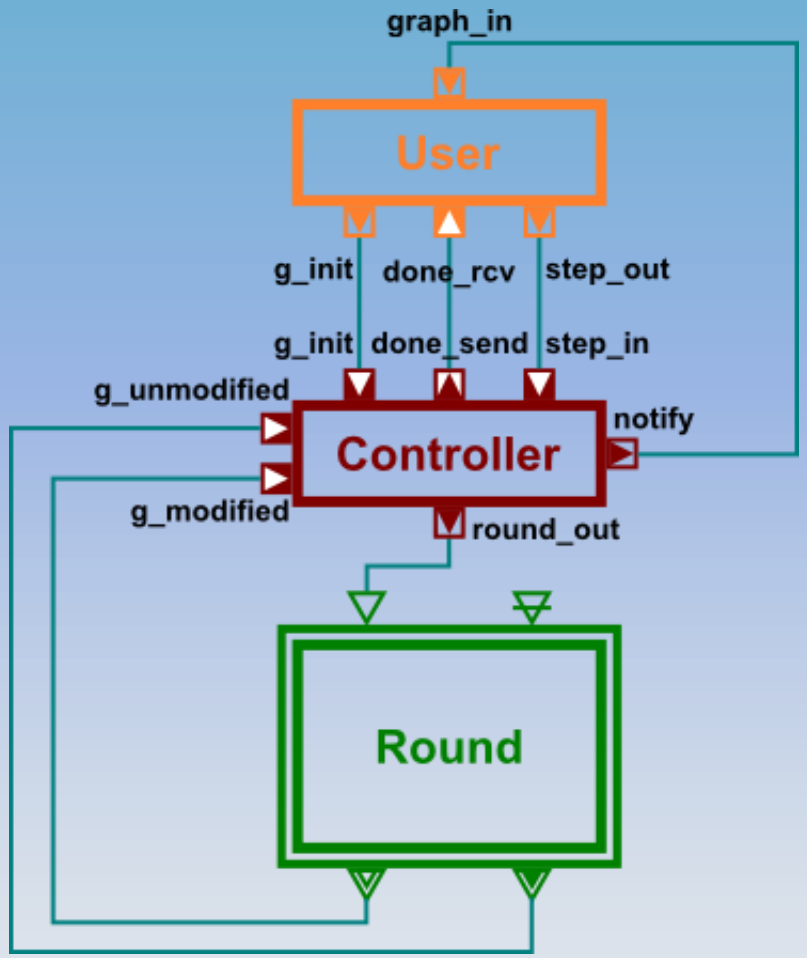
```
class Grabfood(ARule):
    def __init__(self):
        ARule.__init__(self, name='GF')
        self.state =
ARuleState(Grabfood())

    def weightFunction(self):
        return 1.0
```

SIMULATE

```
C:\Python25\python.exe
-------------------- Transforming graph
********************
Round: 1, Circles: 2.0, Nodes: 16, Food
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* GoToNextNodeOut
* Reset
********************
Round: 2, Circles: 2.0, Nodes: 16, Food
* GoToNextNodeOut
* GoToSameNodeIn
* GoToSameNodeOut
* GoToSameNodeOut
* GoToSameNodeOut
* GoToNextNodeOut
* GoToSameNodeIn
* GoToSameNodeOut
```

MOTIF: Timed


graph_in
User
g_init
done_rcv
step_out
g_init
done_send
step_in
g_unmodified
notify
Controller
g_modified
round_out
Round

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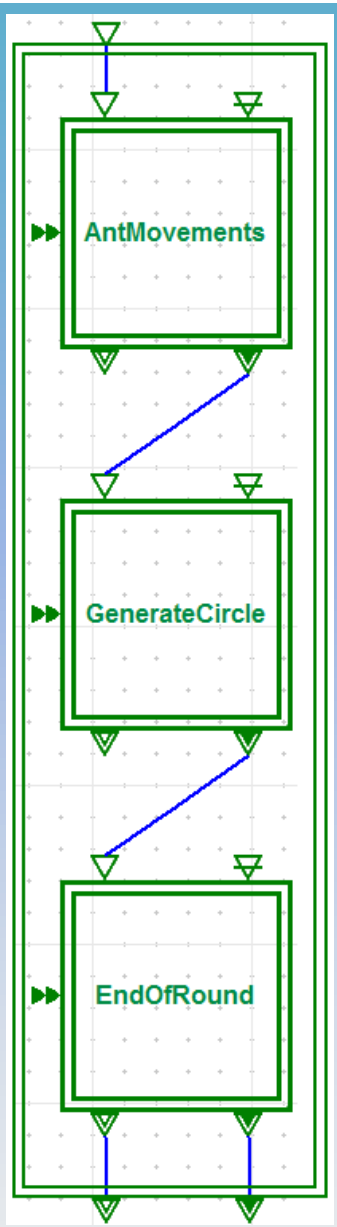
MOTIF: Modular

- Layers



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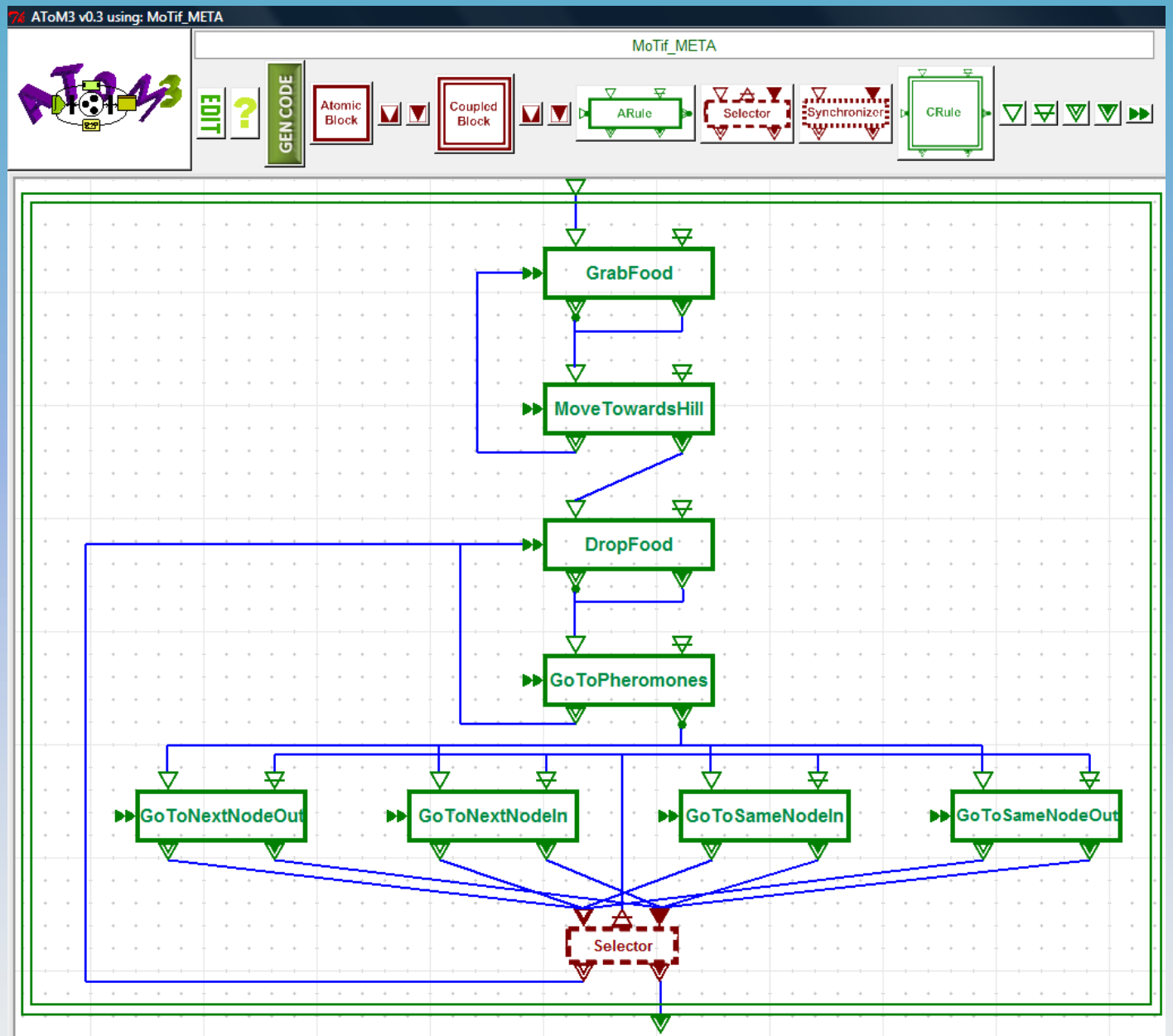
MOTIF: Transformation

- Patterns



(MY) INTERESTS IN THIS CAMPAM

- **Scaling of Model Transformation**
  - ***Distributability*** **of transformations**
- **Applications**
  - ***Applied case-study*** **for MT**
  - ***Reduce gap*** **between existing transformation languages and needs in applications**
- **Model Transformation Evolution**
  - **Higher-Order transformations (HOT)**
- **What would be an optimal meta-meta-model?**