

# Modeling Of Aspect Weaving

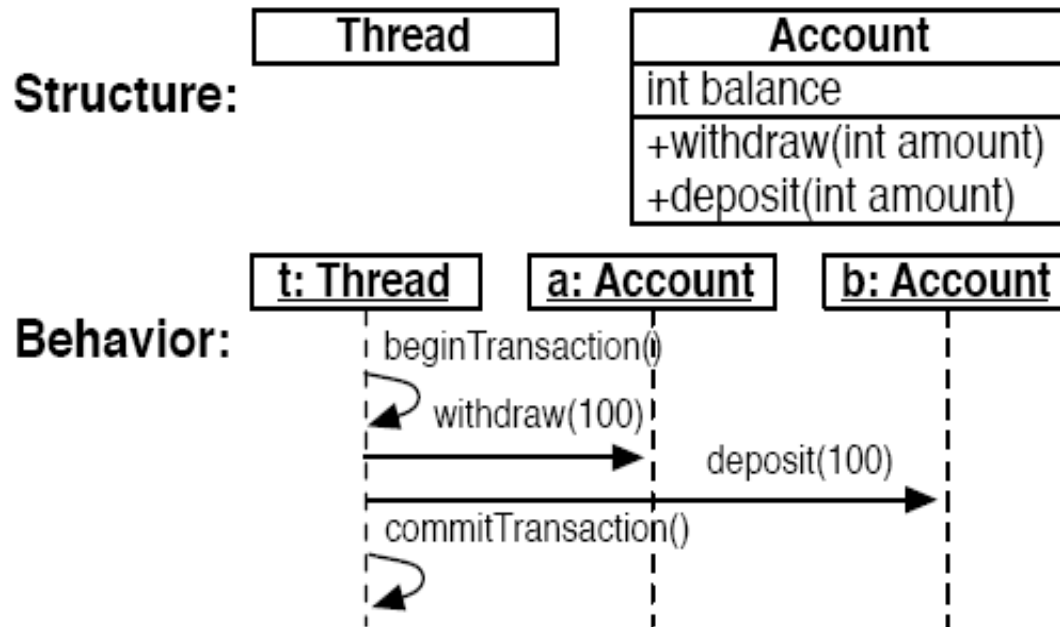
Wisam Al Abed

Modeling Aspect-Oriented Framework: Handling Aspect Reusability,  
Dependencies, Variabilities and Conflicts  
*Jörg Kienzle, Jacques Klein, and Nicolas Guelfi*

# Agenda

- Quick recap of last time
- What I did
  - The meta-model
  - The transformation
  - A simple example implemented
- Summarize and Conclude
  - Issues/Challenges
  - Future work/Potential extensions
- Questions

# Our Simple Example



**Fig. 5.** A Simple Application Model

# Transaction Product Line

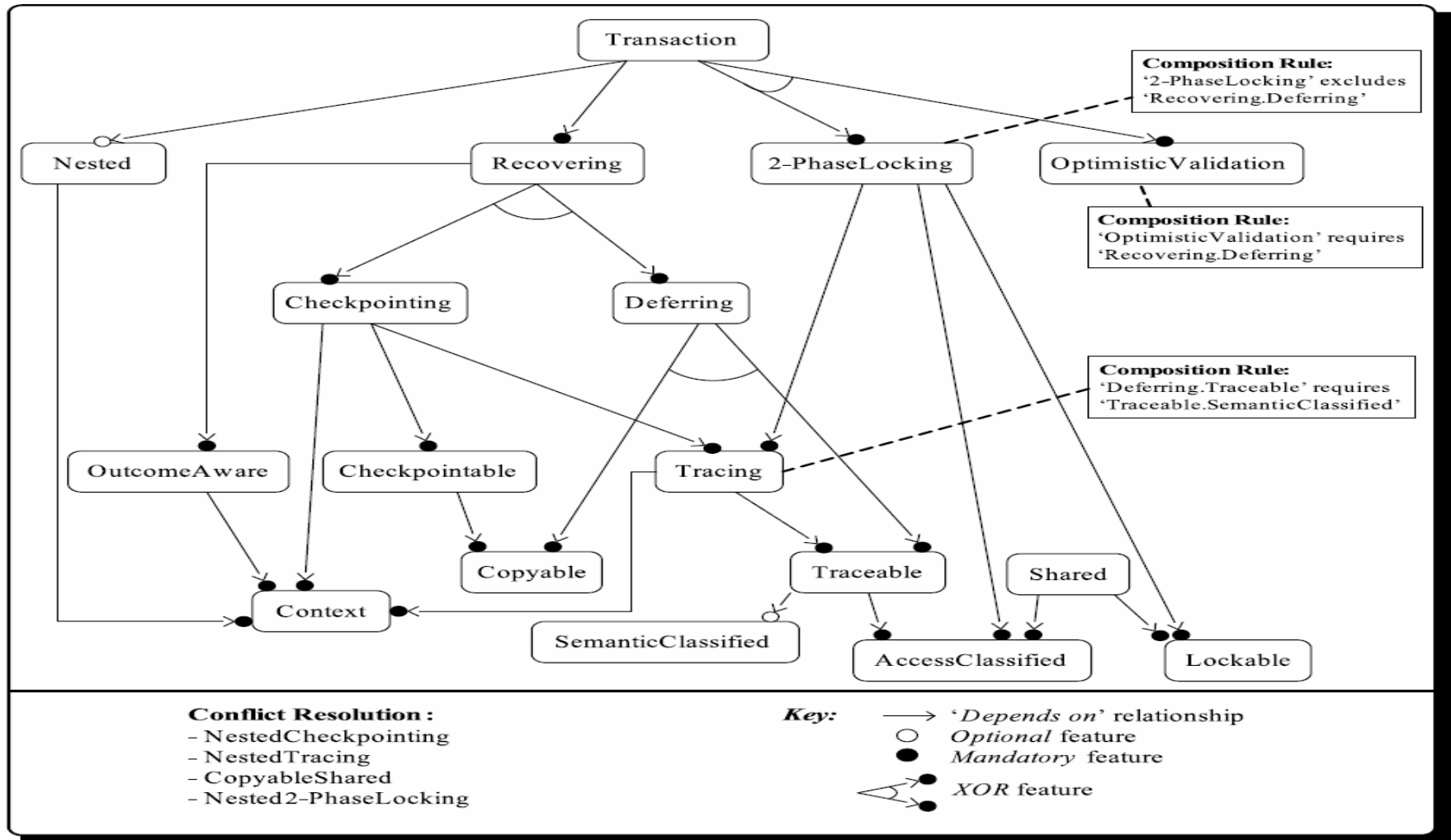


Fig. 16. Our Product Line of Transaction

# Aspect Oriented Modelling

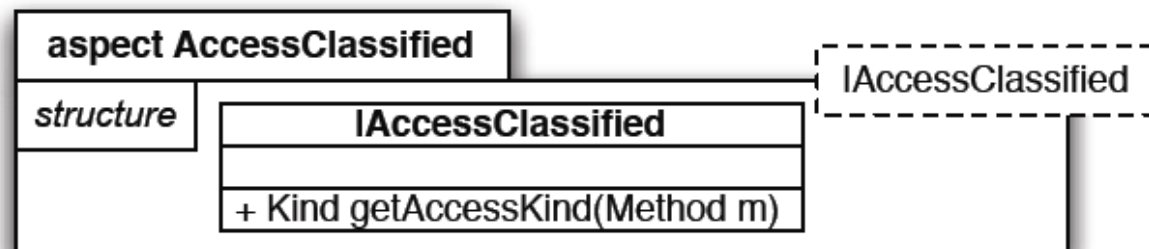


Fig. 6. The *AccessClassified* Aspect

we use UML template parameters to identify within an aspect model which modeling elements are generic. Reusing an aspect model involves binding the aspect model's template parameters to target model-specific elements.

# Aspect Oriented Modelling

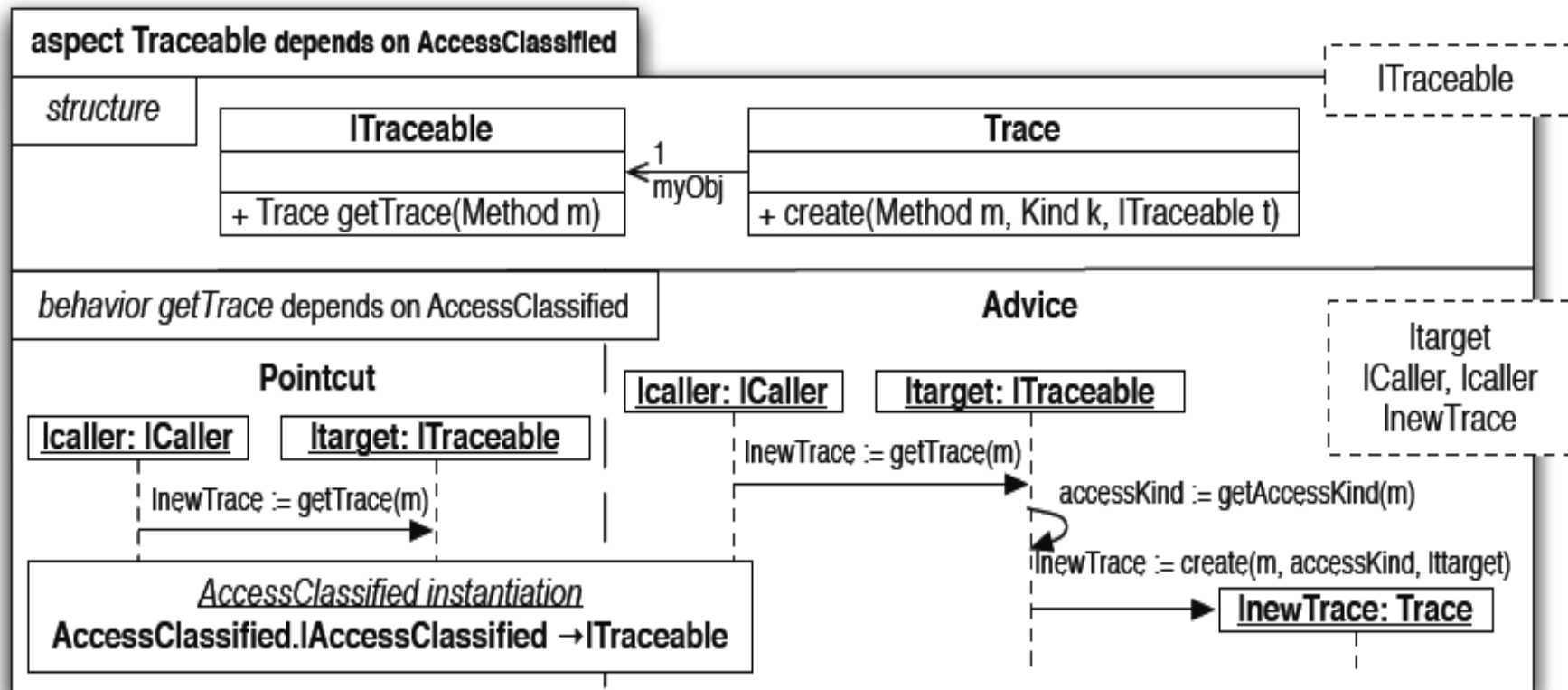
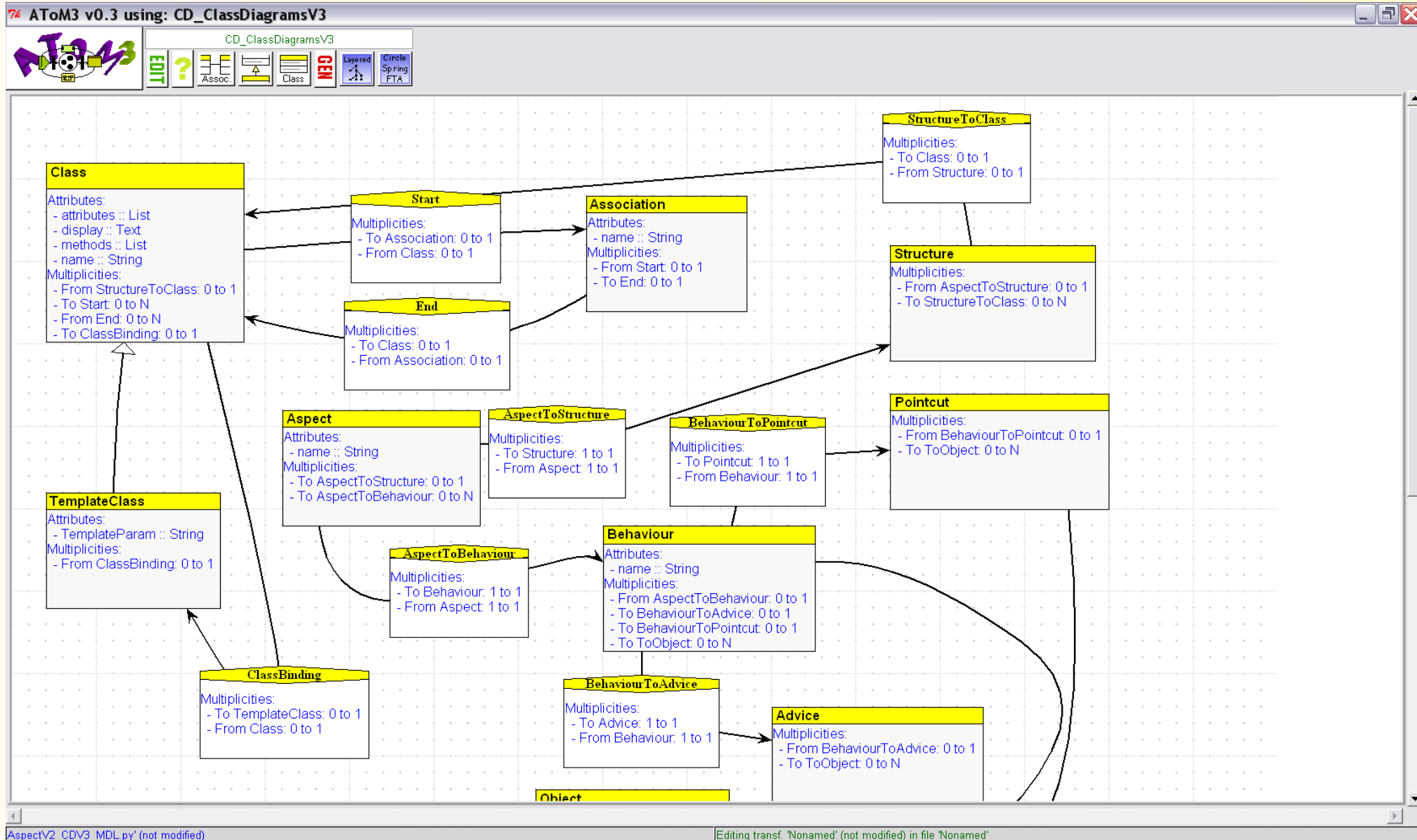


Fig. 9. The *Traceable* Aspect depends on *AccessClassified*

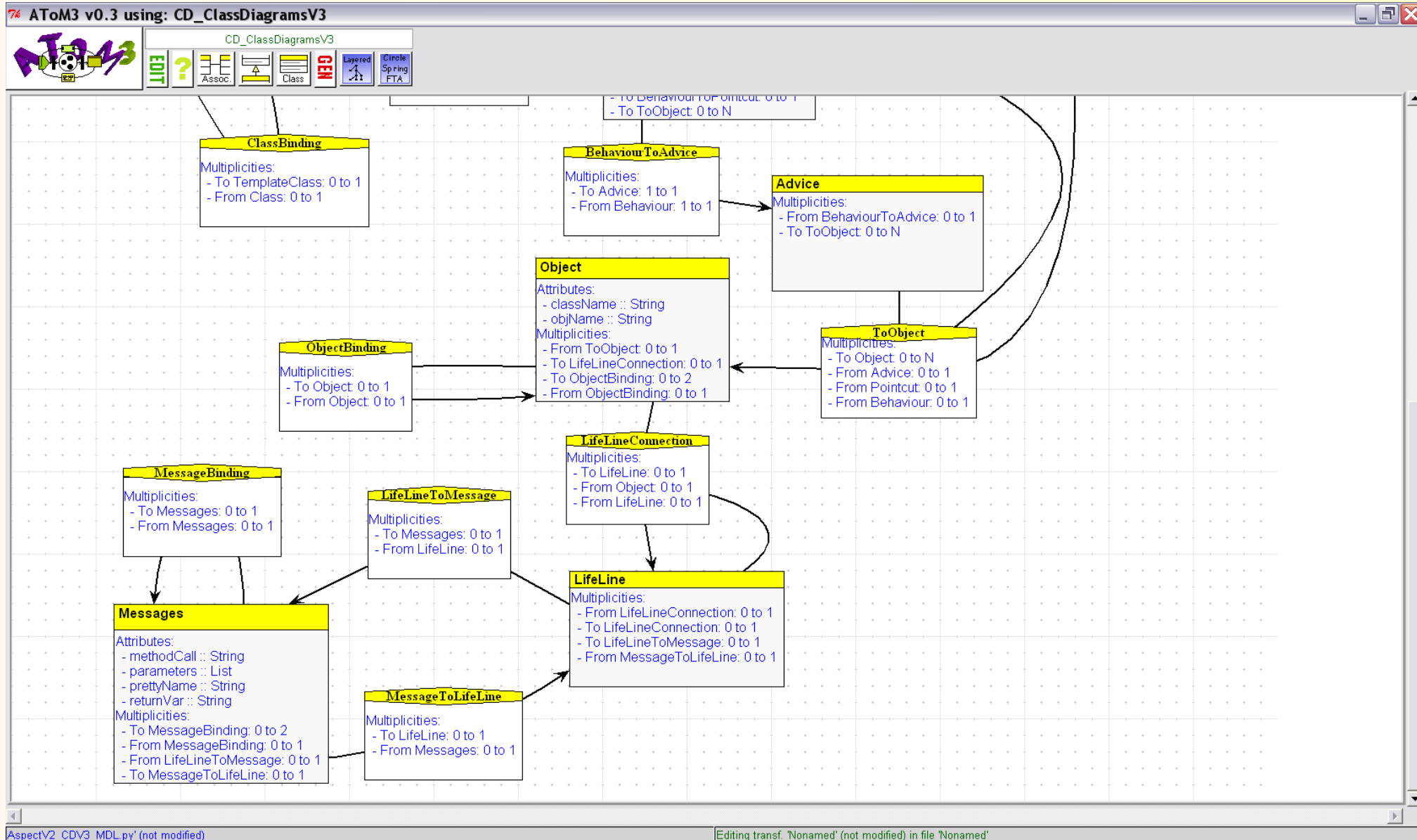
# The Meta-Model

## Part 1

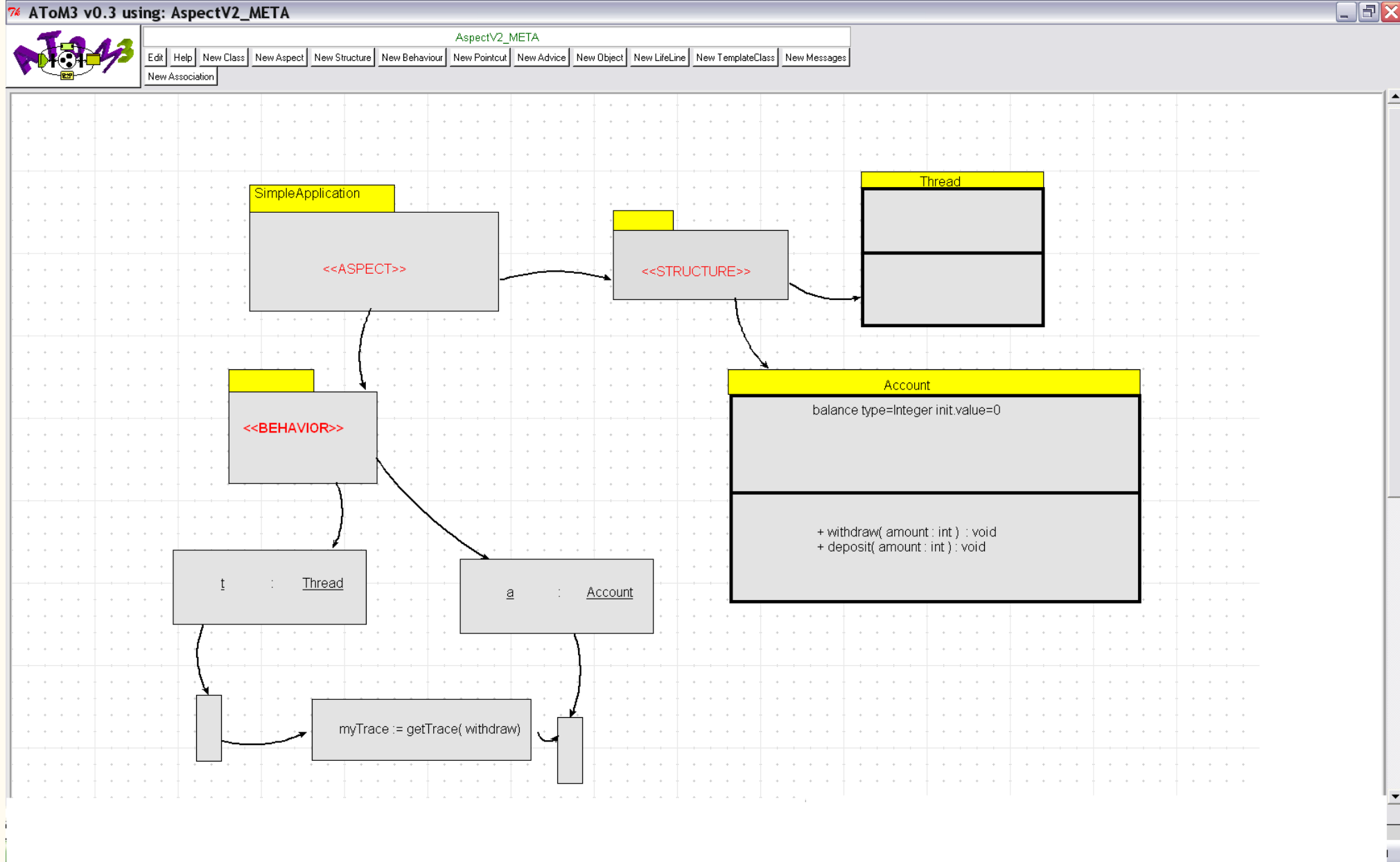


# The Meta-Model

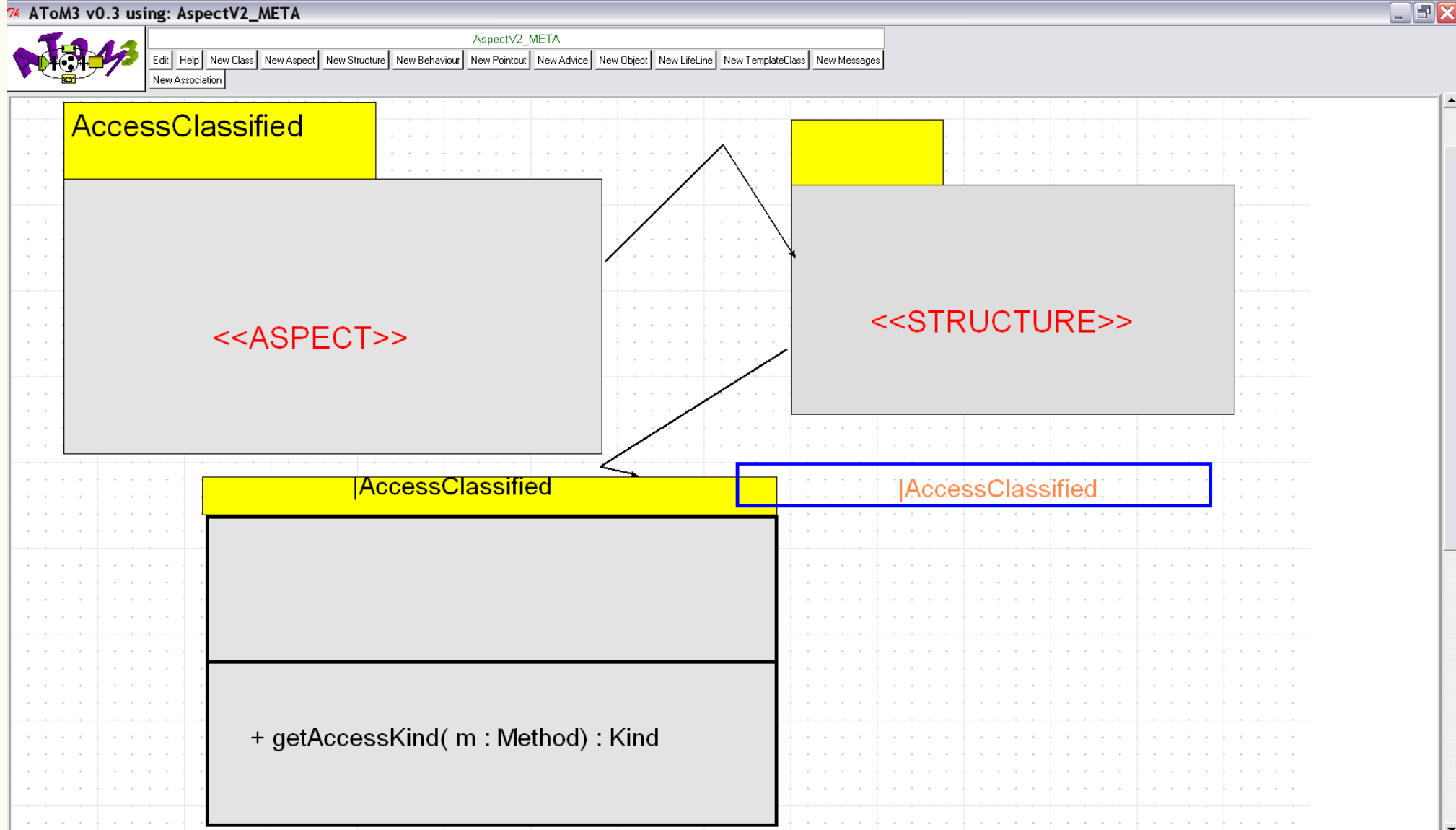
## Part2



# Base Application

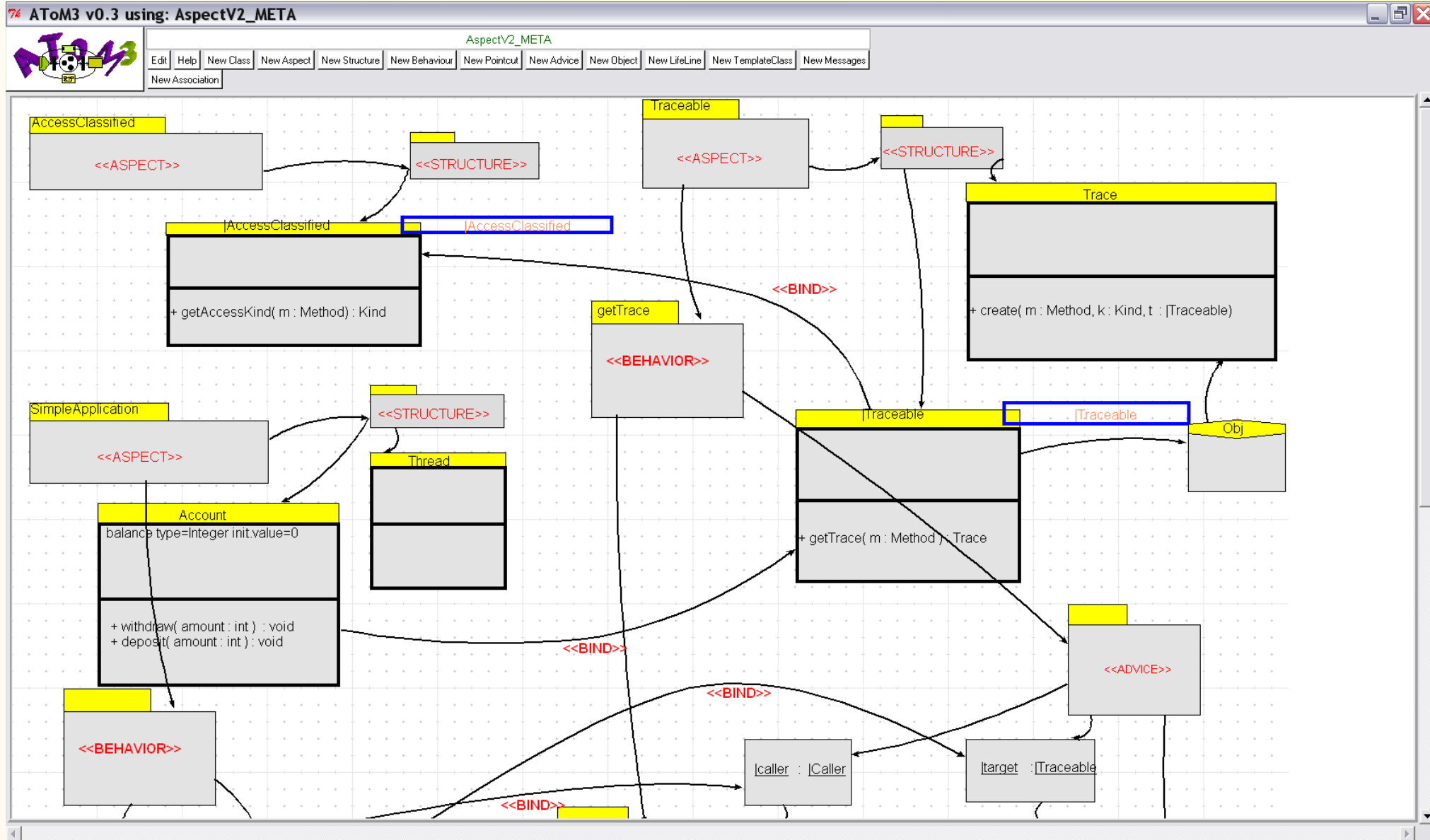


# AccessClassified

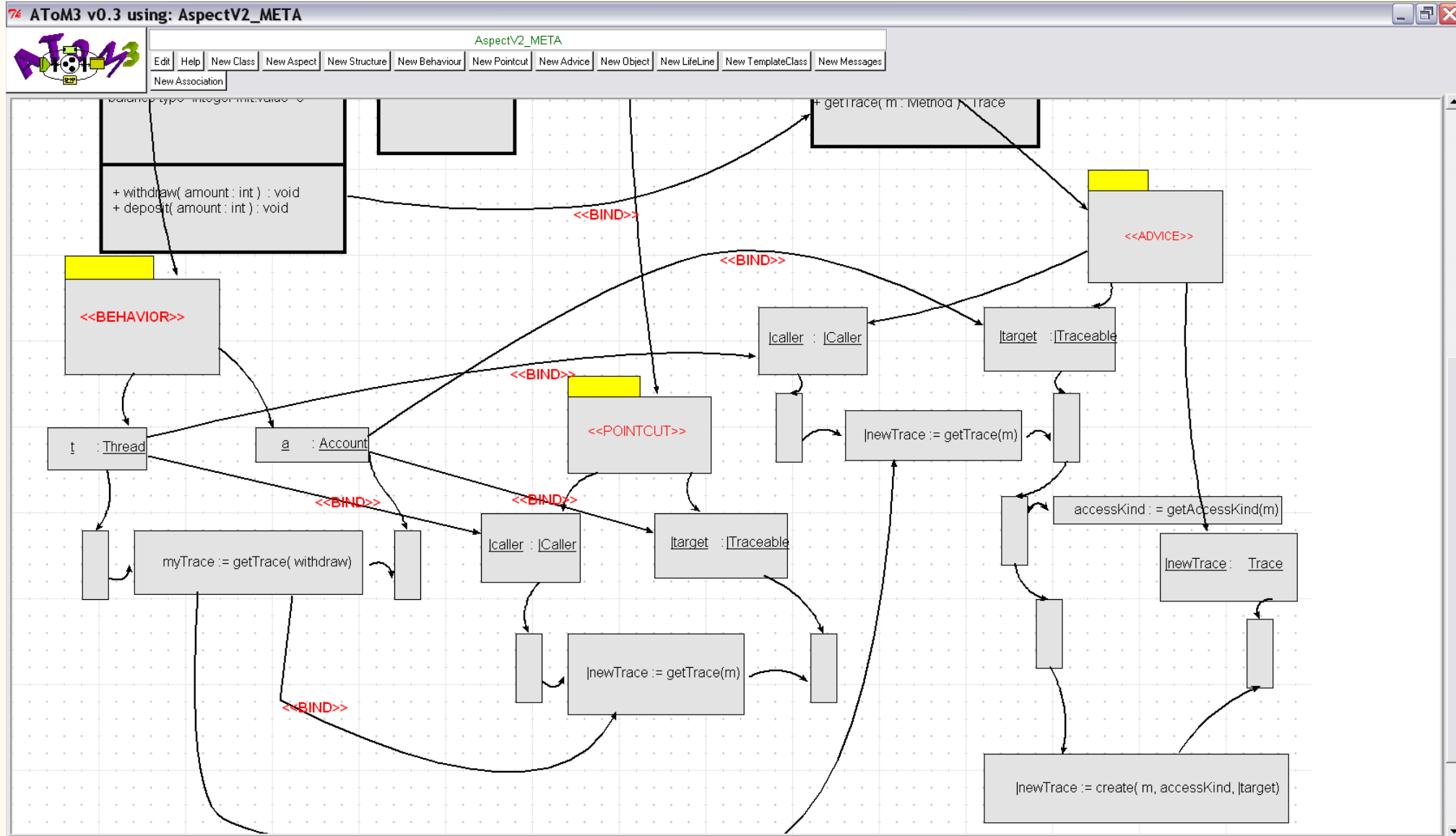




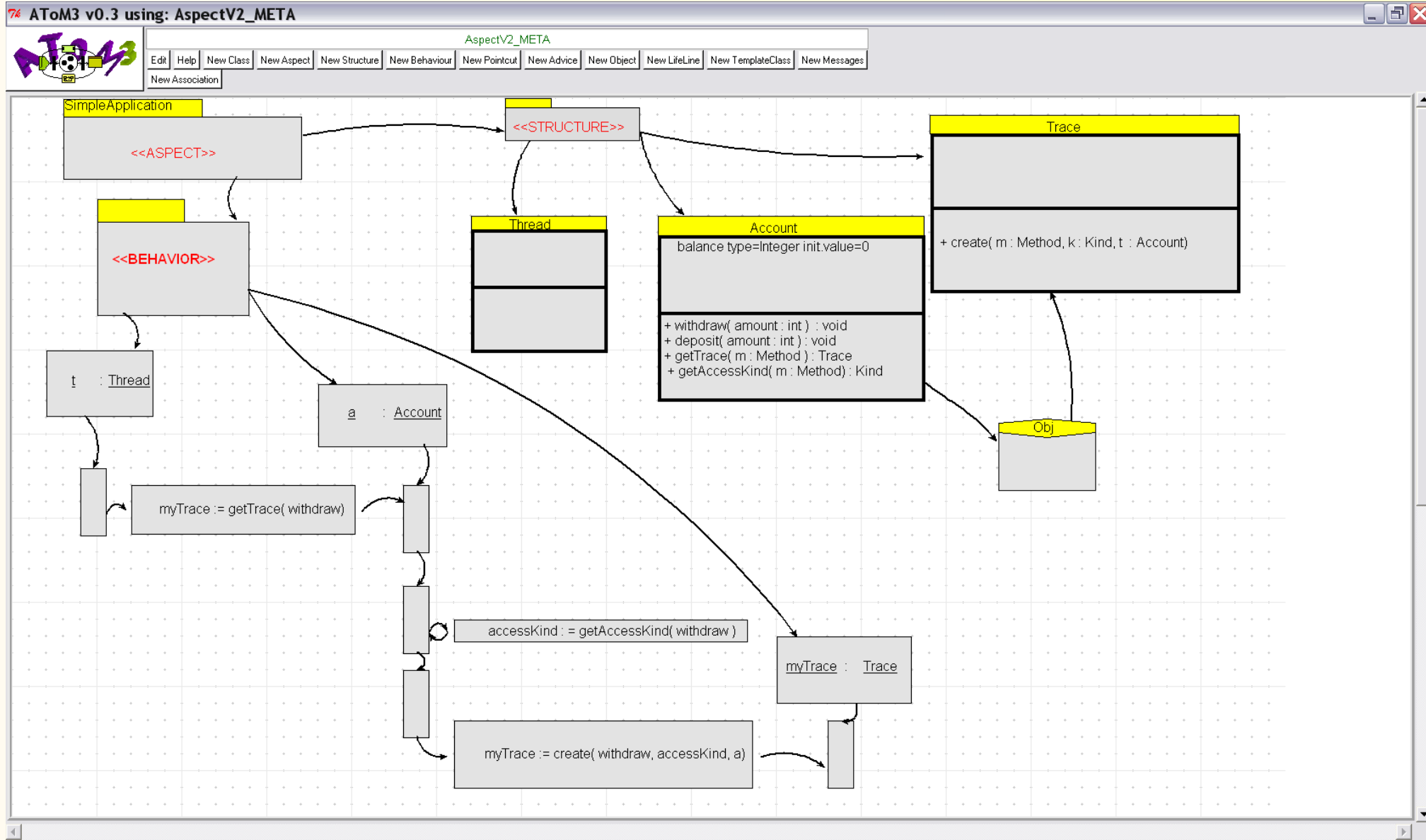
# The Big Picture: Part 1



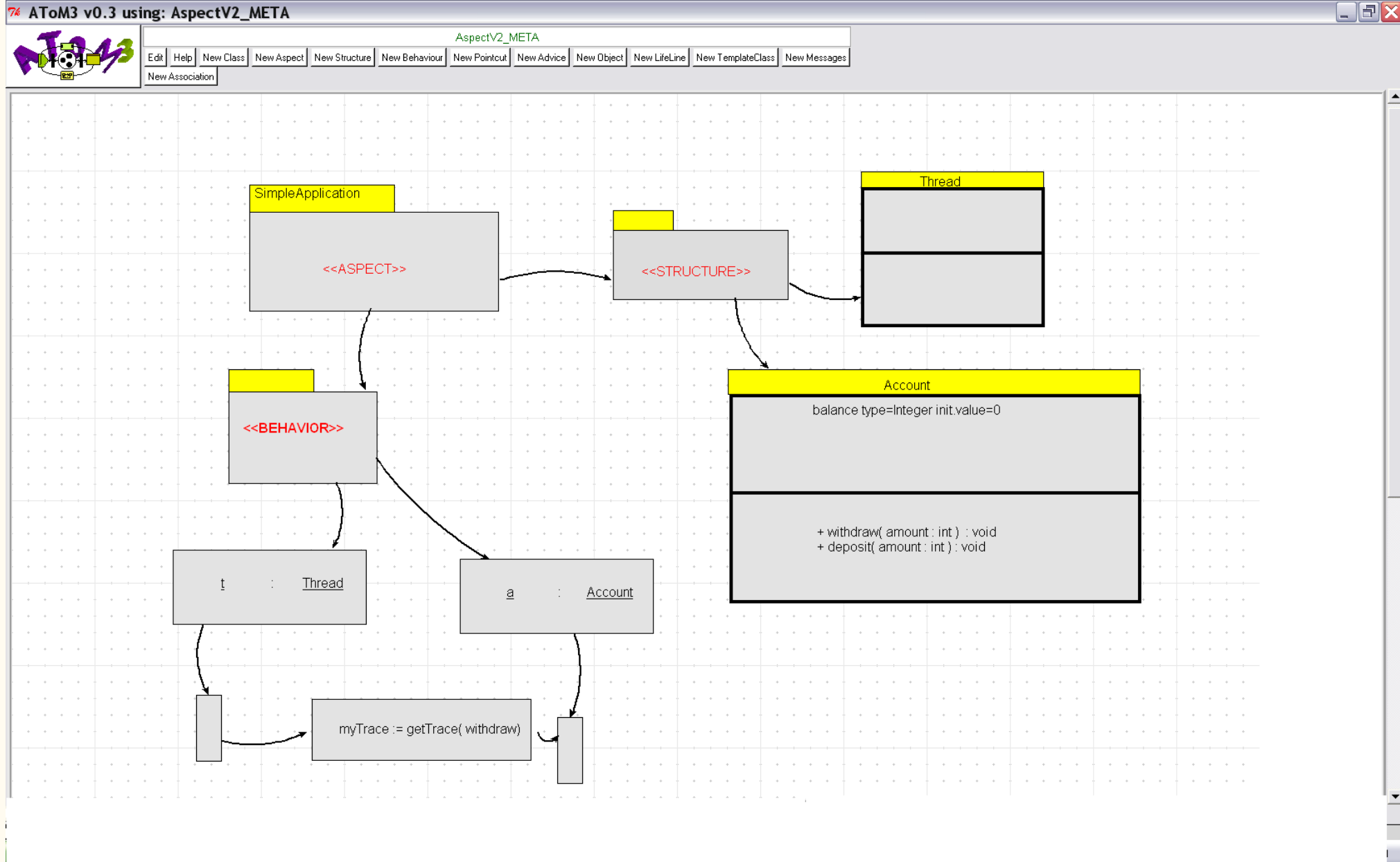
# The Big Picture: Part 2



# Final Weaved Model



# Base Application



# Issues and Challenges

- The Meta-Model:
  - Incomplete
  - Constraints
  - Nice visualization
  - Model everything?
- The Transformation:
  - String matching and replacement
  - Grouping rules

# Flat Transaction

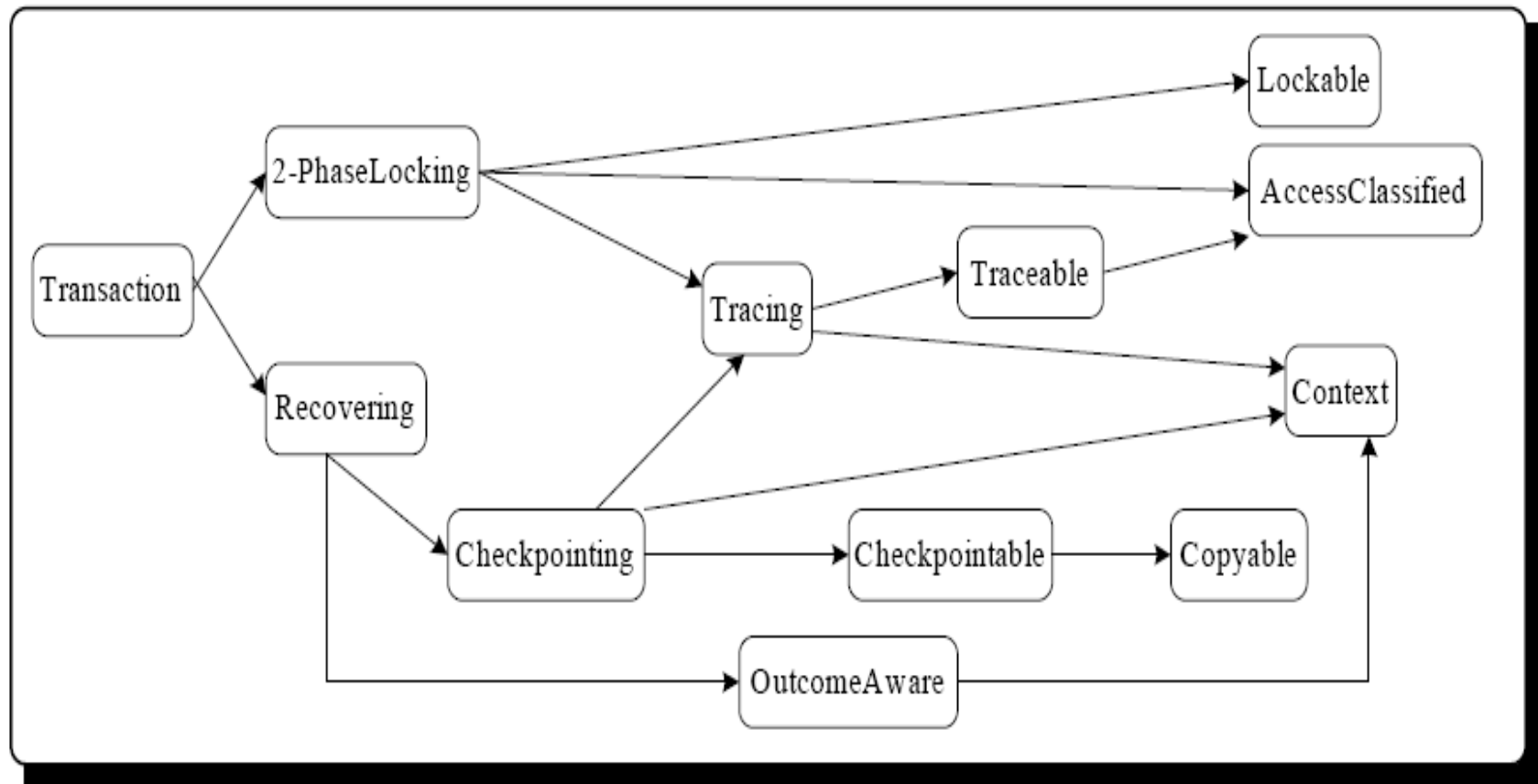


Fig. 18. Aspect Dependency chain for a Flat Transaction

# Future Work and Extensions

- Improve the meta-model expand upon it e.g sequence diagrams UML 2.0
- Add constraints to perform checks ect
- Solve the issue of recursively weaving starting from innermost
- Extensions
  - Look into integrating OCL with this aspect model
  - Look into conflict resolution aspects
  - Look into adding new aspects to the framework and see if they can still be modeled or do they raise new issues
  - More formal and well defined ways to specify the instantiation directives(bindings)
  - Test weaving for potential errors eg calling `commitTransaction()` before `beginTransaction()`
  - Modeling state diagrams and weaving them

# Q&A

ASK THE EXPERT  
MONEY BACK GUARANTEED???