UNIVERSITÄT
BERN

Modeling Features at Runtime

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CHOOSE Swiss Group for Object-Oriented Systems and Environments

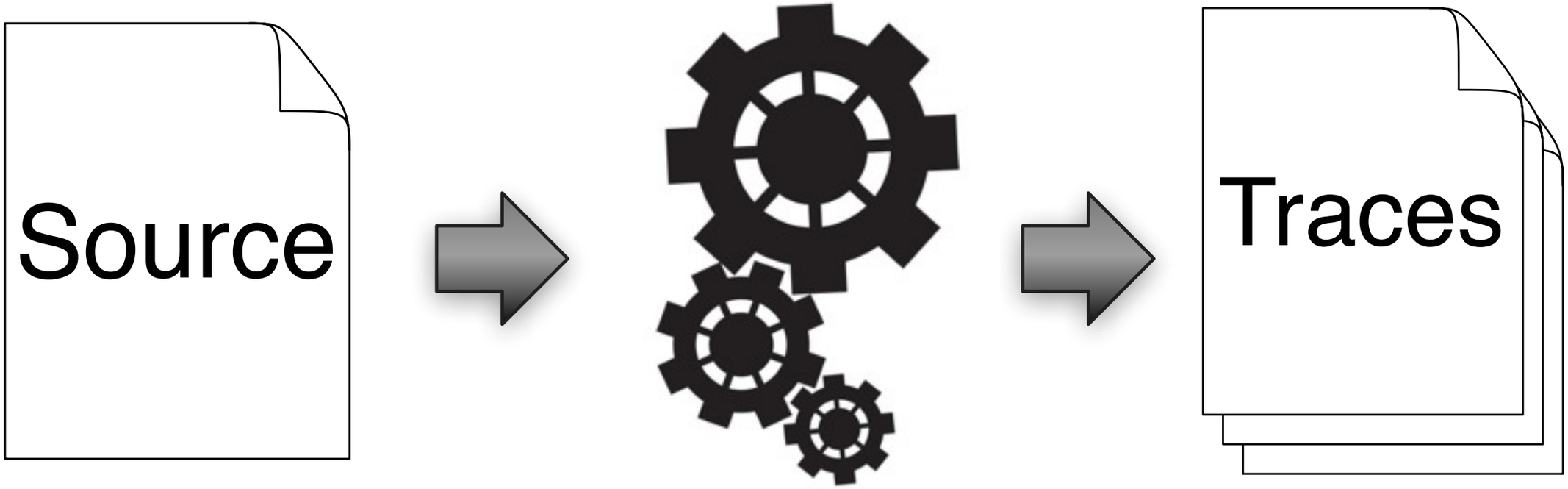
New way of doing feature analysis

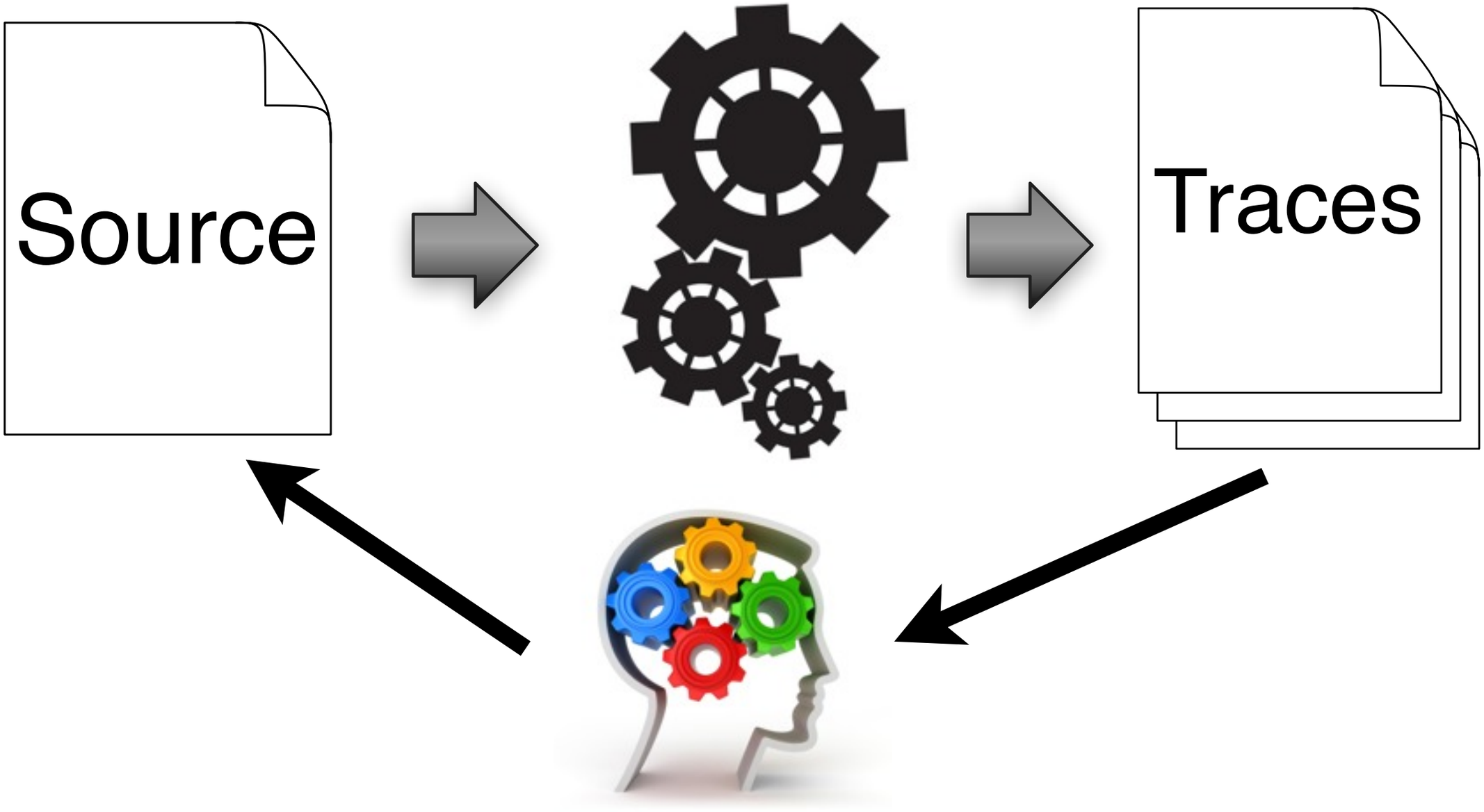
Software Feature:
A distinguishing characteristic of a software item.

IEEE 829

Post-mortem

Feature Analysis


Source
Traces


Source
Traces

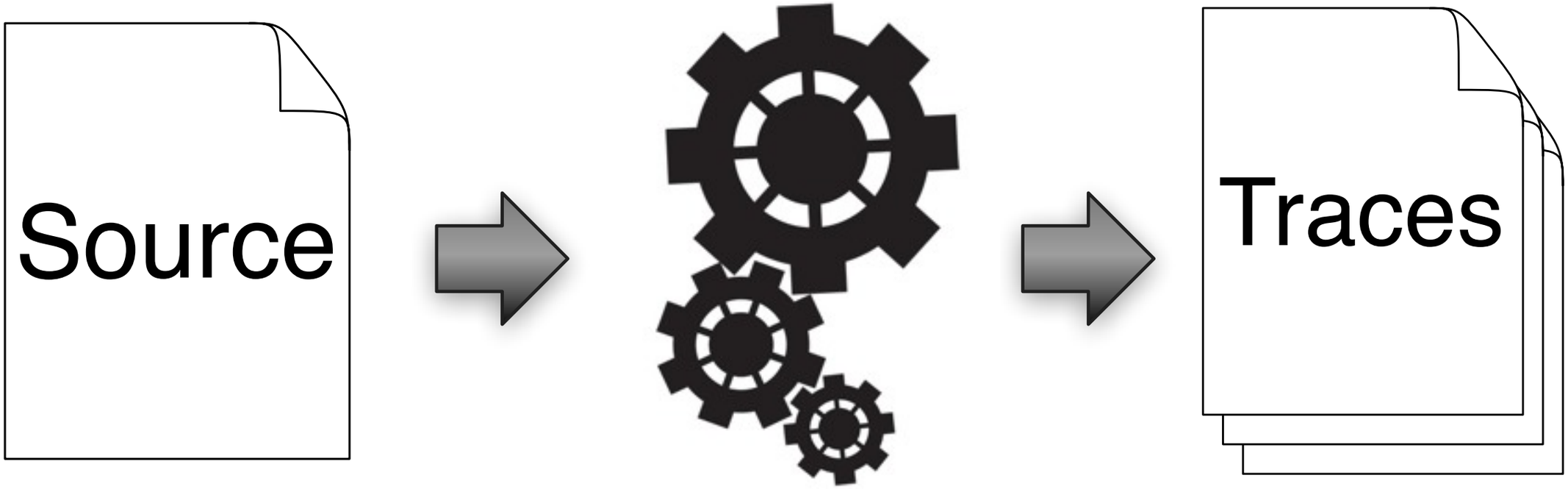
Shortcomings

Data Volume

Feature Growing

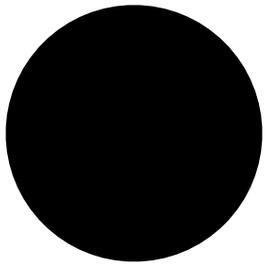
Sub-Method granularity

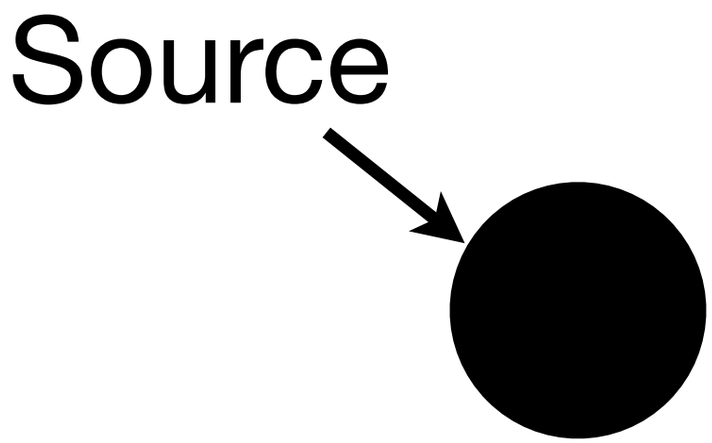
Interactive Features


Source
Traces

Live

Feature Analysis

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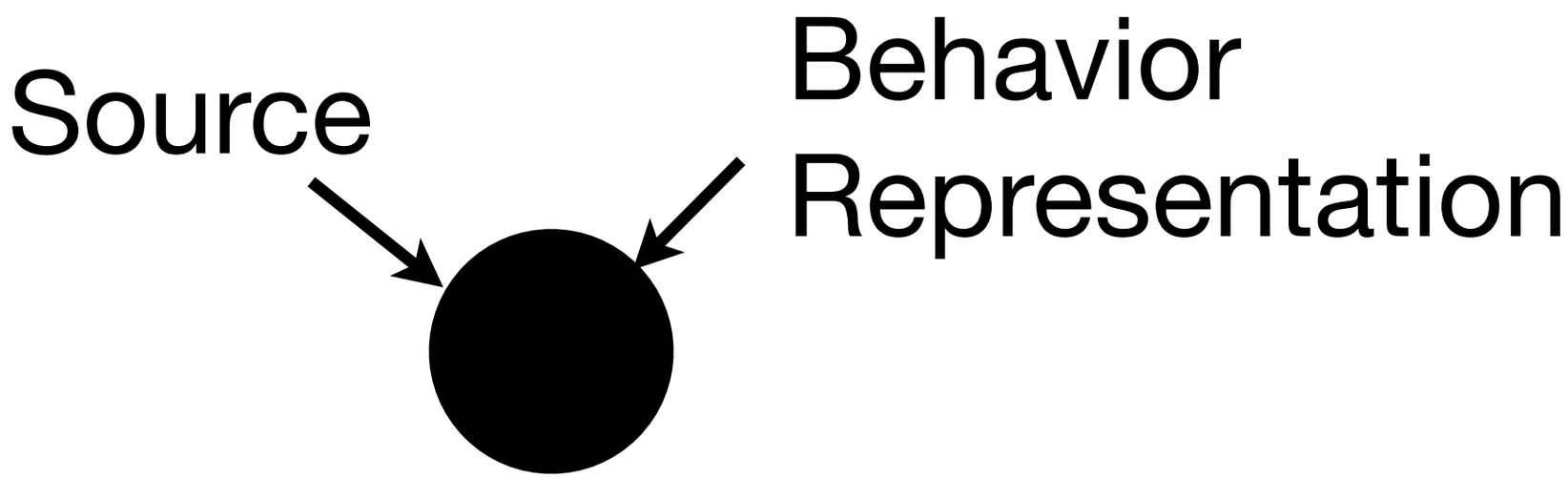
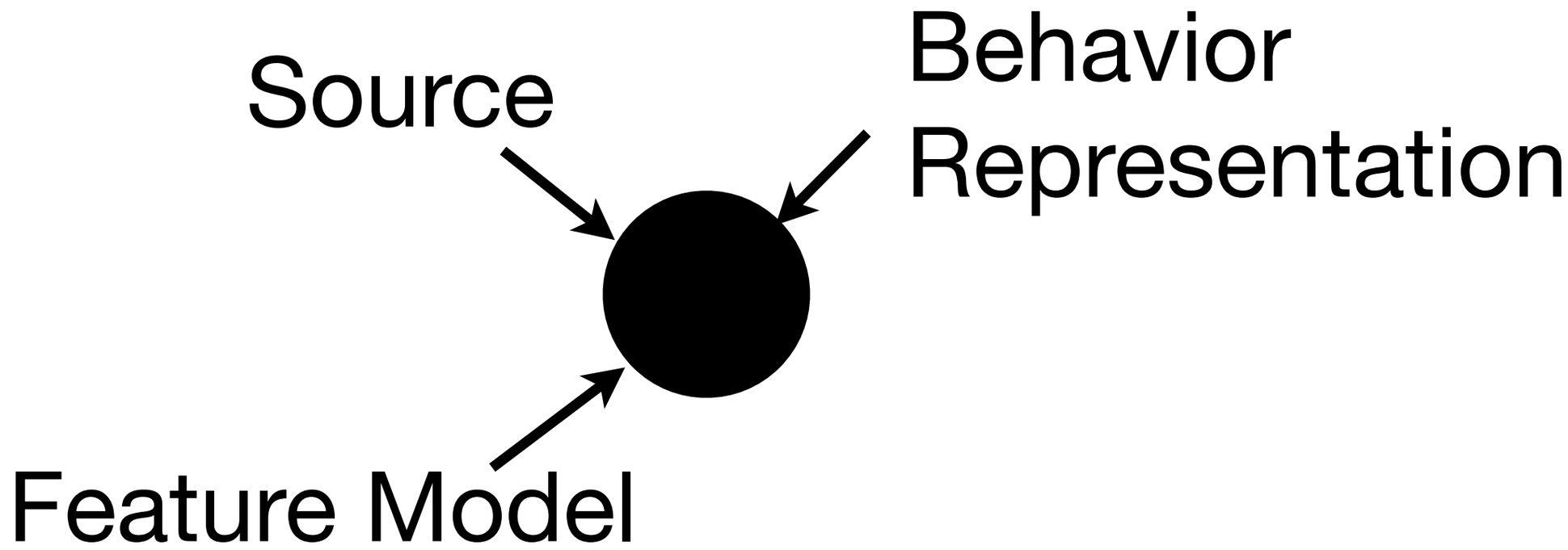
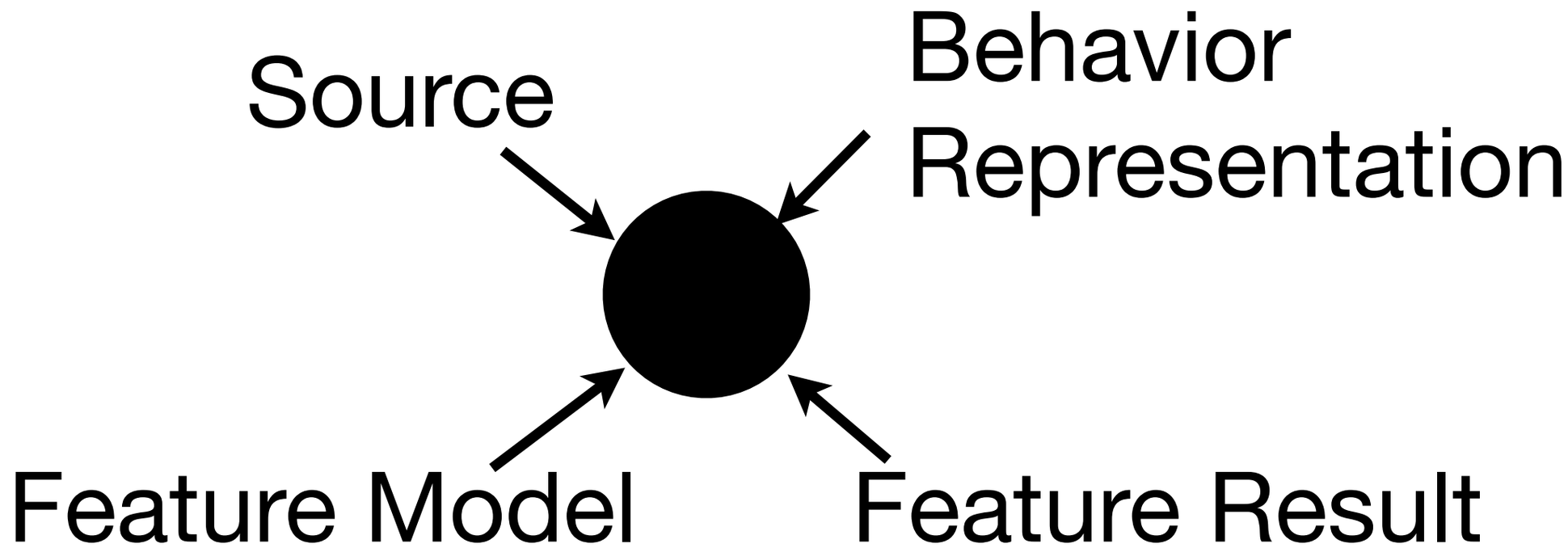
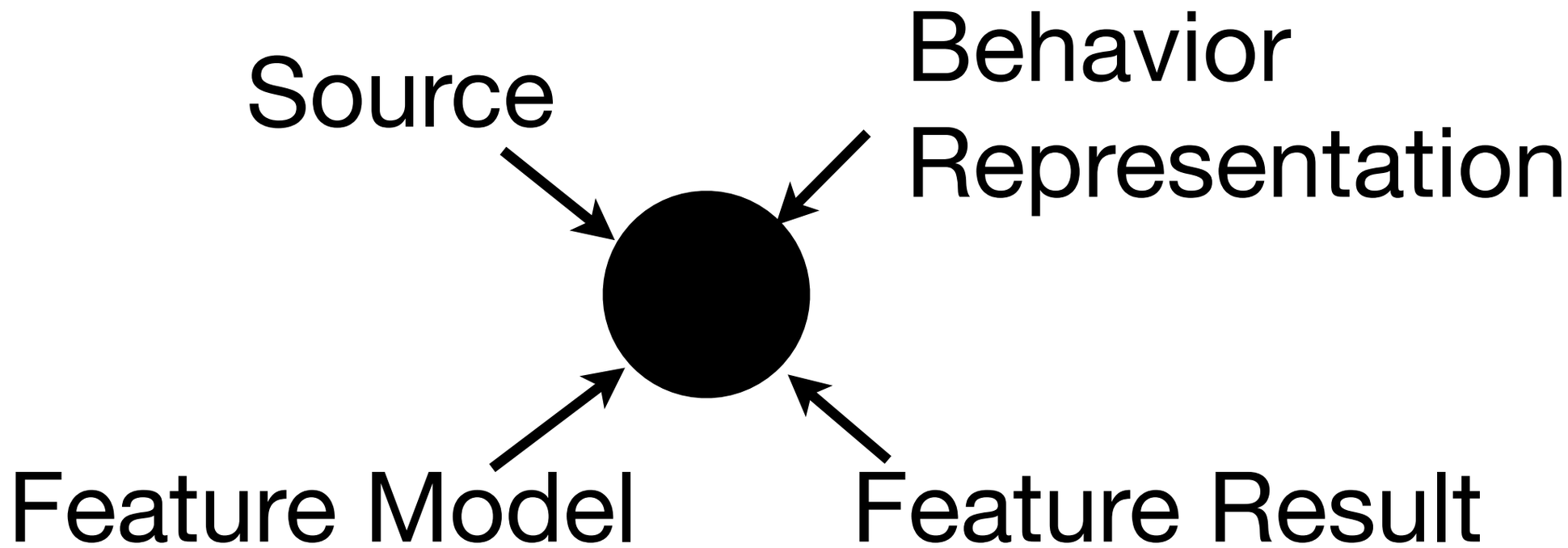
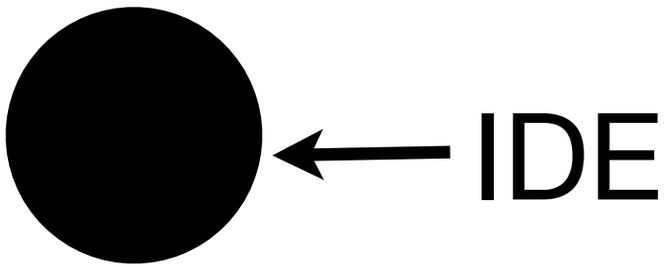

Source
Behavior
Representation


Source
Behavior
Representation
Feature Model

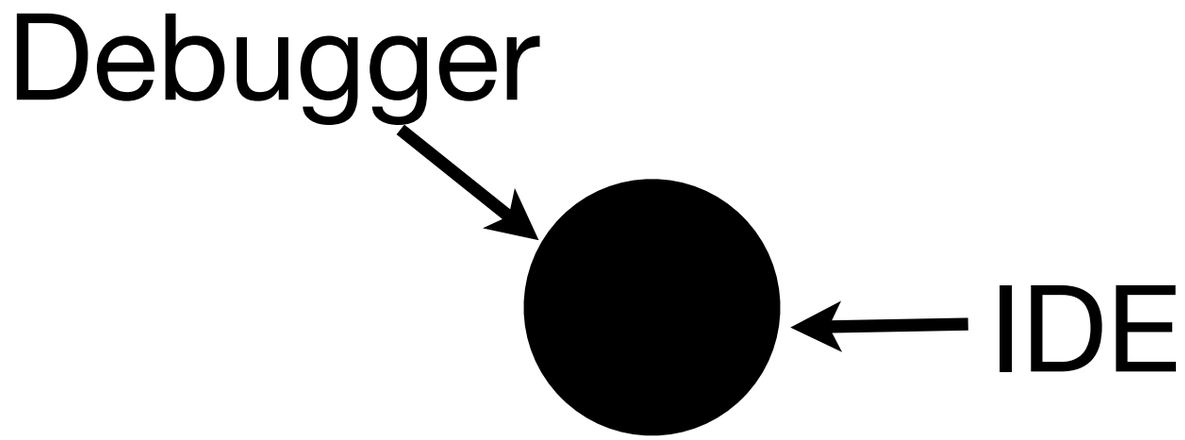

Source
Behavior Representation
Feature Model
Feature Result


Source
Behavior Representation
Feature Model
Feature Result

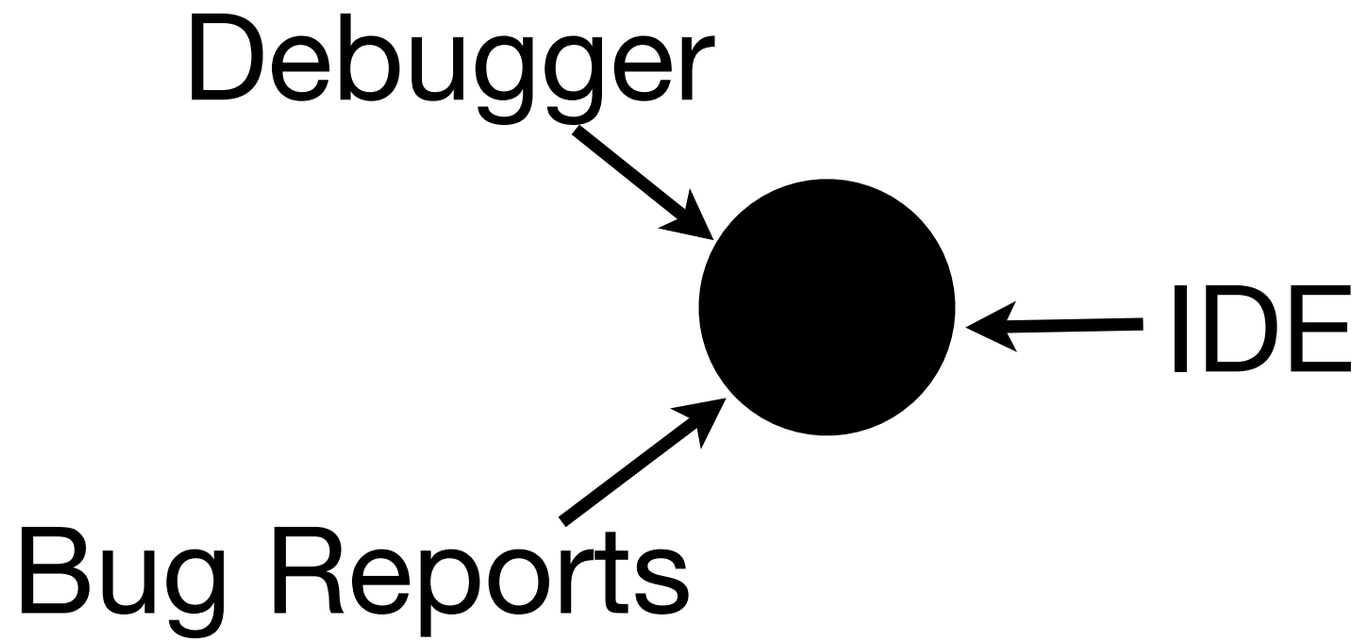
Runtime



Runtime

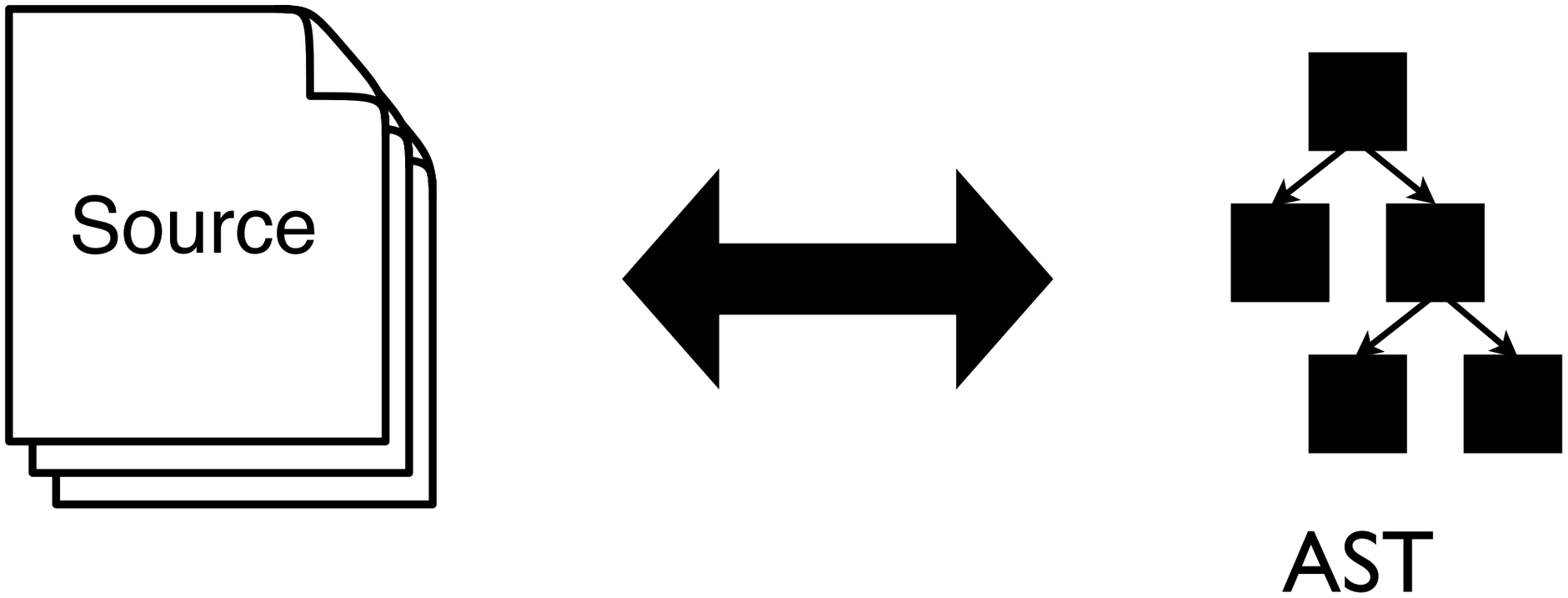


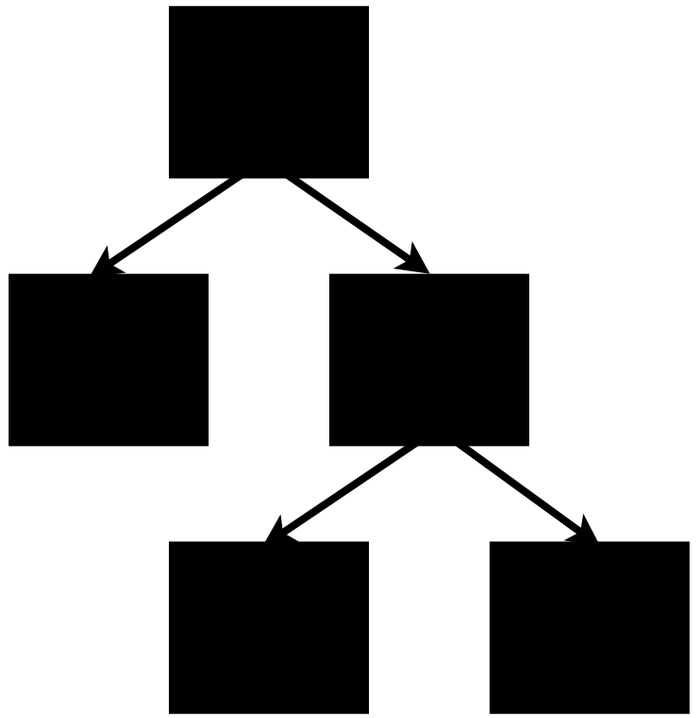
Runtime

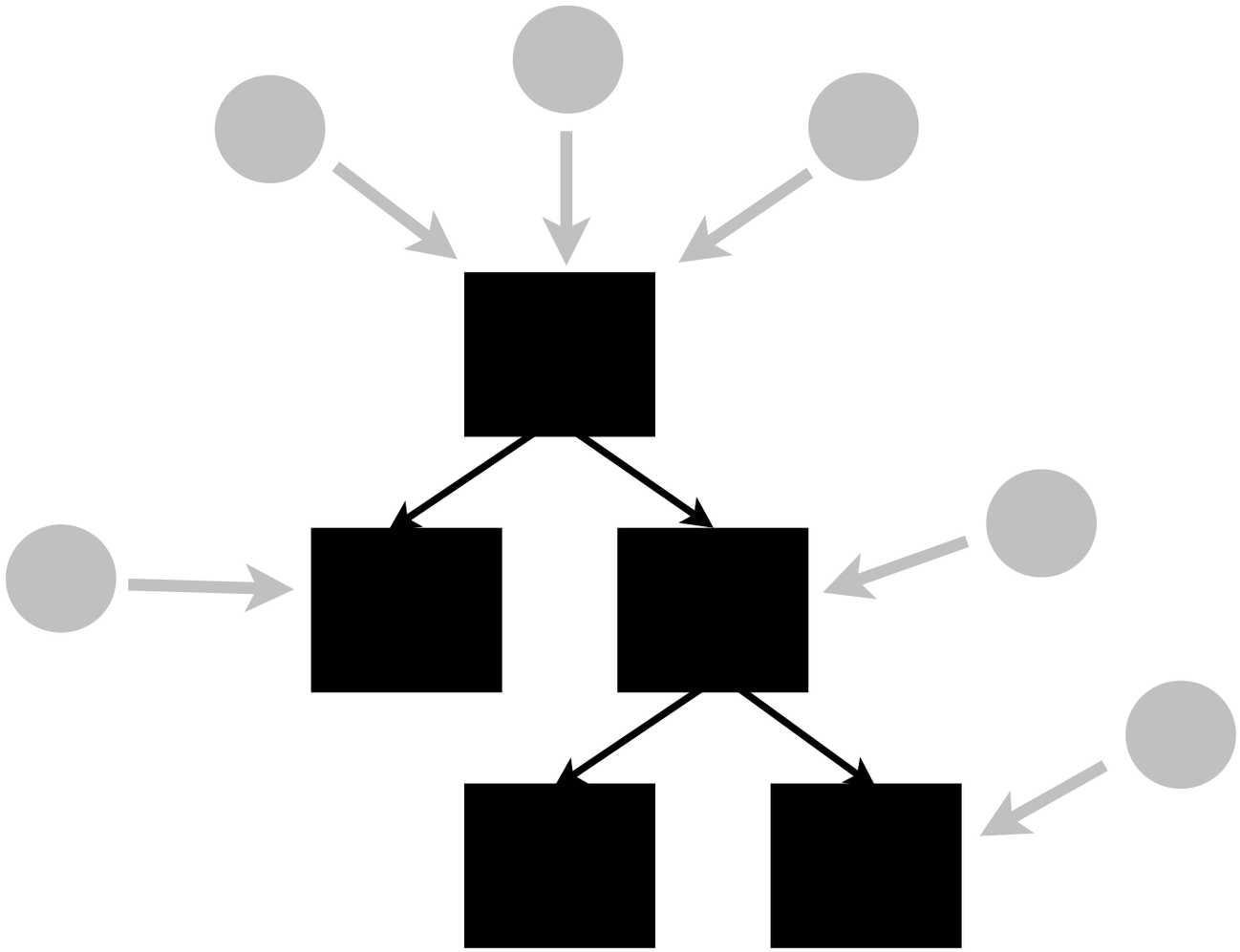


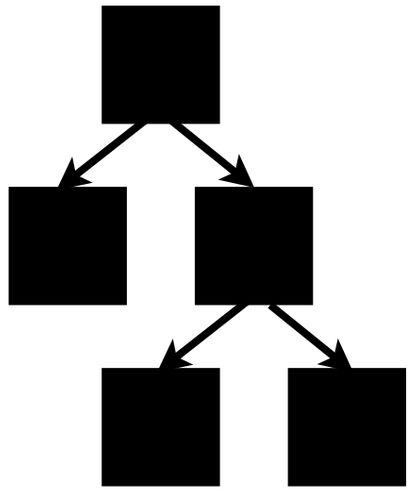
Runtime

How it works


Source
AST







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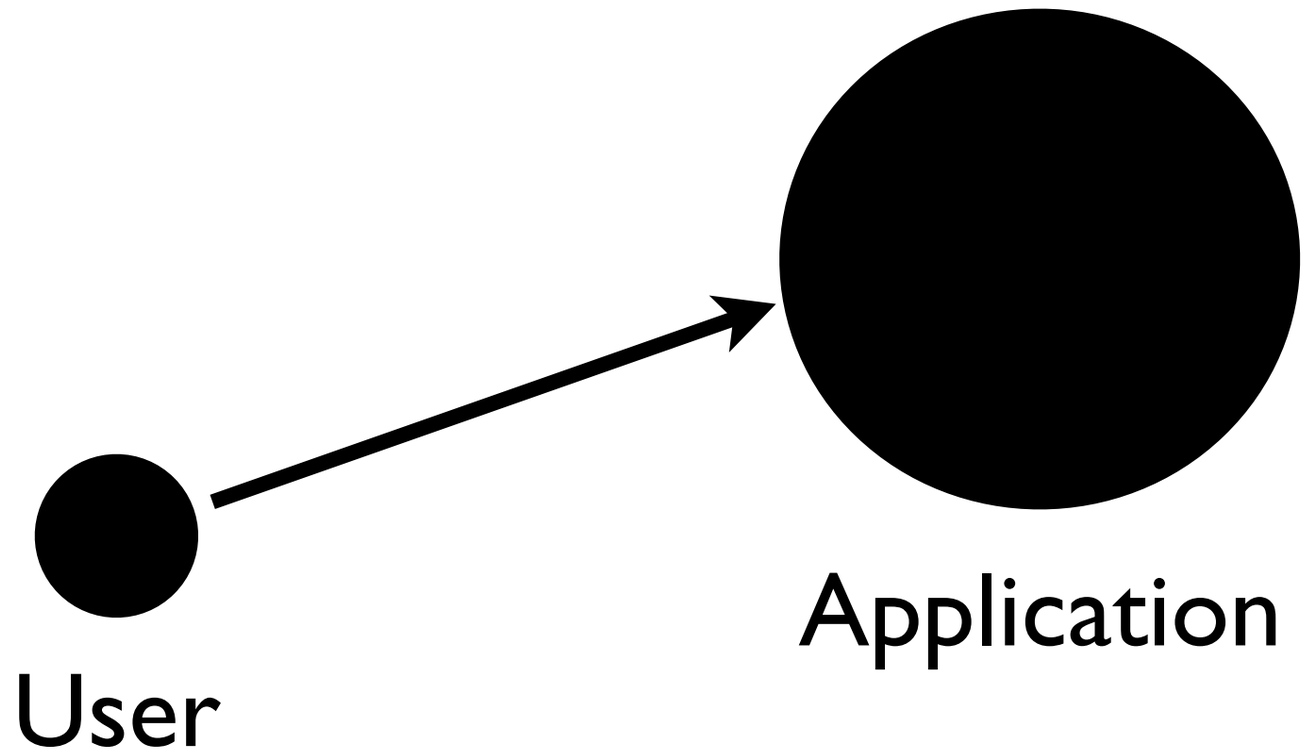
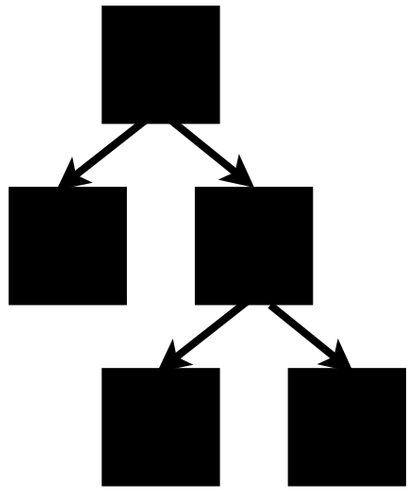


Application

User



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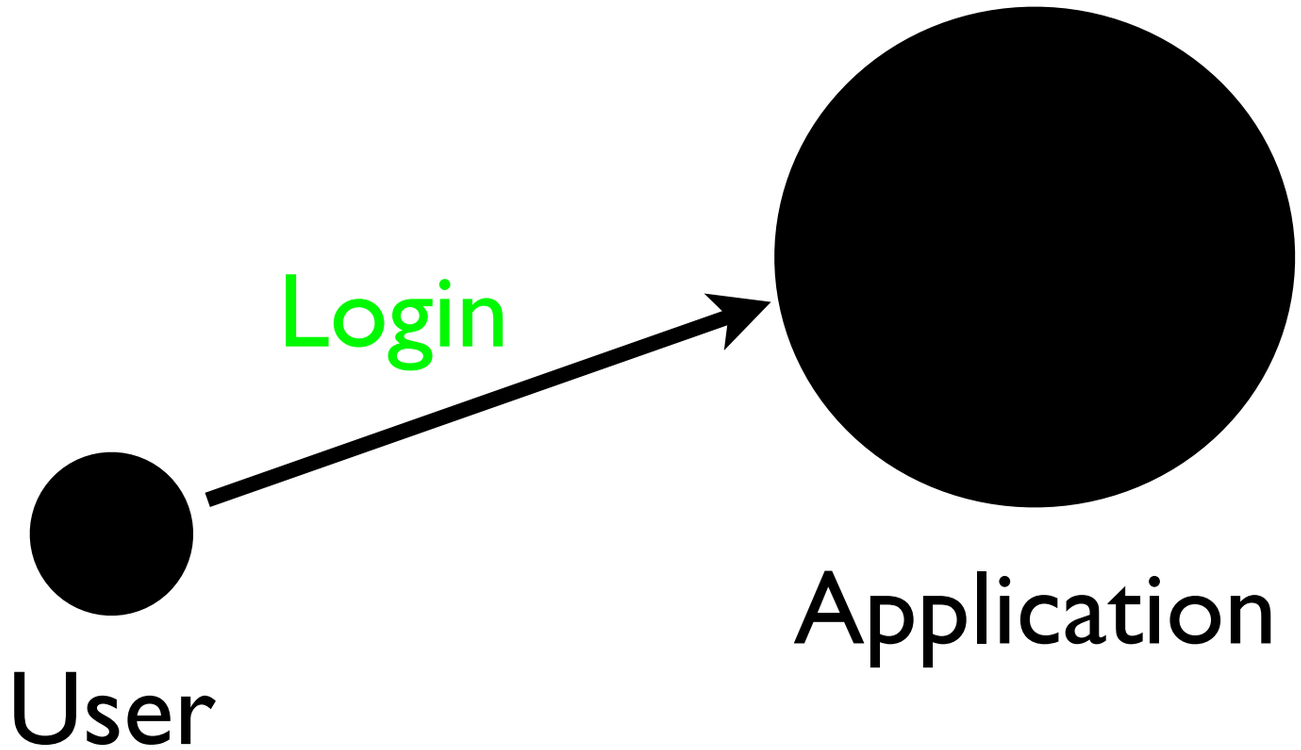

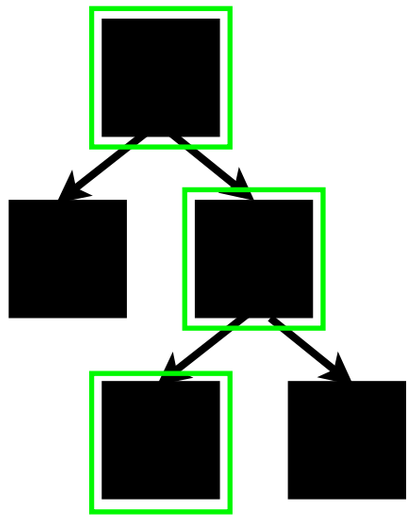

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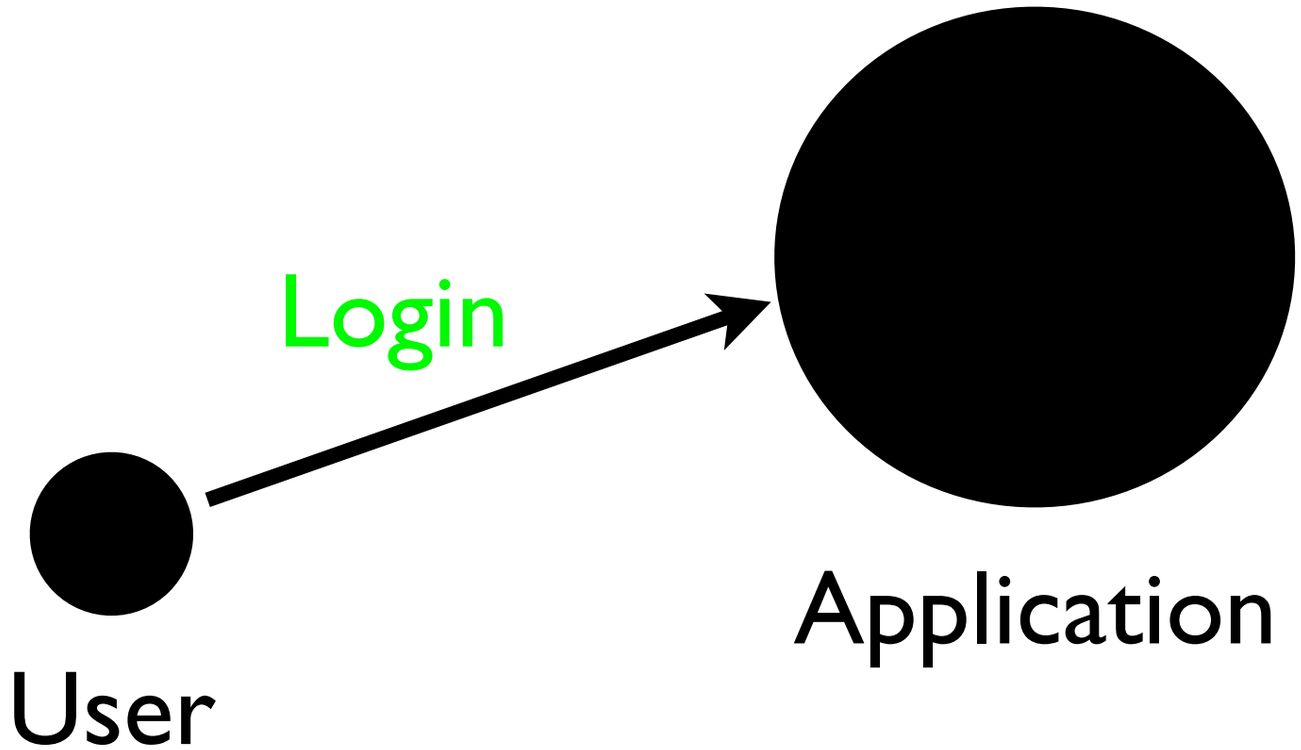

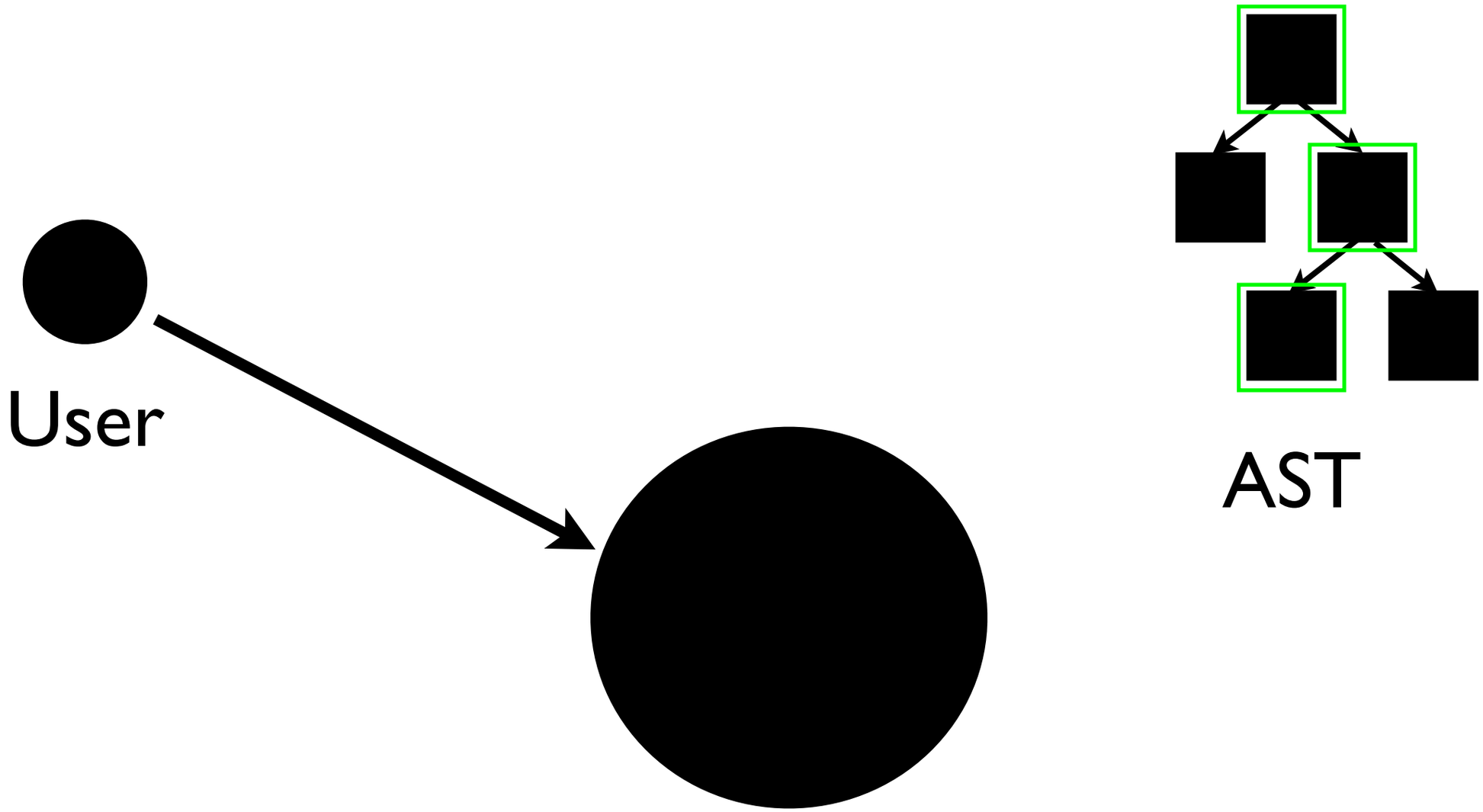

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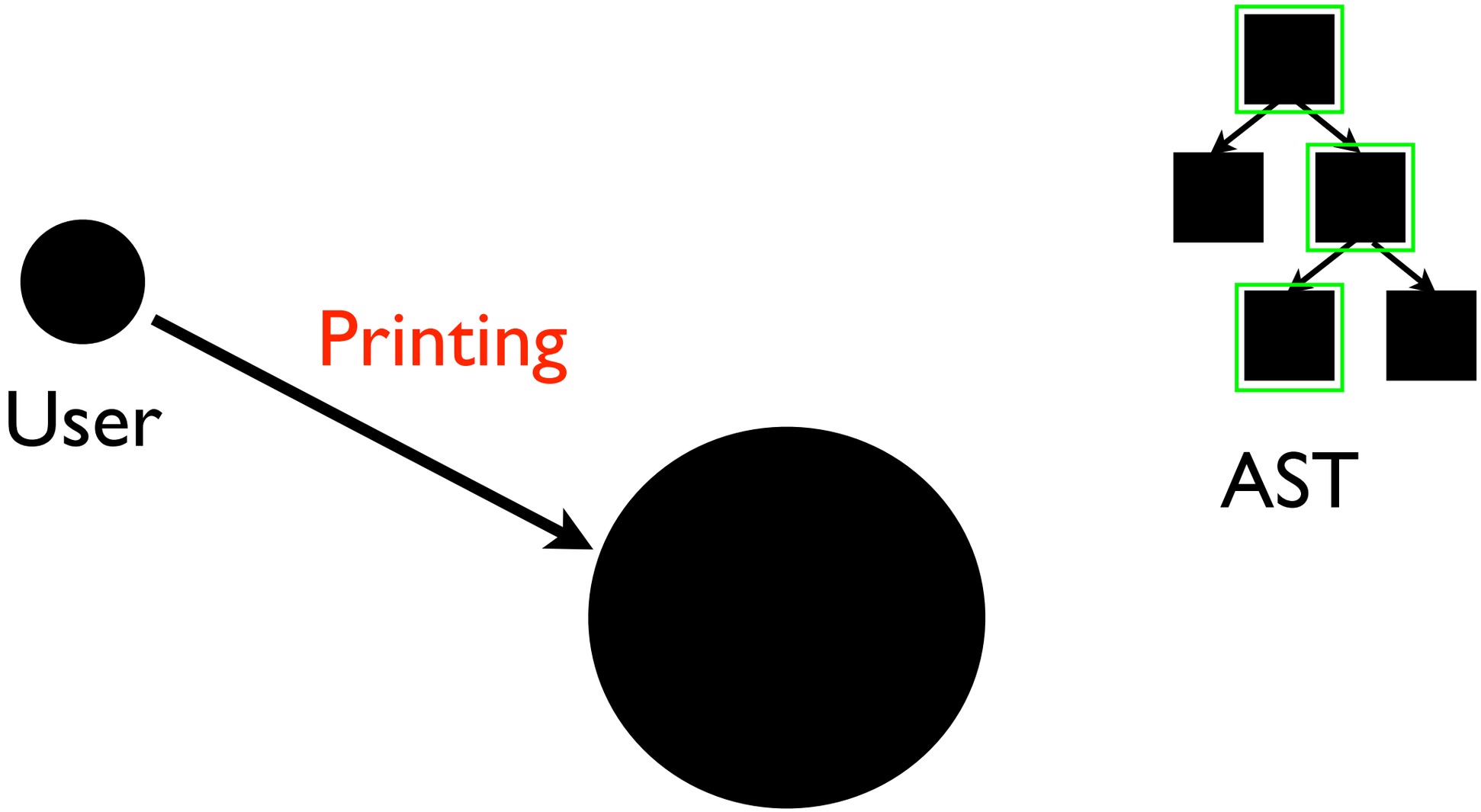
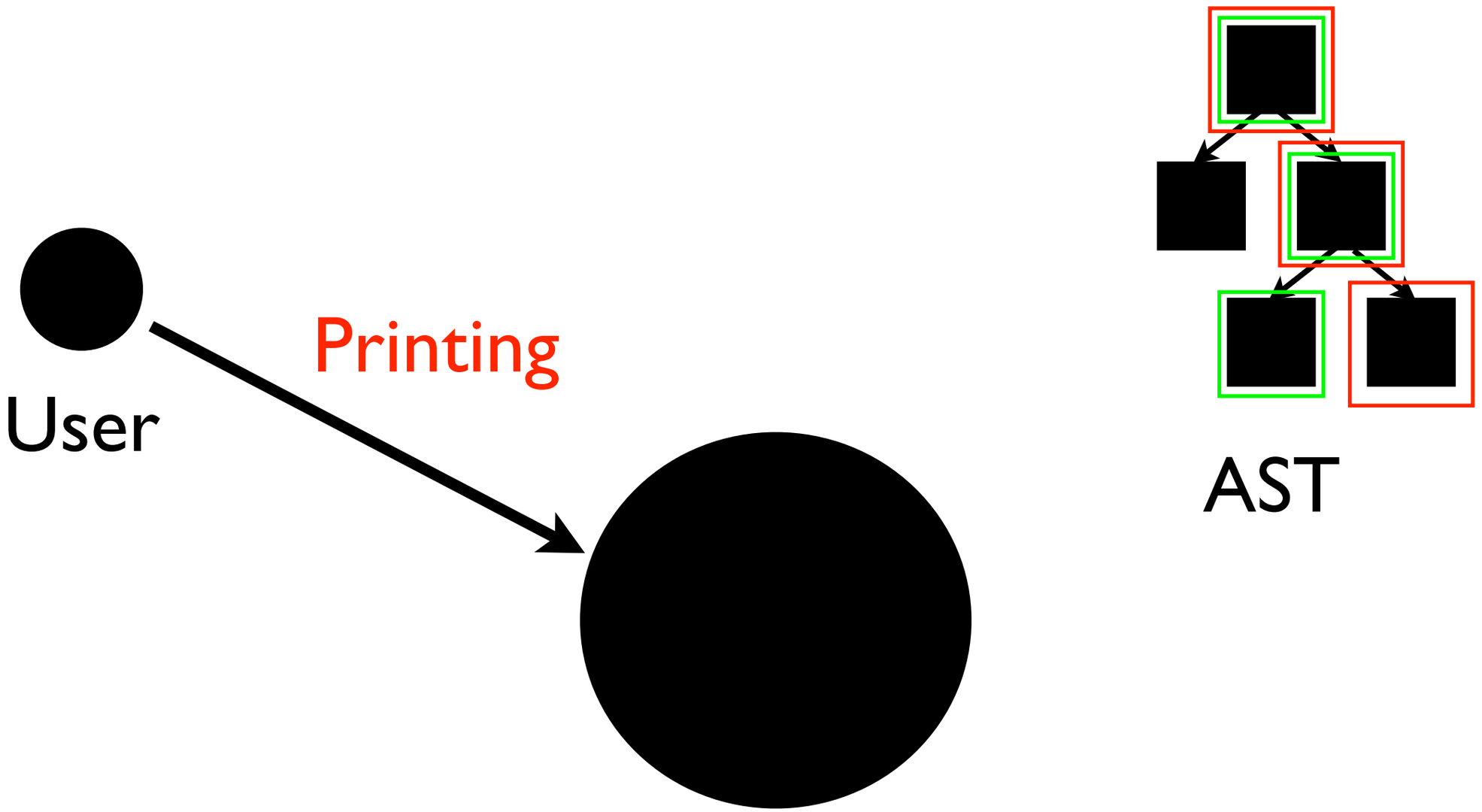
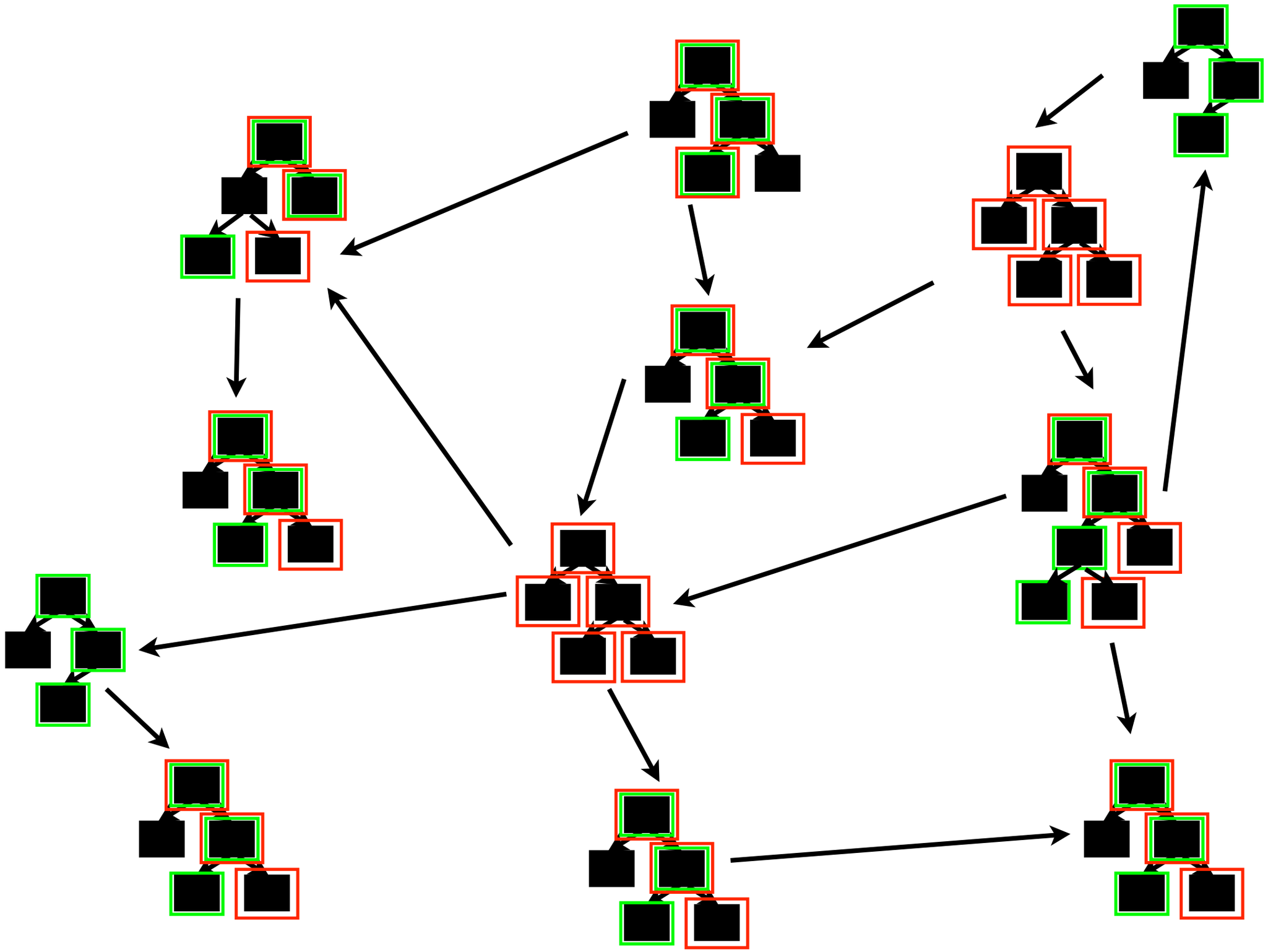

Printing
User
AST
Application



Application



Implementation

Partial Behavioral Reflection

Partial Behavioral Reflection

Reflex

Tanter 2003

Partial Behavioral

Reflection

Reflex

Tanter 2003

Reflectivity

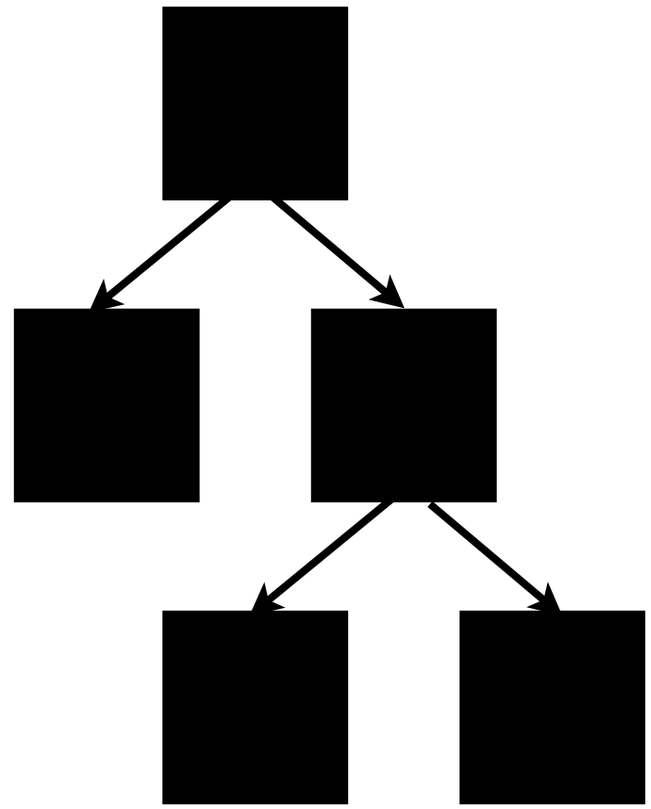
Denker 2008

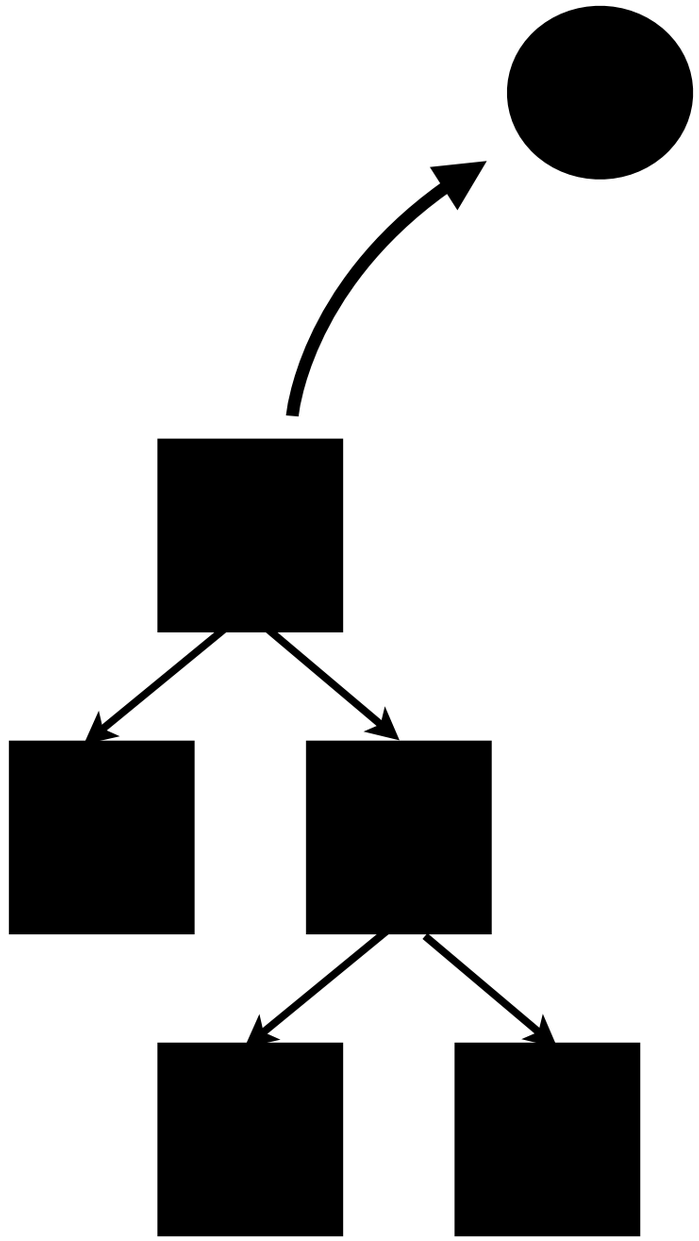
Reflection

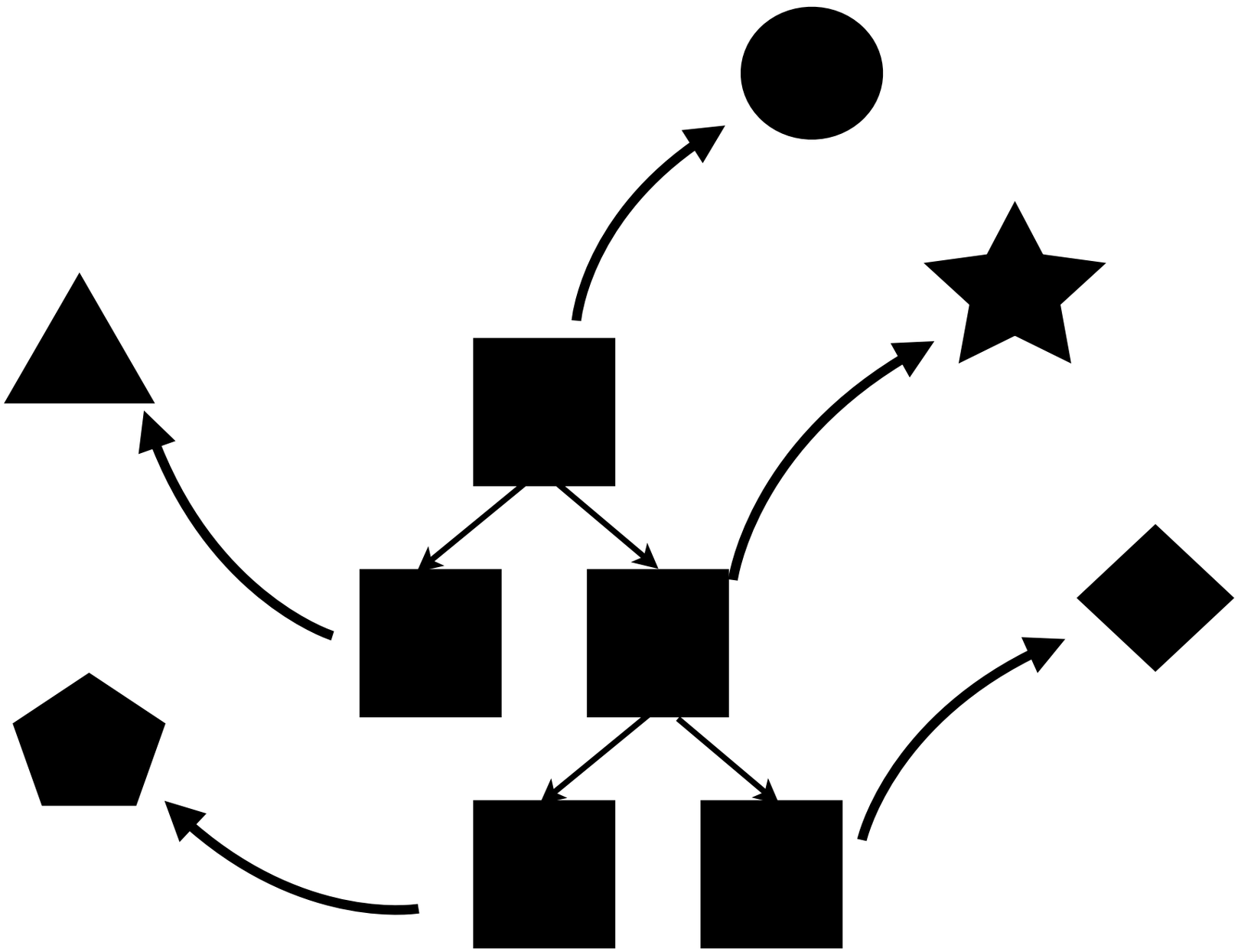
Structural Reflection

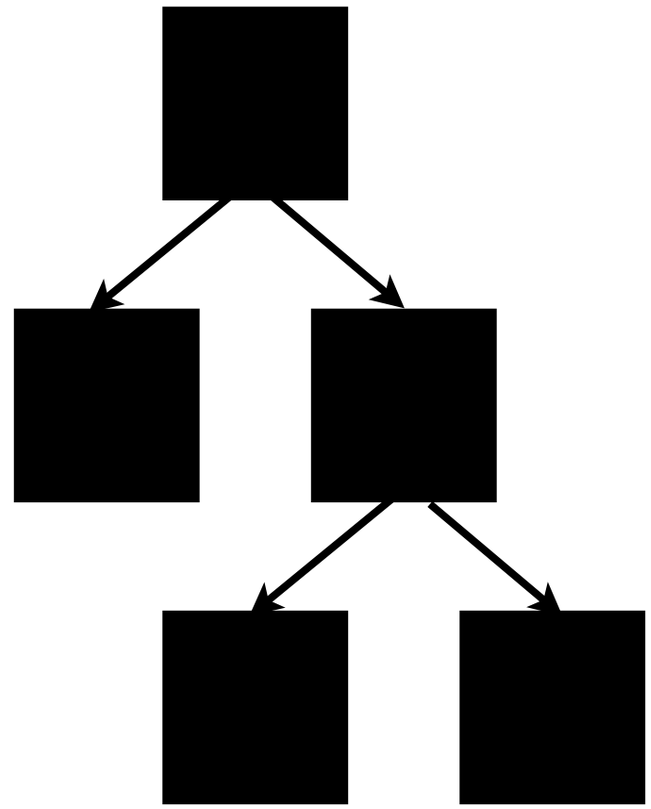
Behavioral Reflection

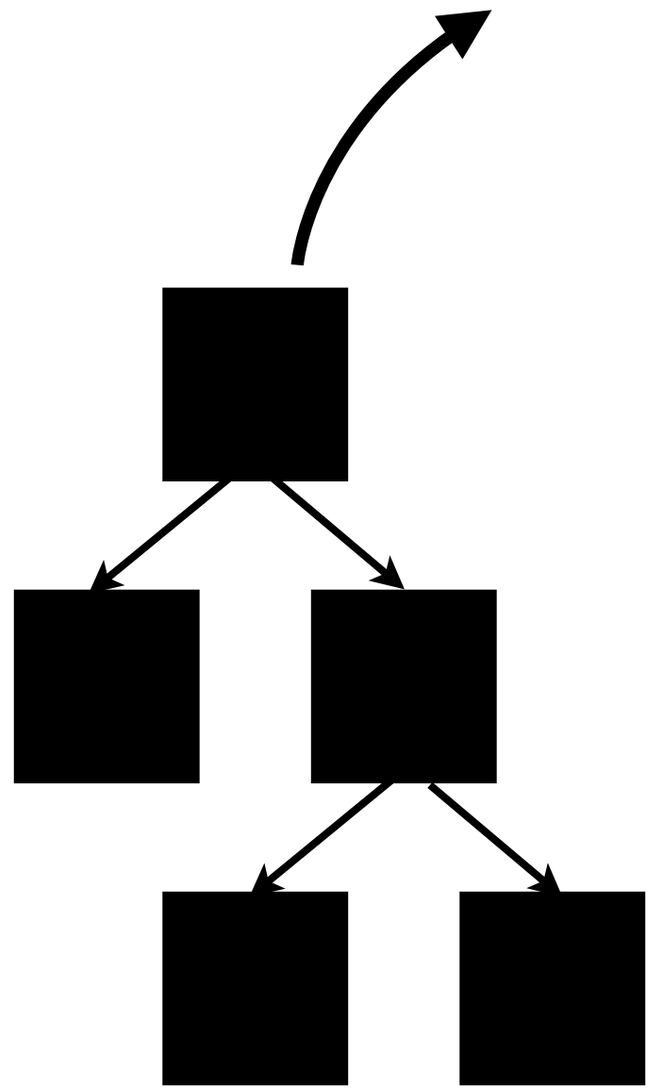
Partial Behavioral Reflection

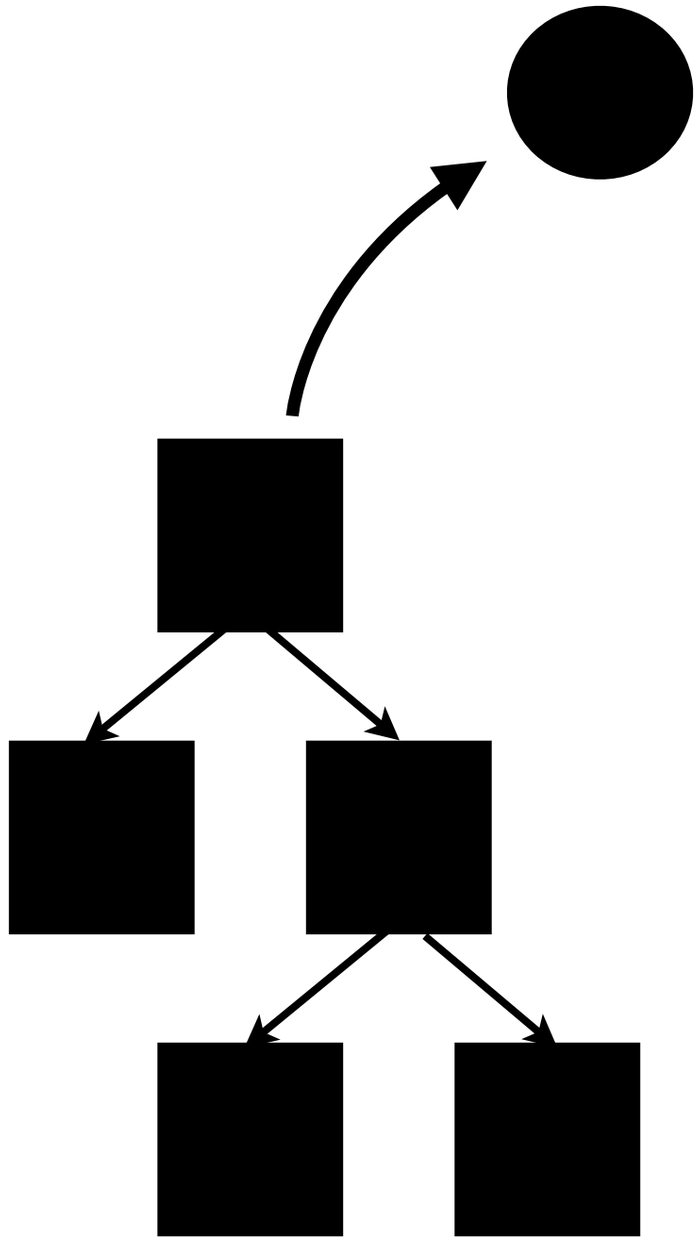


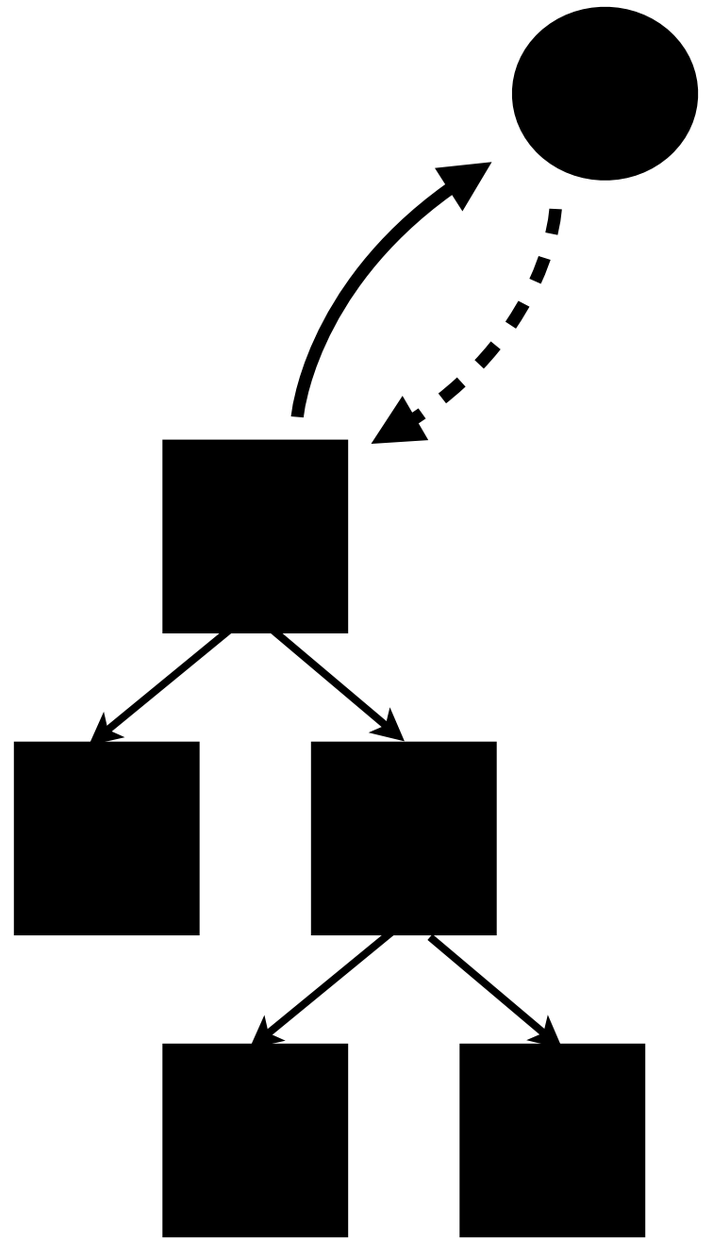


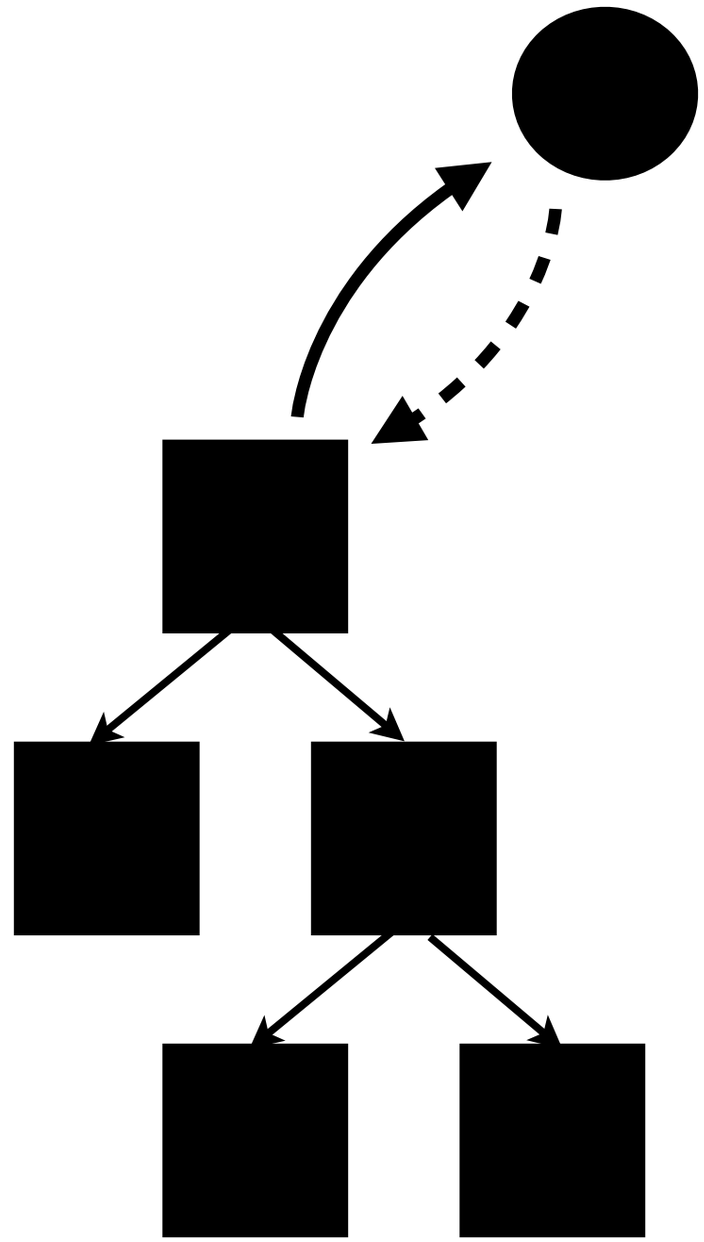


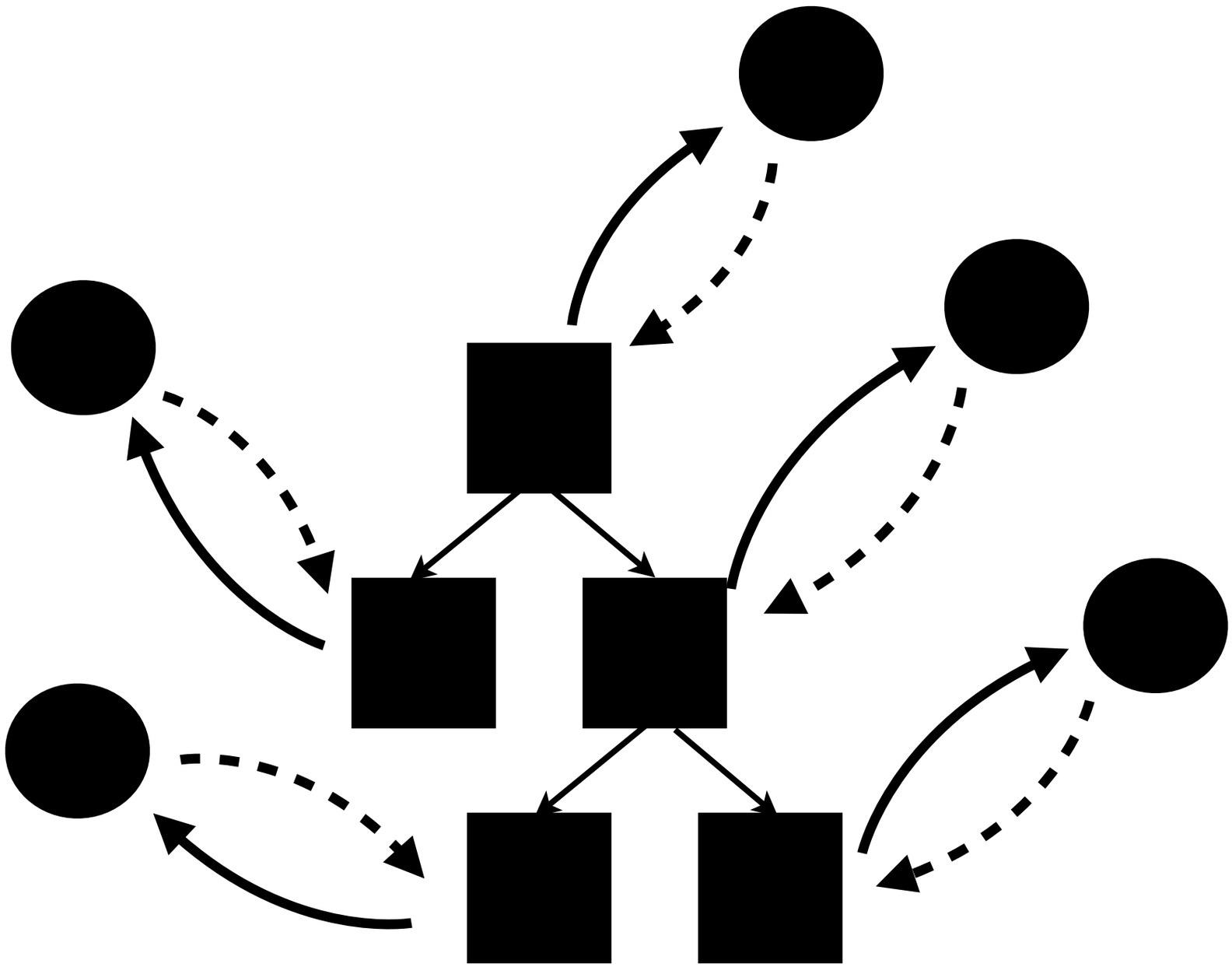










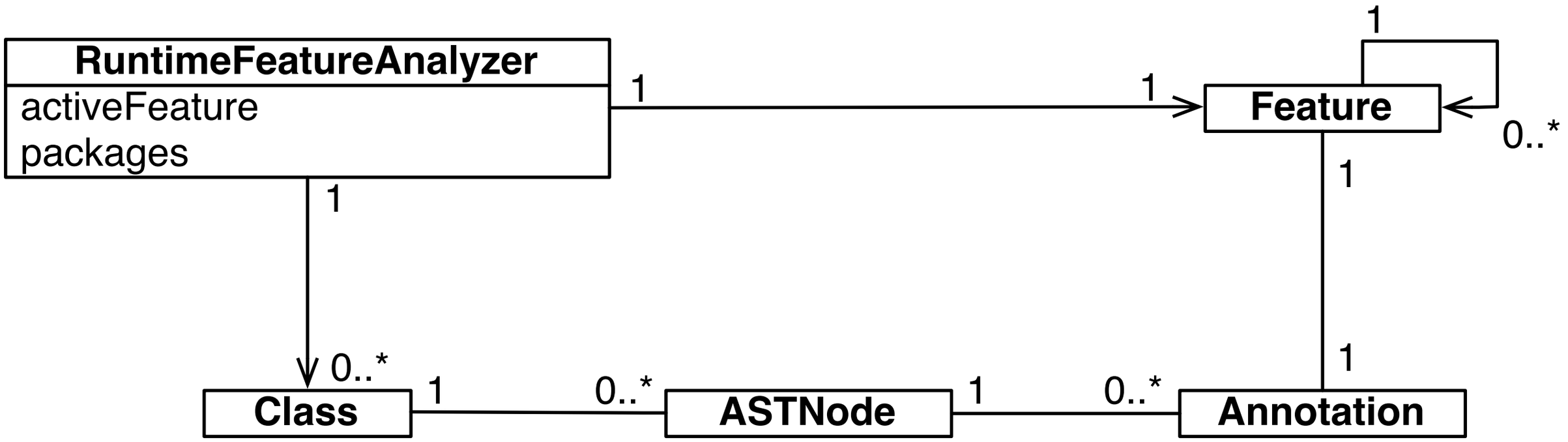


Performance Impact

Original	1x
Full Adaptation	16x
Practice	1.3x

Memory Footprint

Original	1x
Post-Mortem	nx
Live Feature	1x


RuntimeFeatureAnalyzer
activeFeature
packages
1
1
Feature
1
0..*
1
1
0..*
Class
1
0..*
ASTNode
1
0..*
Annotation

Conclusions

Feature analysis at runtime

Interactive analysis

Feature Growing

Sub-Method granularity

Live

Feature Analysis

Data volume reduction

Feature Growing

Sub-Method granularity

Interactive Features