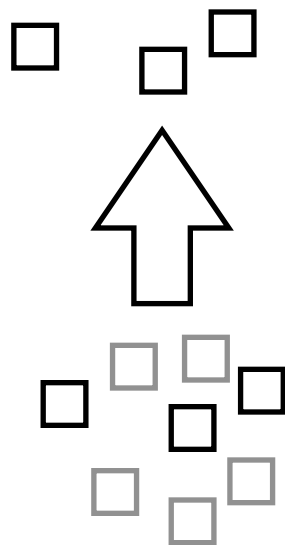


an analysis tool

McCabe = 21

NOM = 102

LOC = 753,000

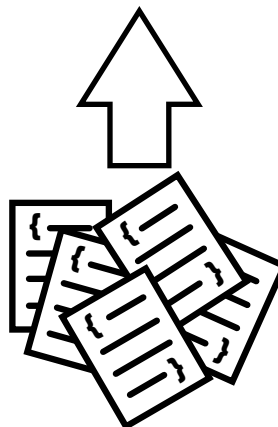
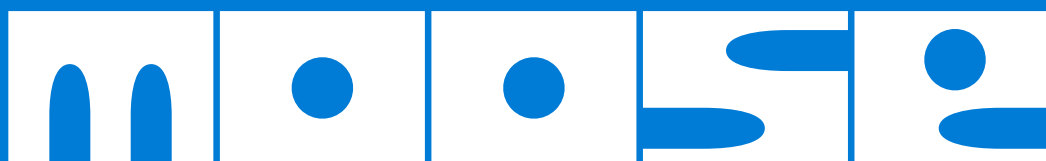
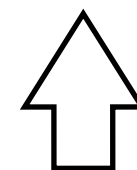
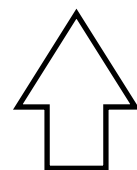
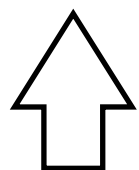
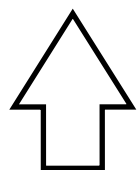


Metrics

Queries

Visualizations

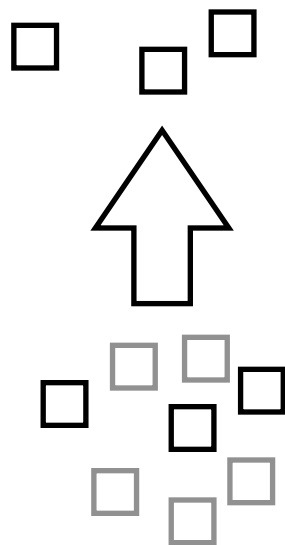
...



McCabe = 21

NOM = 102

LOC = 753,000

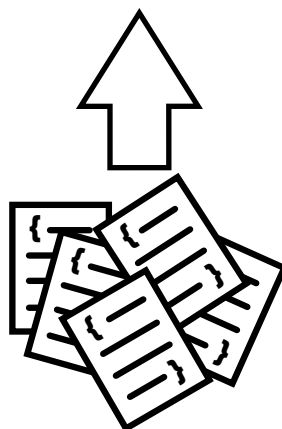
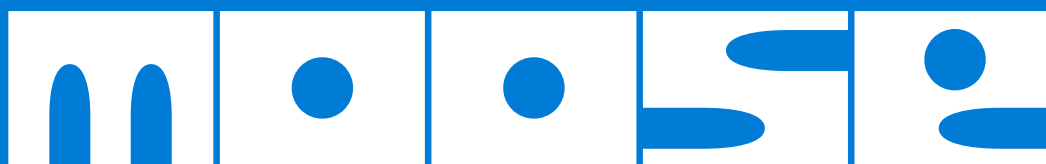
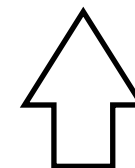
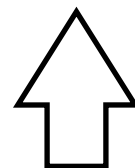
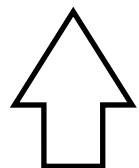


Metrics

Queries

Visualizations

...



Metrics compress systems into numbers.

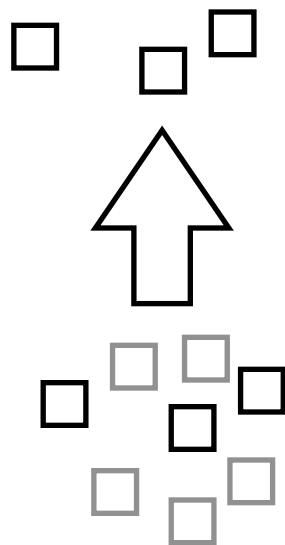
NOM	number of methods
LOC	number of lines of code
CYCLO	McCabe cyclomatic complexity
TCC	tight class cohesion
...	

Lorentz, Kidd, 1994
Chidamber, 1994
McCabe 1977

McCabe = 21

NOM = 102

LOC = 753,000

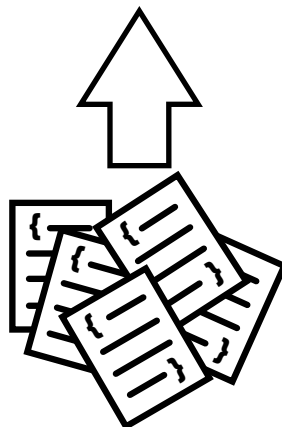
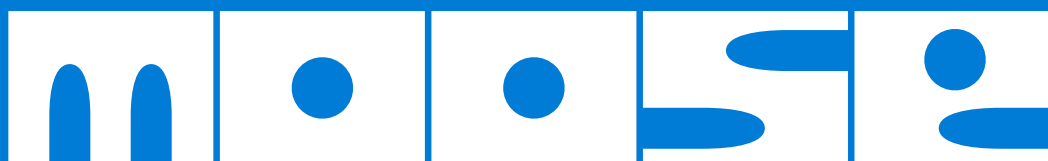
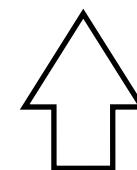
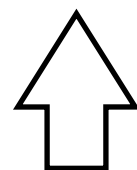
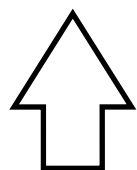


Metrics

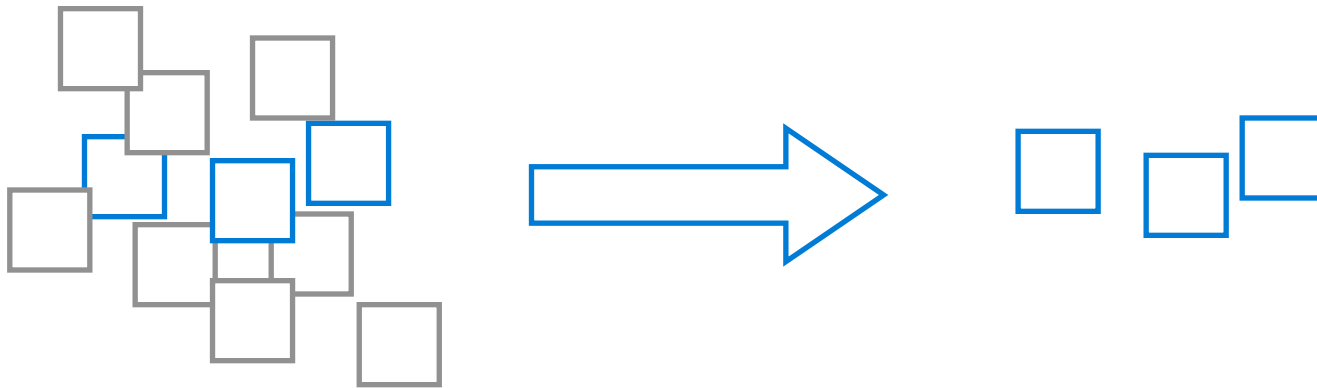
Queries

Visualizations

...

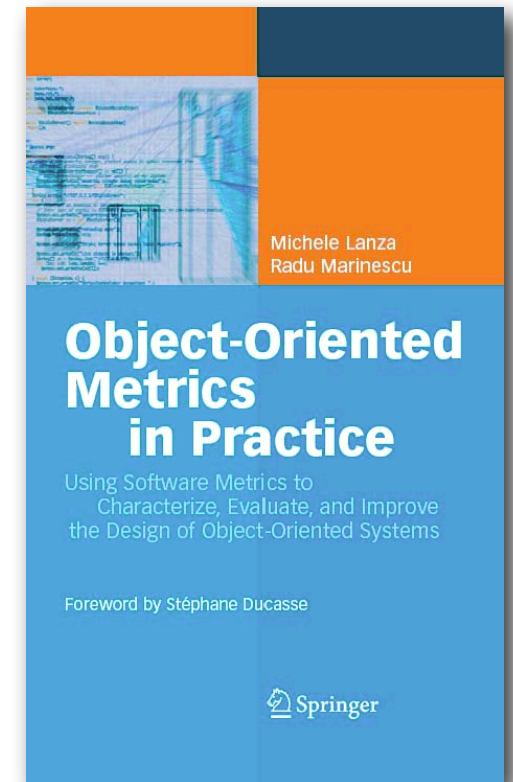
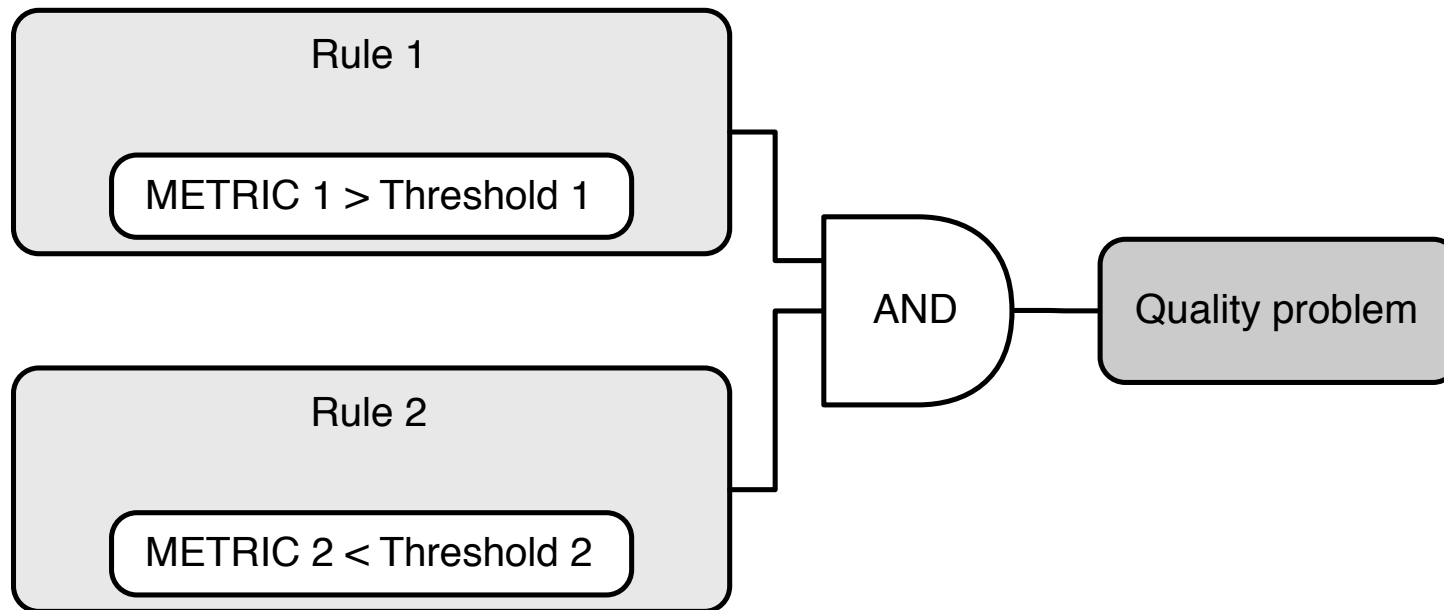


Queries reduce the analysis space.

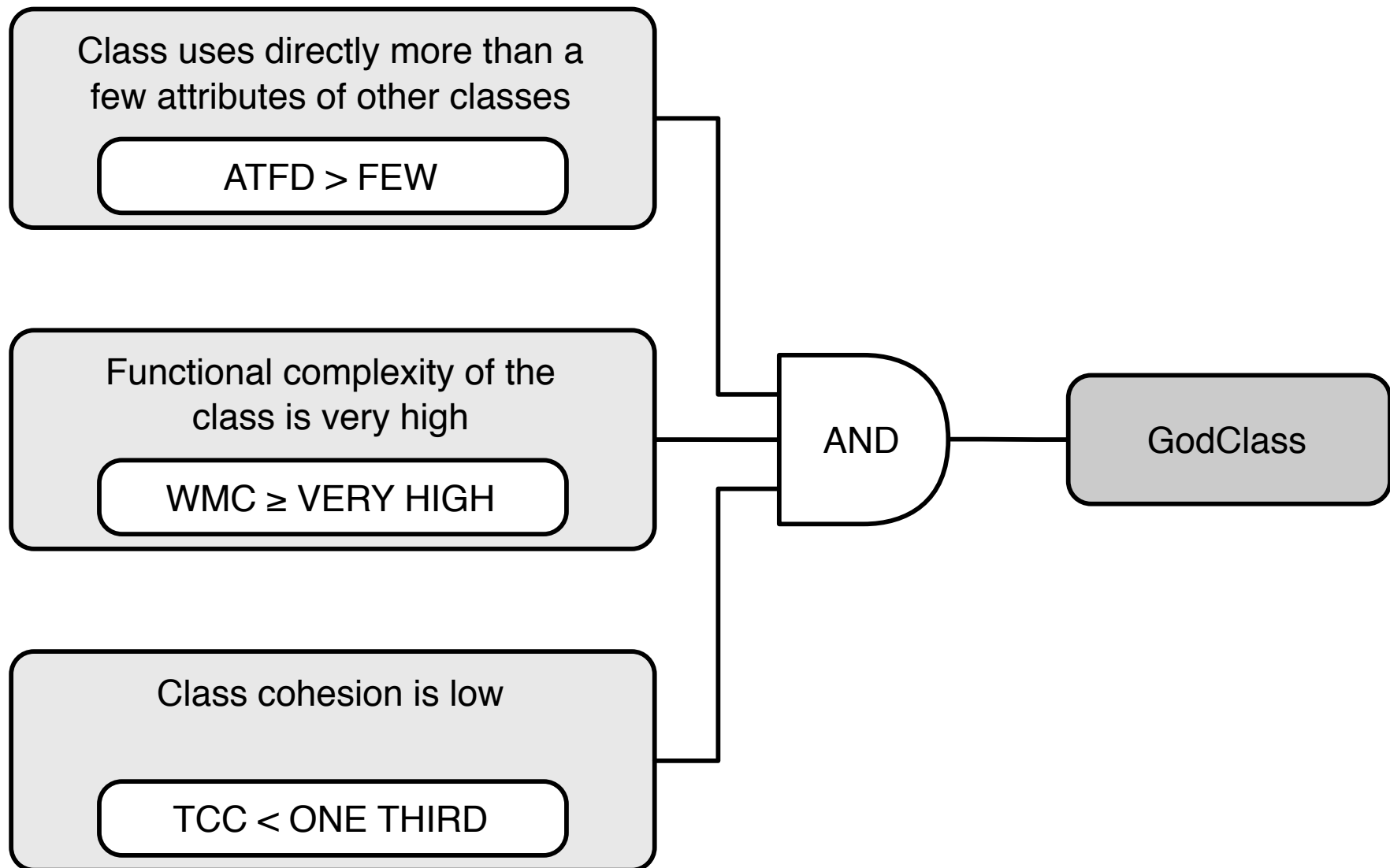


Detection Strategies are metric-based queries to detect design flaws.

Lanza, Marinescu 2006



Example: a **God Class** centralizes too much intelligence in the system.

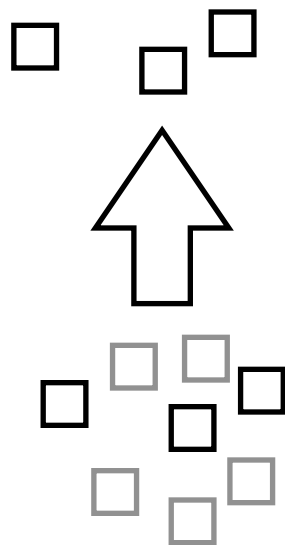


We can always resort to Smalltalk for querying.

McCabe = 21

NOM = 102

LOC = 753,000

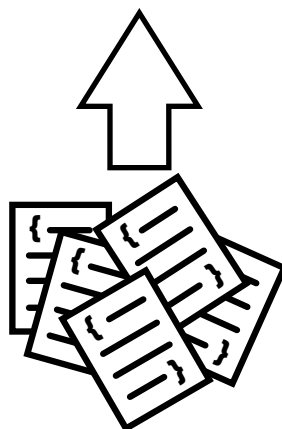
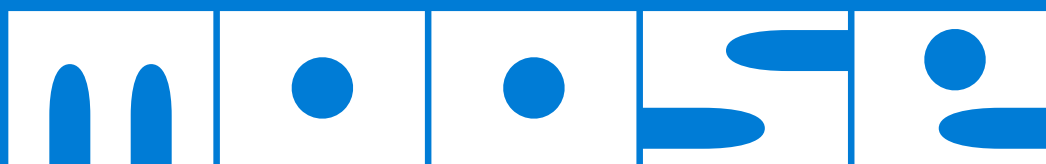
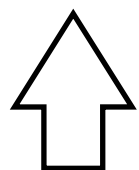
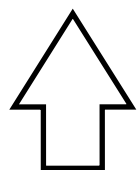


Metrics

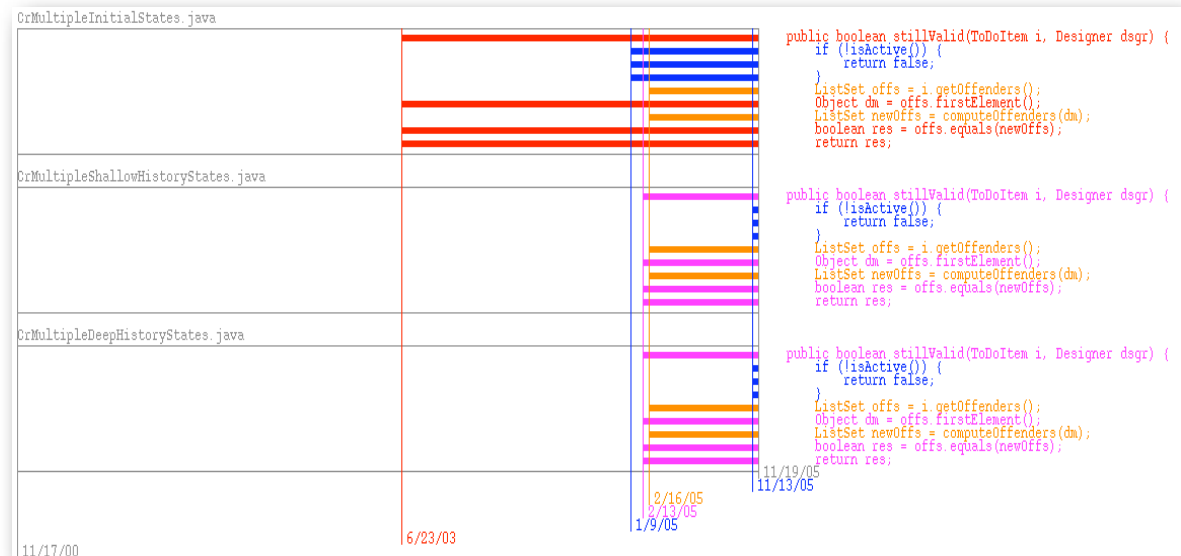
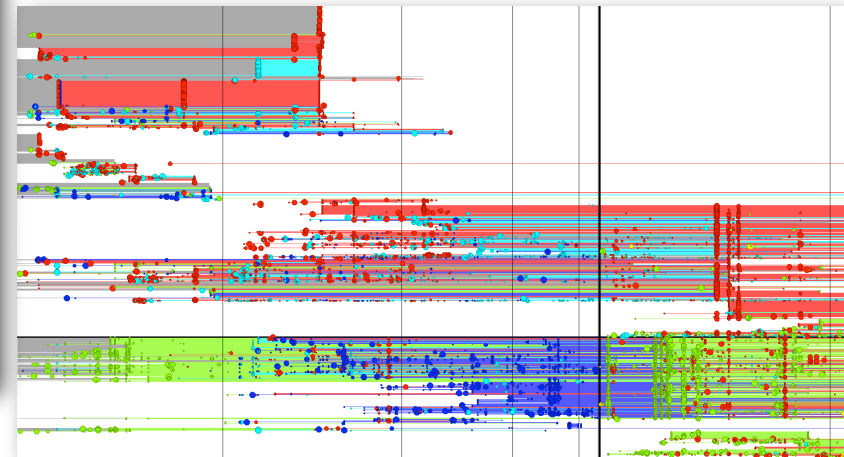
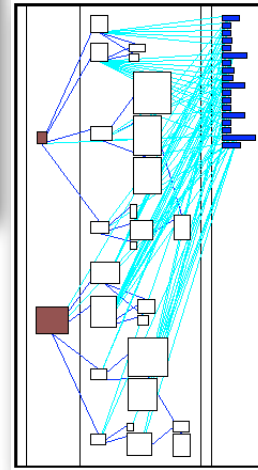
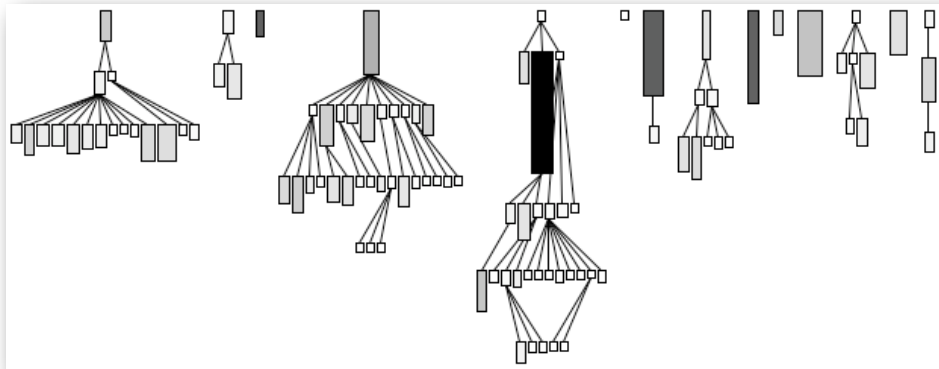
Queries

Visualizations

...

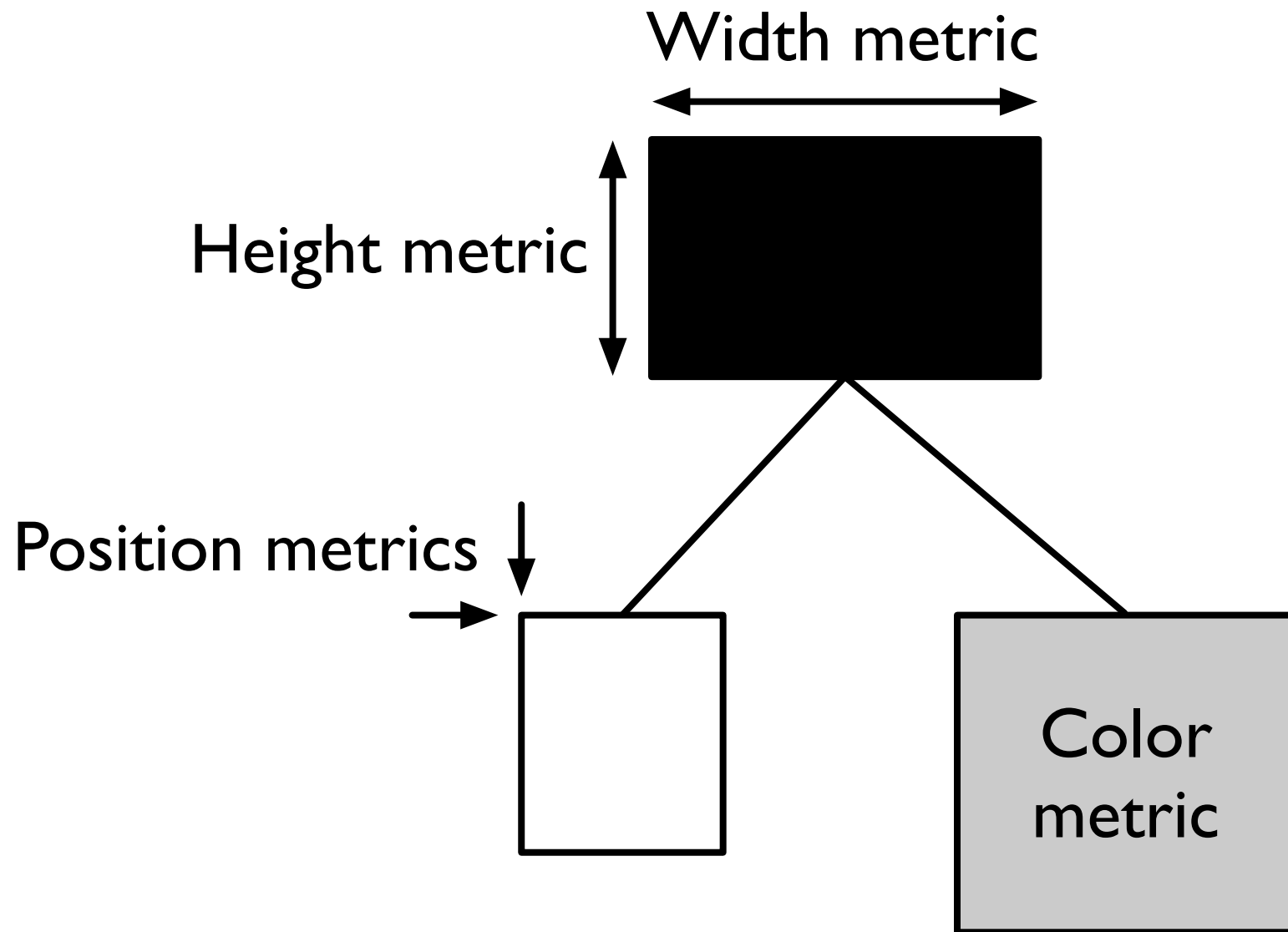


Visualization compresses the system into pictures.



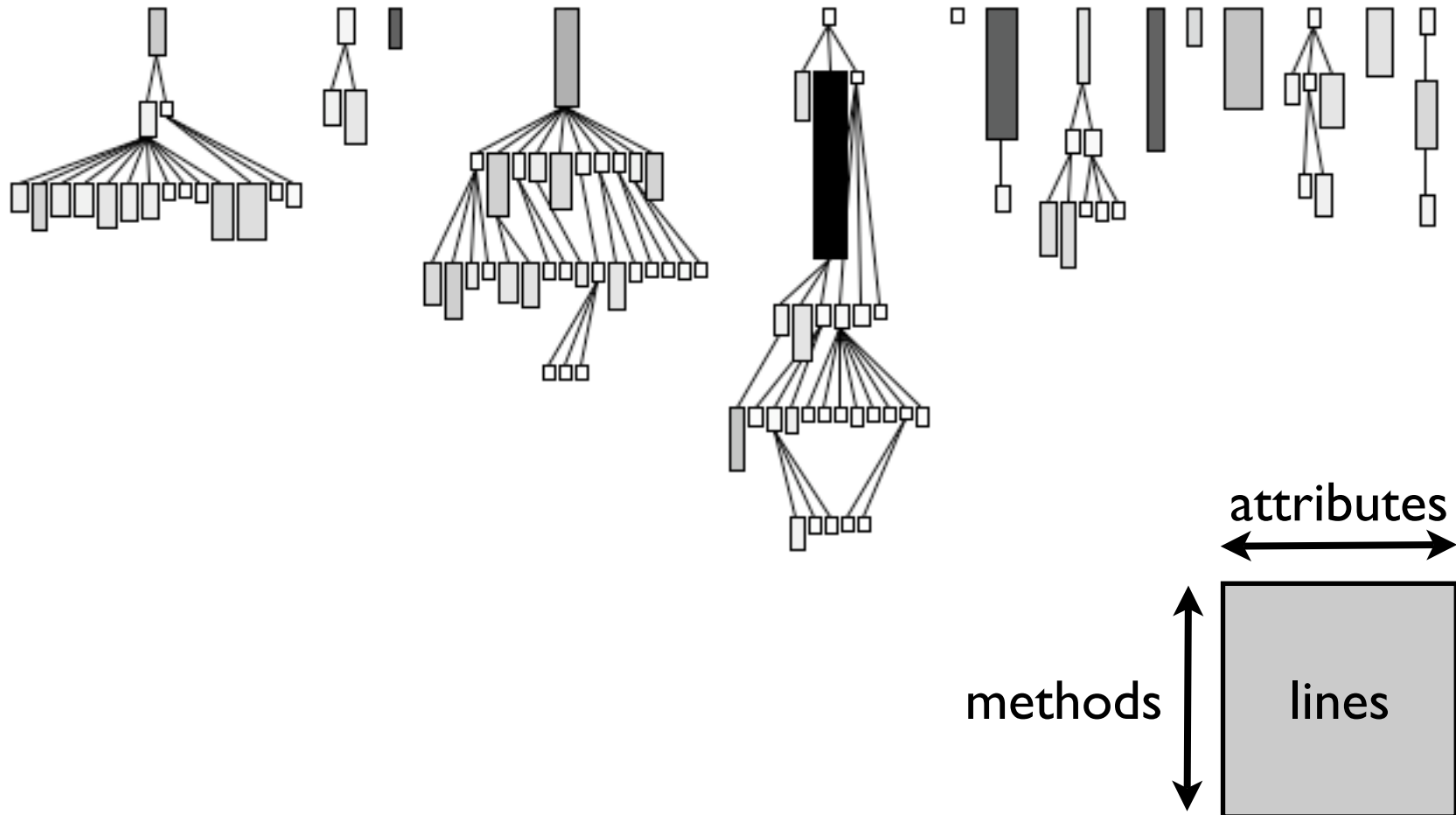
Polymetric views show up to 5 metrics.

Lanza, 2003



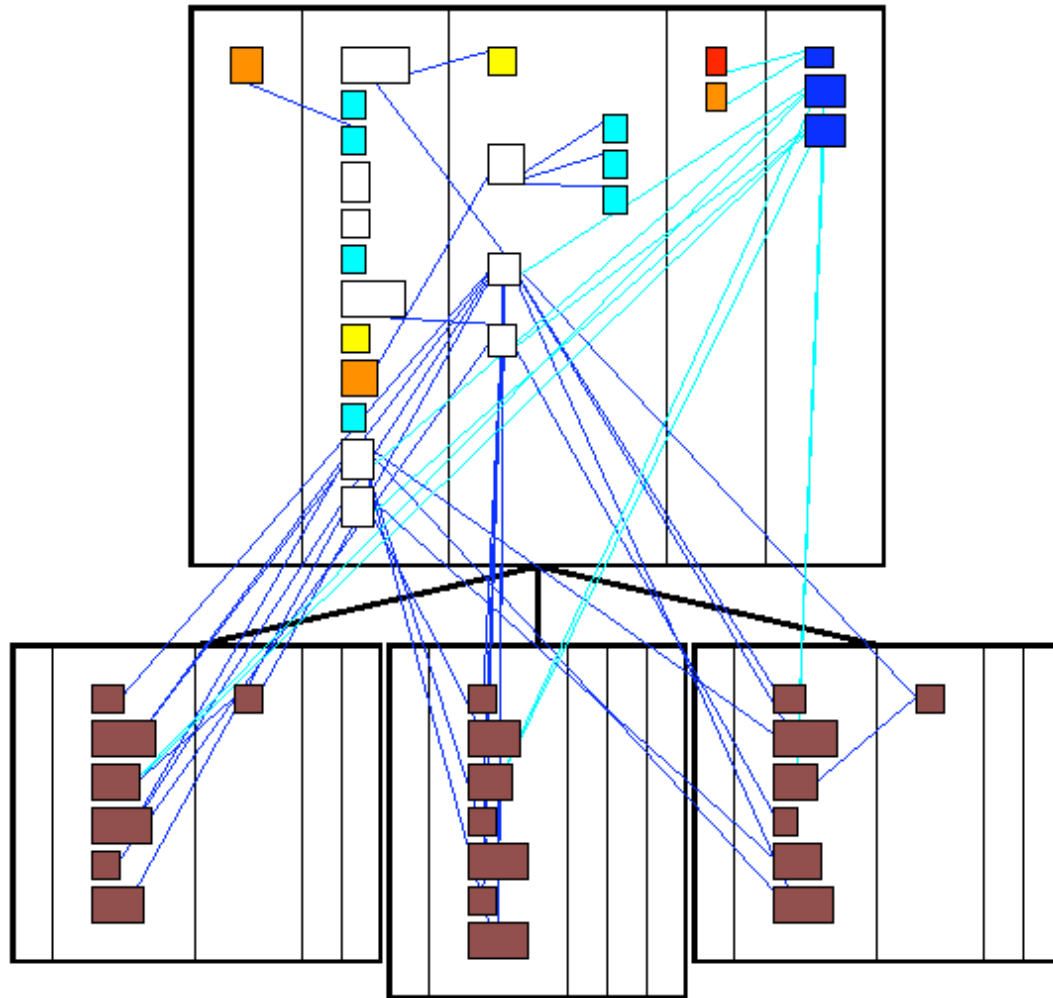
System Complexity shows class hierarchies.

Lanza, Ducasse, 2003

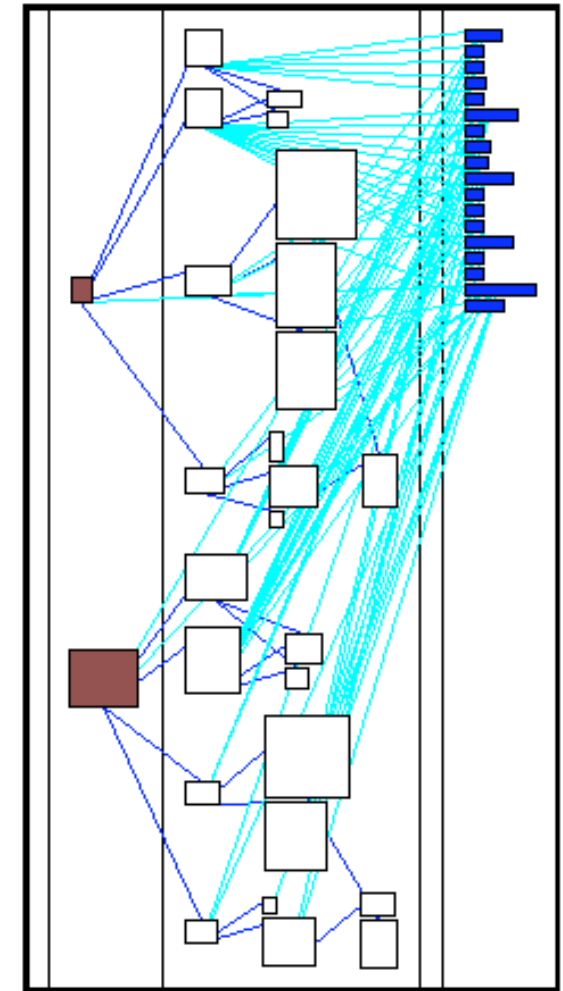


Class Blueprint shows class internals.

Ducasse, Lanza, 2005



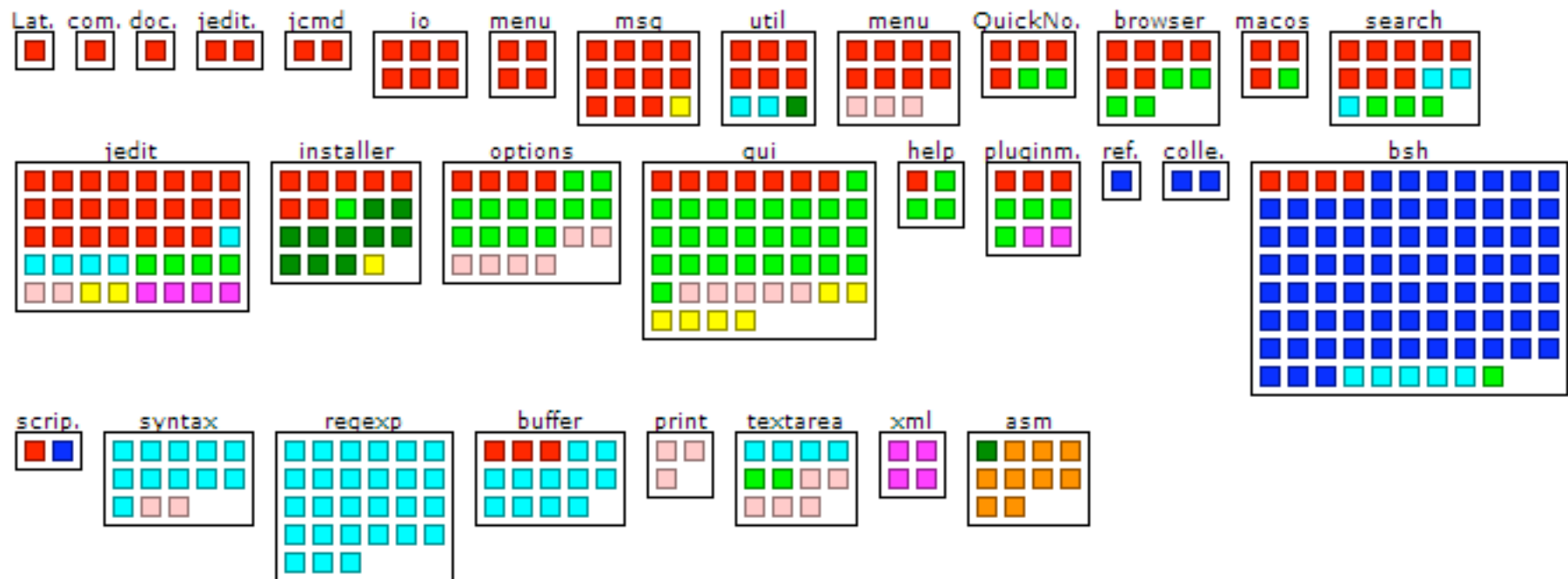
twin classes



schizophrenic class

Distribution Map shows properties over structure.

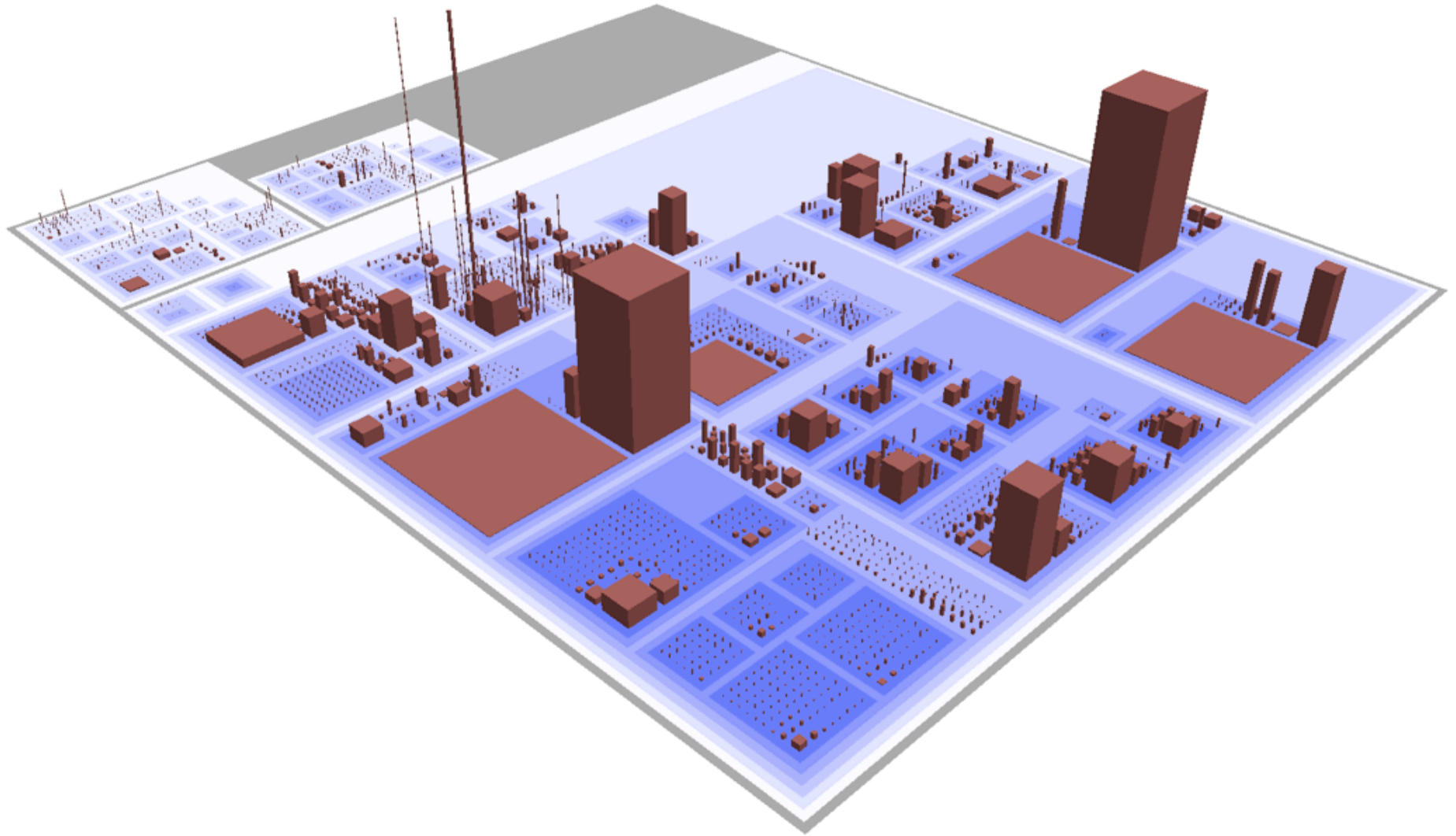
Ducasse et al, 2006



31 parts, 394 elements and 9 properties

Code City shows where your code lives.

Wettel, Lanza, 2007

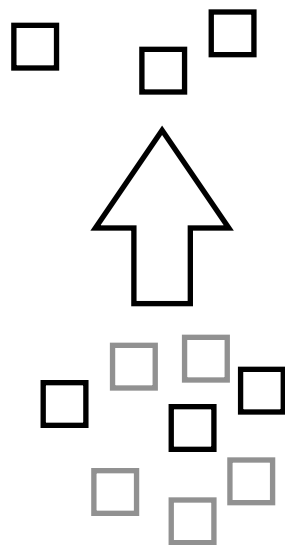


classes are buildings grouped in quarters of packages

McCabe = 21

NOM = 102

LOC = 753,000

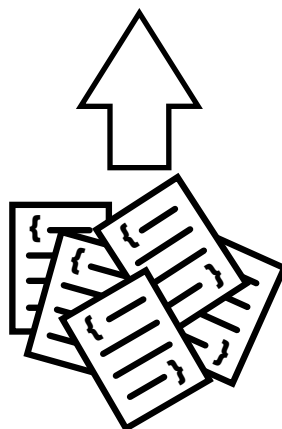
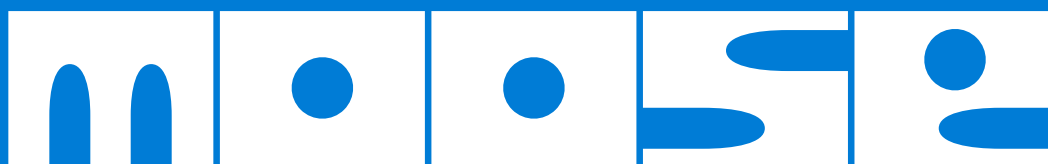
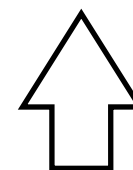
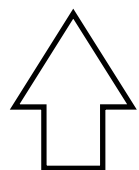
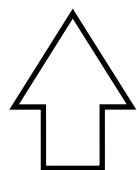


Metrics

Queries

Visualizations

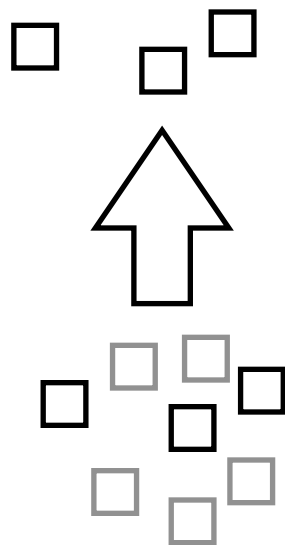
...



McCabe = 21

NOM = 102

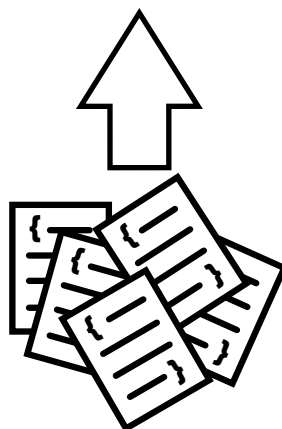
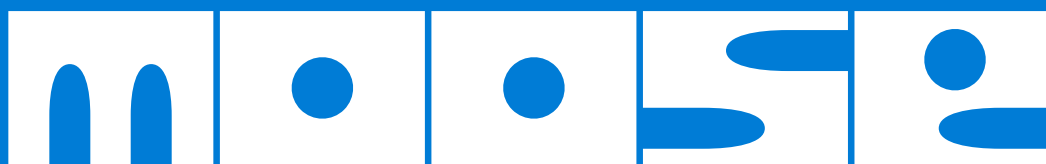
LOC = 753,000

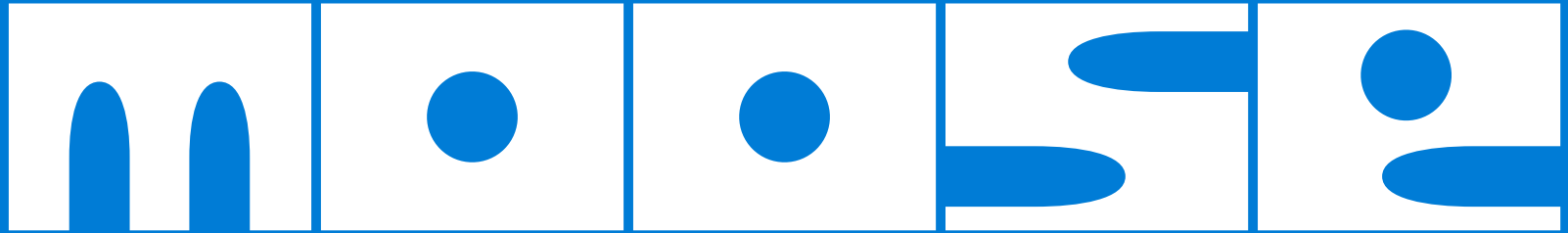


Metrics

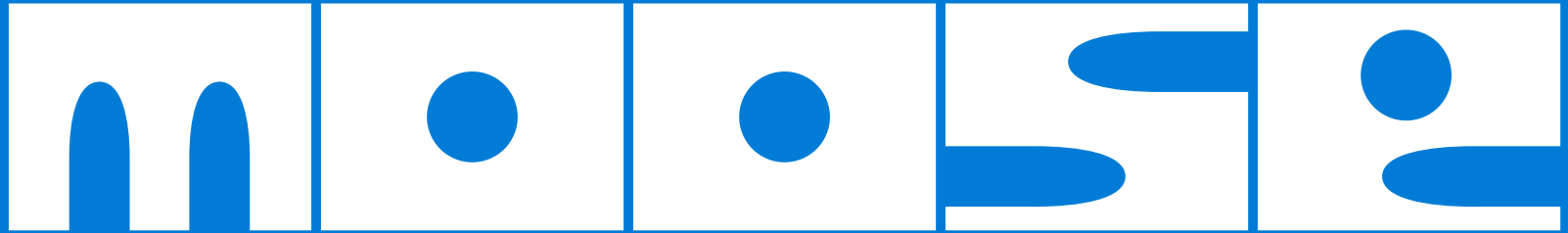
Queries

Visualizations





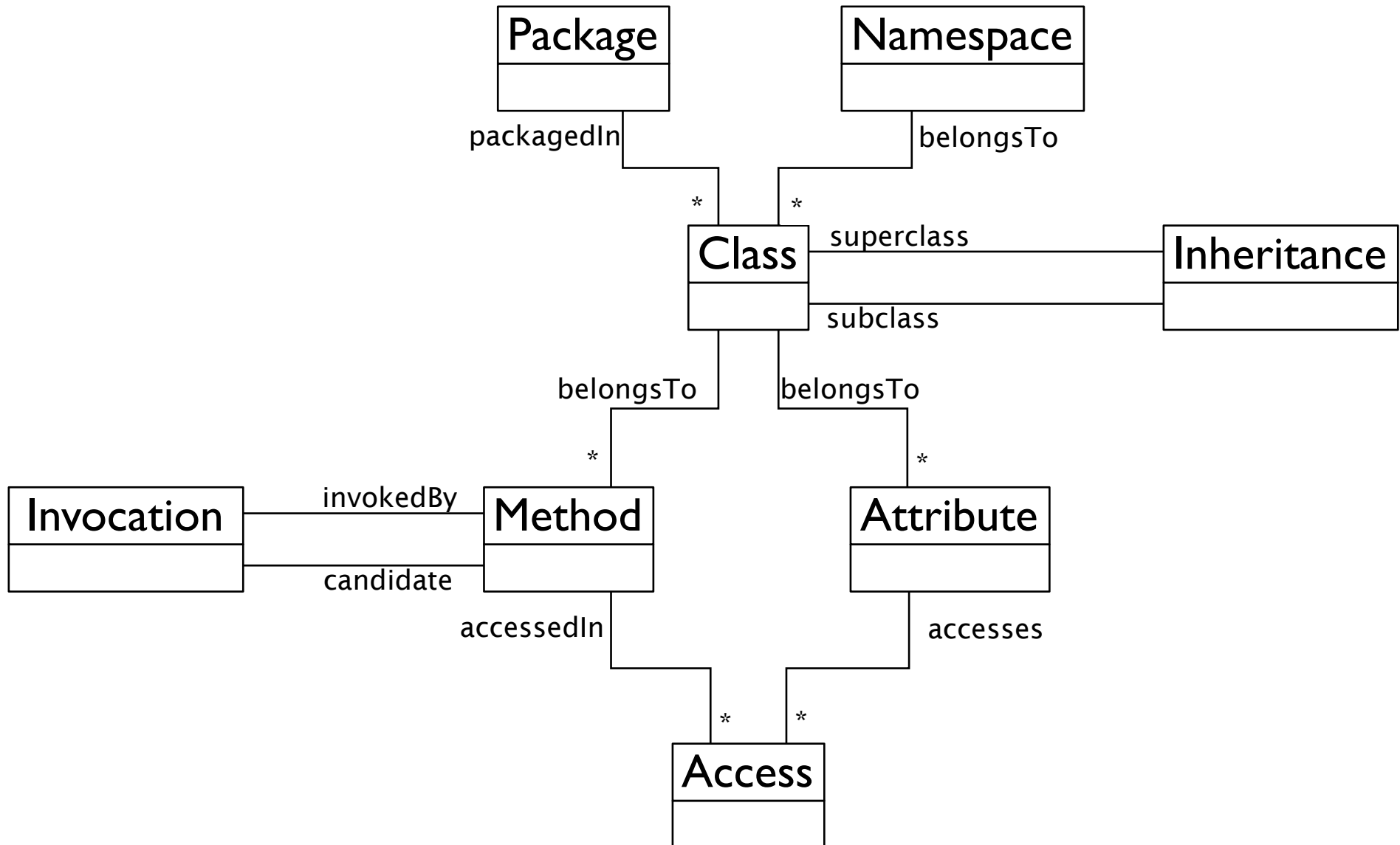
an analysis tool

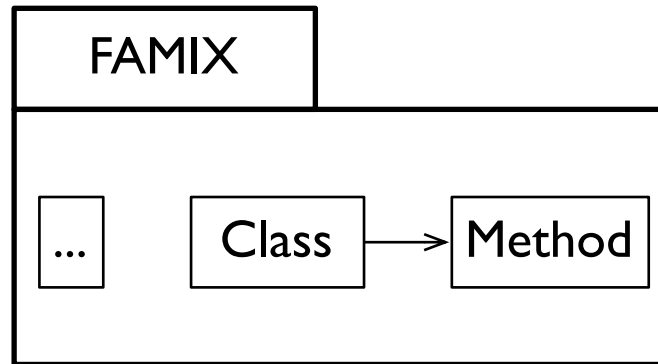


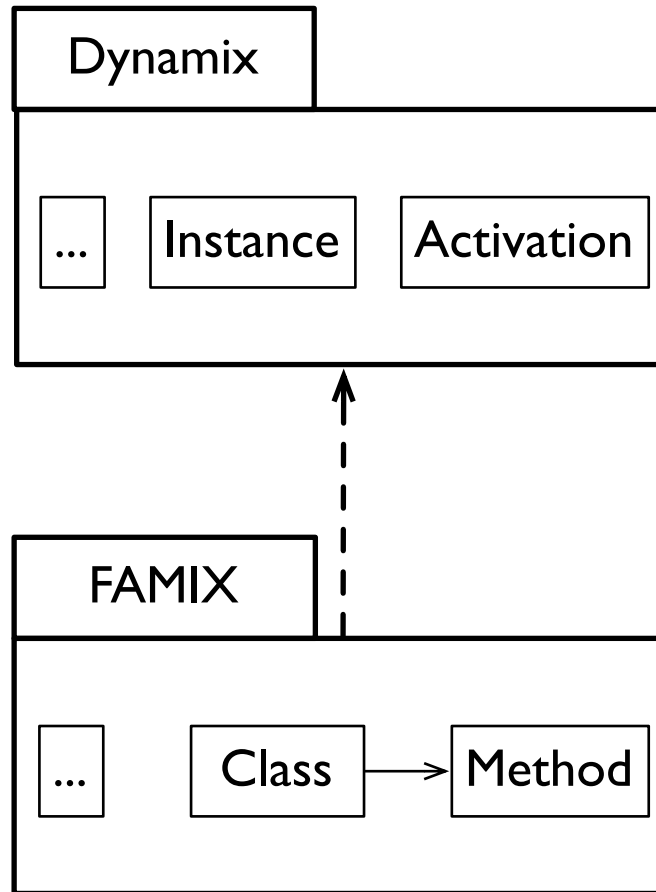
an analysis tool

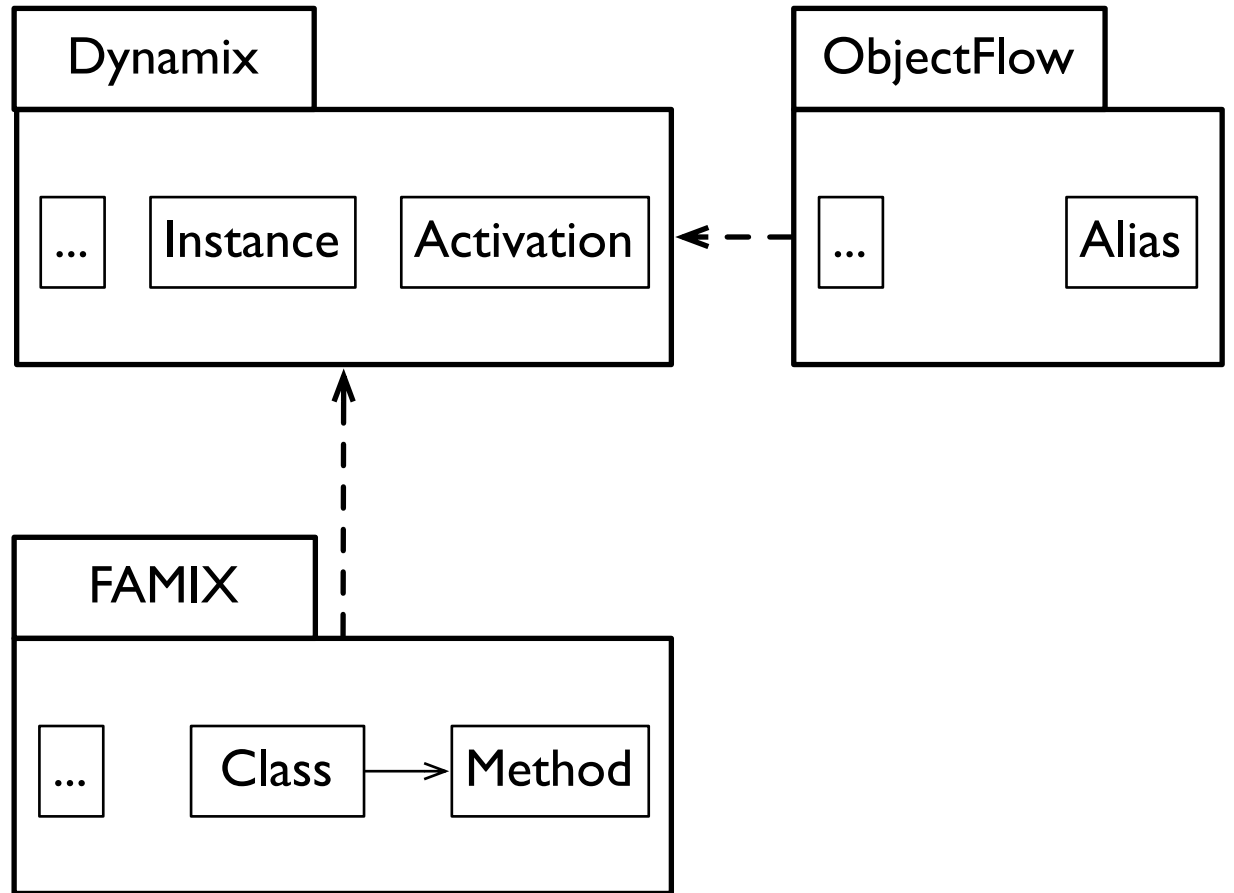
a platform for modeling

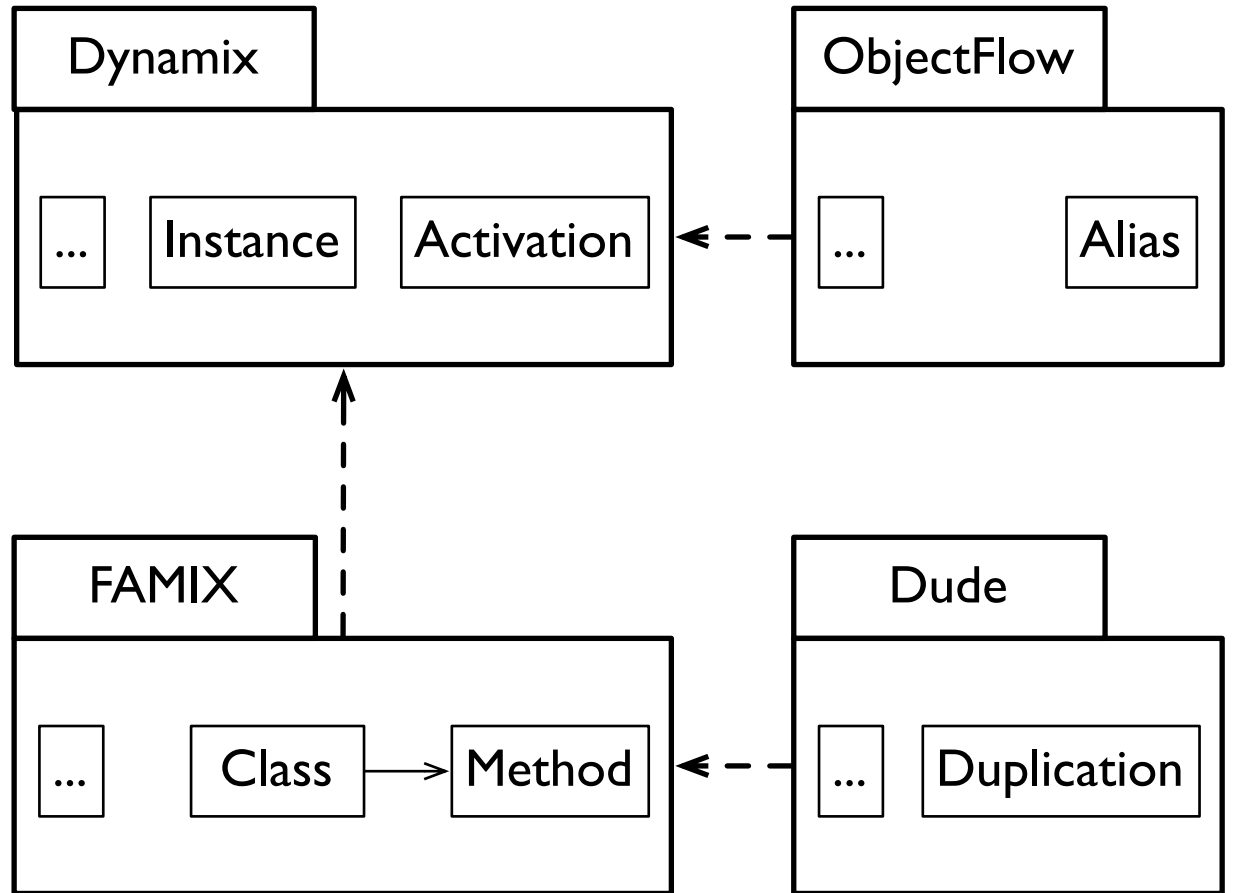
FAMIX is a language independent meta-model.

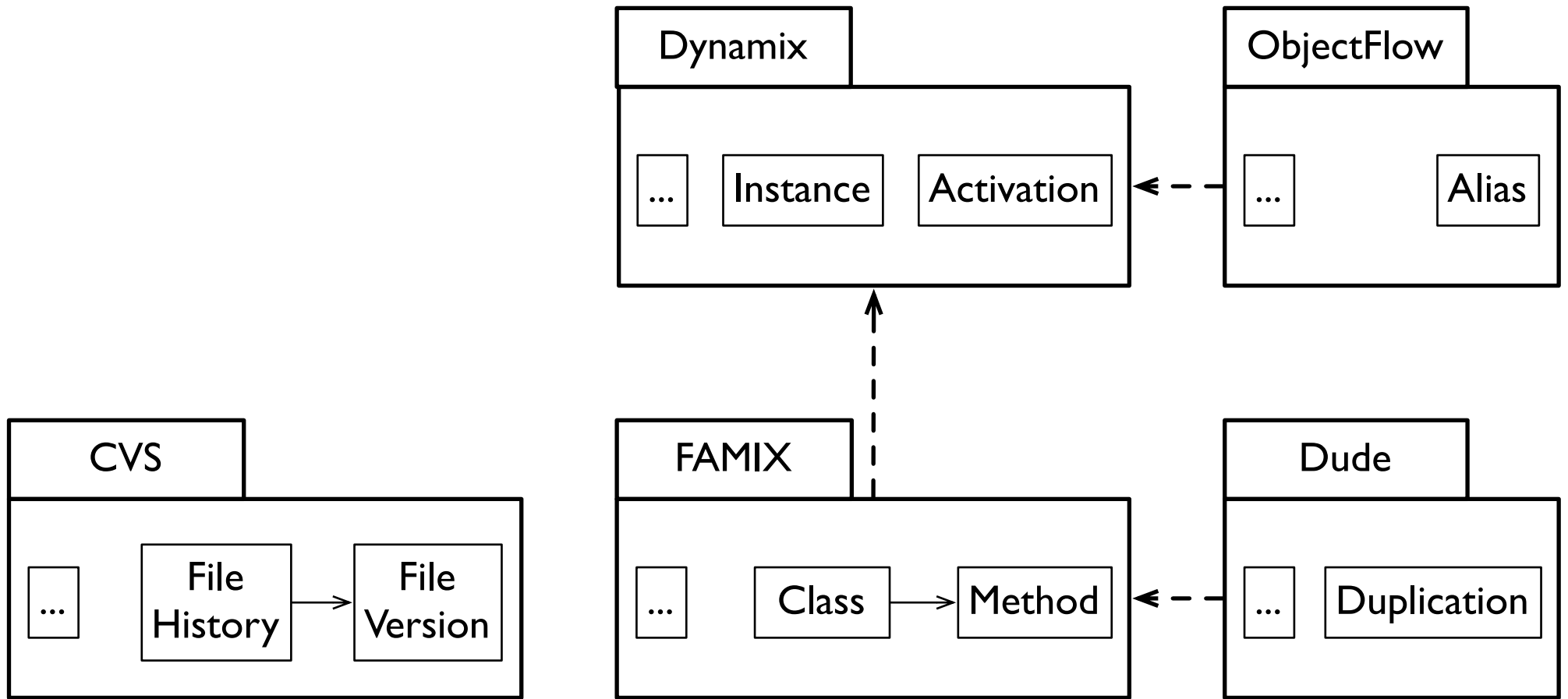


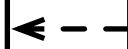
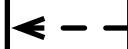
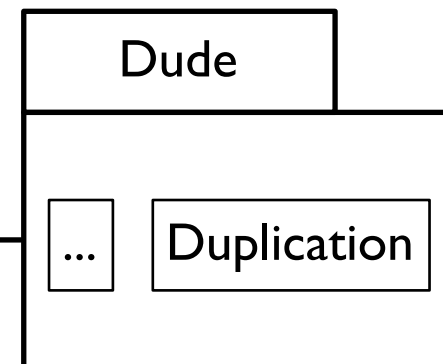
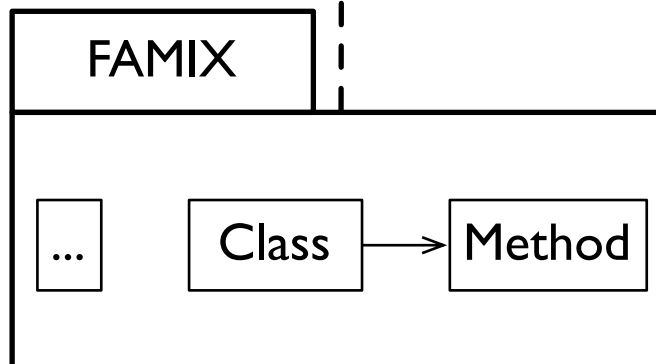
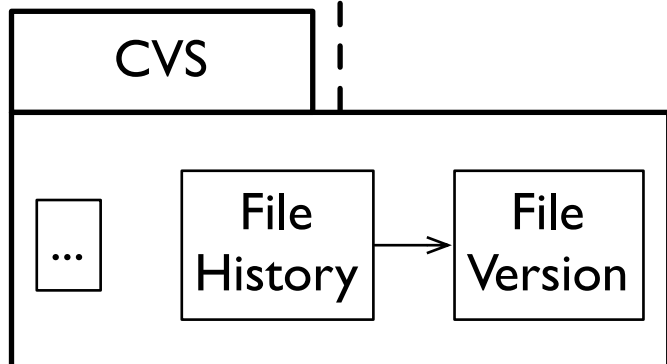
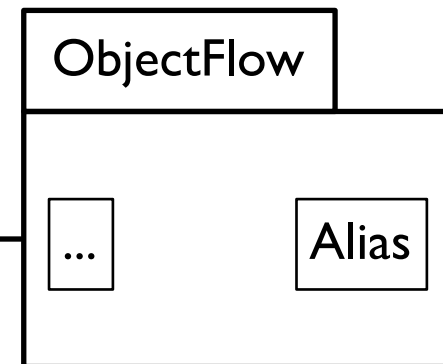
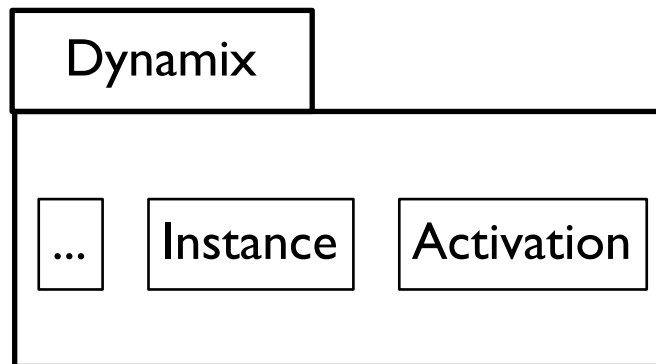
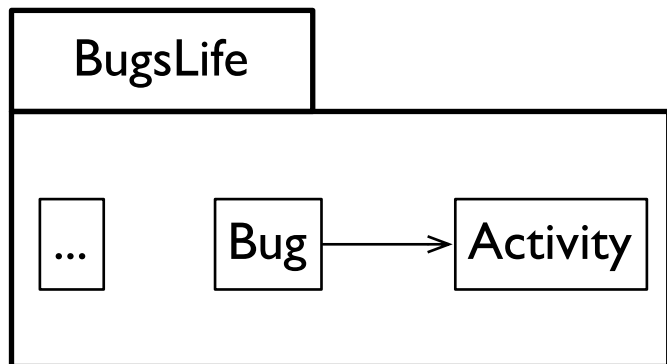


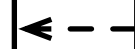
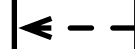
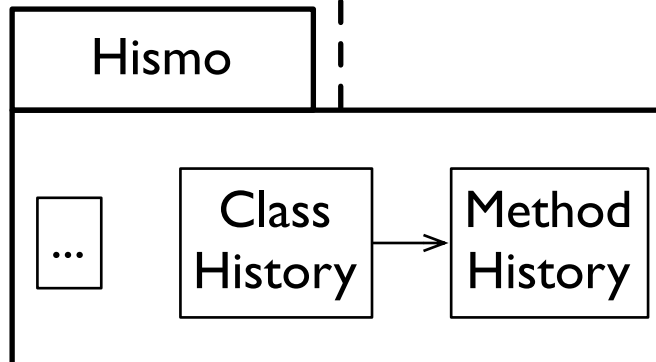
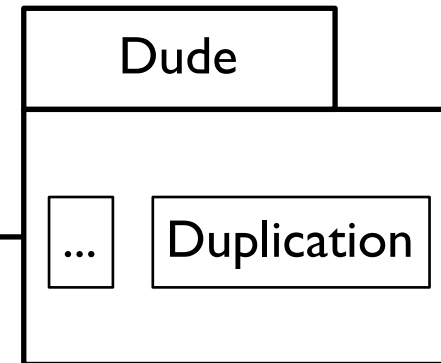
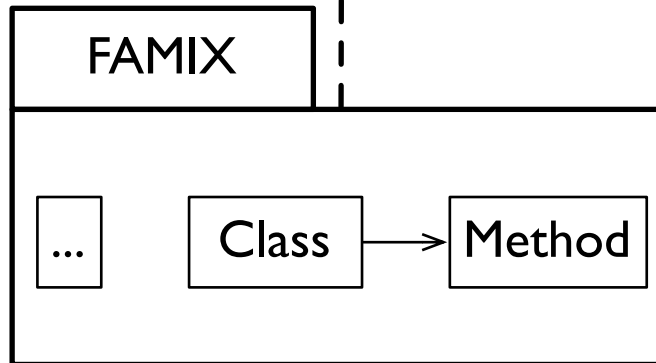
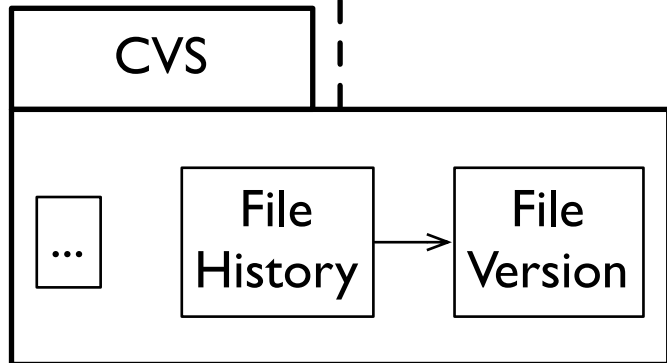
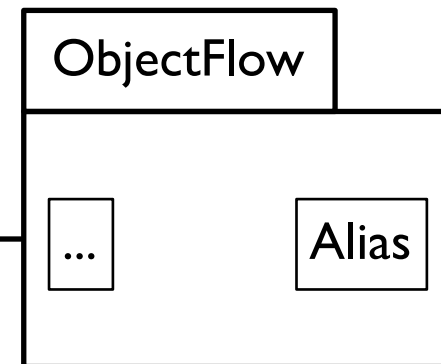
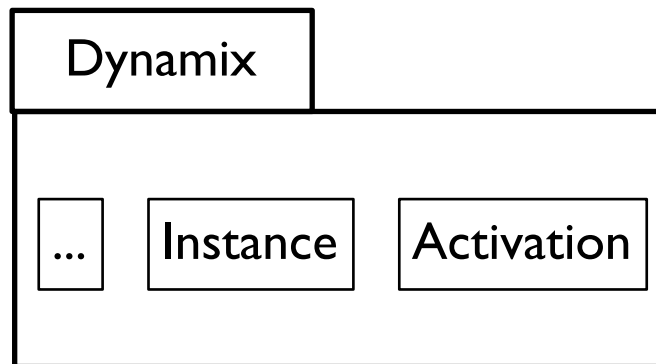
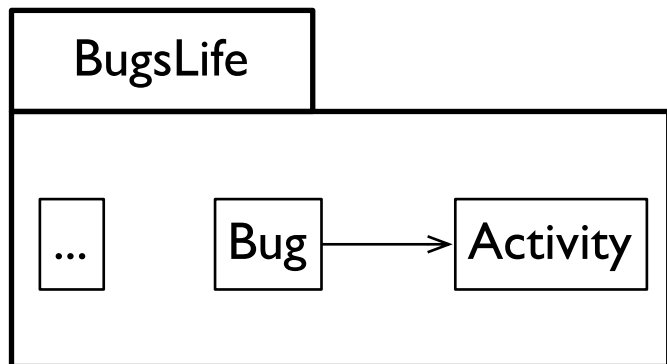


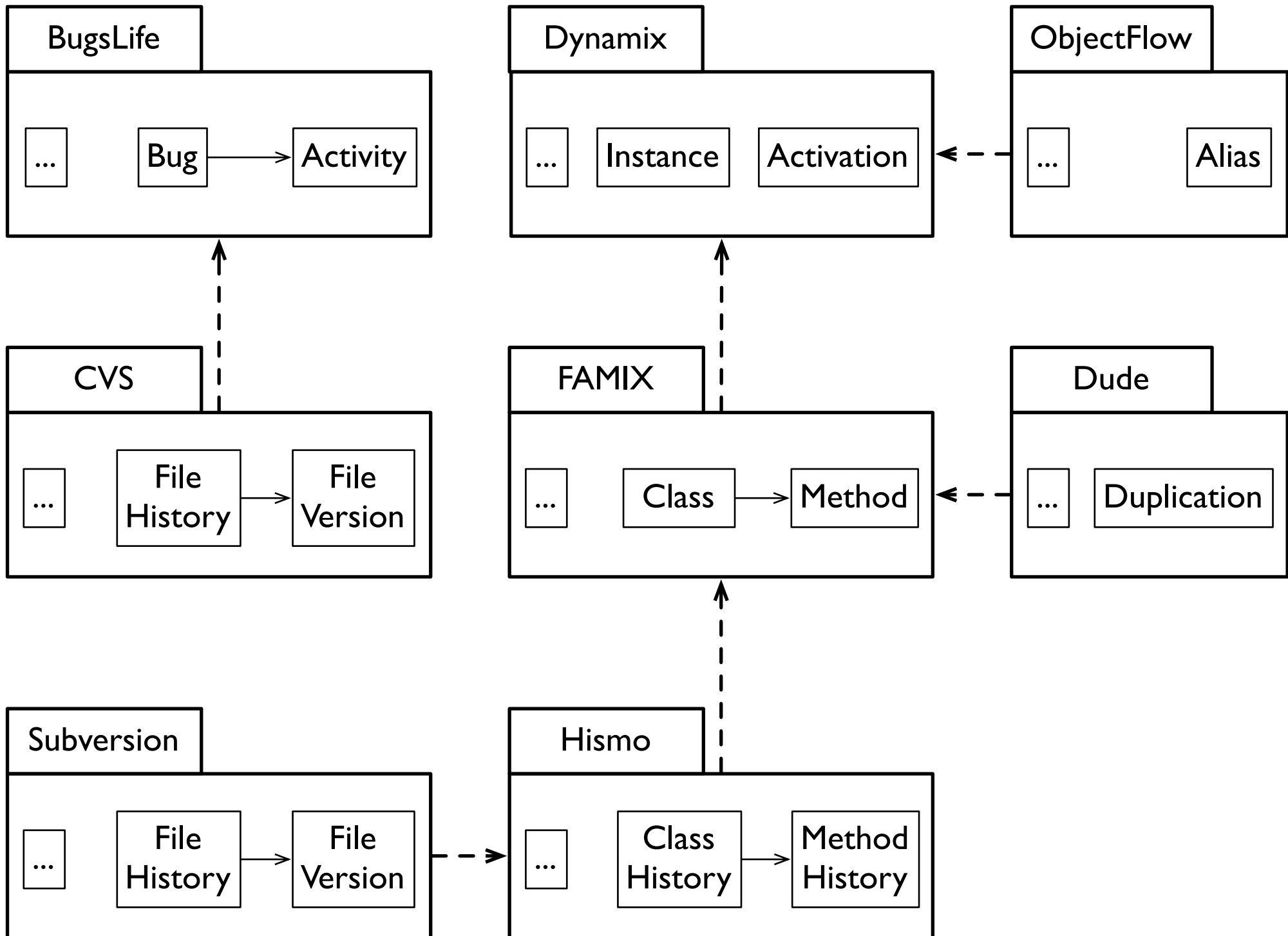


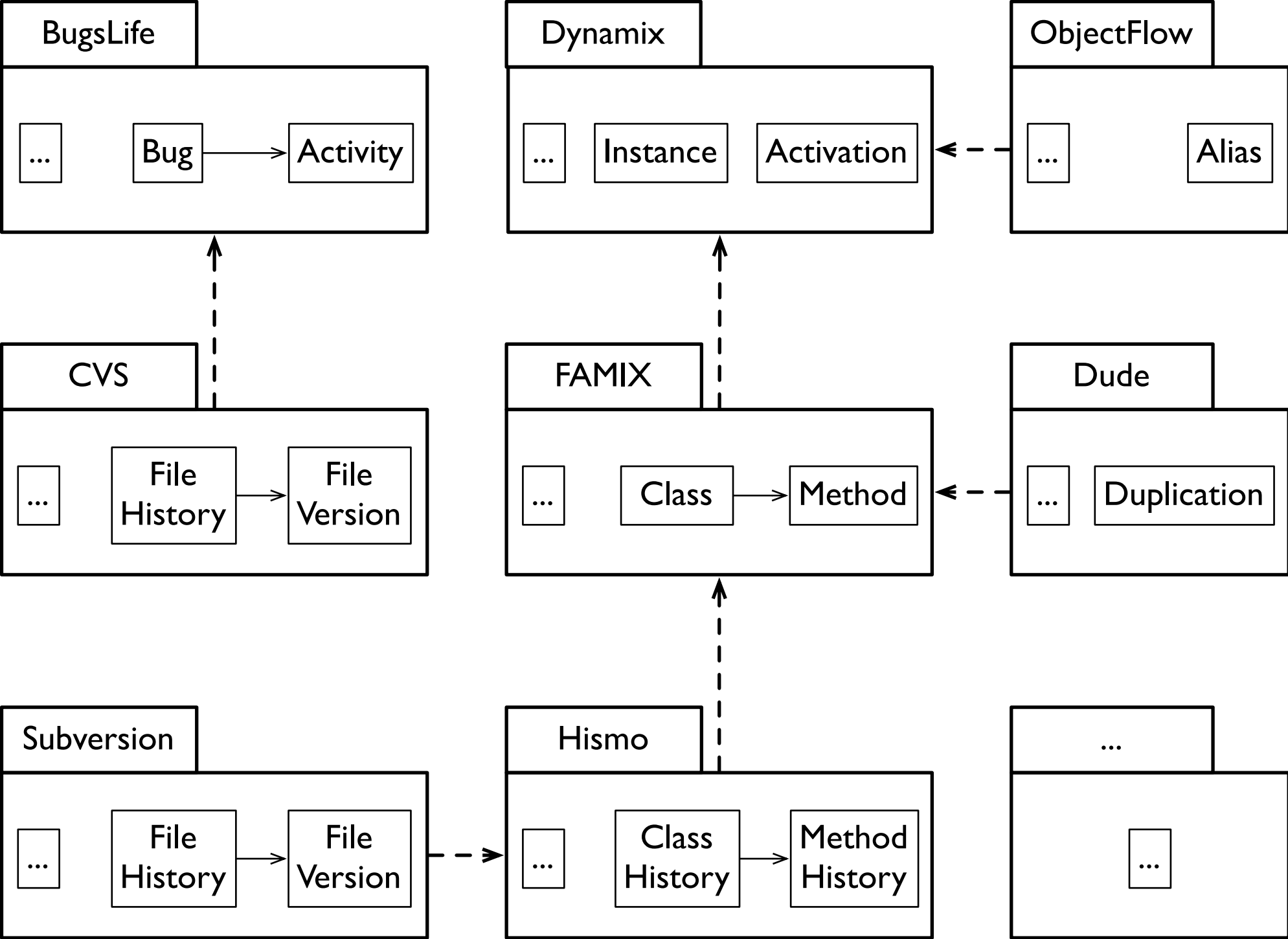




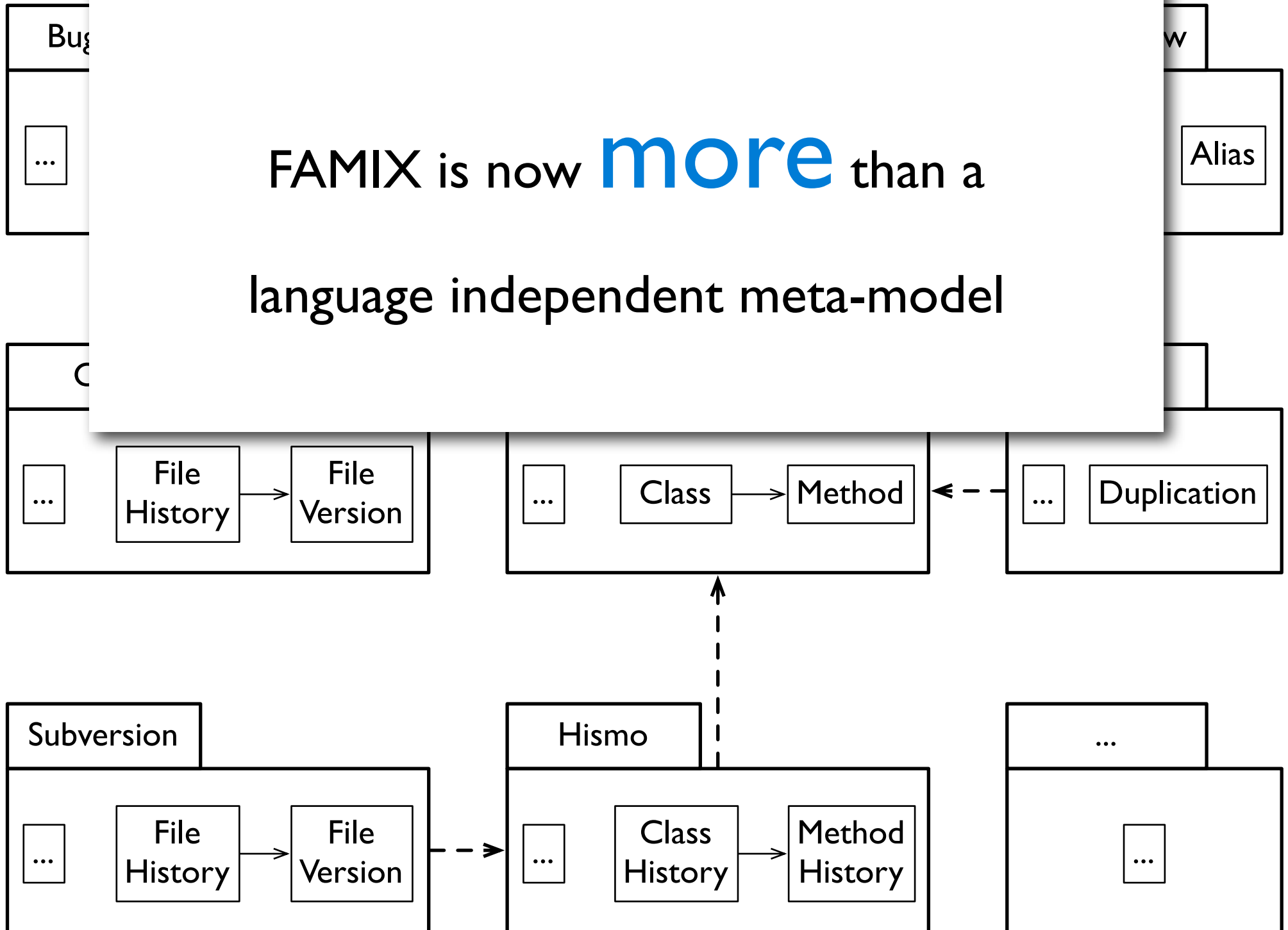


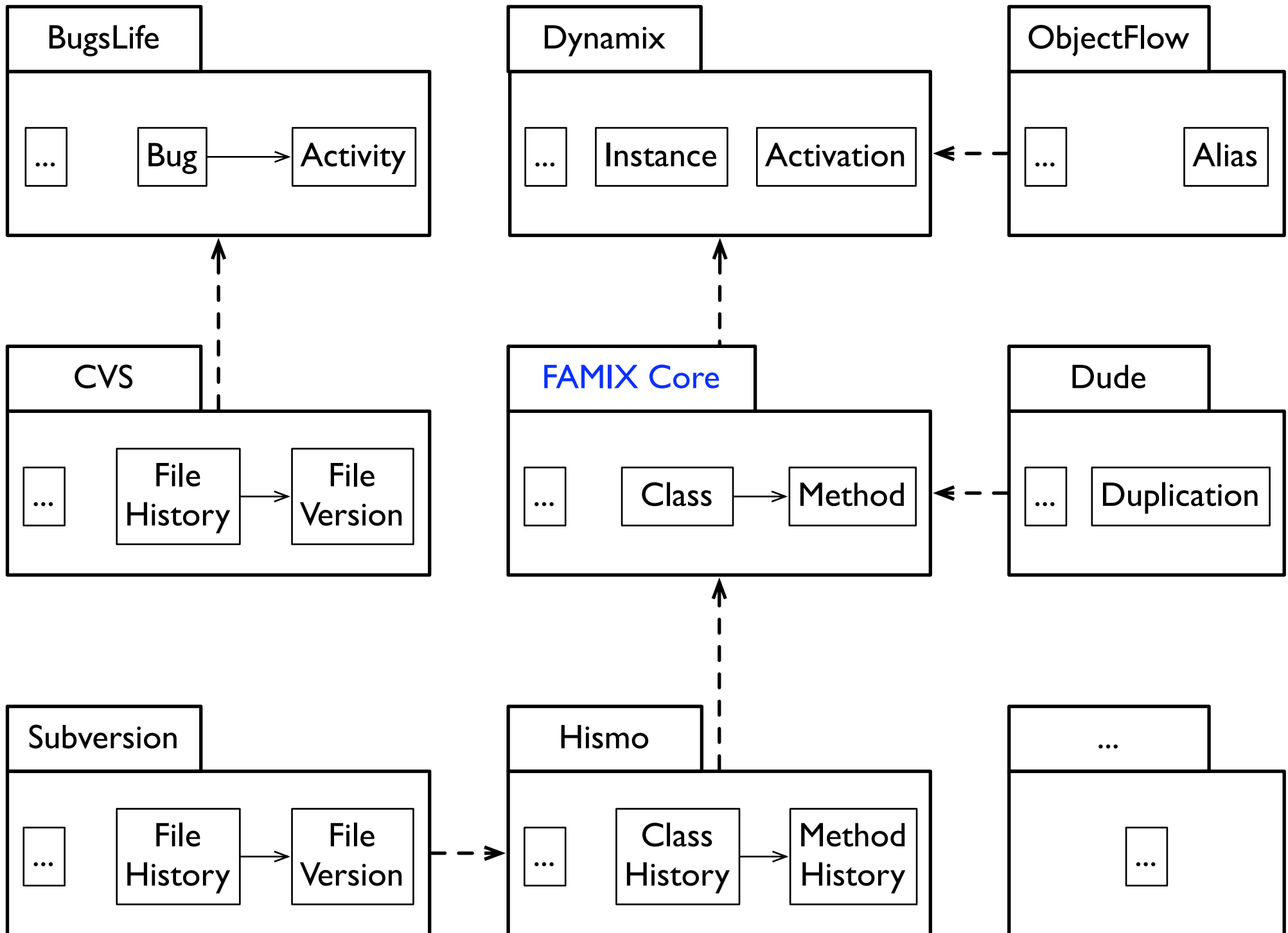




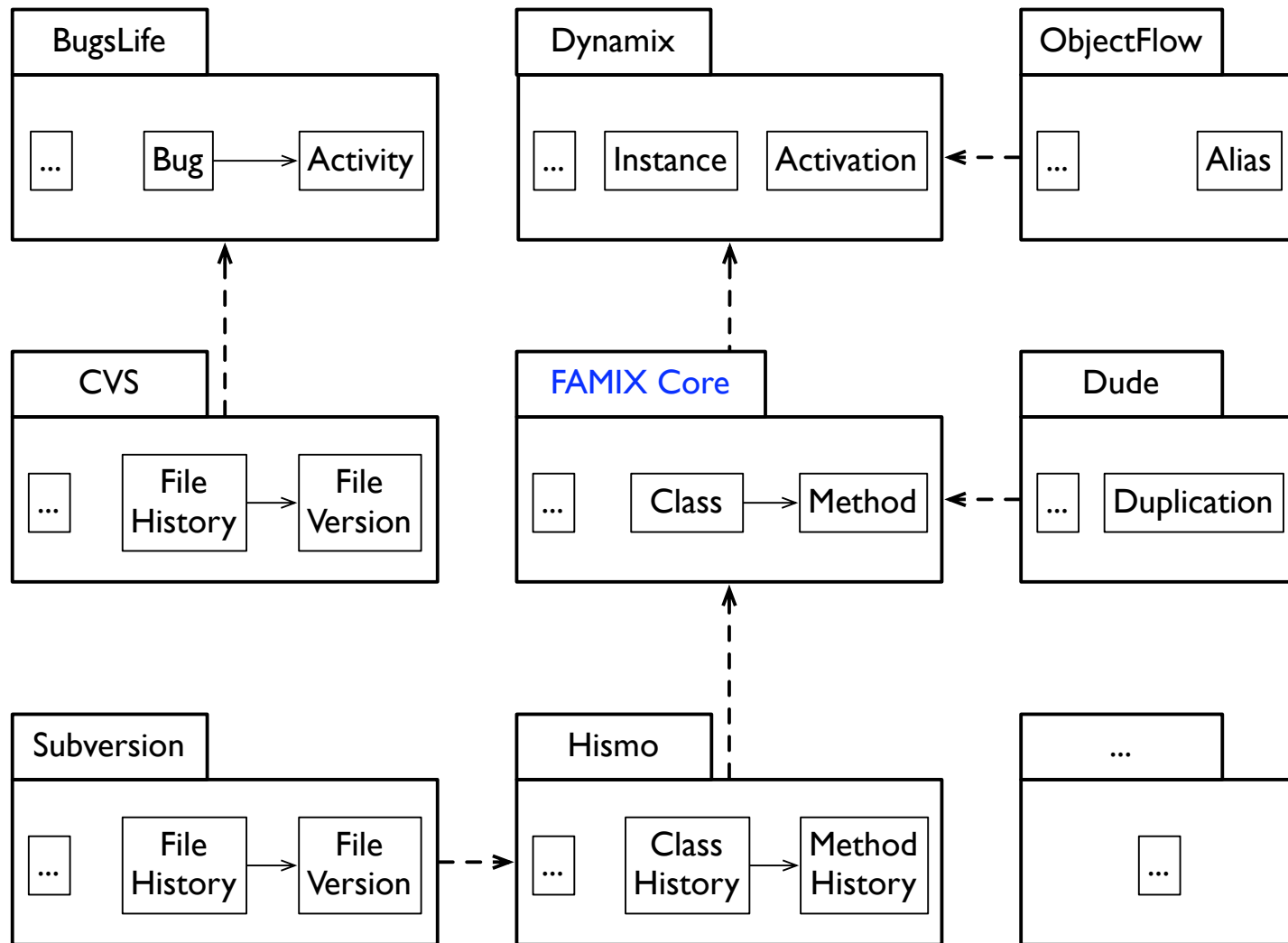


FAMIX is now **more** than a
language independent meta-model

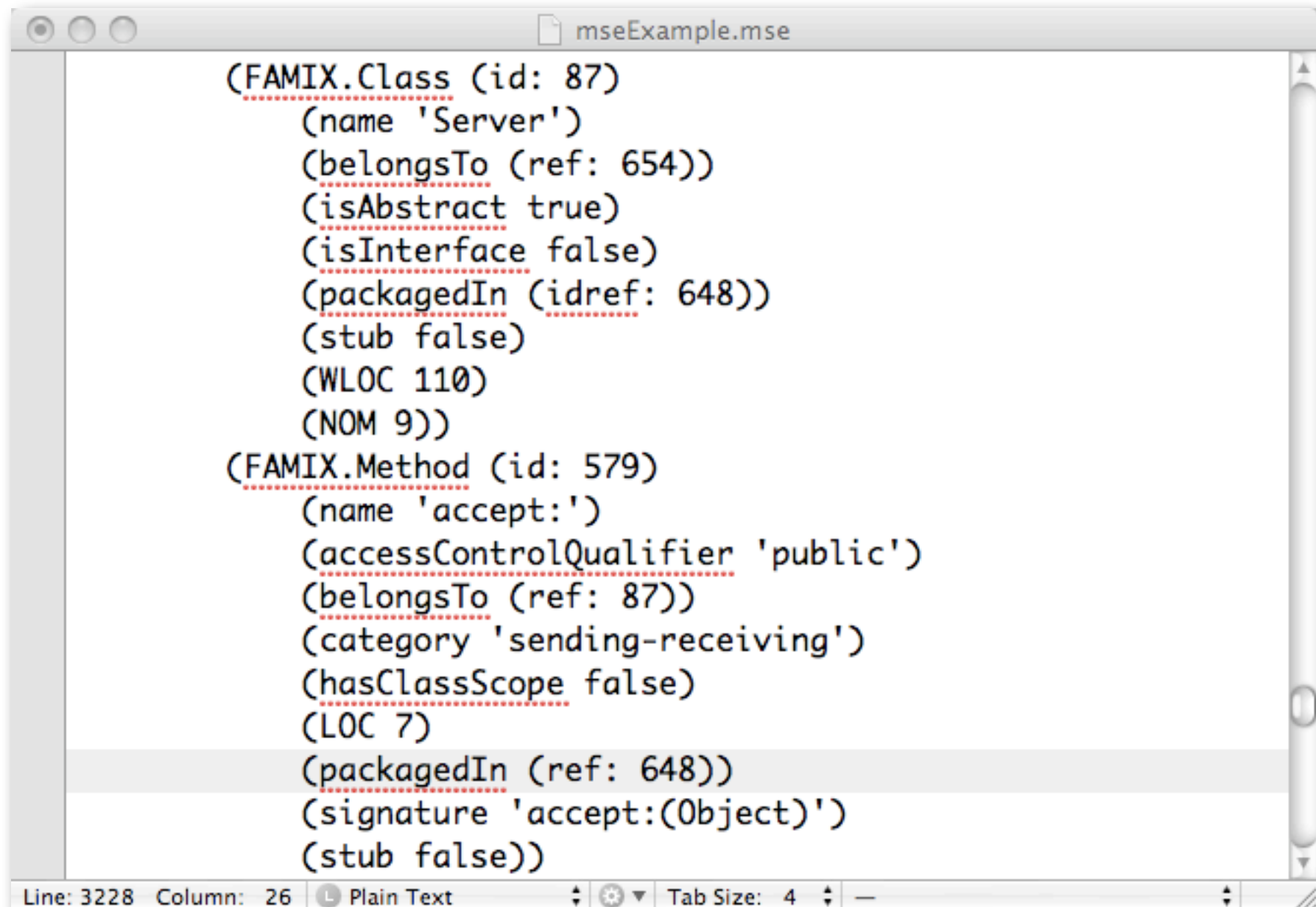




FAMIX



MSE is the exchange file format.

A screenshot of a text editor window titled 'mseExample.mse'. The window displays two entries in the MSE file format. The first entry is a class definition for 'Server' with various attributes like 'name', 'belongsTo', 'isAbstract', 'isInterface', 'packagedIn', 'stub', 'WLOC', and 'NOM'. The second entry is a method definition for 'accept:' with attributes like 'name', 'accessControlQualifier', 'belongsTo', 'category', 'hasClassScope', 'LOC', 'packagedIn', 'signature', and 'stub'. The text is color-coded with red for keywords and blue for values. The editor's status bar at the bottom shows 'Line: 3228 Column: 26', 'Plain Text', and 'Tab Size: 4'.

```
(FAMIX.Class (id: 87)
  (name 'Server')
  (belongsTo (ref: 654))
  (isAbstract true)
  (isInterface false)
  (packagedIn (idref: 648))
  (stub false)
  (WLOC 110)
  (NOM 9))
(FAMIX.Method (id: 579)
  (name 'accept:')
  (accessControlQualifier 'public')
  (belongsTo (ref: 87))
  (category 'sending-receiving')
  (hasClassScope false)
  (LOC 7)
  (packagedIn (ref: 648))
  (signature 'accept:(Object)')
  (stub false))
```

Line: 3228 Column: 26 Plain Text Tab Size: 4

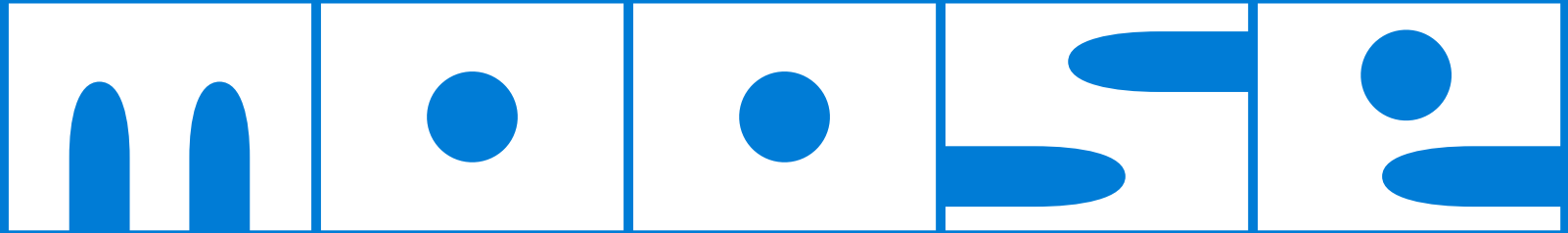
Moose is based on Fame :)

Where to get Fame from?

VisualWorks just download Moose

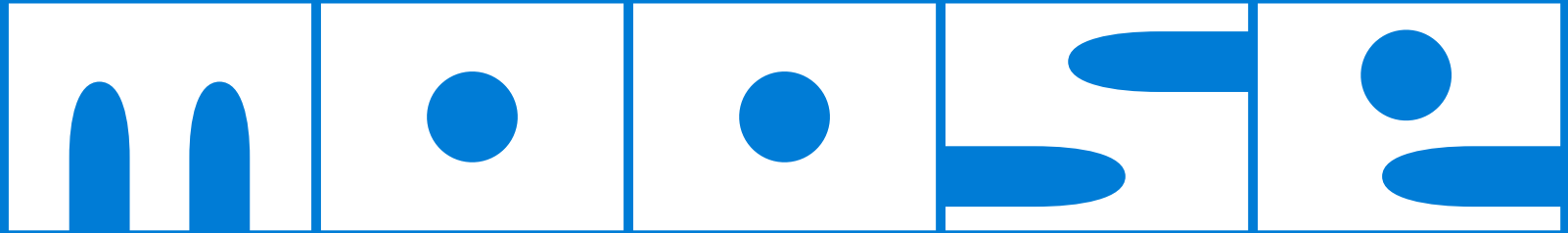
Java <http://smallwiki.unibe.ch/fame/>

Python <http://smallwiki.unibe.ch/fame/>



an analysis tool

a platform for modeling



an analysis tool

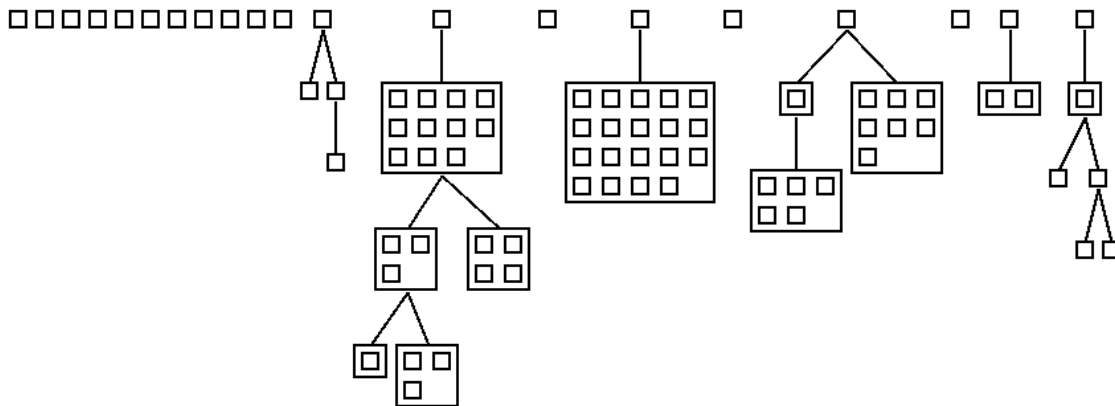
a platform for modeling

a platform for visualization

Mondrian is an engine for scripting graph visualizations.

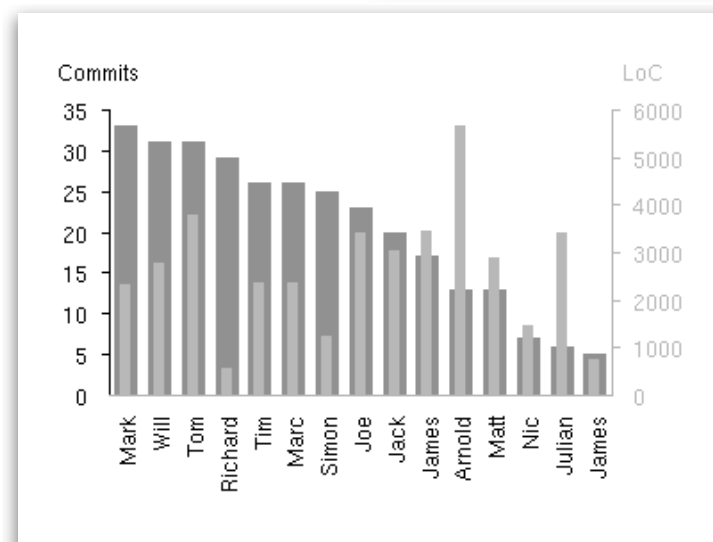
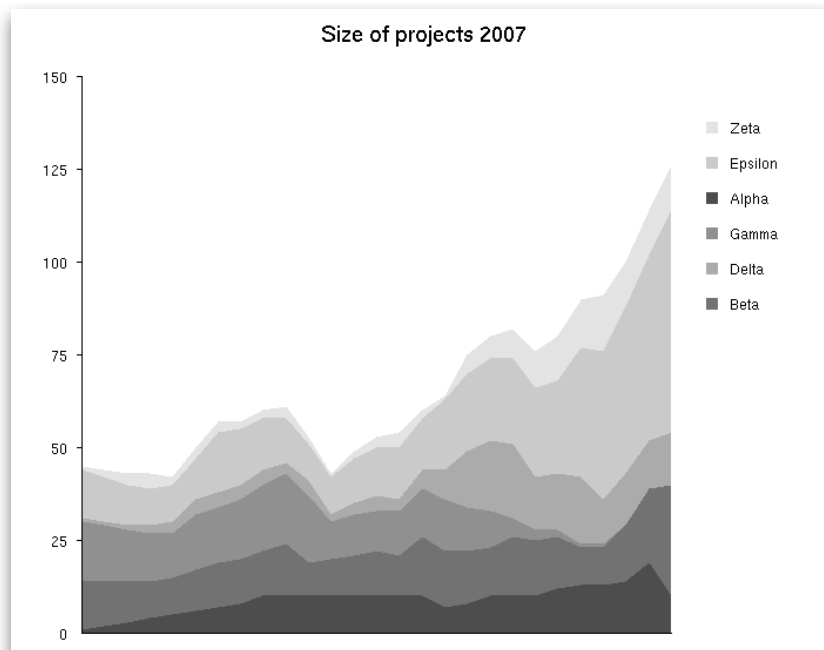
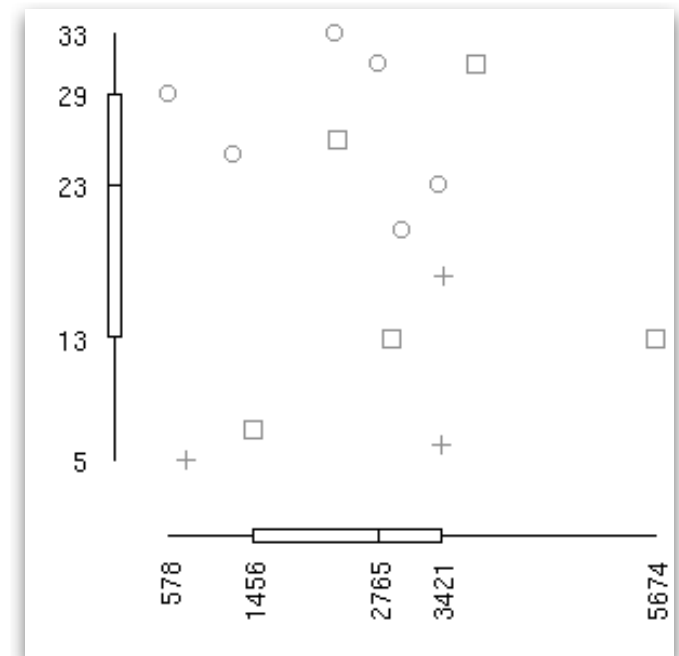
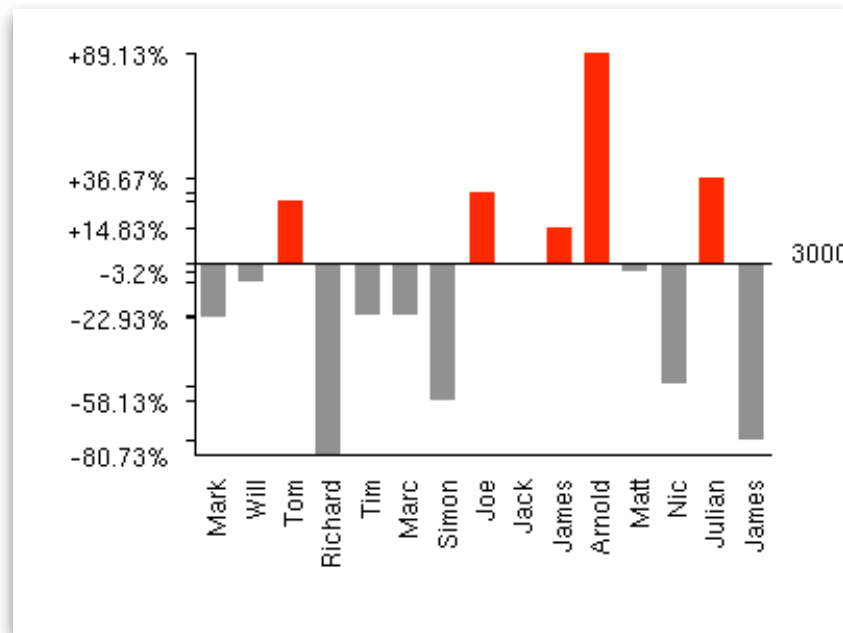
Meyer et al 2006

```
view := ViewRenderer new.  
view nodes: classes forEach: [:each |  
    view nodes: each methods.  
    view GridLayout].  
view edgesFrom: #superclass.  
view treeLayout.  
view open.
```



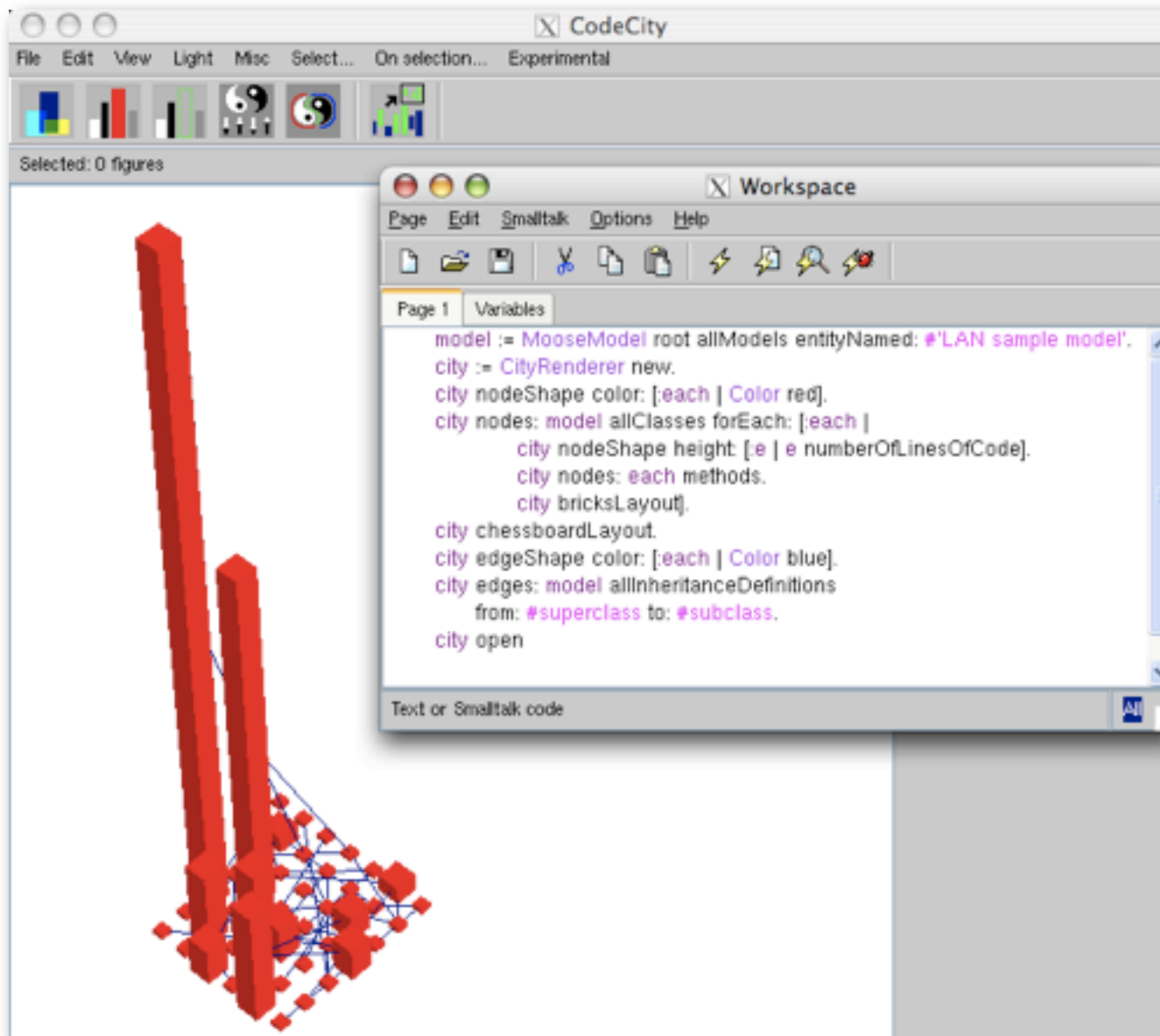
EyeSee is an engine for scripting charts.

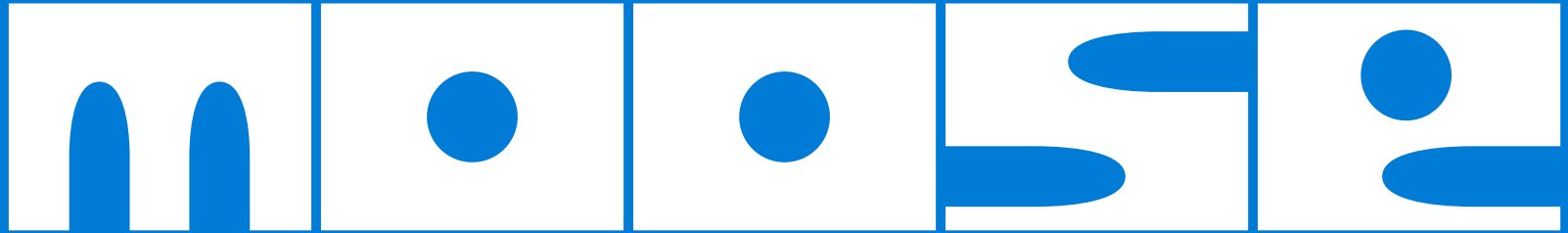
Junker, Hofstetter 2007



CodeCity is an engine for 3D visualizations.

Wettel, Lanza, 2007

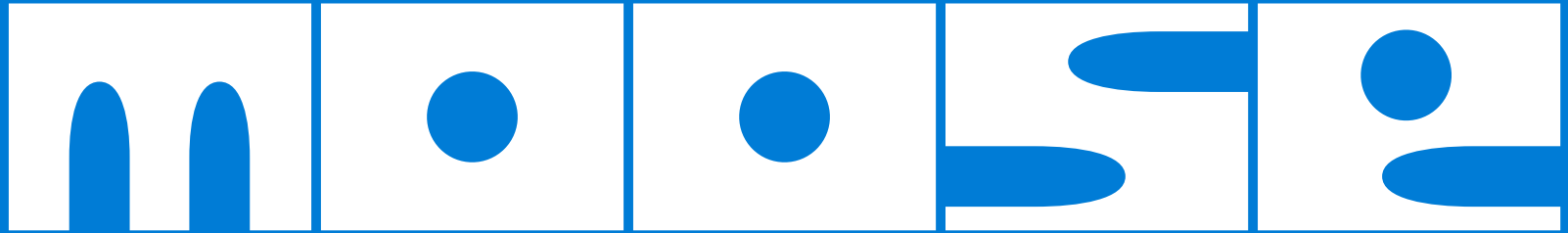




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Repository

FAMIX
Core

Meta

UI

Mondrian

EyeSee





FAMIX
Core

Meta

UI

Mondrian

EyeSee



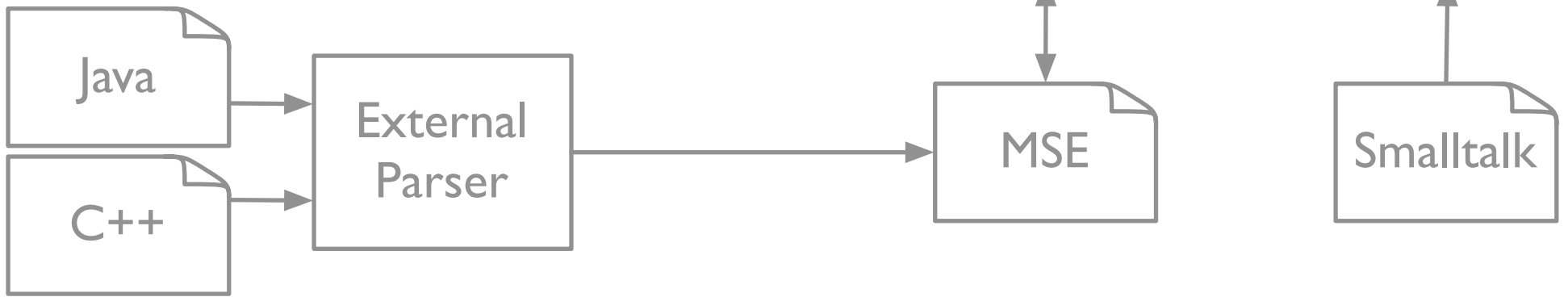
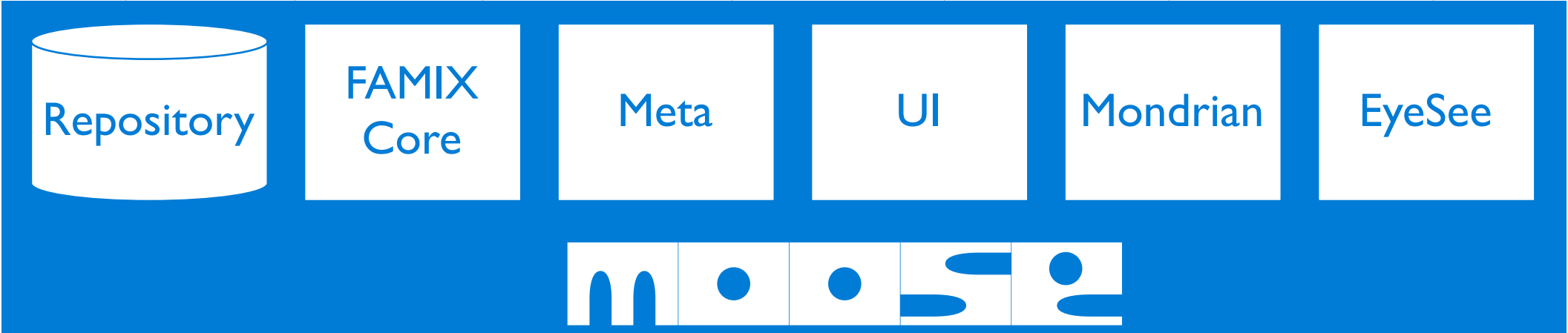
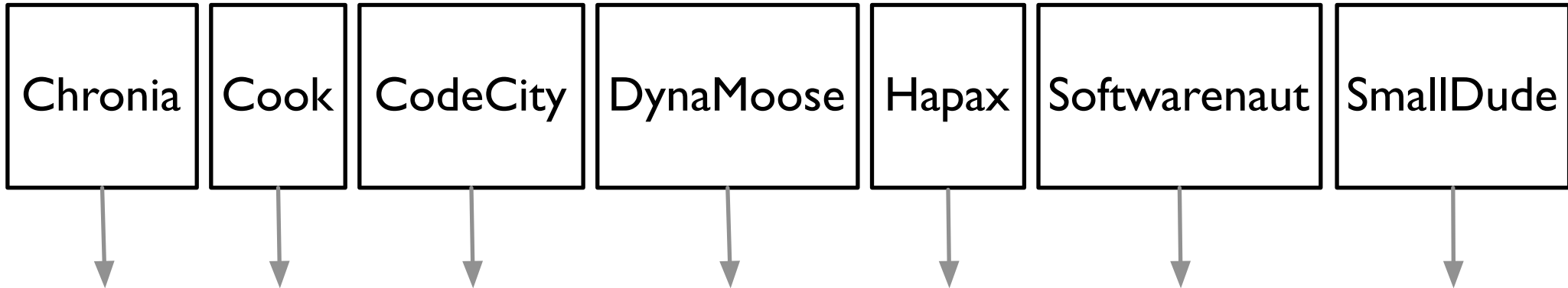
Java

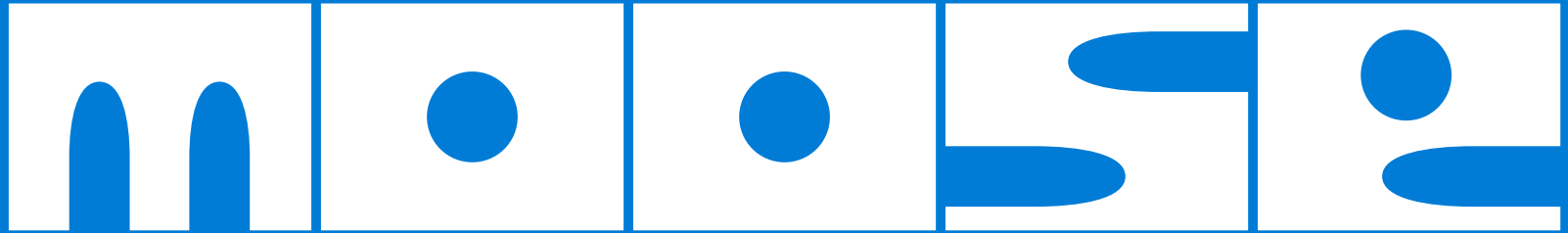
C++

External
Parser

MSE

Smalltalk





an analysis tool

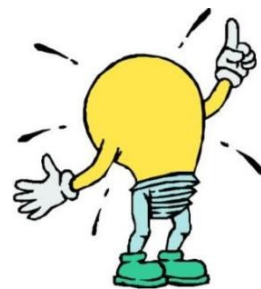
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Rapid Experimentation

An Idea

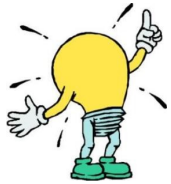


5mins



Results

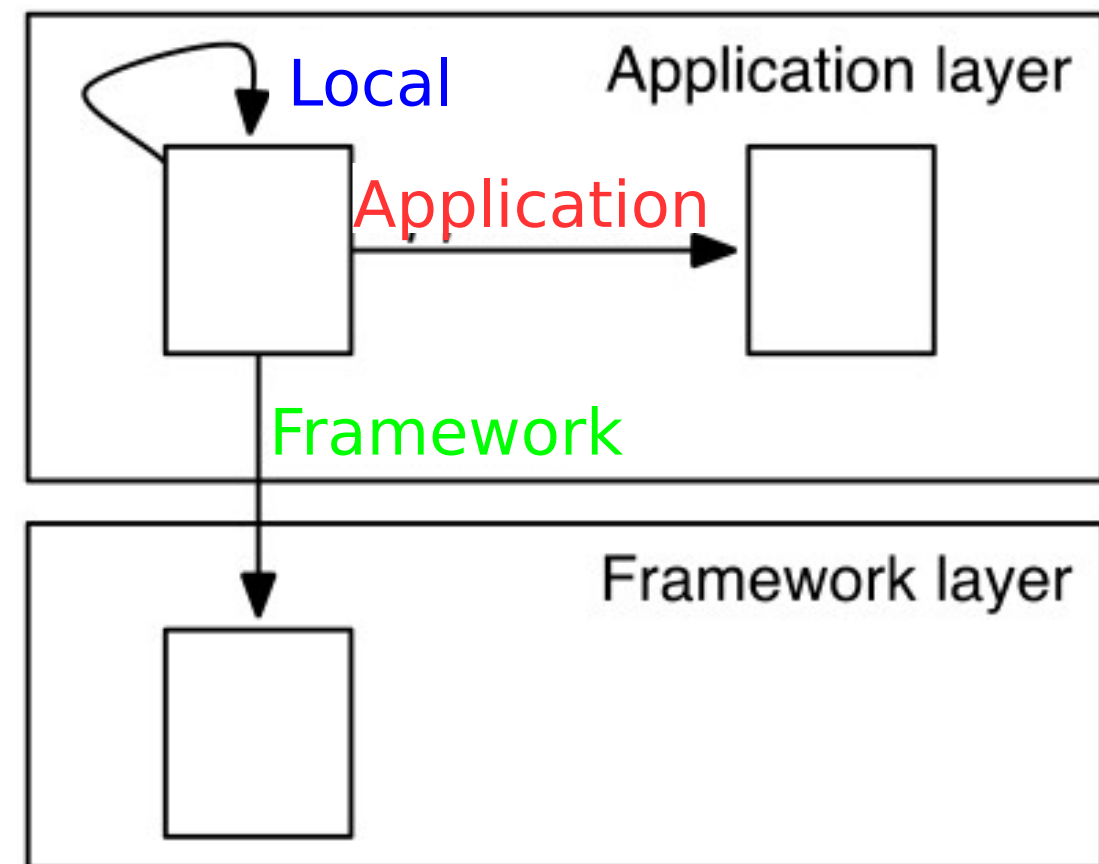
Package Cohesion and Coupling



Hypothesis: Packages developed on top of frameworks are less cohesive

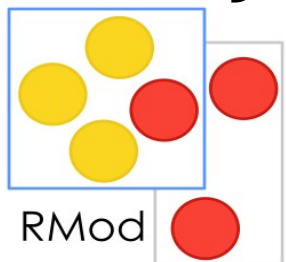
- 3 types of dependencies of classes

- Local to package
- Same Application package
- Framework Package

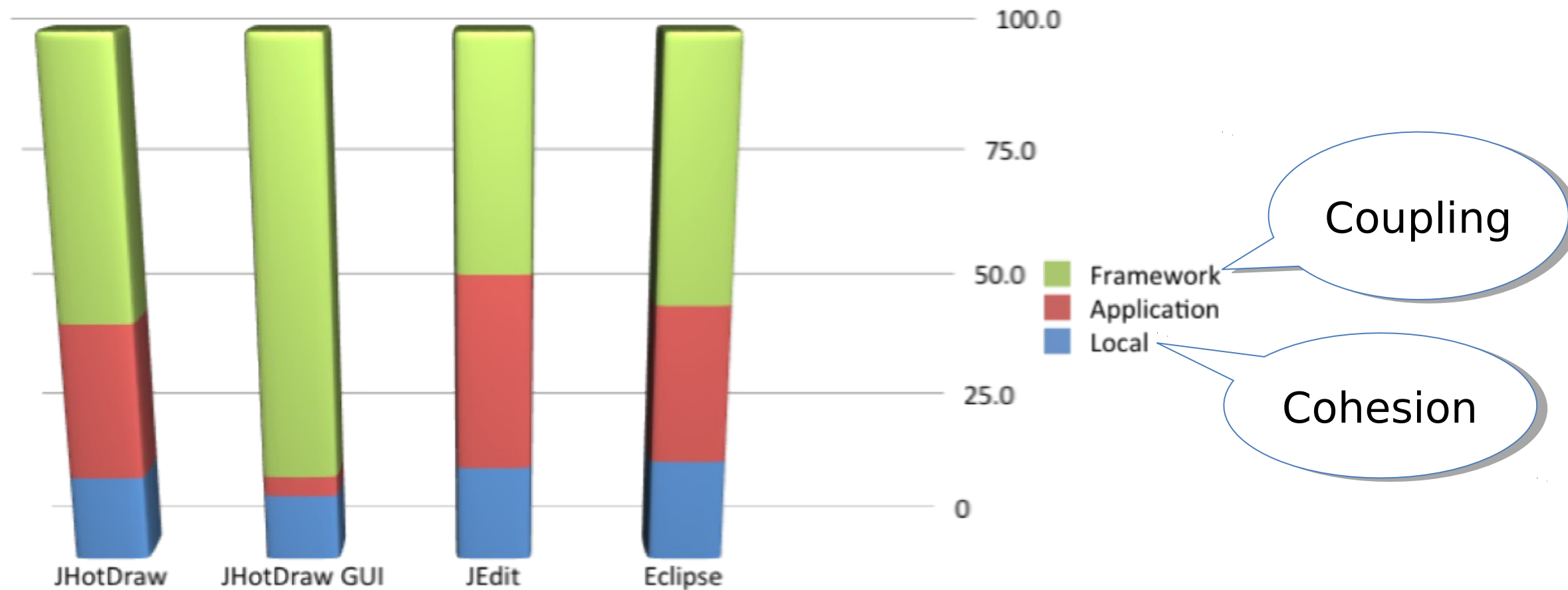


Load into Moose:

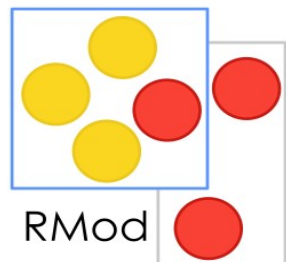
- JHotDraw , Eclipse, JEdit



Results



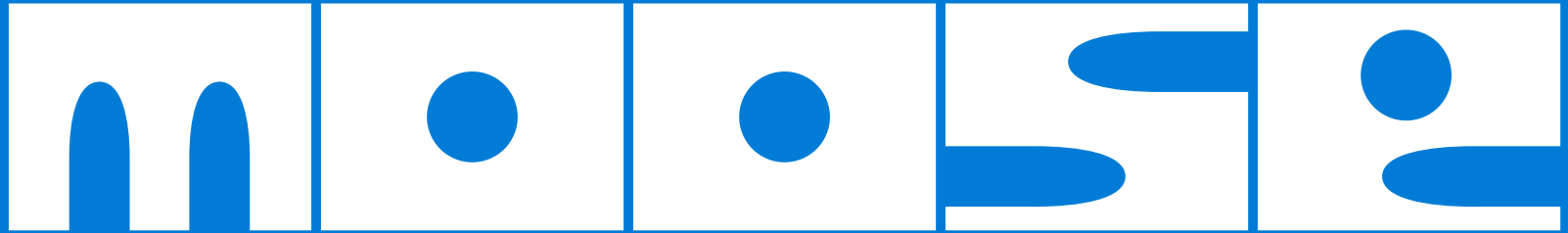
Results validate our hypothesis



Collaborative and practical reverse engineering research with Moose

Tudor Gîrba

www.tudorgirba.com



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Stéphane Ducasse

Tudor Gîrba

Adrian Kuhn

Toon Verwaest

Previous Team

Serge Demeyer

Michele Lanza

Sander Tichelaar

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Gabriela Arevalo

Philipp Bunge

Orla Greevy

Matthias Junker

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Michael Meyer

Sara Sellos

Toon Verwaest

Richard Wettel

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Michael Locher

Michael Meer

Daniel Ratiu

Azadeh Razavizadeh

Daniel Schweizer

Lukas Steiger

Herve Verjus

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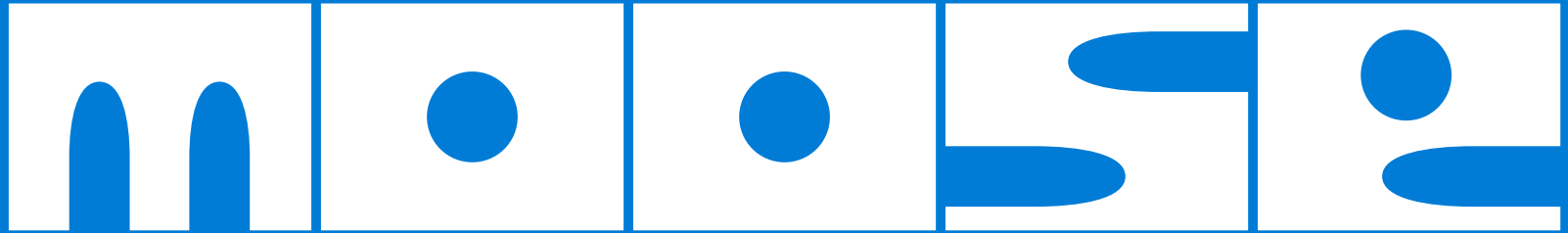
Daniel Ratiu

Azadeh Razavizadeh

Daniel Schweizer

Lukas Steiger

Herve Verjus



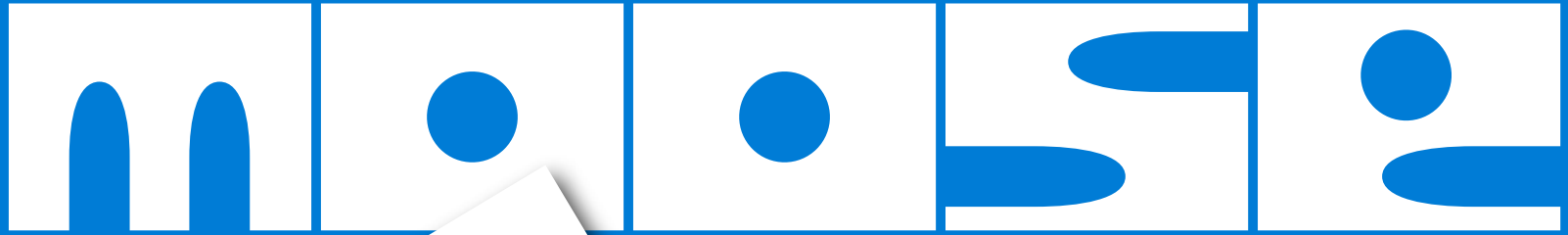
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an idea

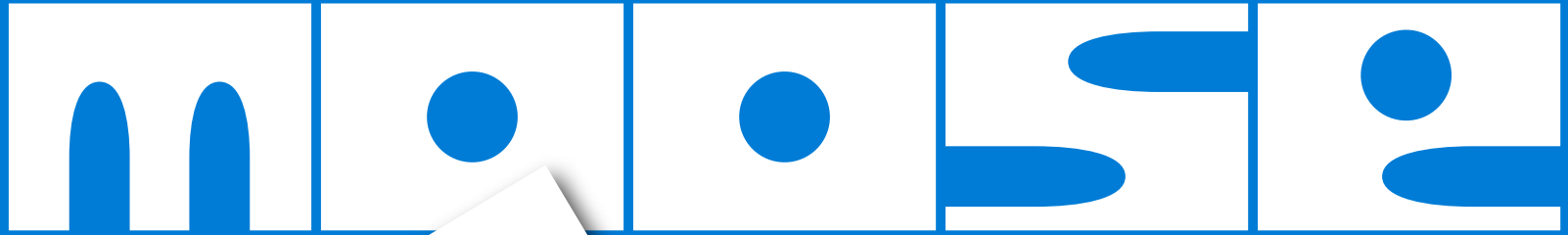
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analysis technology since 1997

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Welcome to Moose!

Moose is a collaborative research platform for Software Analysis and Information Visualization.

Moose was first conceived in 1997 at [Software Composition Group](#). Since then the community has grown and spread to several universities. Research with Moose has led to several scientific publications.

Moose is supported by the [Moose Association](#).

You are welcome to visit our site for more information.

Highlight



News

2008-02-02 [Moose and Famix Dojo summary](#)

The first Dojo of 2008 ended yesterday. Several things came out of it: - Yellow Submarine can now ...

2008-01-11 [Moose and Famix Dojo \(Jan 30-31\)](#)

Between January 30-31 we organize a Dojo. The Dojo is an event where you can ...

Available as

login to explore software systems. Code ...

Meyer received the IAM

2006 for his Masters in Engineering Inter...

2007-11-01 [Moose and Eclipse](#)

Johan Brichau has built a first version of a bridge between Moose and Eclipse. This is built on his ...

Features

Extensible platform.

[FAMIX](#) meta-model.

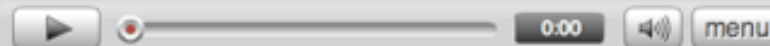
[MSE File Format](#) for exchanging data.

[Mondrian](#) and [EyeSee](#) visualization engines.

Many analysis [Tools](#) available.

Importers for Java, C++, Python and Smalltalk.

Direct access to CVS.



This video demos the basic scripting in Mondrian. [Learn more ...](#)

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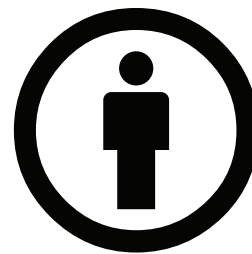
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