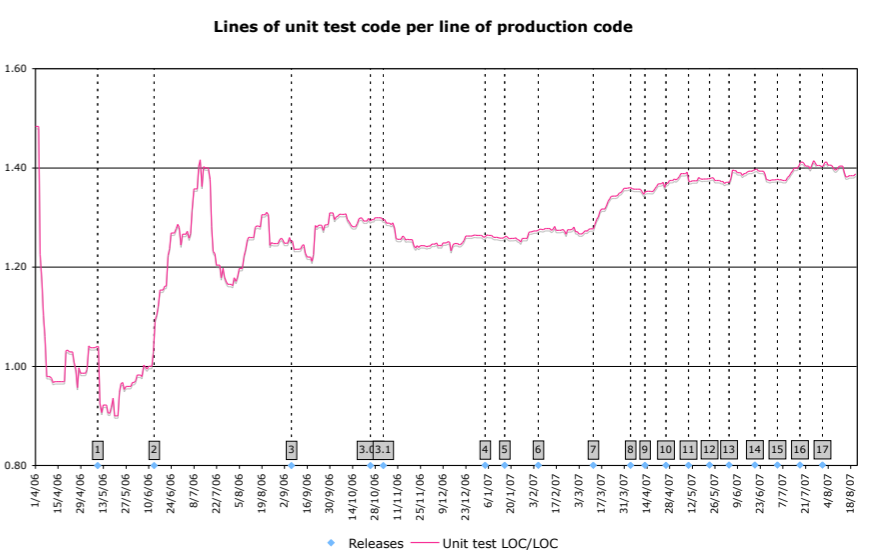
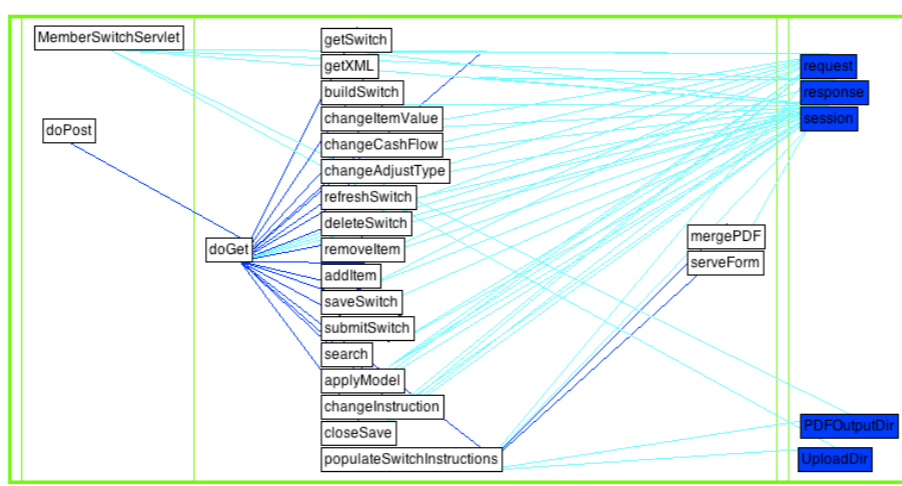
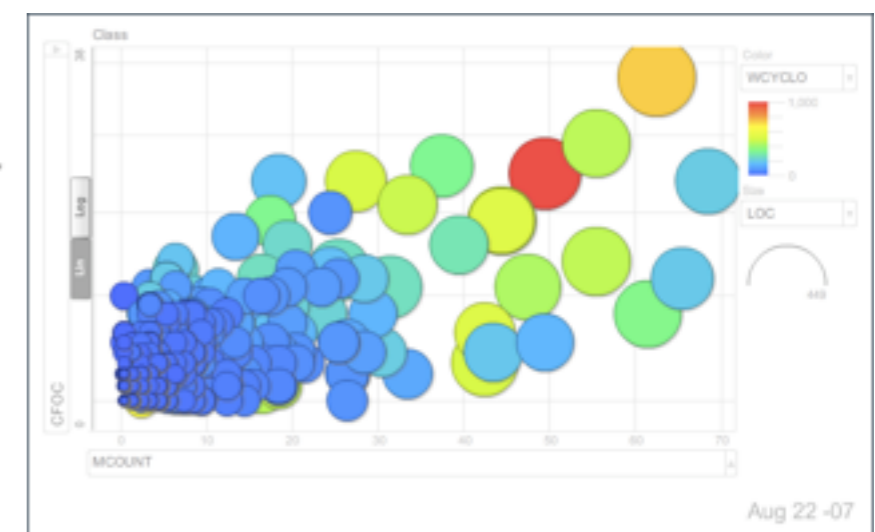
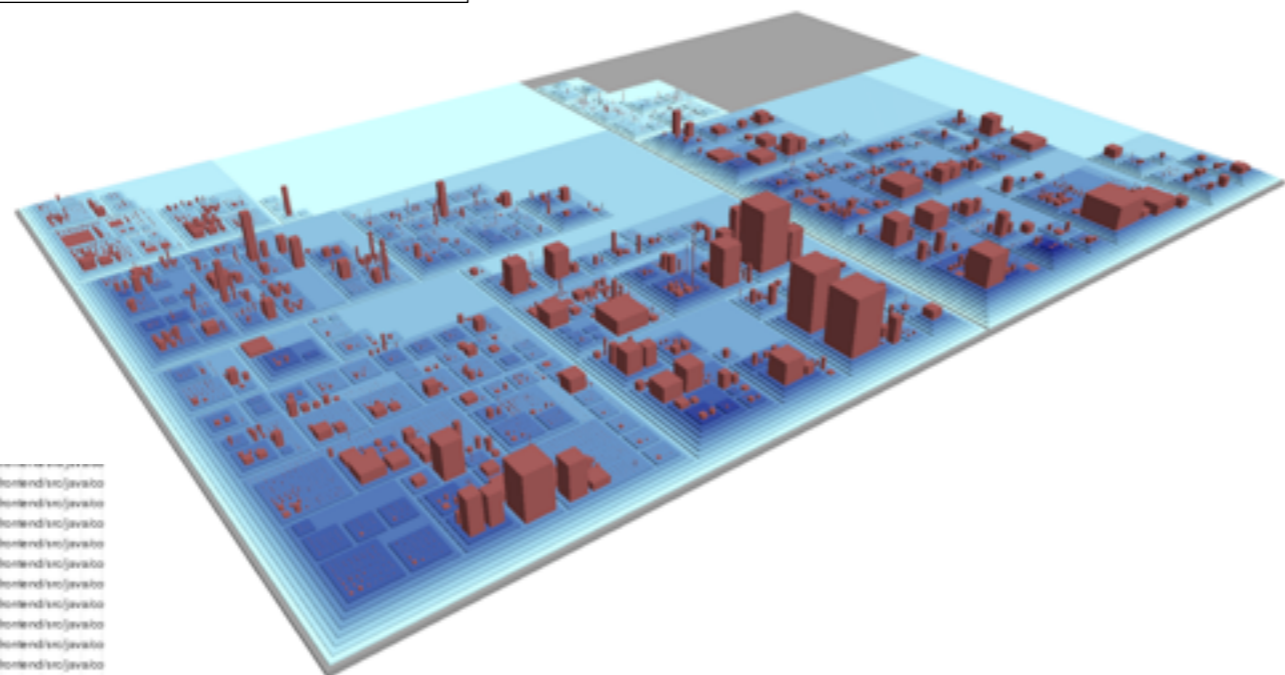
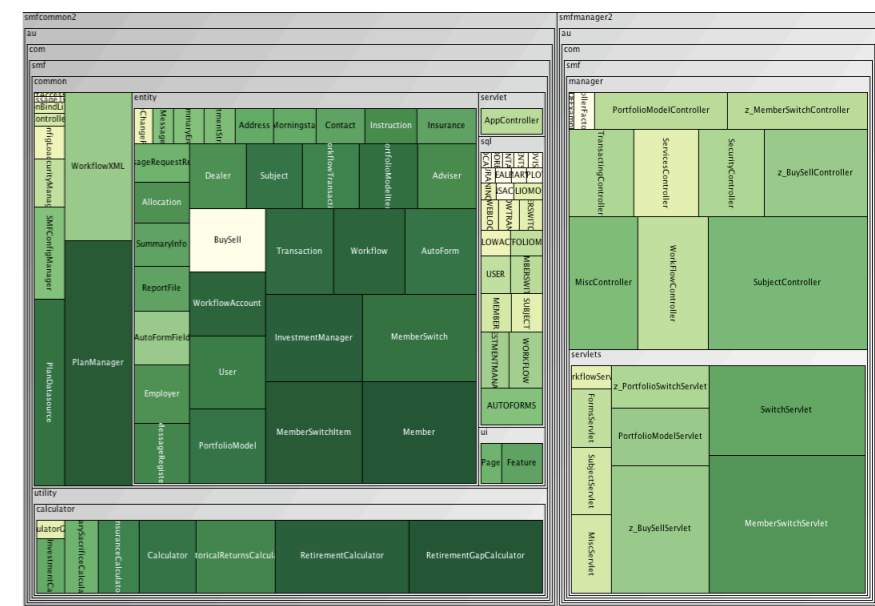


BooleanExpressionComplexity ClassDataAbstractionCoupling ClassFanOutComplexity CyclomaticComplexity FileLength MethodLength NestedDepth AnonInnerLength ParameterNumber MissingSwitchDefault TreeWalker

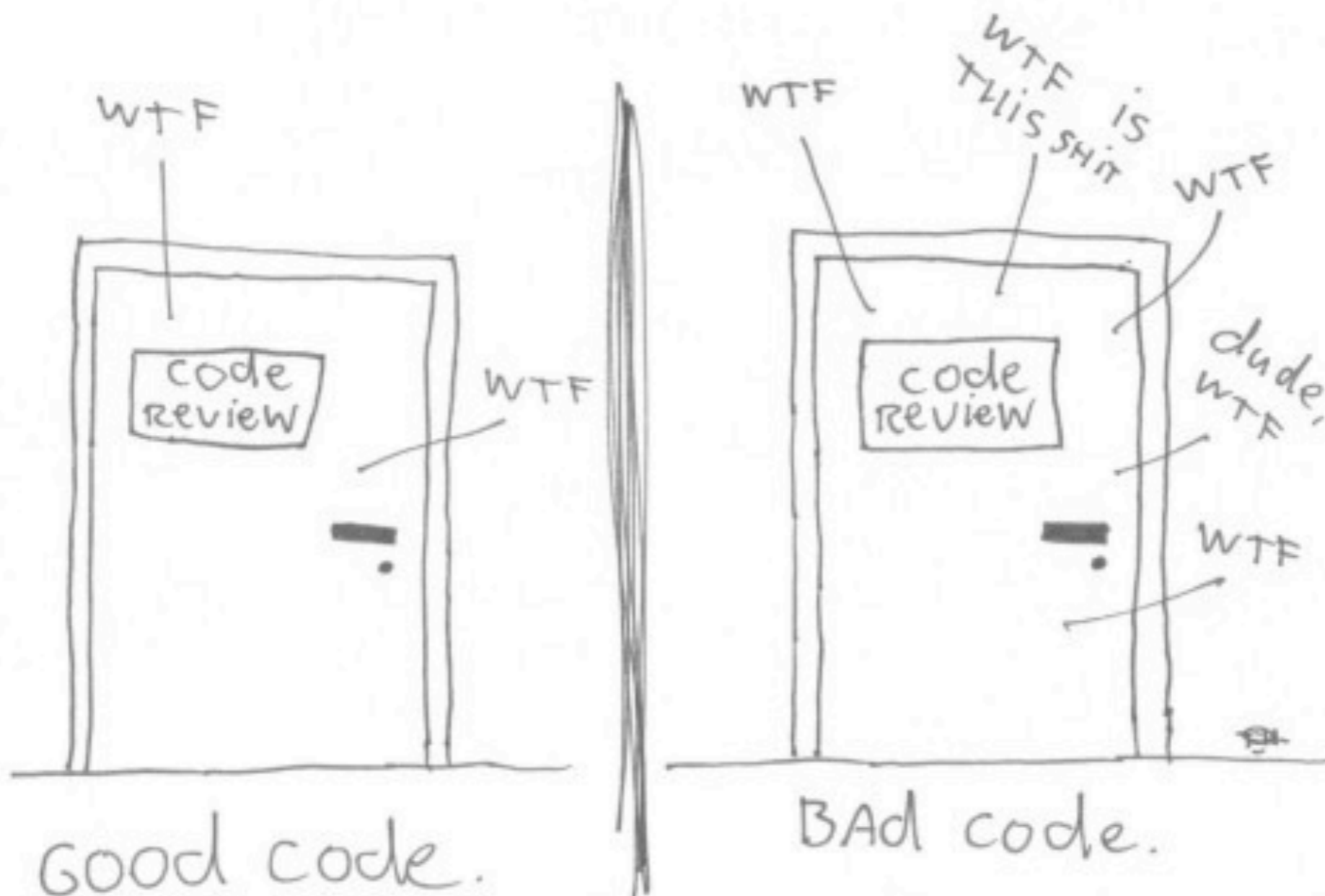


# Software Quality – you know it when you see it

Erik Doernenburg  
ThoughtWorks

@erikdoe // erik.doernenburg.com

The ONLY VALID MEASUREMENT  
OF CODE QUALITY: WTFs/MINUTE



(c) 2008 Focus Shift/OSNews/Thom Holwerda - <http://www.osnews.com/comics>

# Software Quality

## External perspective

- Is the software of value to its users?

## Internal perspective

- How appropriate is the design?
- How easy is it to understand and extend?
- How maintainable is the software?





# The 1000ft view



- Is at the “right” level
- Aggregates data and metrics
- Utilises visualisation techniques
- Makes every pixel count

# Metrics

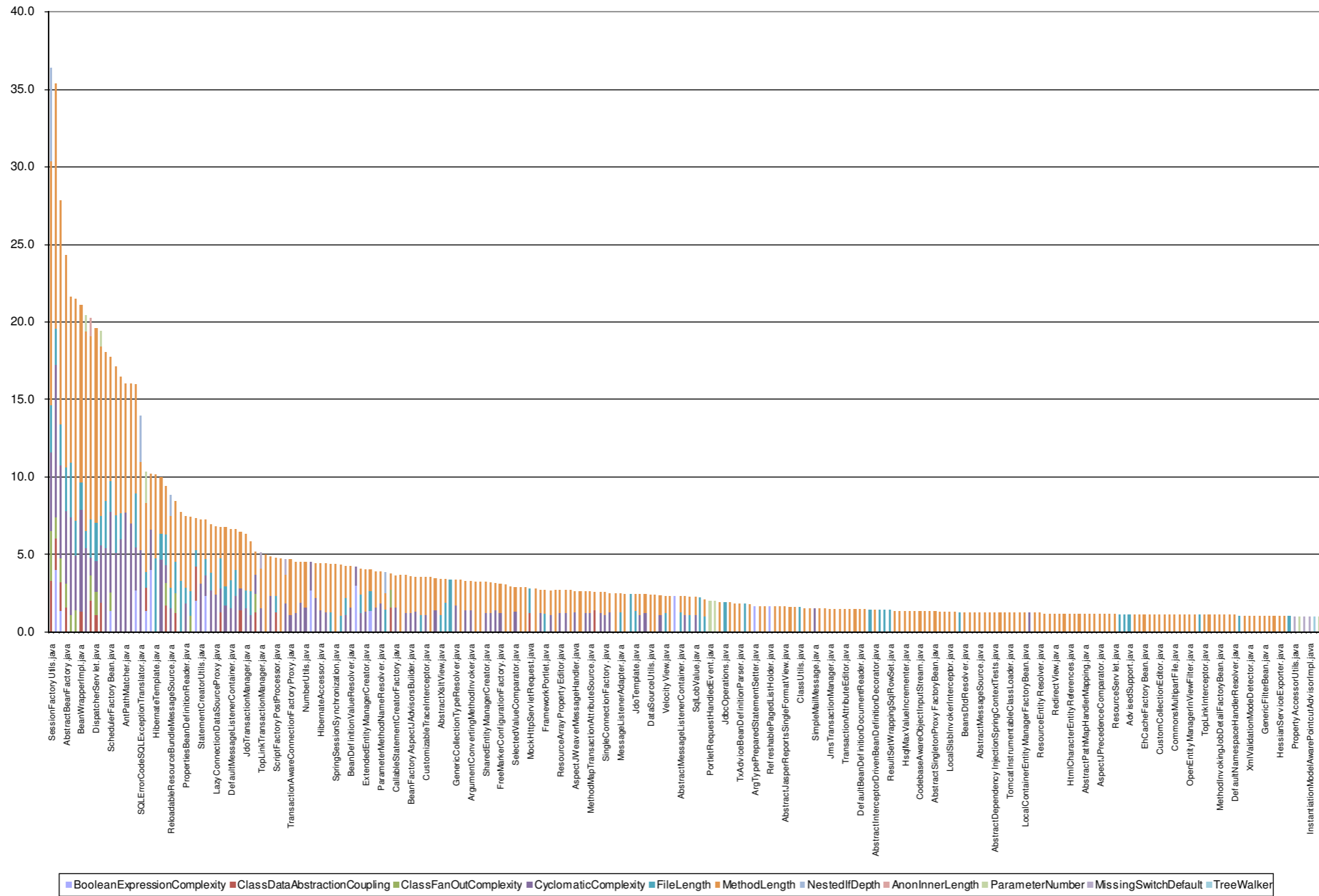
- lines of code
- method length
- class size
- cyclomatic complexity
- weighted methods per class
- coupling between (object) classes



ckjm



# Toxicity chart



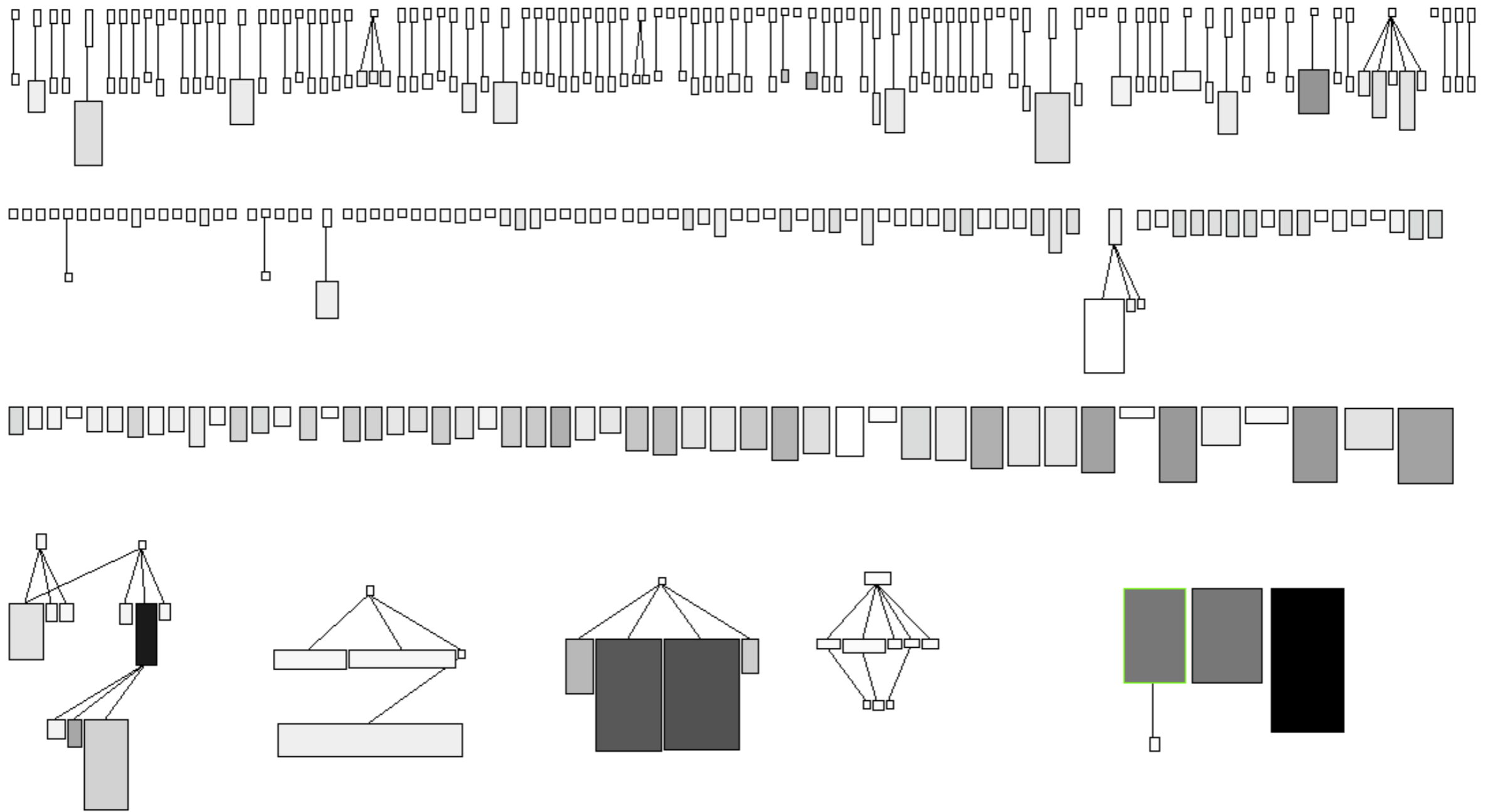
Provides easy to compare overview of quality  
Developed by ThoughtWorks using Excel







# System complexity view

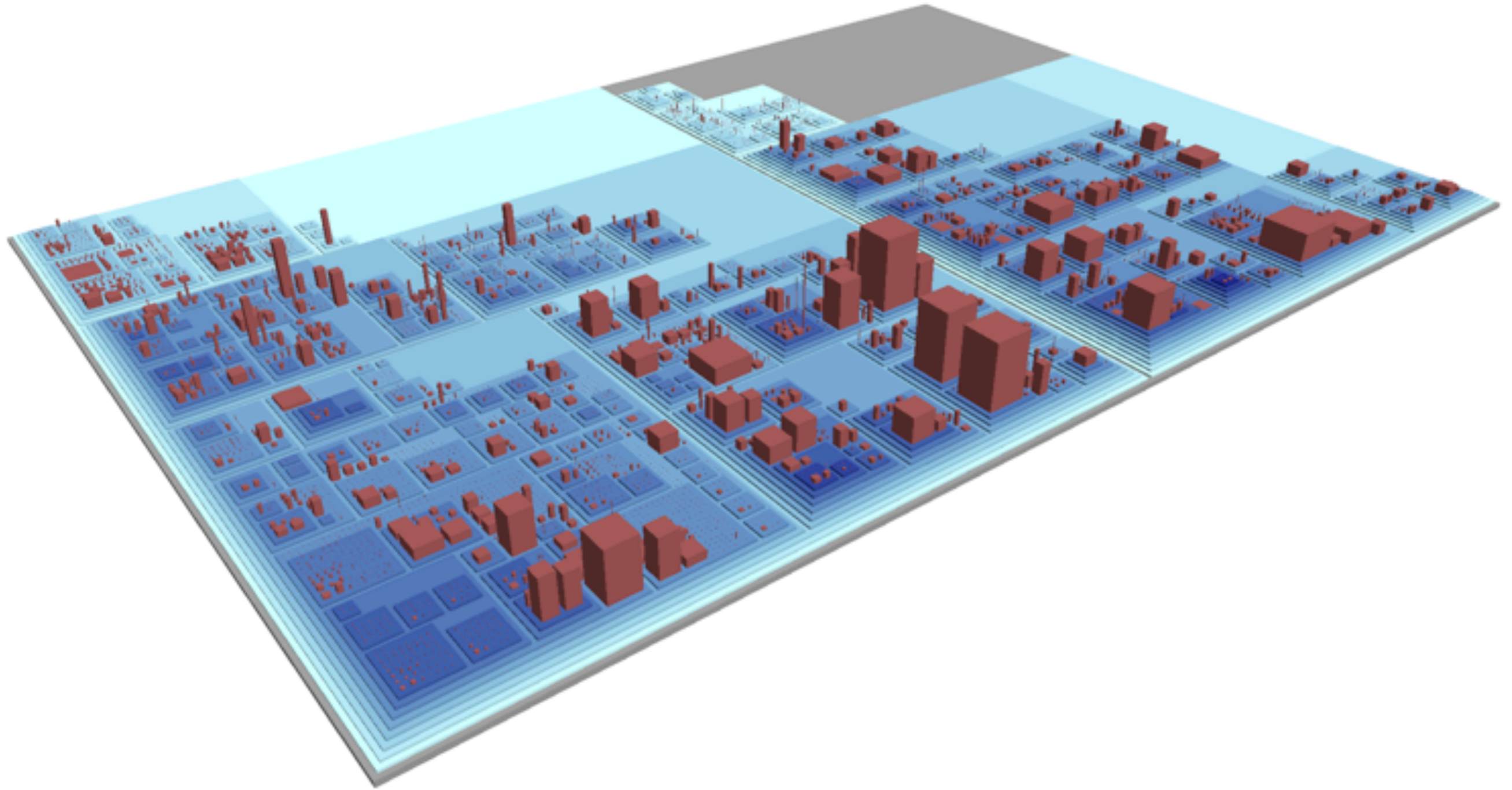


Part of Moose Technology

Polymetric view of class hierarchy

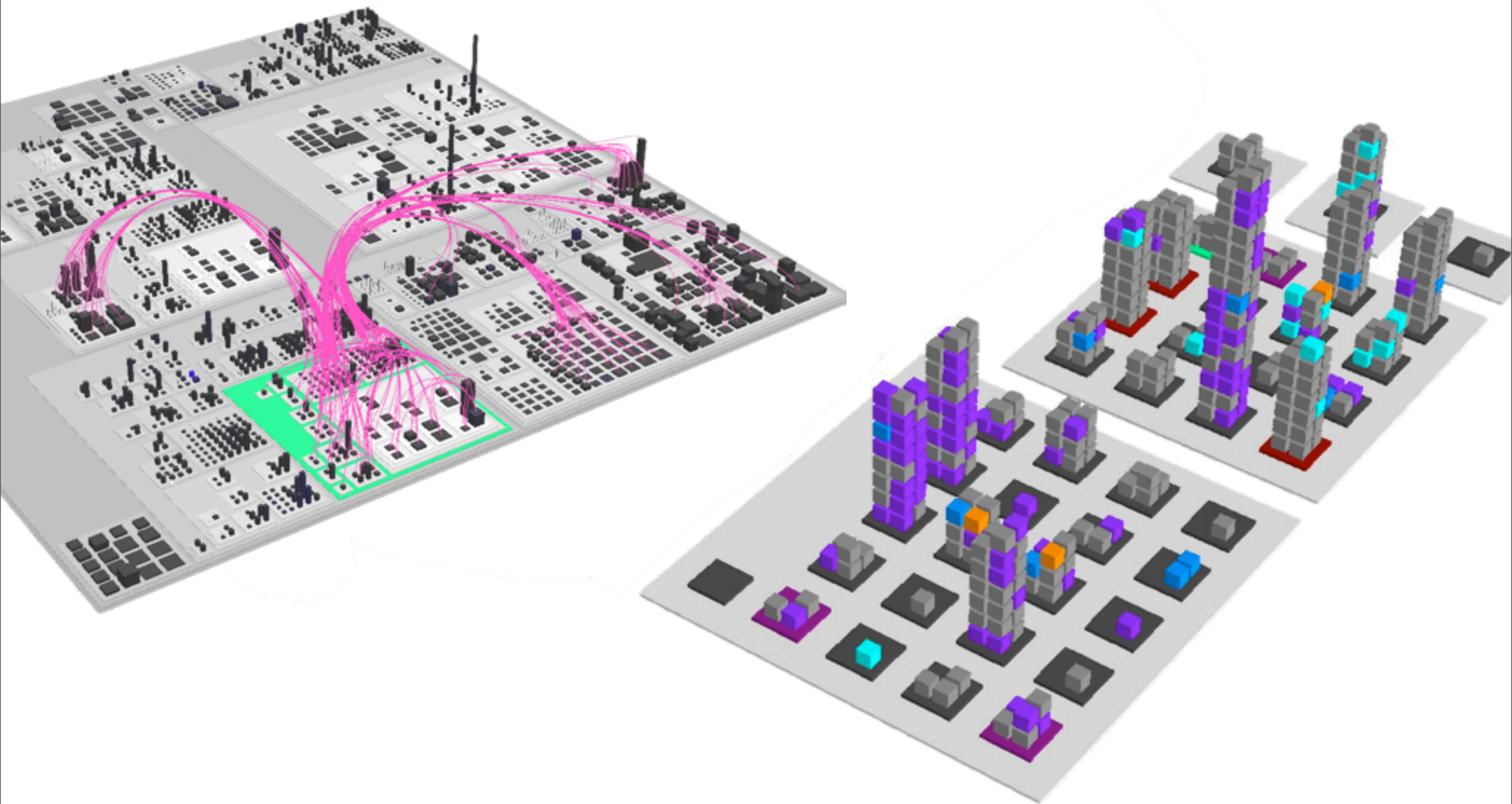


# CodeCity



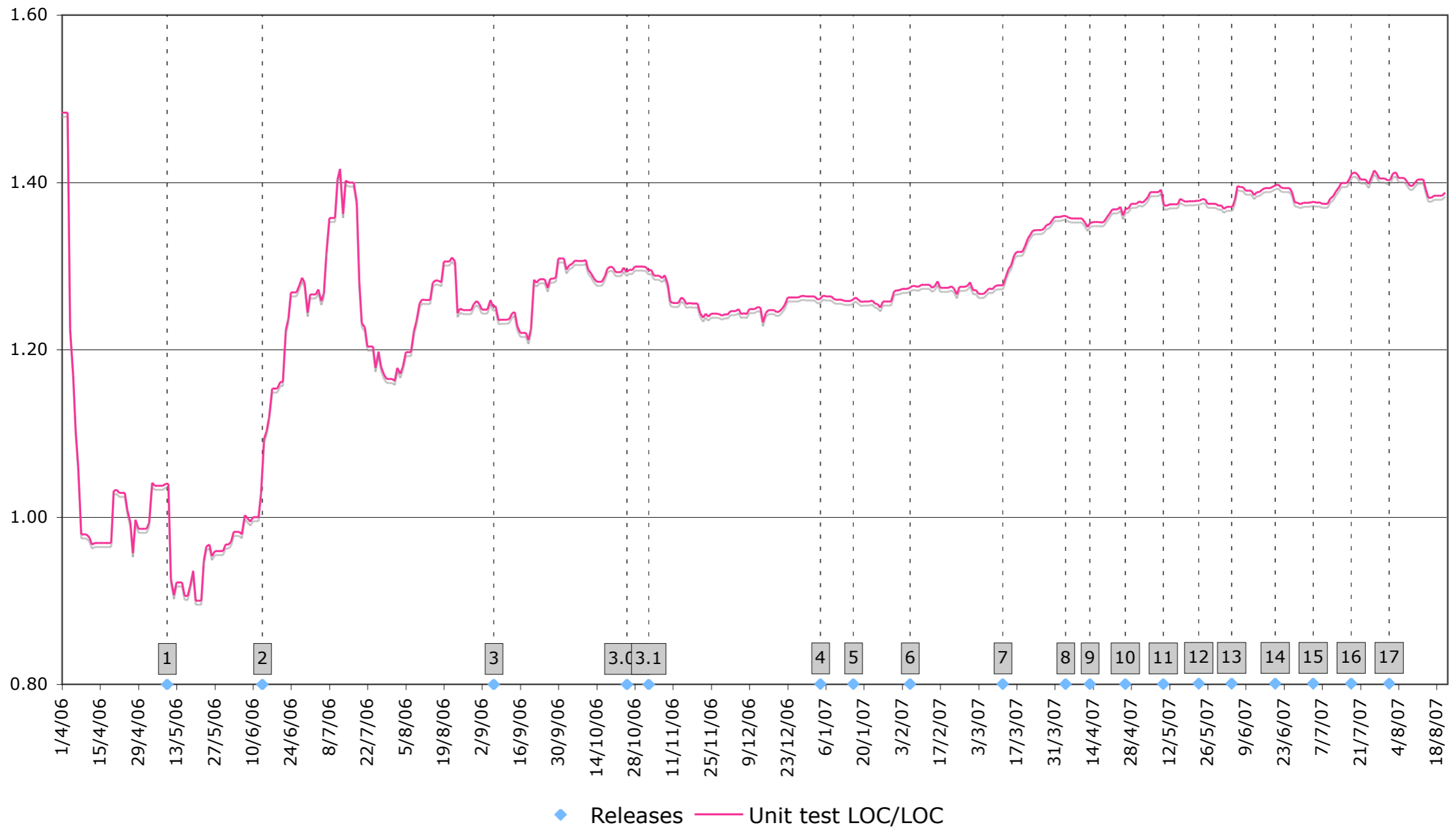
Also part of Moose Technology  
Polymetric views in 3D and more

# CodeCity continued



⚠ Might need a license for VisualWorks Smalltalk

# Test to code ratio



Shows the test to code ratio over time  
Created with Unix tools and Excel



# More metrics

- duplication
- check-in counts
- coverage
- testability
- test/code ratio

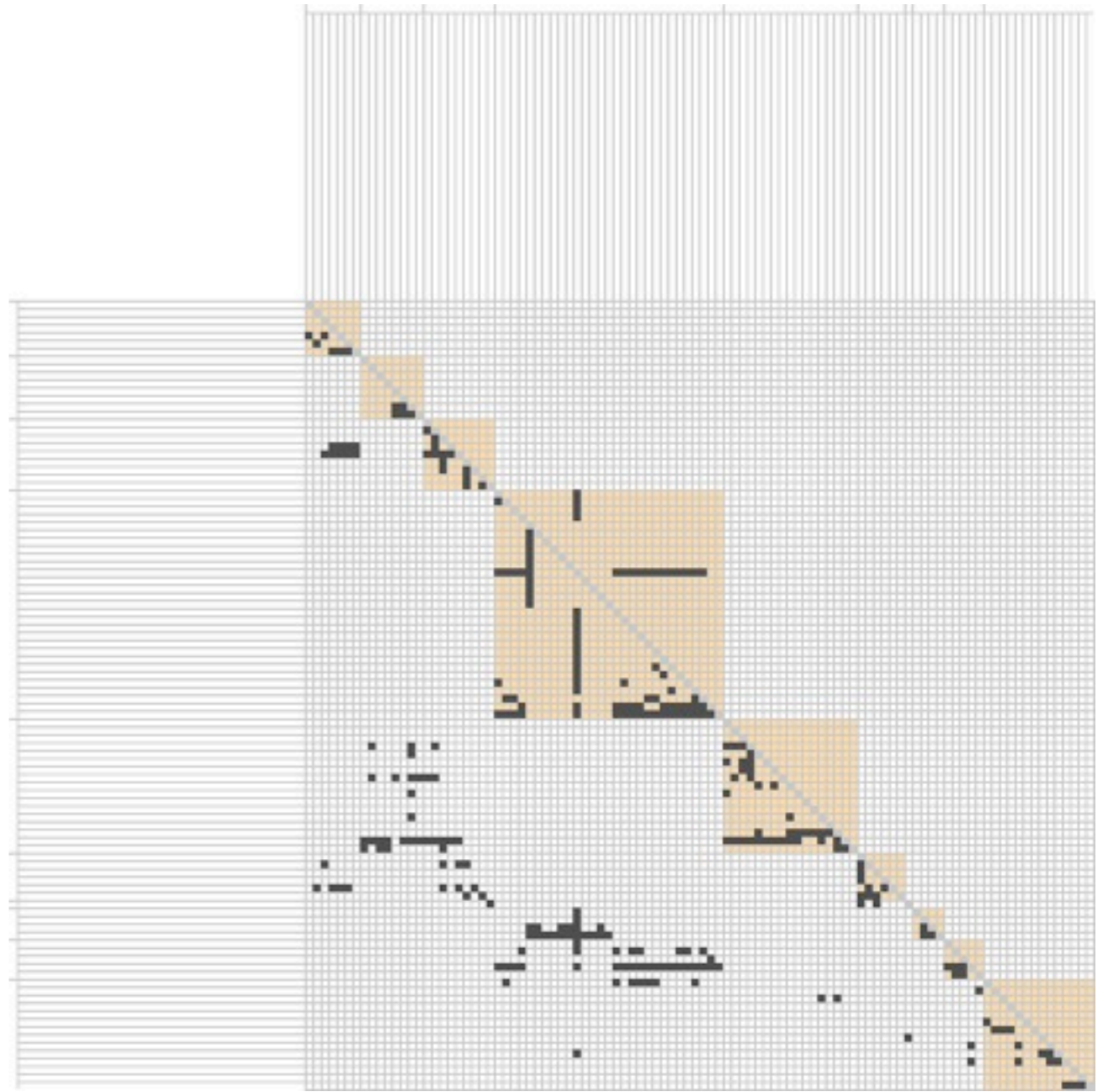


simian

**Testability  
Explorer**

# Dependency Structure Matrix

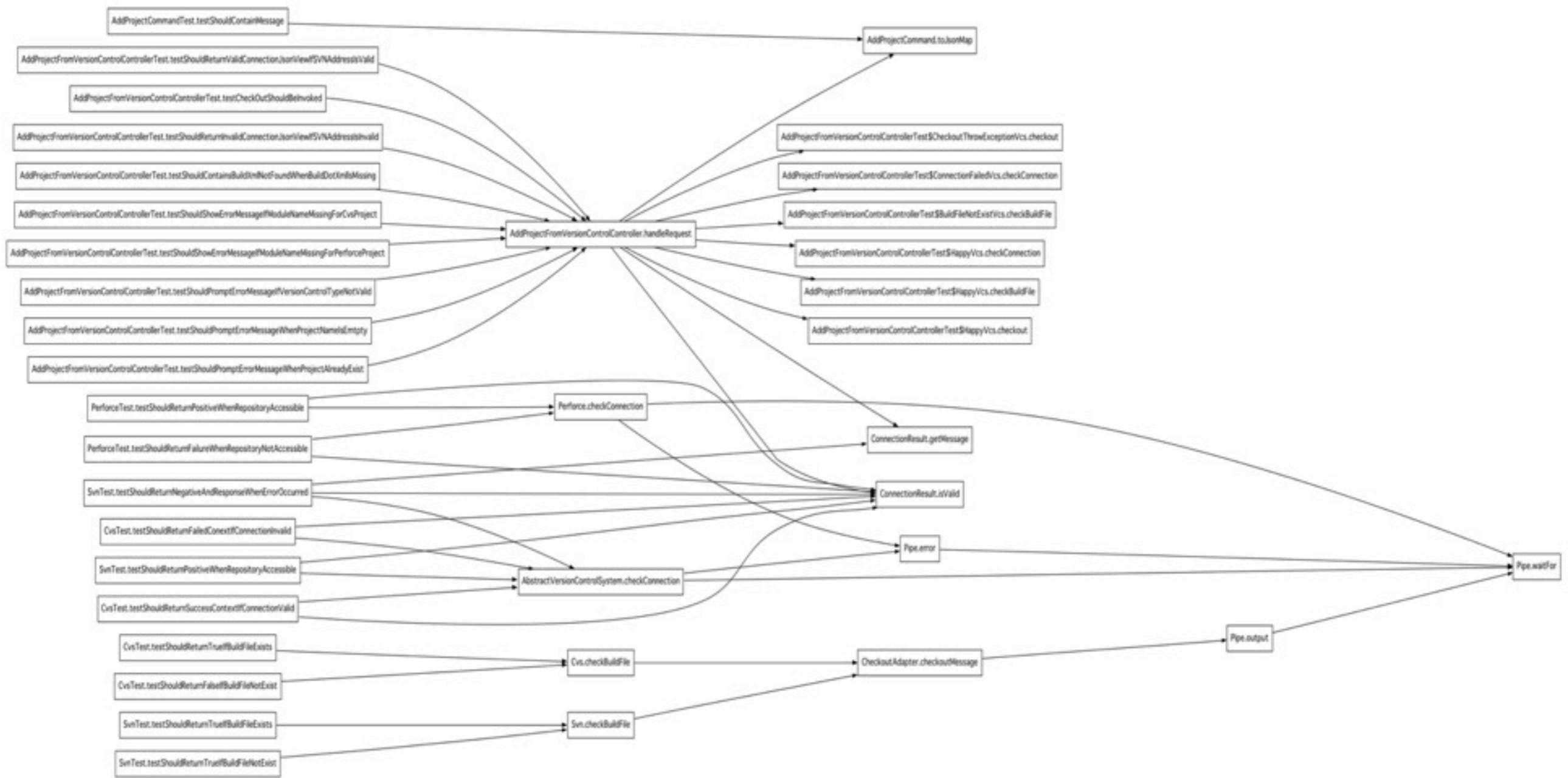
		.beans											.core										
		access	annotation	xml	parsing	support	wiring	serviceloader	config	support	annotation	factory	beans	propertyeditors	style	task	enums	type	io	annotation	core	util	
.beans	access																						
	annotation																						
	xml	1																					
	parsing			24																			
	support	2	11	31																			
	wiring		2																				
	serviceloader																						
	config	2	12	30	7	60	1	1															
	support								1														
	annotation																						
	factory	7	8	6	1	75	6	4	60														
	beans	5	12	10	7	54			50	8	2	14											
	propertyeditors									5		19											
.core	style																						
	task																						
	enums																						
	type		3																				
	io	4	18	7	11			2	5			2	7					6					
	annotation		2		2													1					
	core		6	4	10			10				1	17						1	3			
	util	1	12	22	8	44	5	2	34	5	1	3	25	23	6	7	8	4	34	1	20		



Not metrics based

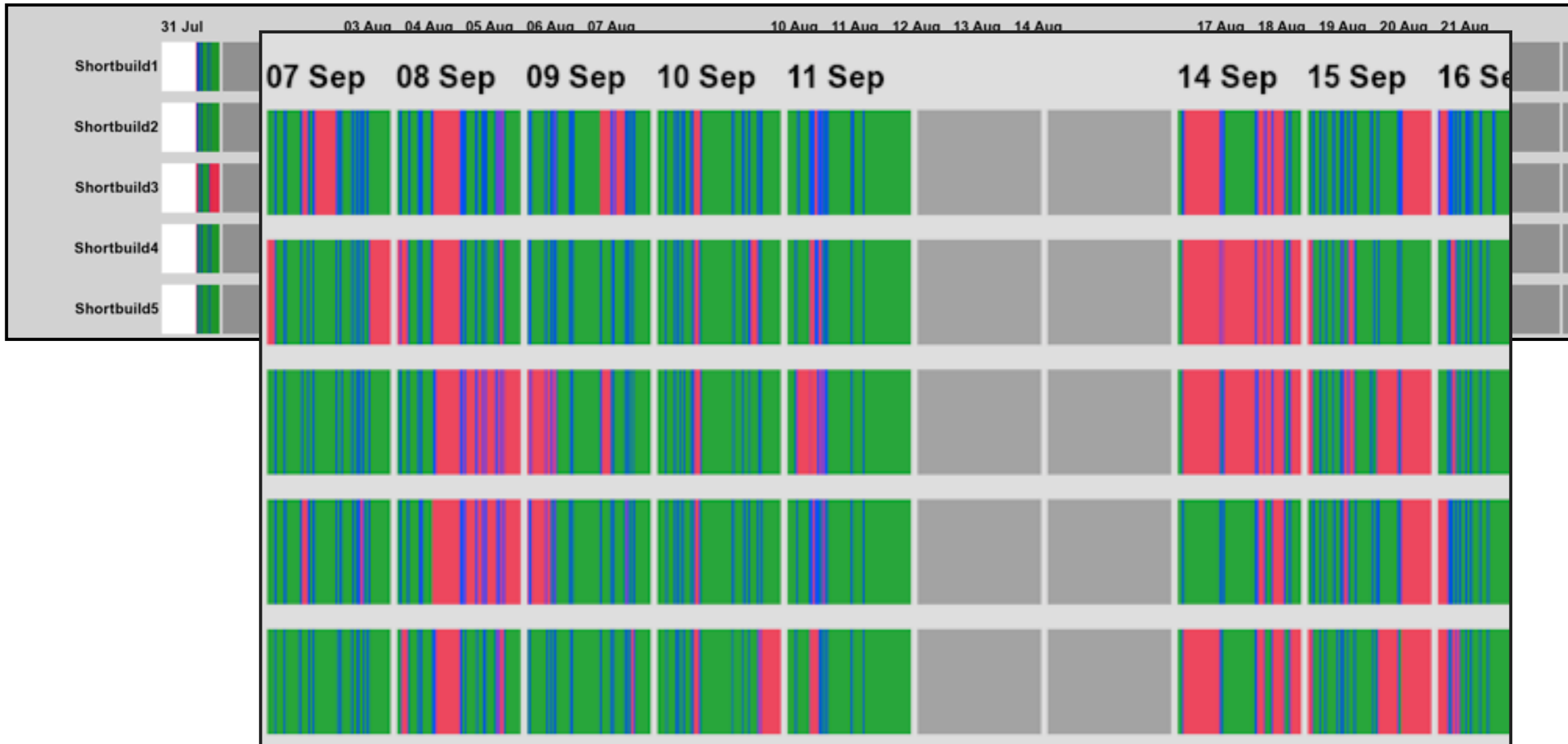
Looks at “complex complexity”

# Test coverage



Not as a percentage, shows call graph  
AspectJ + GraphViz

# Buildlines



Not even about code  
Go + Ruby with RMagick

# DIY

## 1. Get metrics

- SourceMonitor, checkstyle, text tools, etc
- iPlasma, et al

## 2. Aggregate data

- Ruby scripts, unix tools, etc
- VBA and pivot tables

## 3. Render graphics

- Excel is a powerful graphing tool
- Gnuplot and InfoViz are easy to use

# How do you see quality?

## Comparisons

- industry standards
- different revisions: trends
- different parts: outliers

## Aesthetics

- symmetry
- balance/harmony



# What next?

## Measure

- tech debt
- effectiveness of training

## Guide

- refactoring
- clean-up

## Celebrate

Thank you

<http://erik.doernenburg.com/topics/softviz>

[http://97things.oreilly.com/wiki/index.php/Get\\_the\\_1000ft\\_view](http://97things.oreilly.com/wiki/index.php/Get_the_1000ft_view)

<http://www.moosetechnology.org>

**ThoughtWorks®**

We're  
hiring