

Tracking Down Software Changes Responsible for Performance Loss

Juan Pablo Sandoval & Alexandre Bergel
Universidad de Chile

Mondrian

layout
Mondrian
shapes

subview

layout colors
Mondrian
shapes

builder

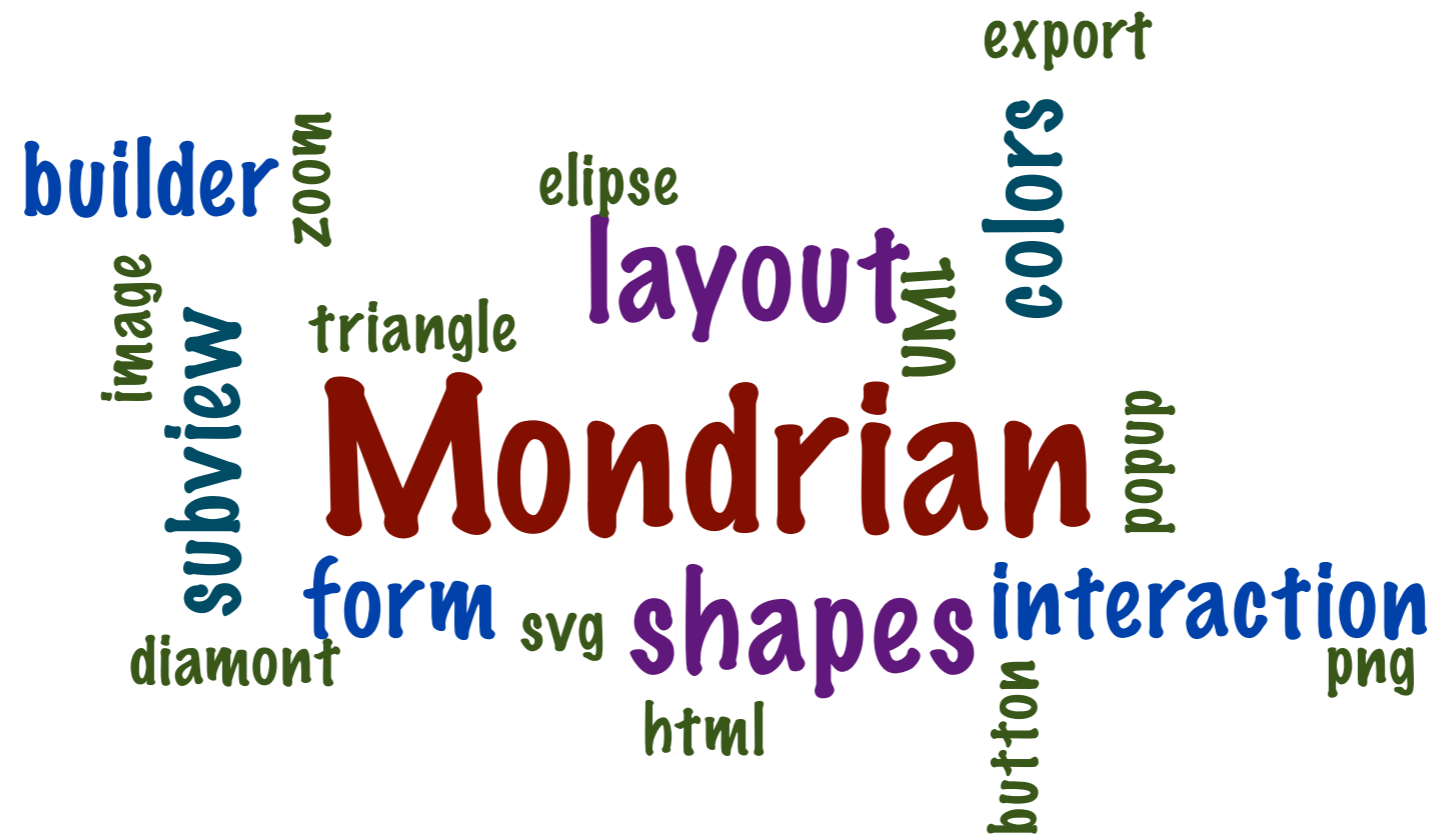
subview

form layout

colors

Mondrian

shapes interaction



A word cloud centered around the word "Mondrian". The word "Mondrian" is the largest and most prominent, rendered in a dark red, serif font. Surrounding it are various other words in different colors and sizes, including "layout" (purple), "interaction" (blue), "builder" (blue), "form" (blue), "shapes" (purple), "colors" (blue), "export" (green), "elipse" (green), "triangle" (green), "UML" (green), "zoom" (green), "image" (green), "subview" (blue), "diamont" (green), "svg" (green), "html" (green), "button" (green), "popup" (green), and "png" (green). The words are arranged in a somewhat circular pattern around the central "Mondrian".

builder
zoom
export
elipse
layout
UML
colors
image
subview
triangle
Mondrian
popup
form
svg
shapes
interaction
diamont
html
button
png

builder
image
subview
zOOM
bullet tree
triangle
dashed edges
elipse
layout
UML
export
colors
Mondrian
popup
form
svg
shapes
interaction
diamond
sccatertplot
html
FADE
button
png

Mondrian has new cool features

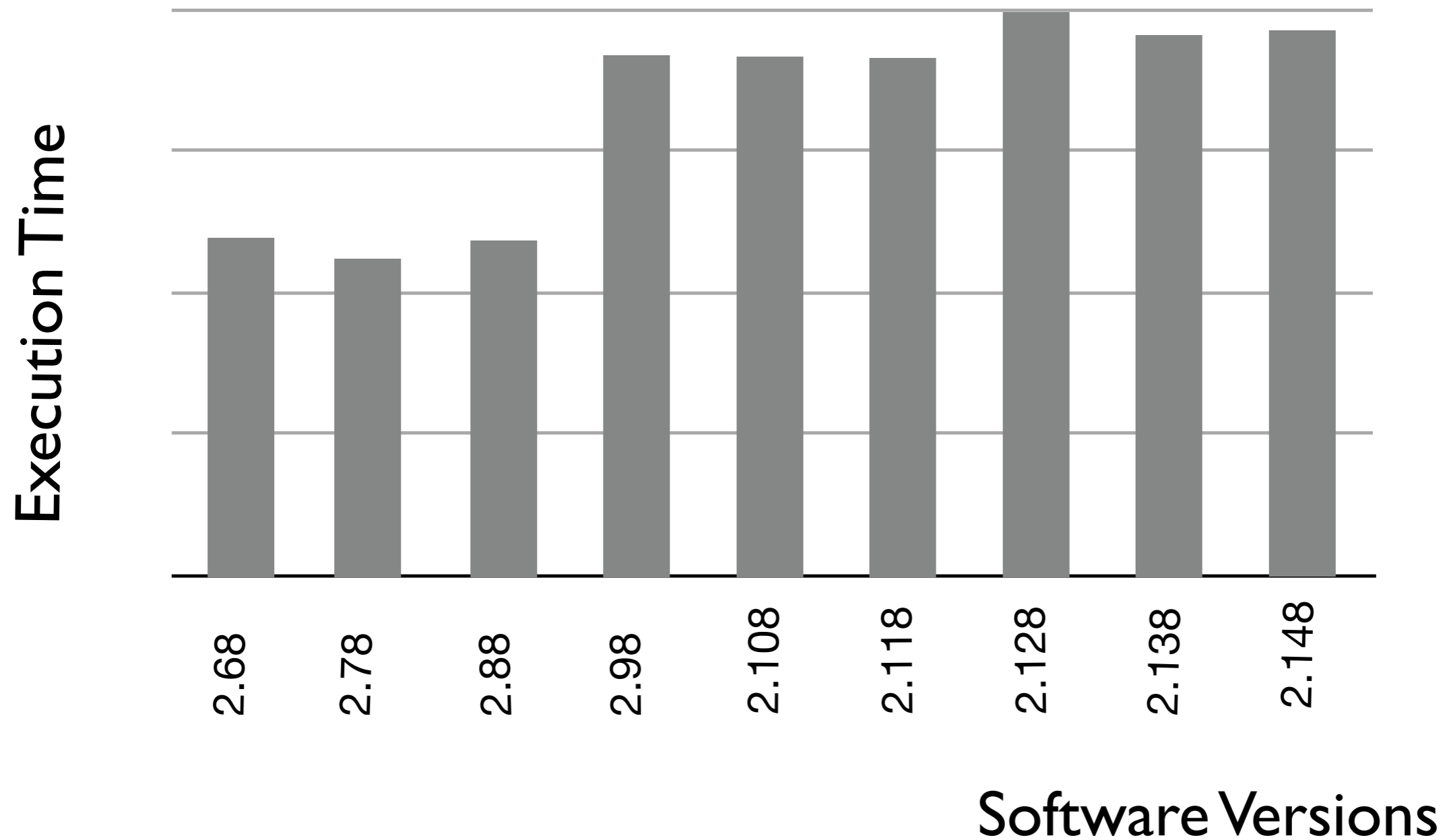
a Mondrian user, 2010

Mondrian has new cool features, **but I feel it is now much slower than before**

a Mondrian user, 2010

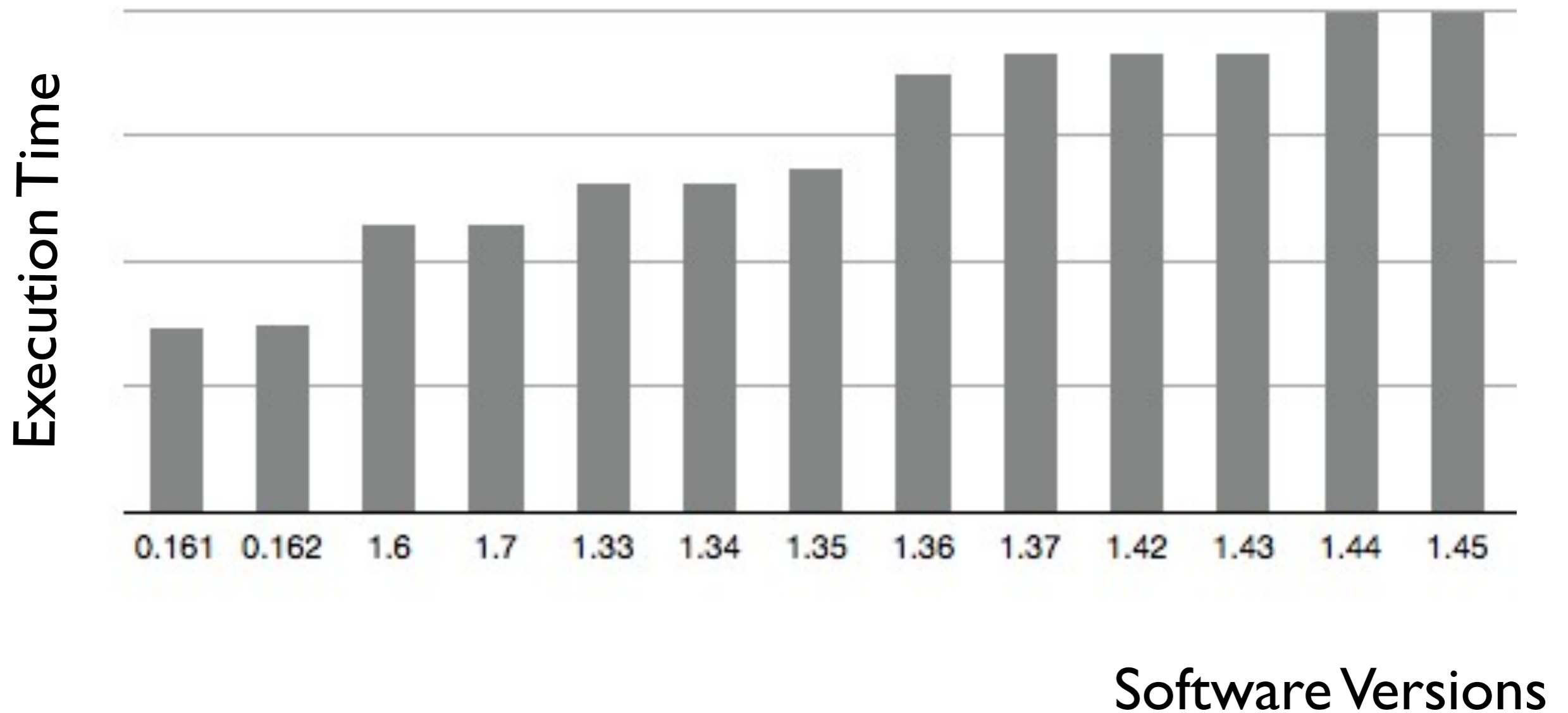
Performance Evolution

(Mondrian)



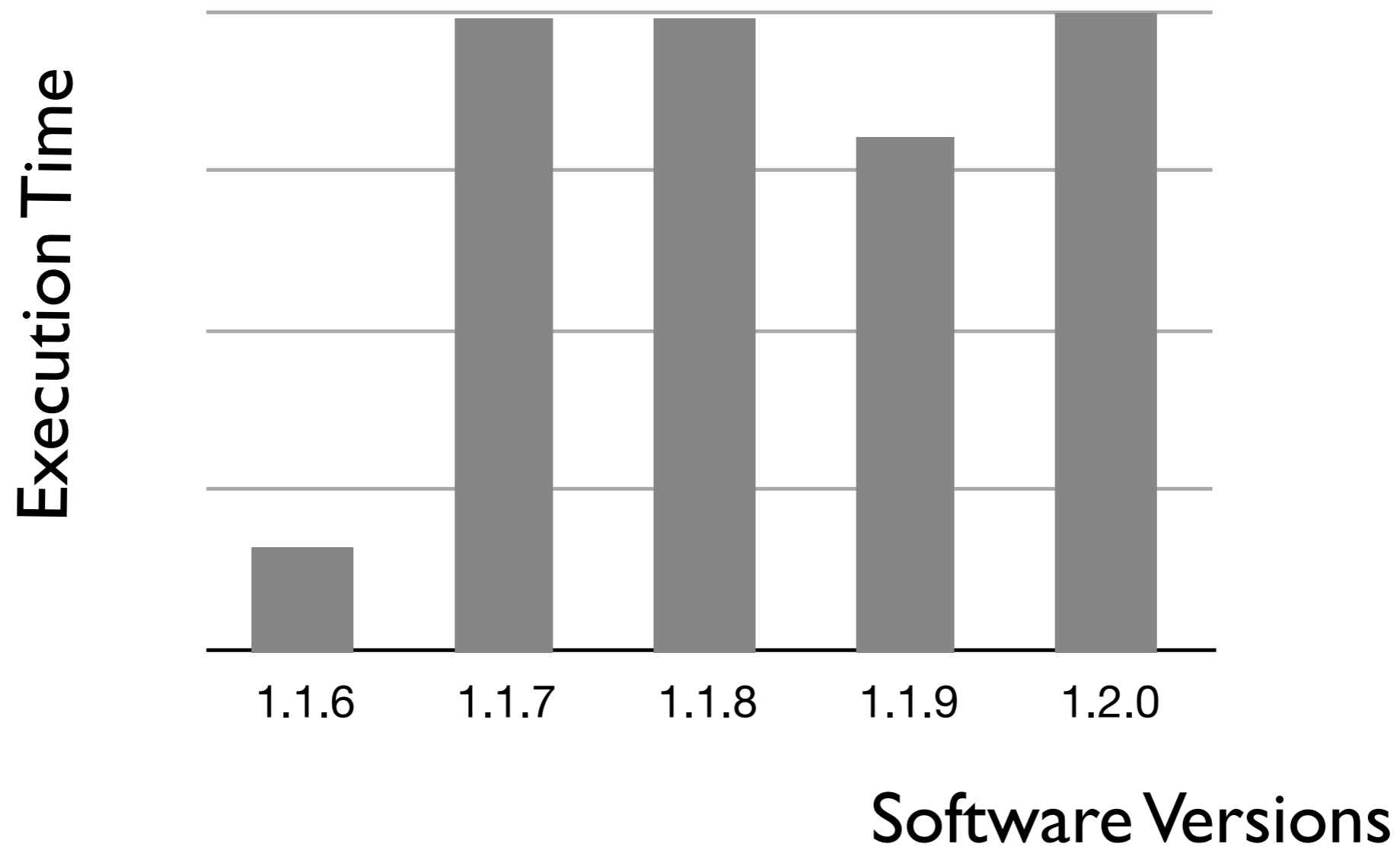
Performance Evolution

(Roassal)



Performance Evolution

(XMLSupport)



**“Why is my software
slower than it was two
month ago?”**

**“Which are the
software changes
responsible for my
performance loss?”**

Tracking Down Software Changes Responsible for Performance Loss

Juan Pablo Sandoval & Alexandre Bergel
University of Chile

Roadmap

1. *Problem*: current abstractions are unfit
2. *Multidimensional Profiling*: tracking performance evolution
3. *Conclusion & Future Work*: studio for monitoring performance

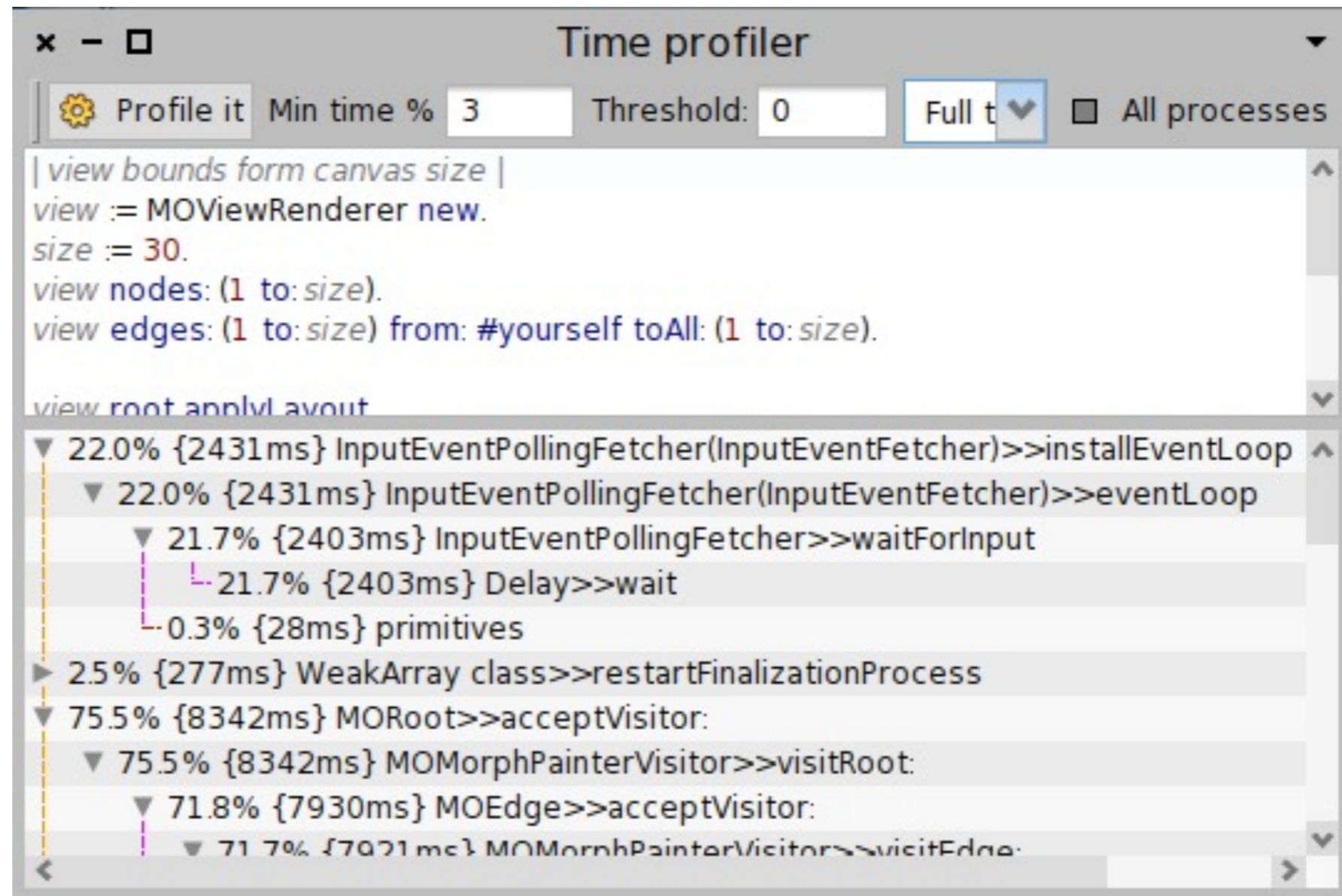
Roadmap

1. *Problem*: current abstractions are unfit
2. *Multidimensional Profiling*: tracking performance evolution
3. *Conclusion & Future Work*: studio for monitoring performance

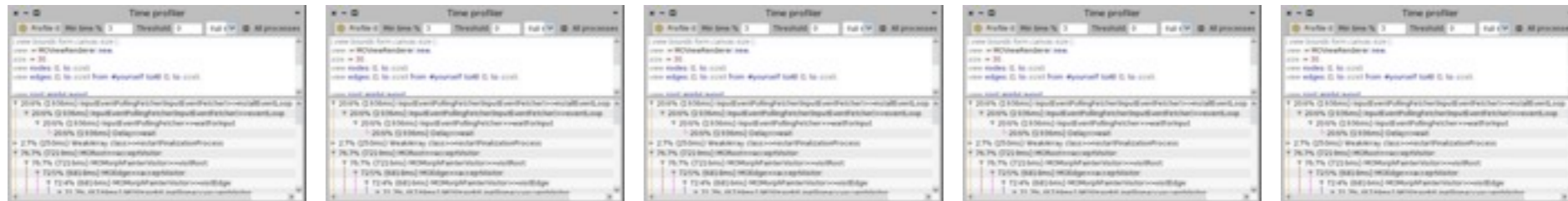
Profiling a benchmark

execution time:

11052 msec



changing versions



V 1.0

V 1.1

V 1.5

V 1.6

V 1.7

changing benchmark

B 1



B 2



V 1.0

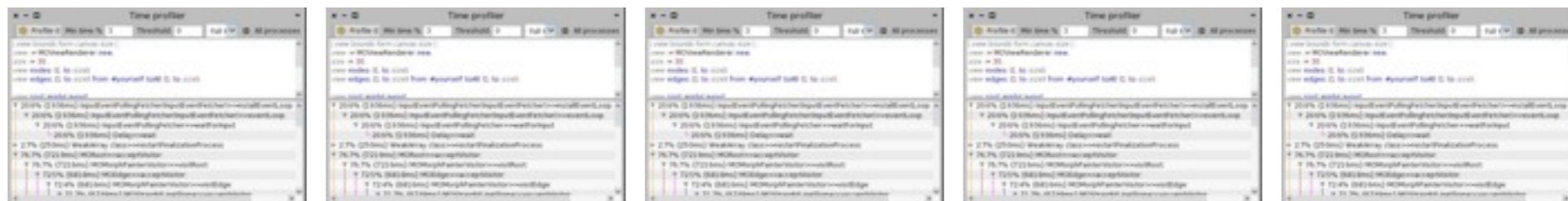
V 1.1

V 1.5

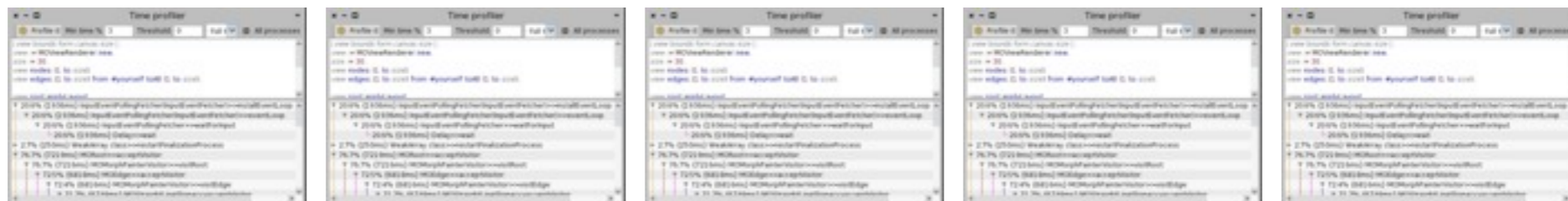
V 1.6

V 1.7

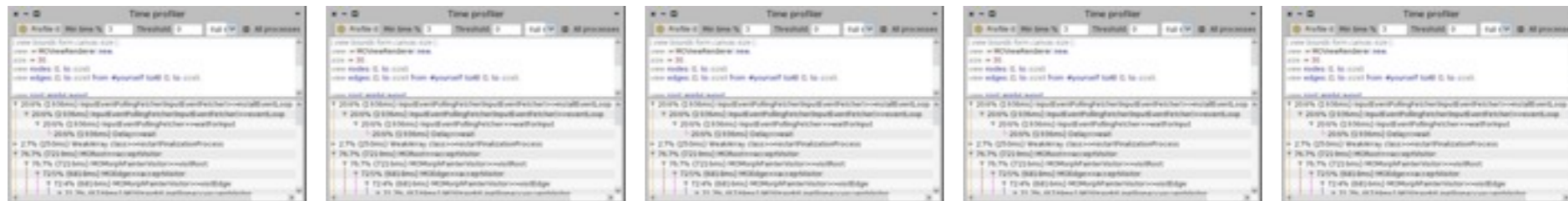
B 1



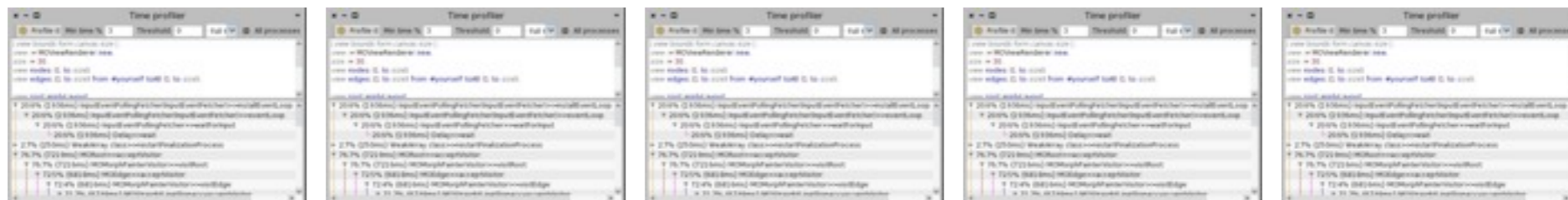
B 2



B 3



B 4



V 1.0

V 1.1

V 1.5

V 1.6

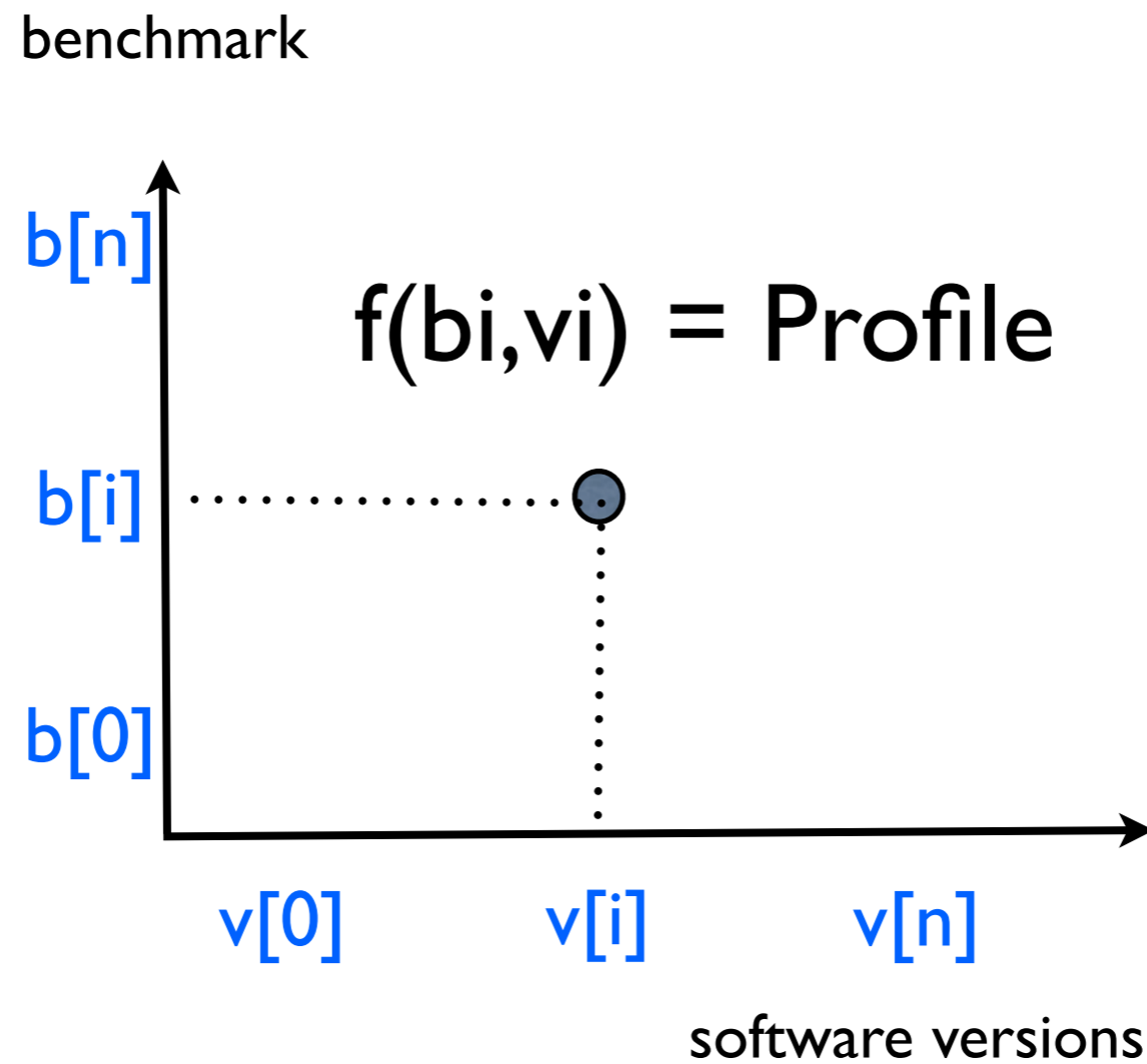
V 1.7

**“Current profilers do not
efficiently support
performance comparison
across multiple profiles”**

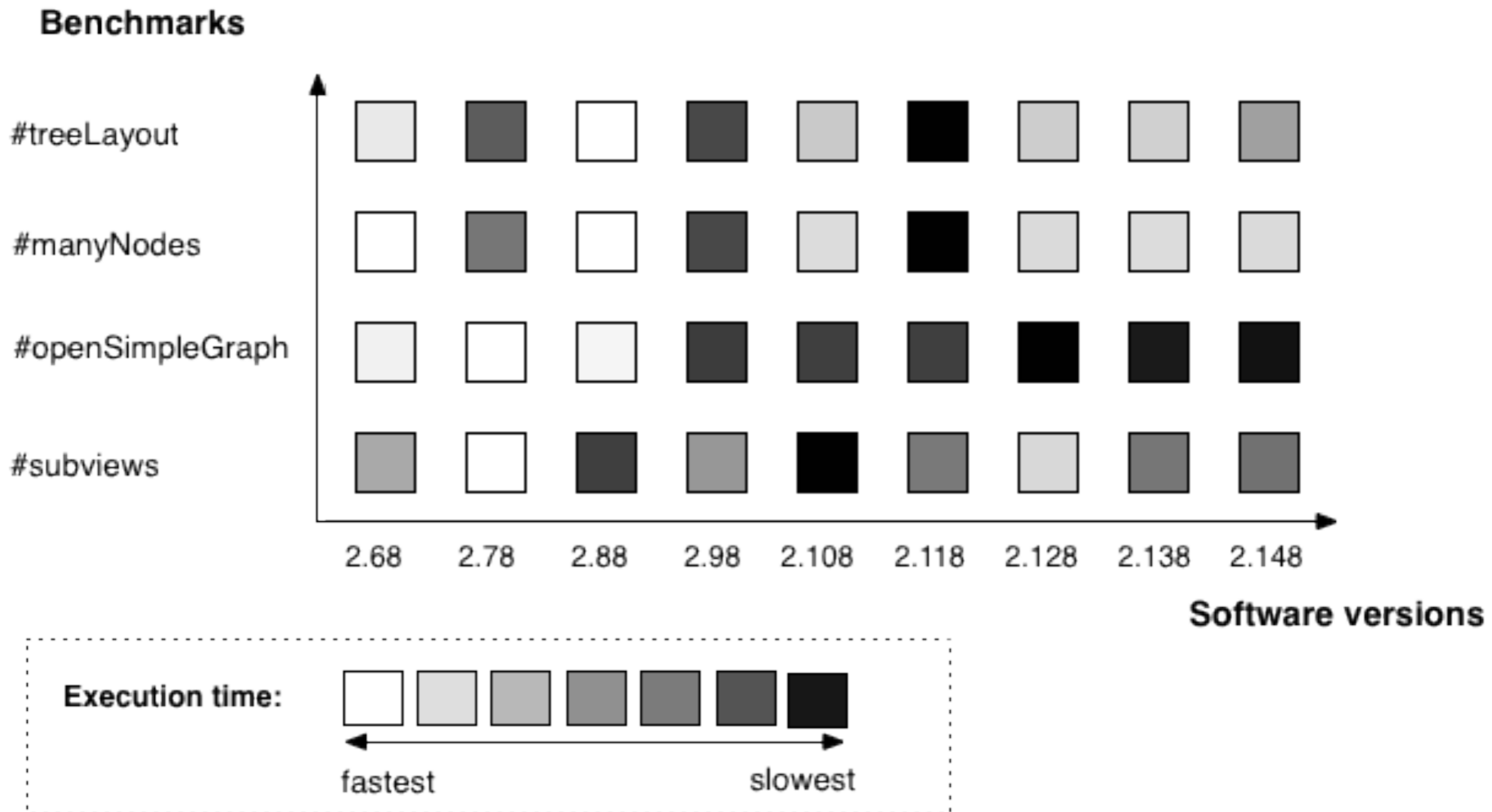
Roadmap

1. *Problem*: current abstractions are unfit
2. *Multidimensional Profiling*: tracking performance evolution
3. *Conclusion & Future Work*: studio for monitoring performance

In a nutshell

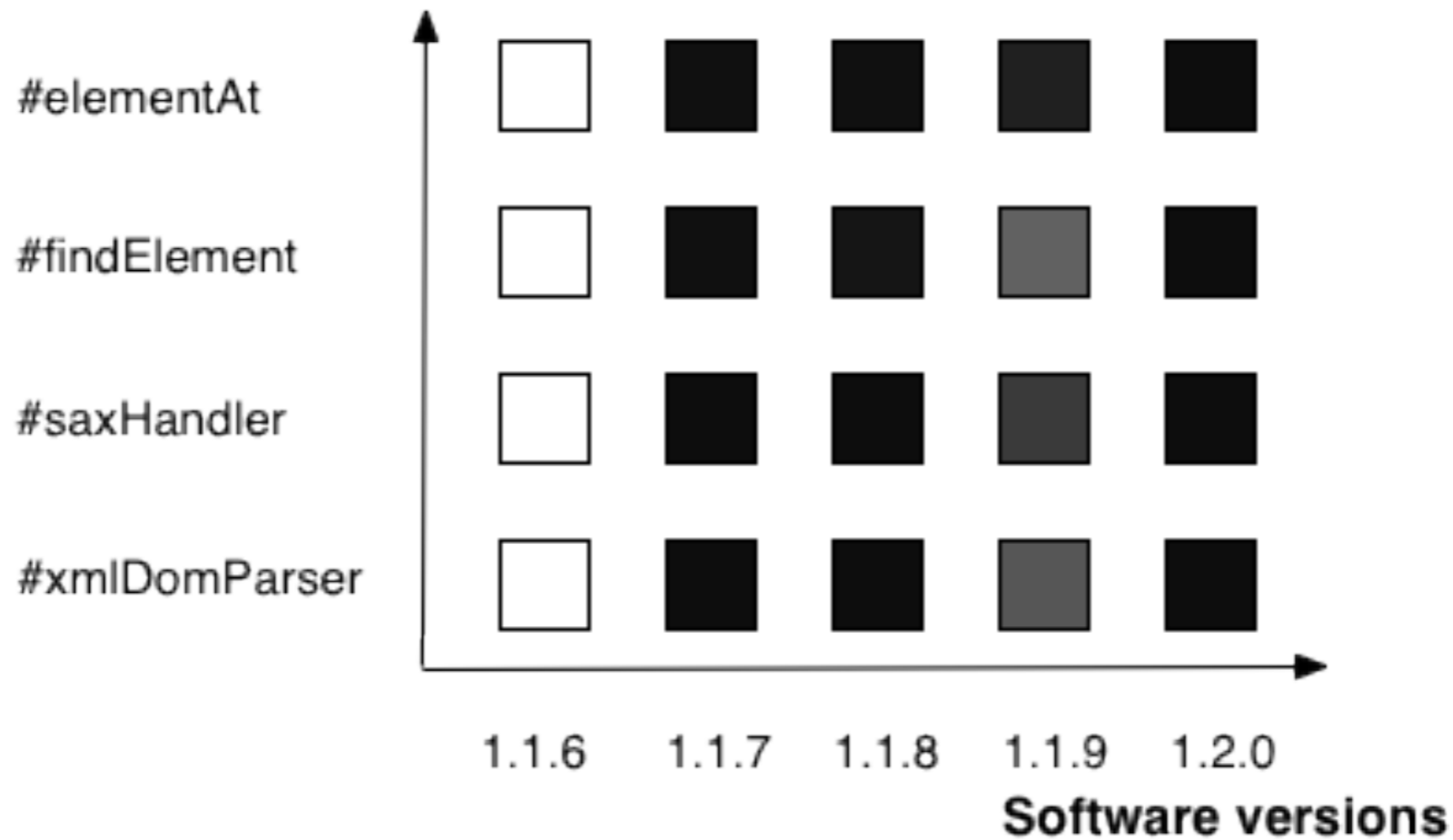


Performance Comparison Matrix (Mondrian)



Performance Comparison Matrix (XMLSupport)

Benchmarks

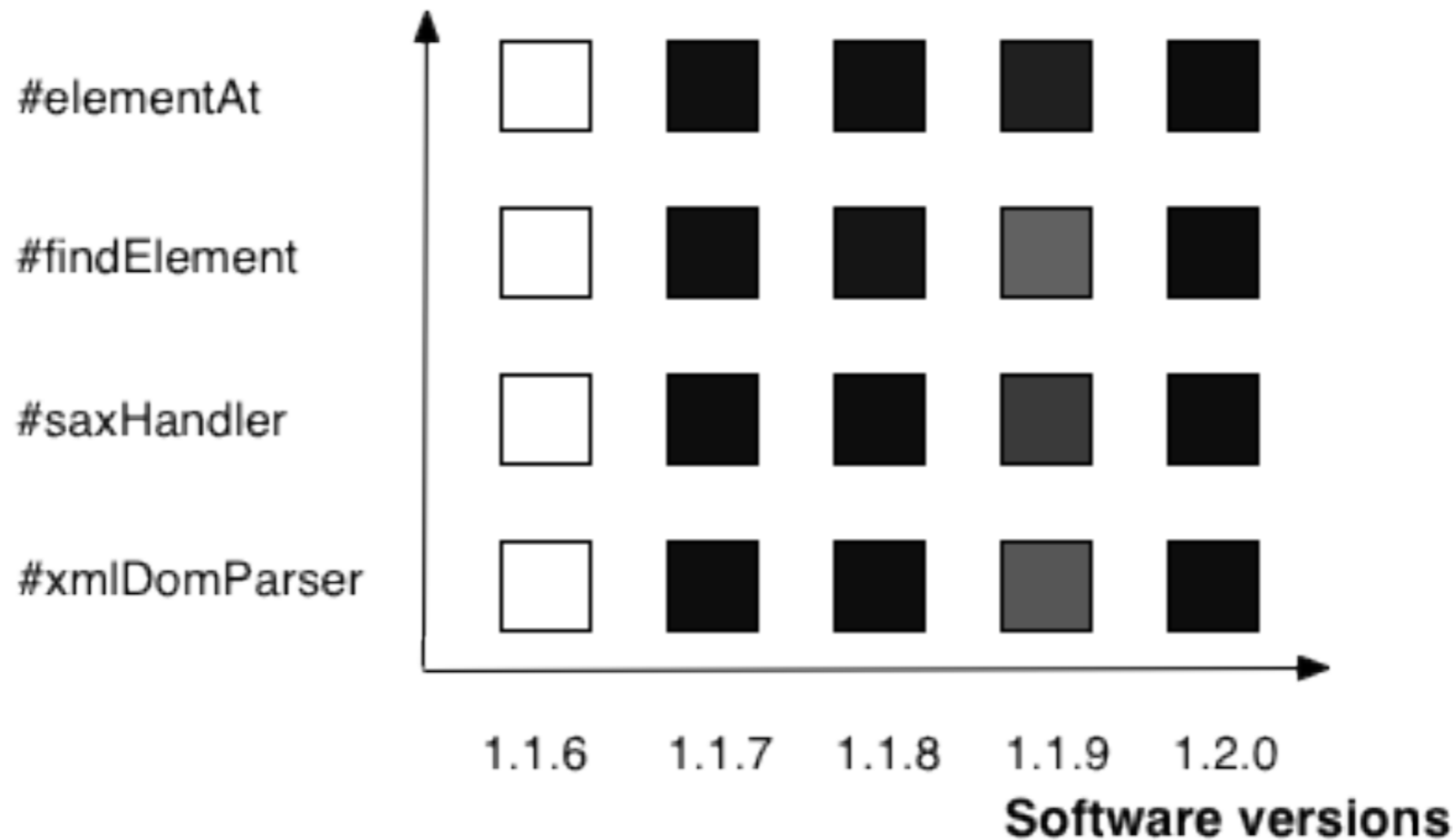


Execution time:



Performance Comparison Matrix (XMLSupport)

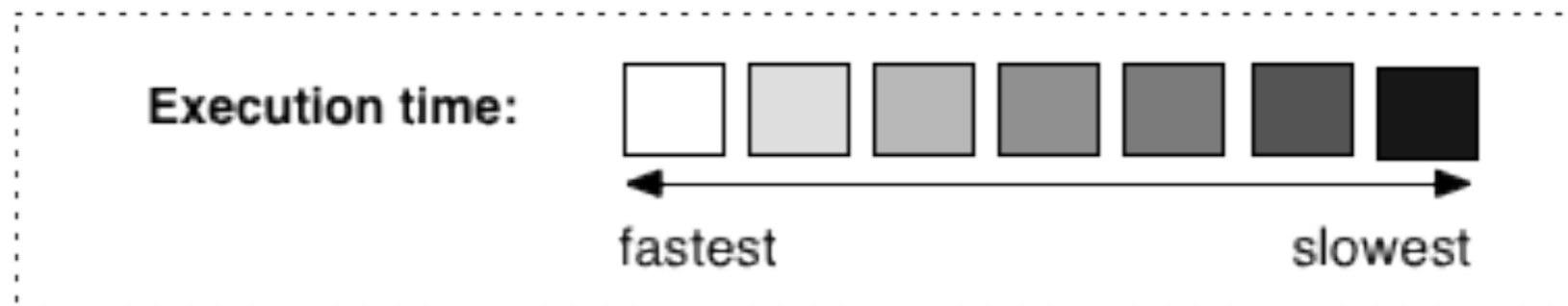
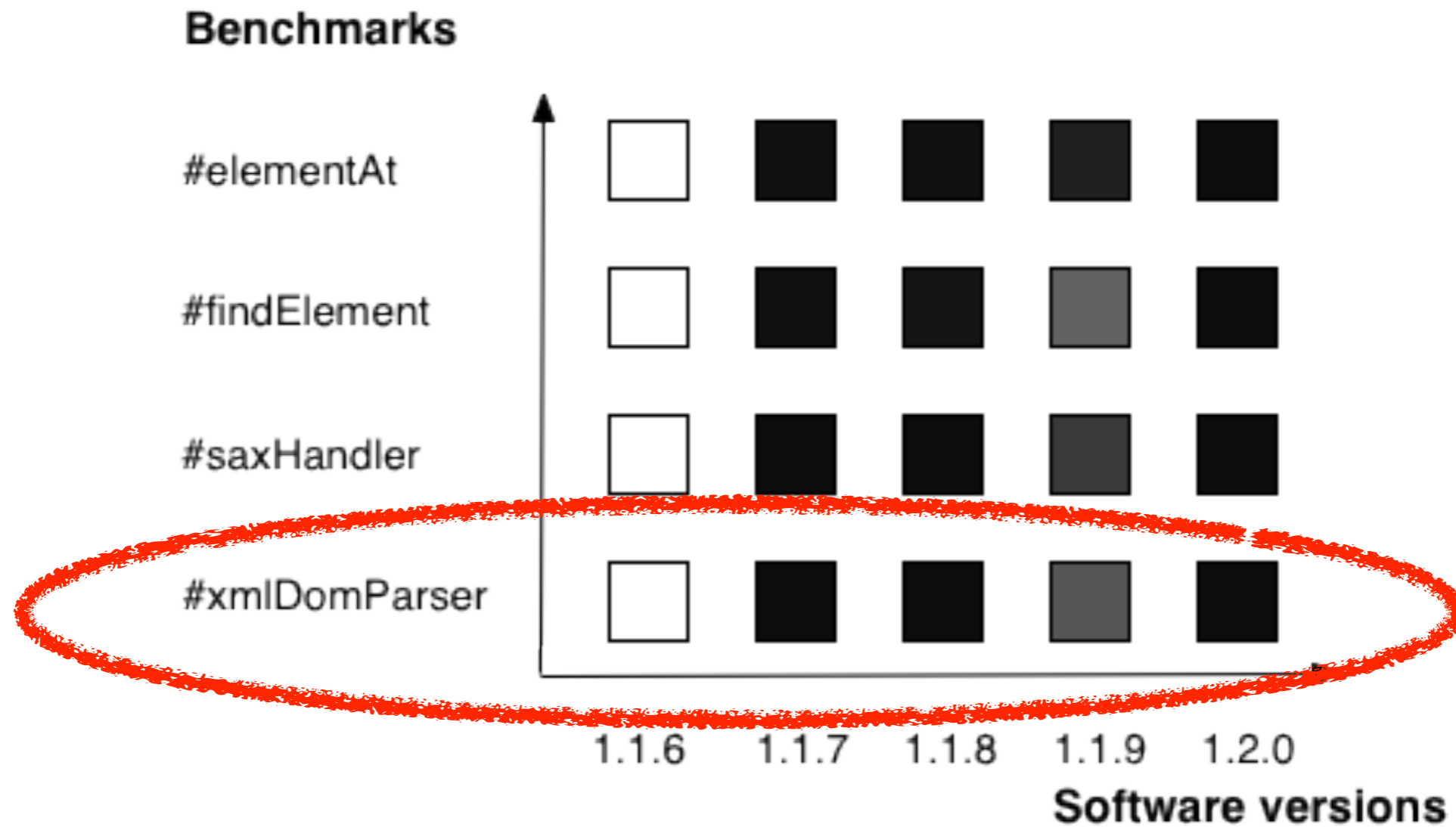
Benchmarks



Execution time:

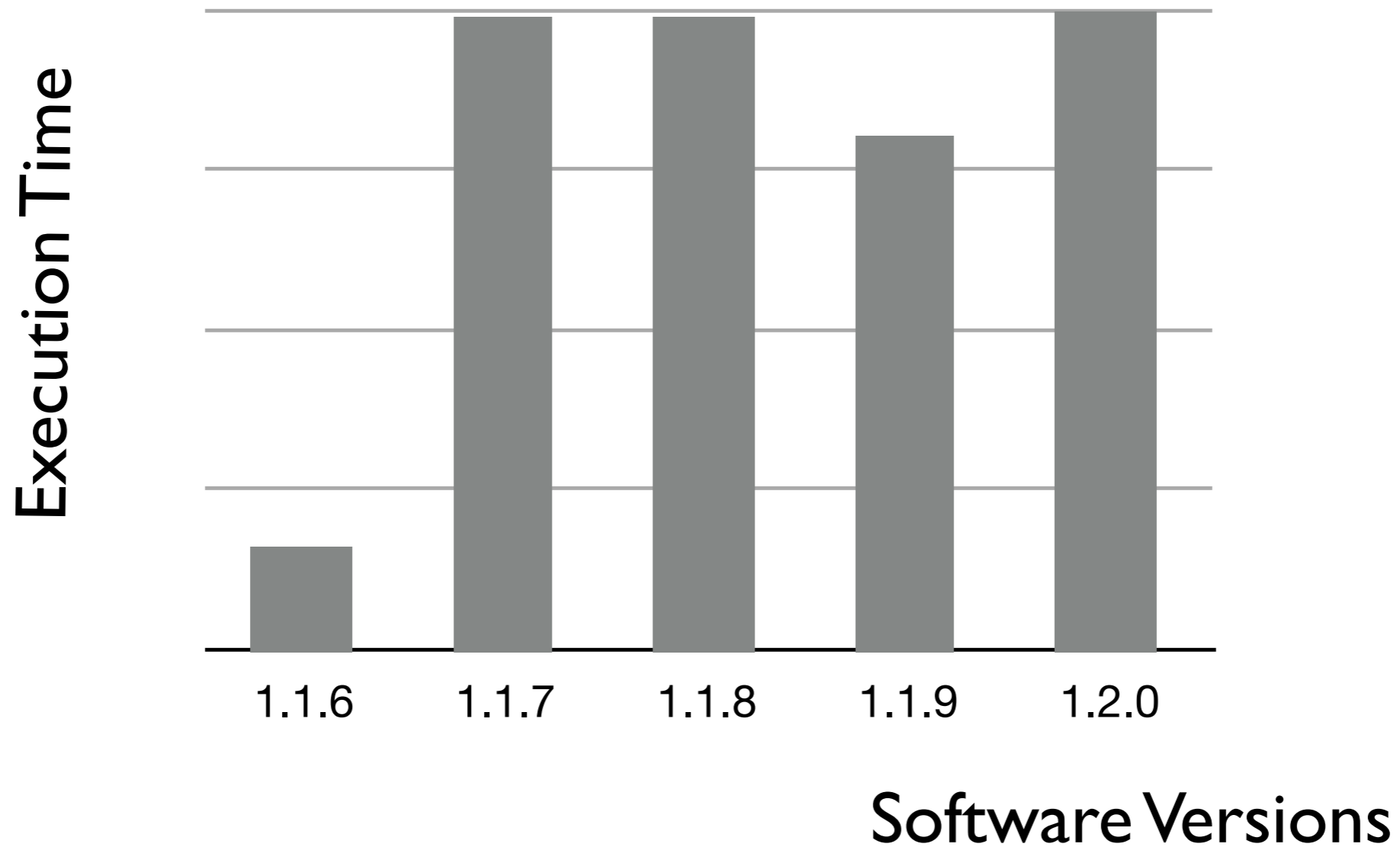


Performance Comparison Matrix (XMLSupport)



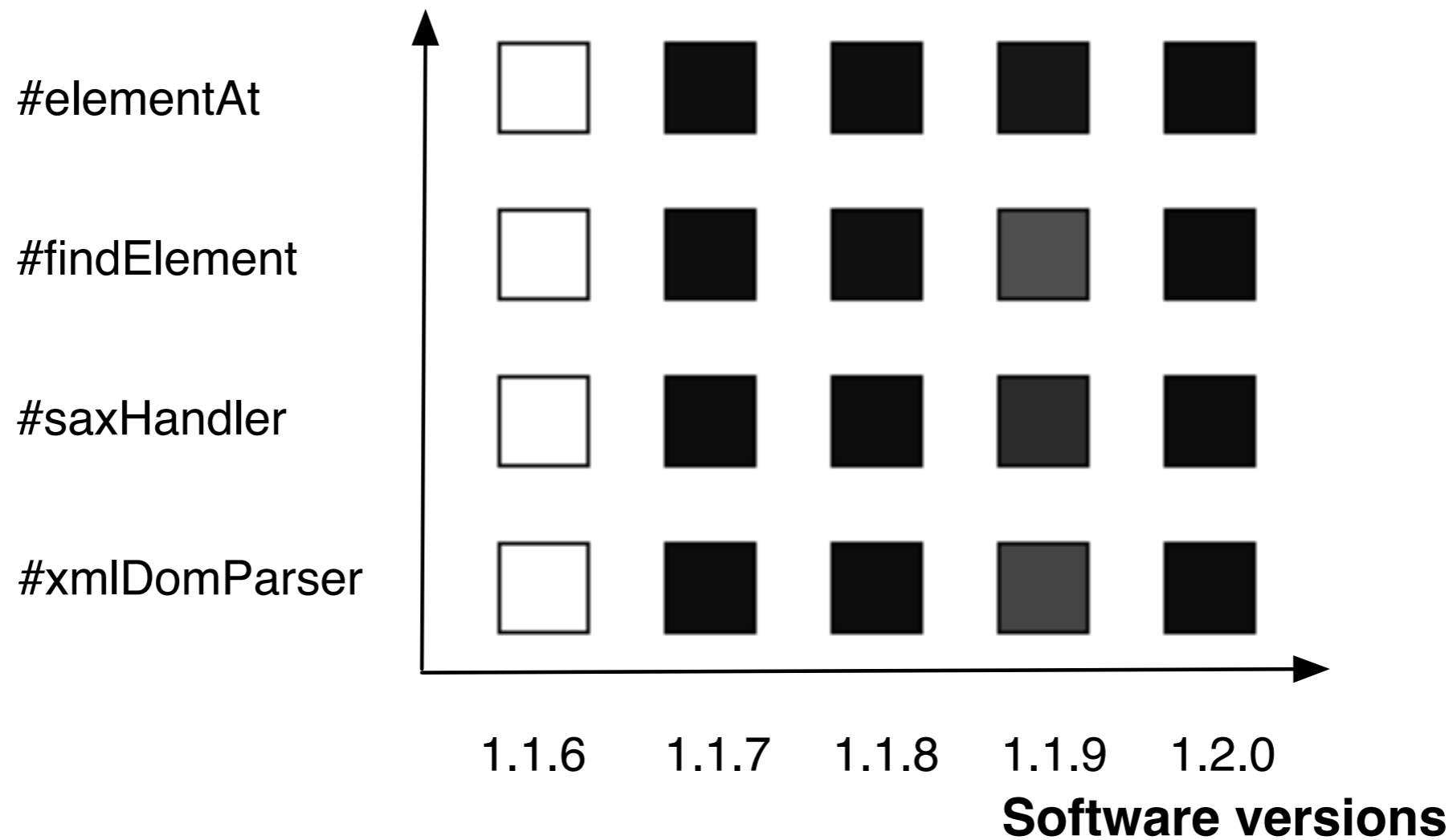
#xmlDomParser

(XMLSupport benchmark)



Performance Comparison Matrix (XMLSupport)

Benchmarks



Execution time:



short



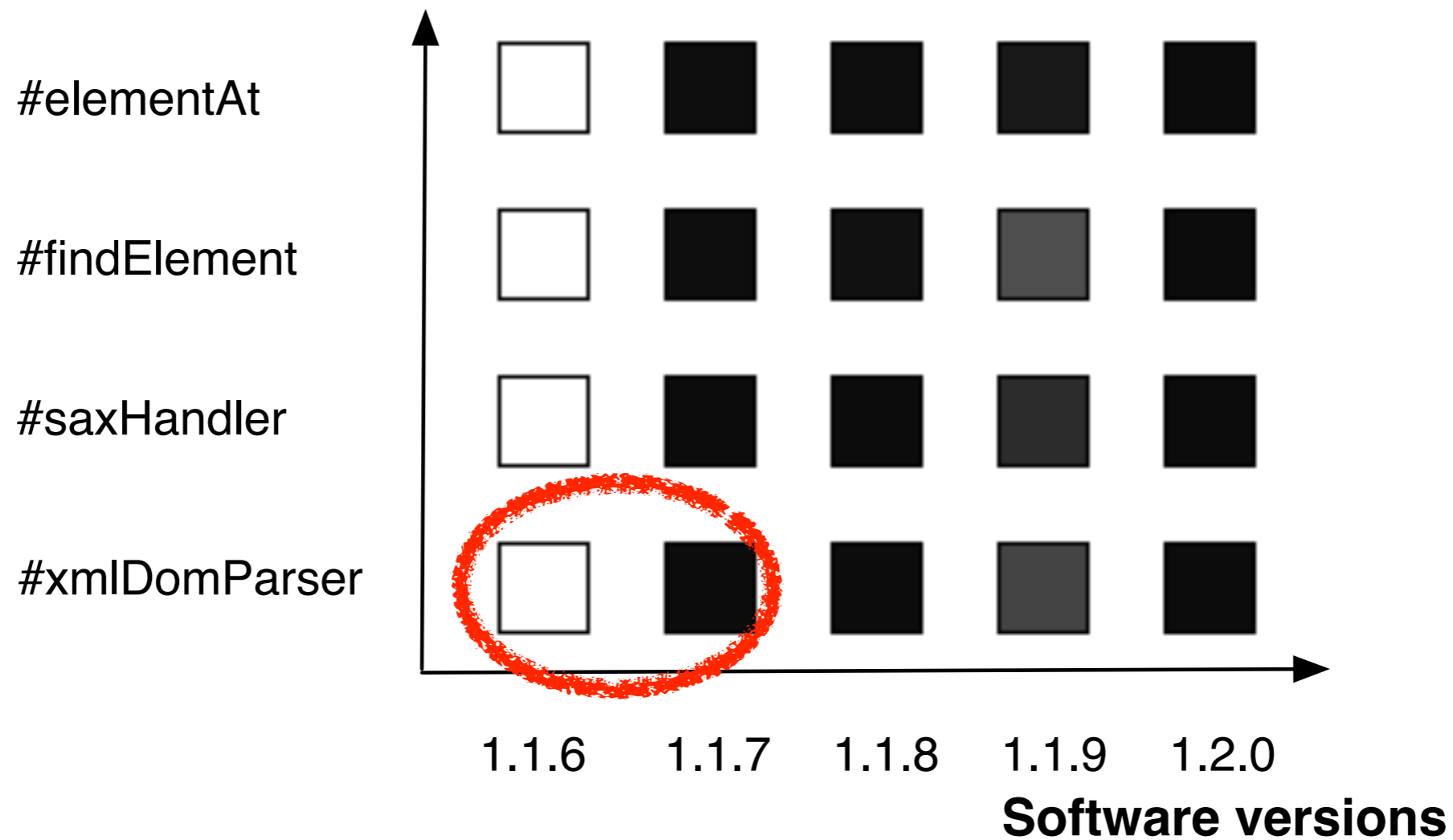
medium



long

Performance Comparison Matrix (XMLSupport)

Benchmarks



Execution time:



short



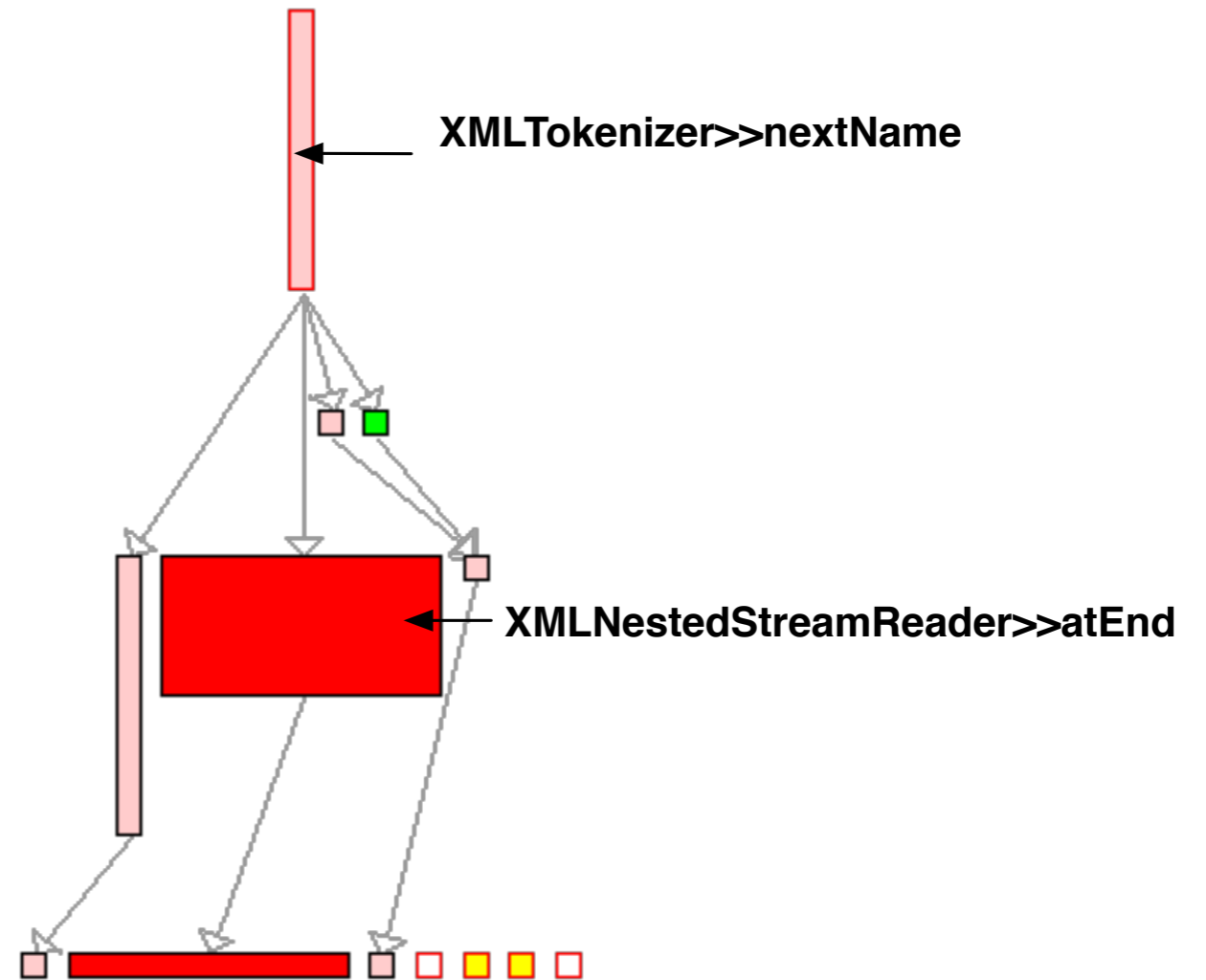
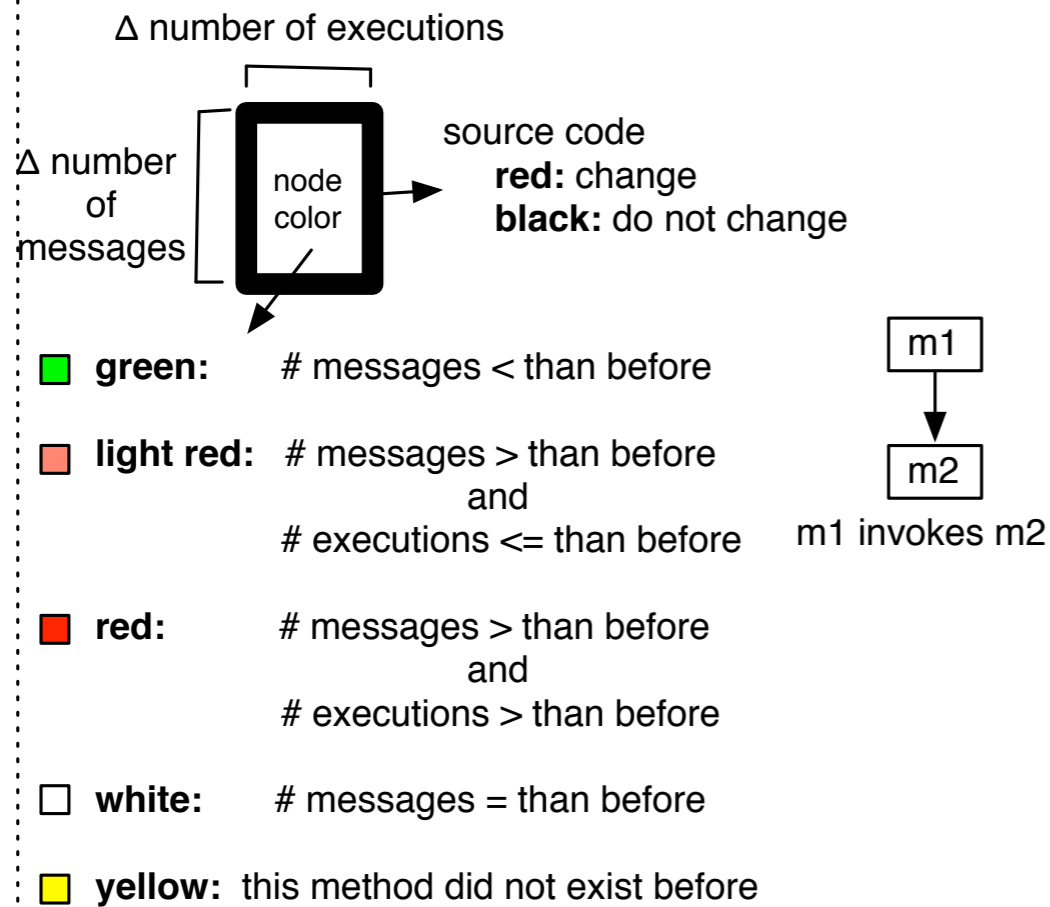
medium



long

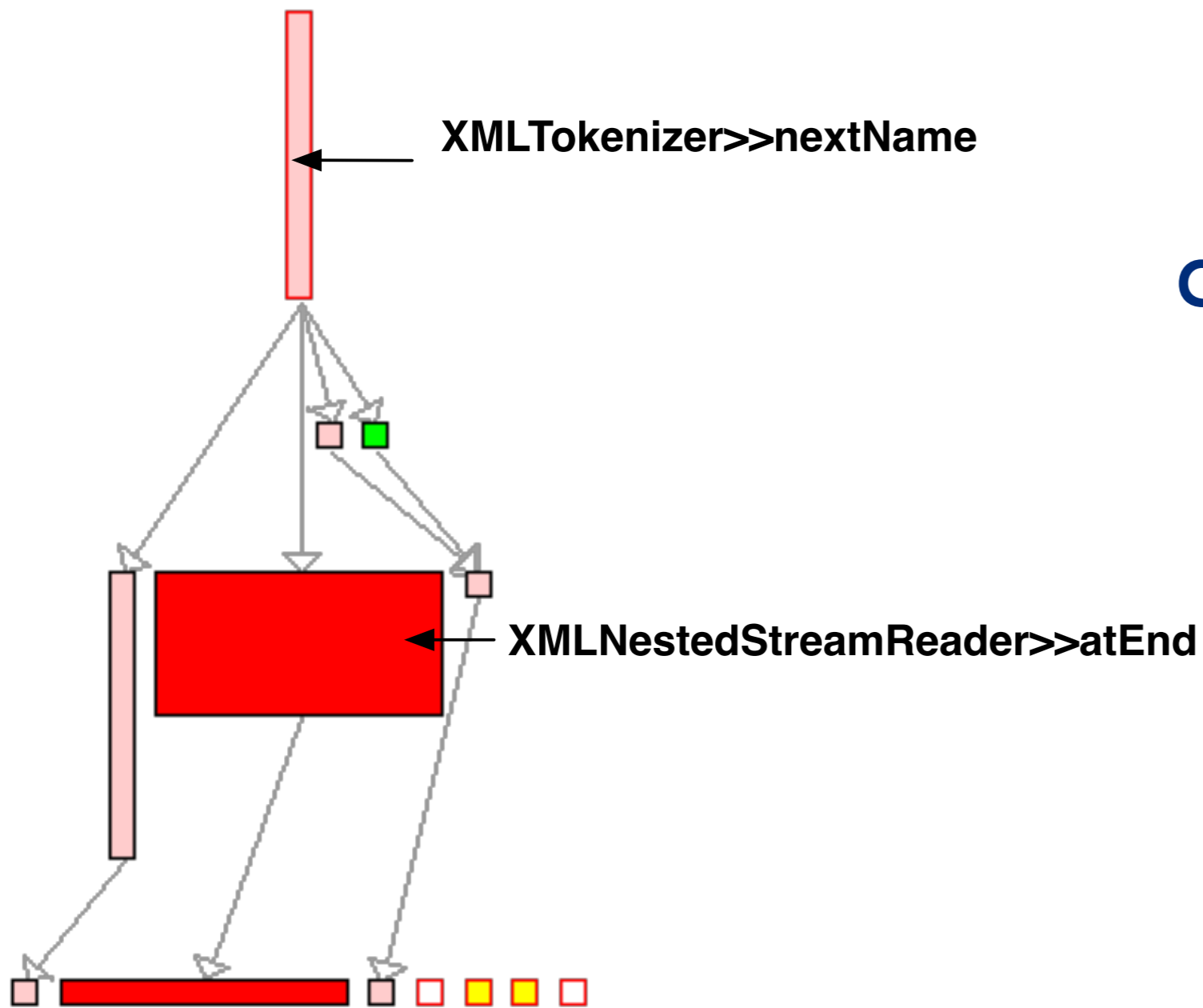
Performance Evolution Blueprint (XMLSupport)

Legend for methods

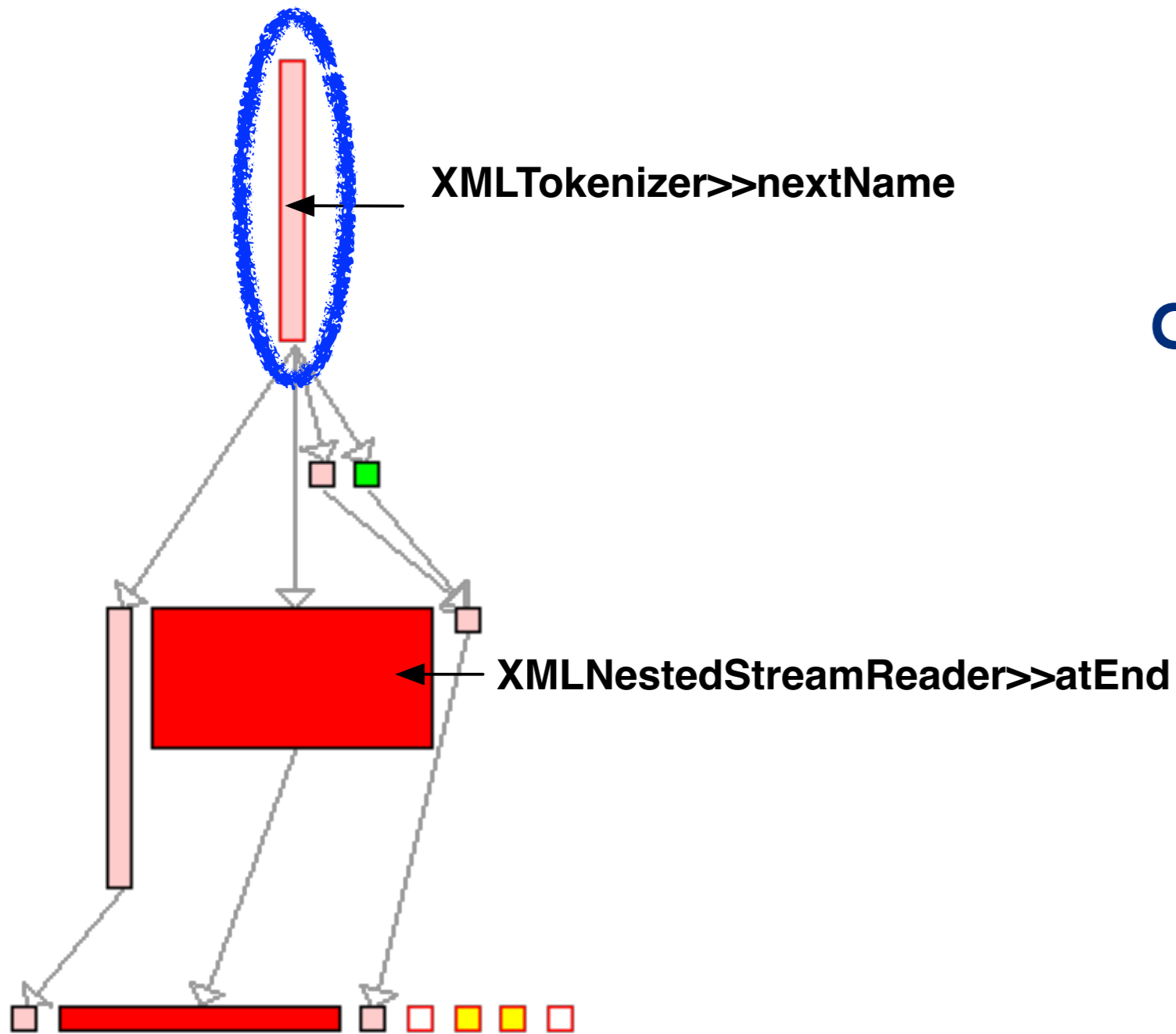


Performance Evolution Blueprint (XMLSupport)

the impact of a
changed method in the
others methods

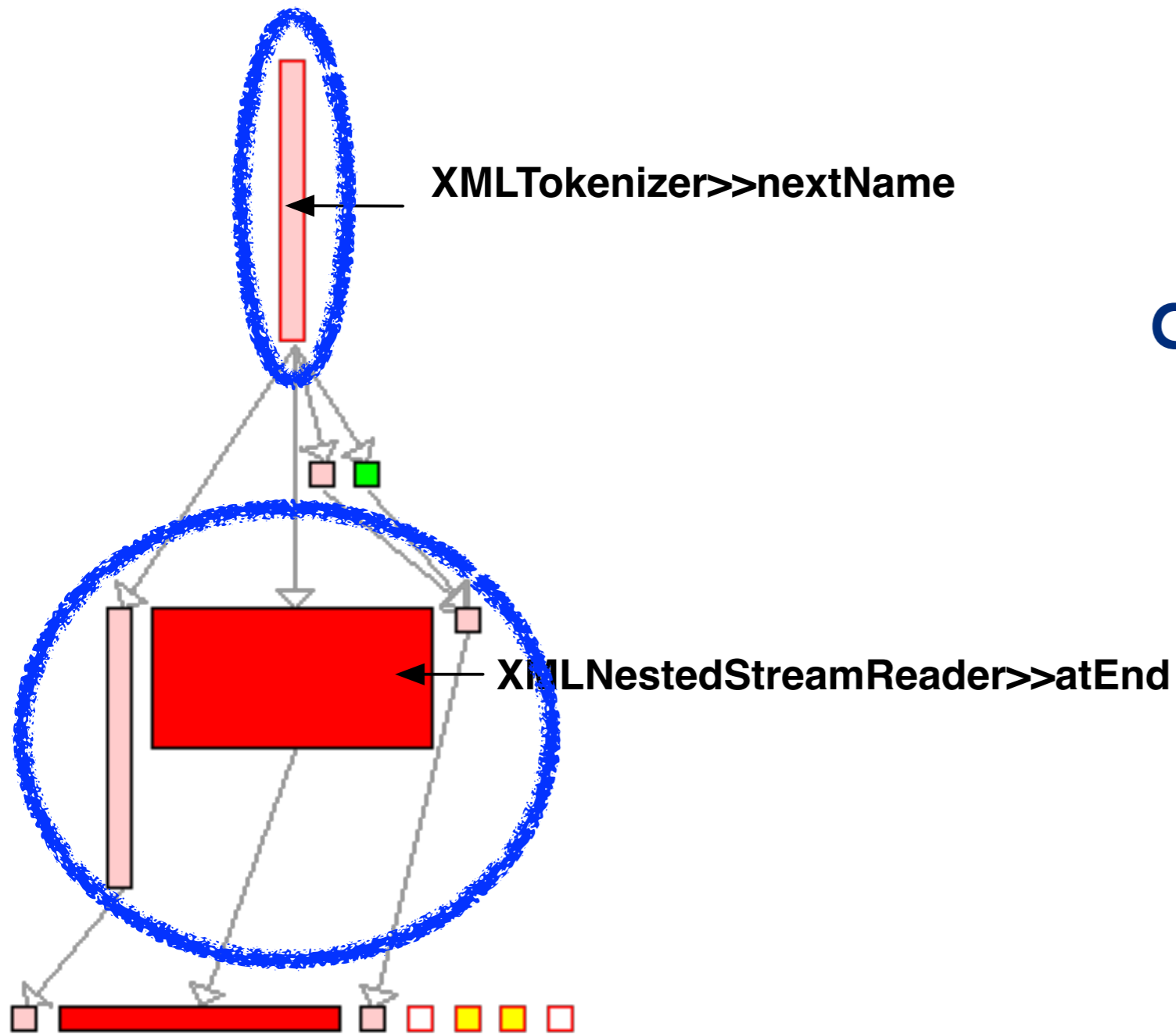


Performance Evolution Blueprint (XMLSupport)



the impact of a
changed method in the
others methods

Performance Evolution Blueprint (XMLSupport)



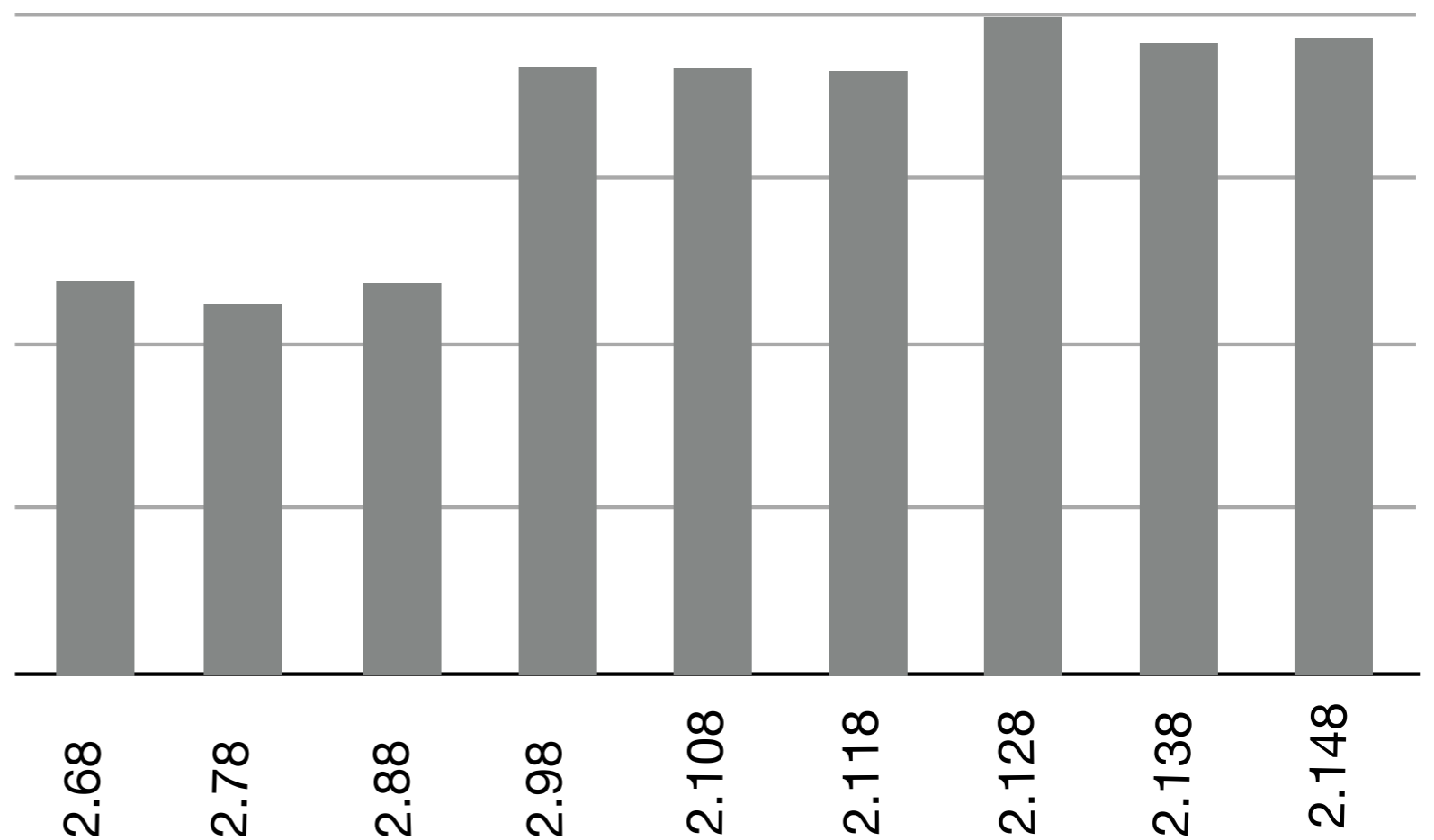
the impact of a
changed method in the
others methods

Roadmap

1. *Problem*: current abstractions are unfit
2. *Multidimensional Profiling*: tracking performance evolution
3. *Conclusion & Future Work*: studio for monitoring performance

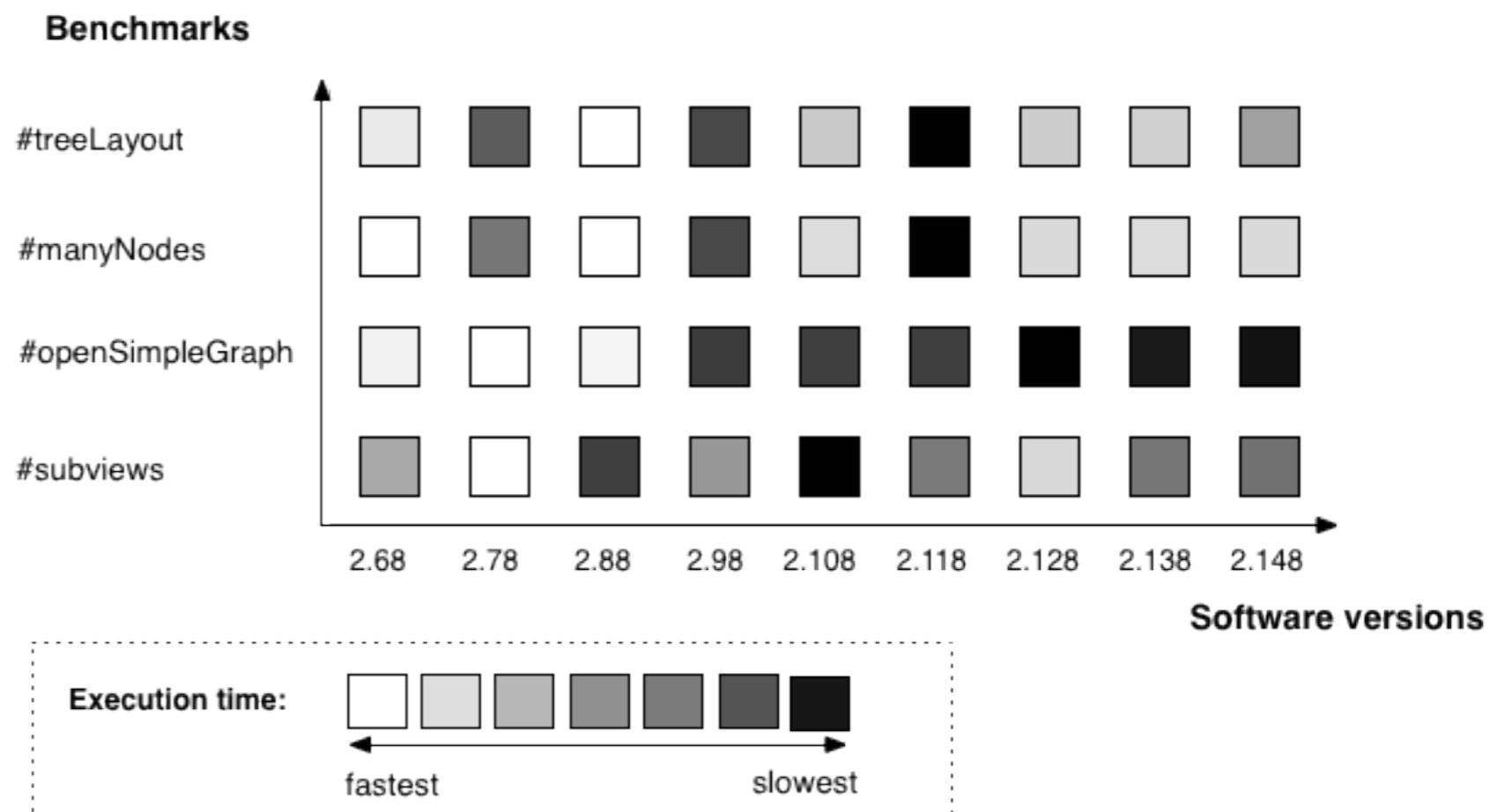
Conclusions

- Performance Evolution
- Multidimensional Profiling
- Future Work



Conclusions

- Performance Evolution
- Multidimensional Profiling
- Future Work



Conclusions

- Performance Evolution
- Multidimensional Profiling
- Future Work

