Tracking Down Software Changes Responsible for Performance Loss

Juan Pablo Sandoval & Alexandre Bergel Universidad de Chile

Mondrian

layout Mondrian shapes

layout ^g Mondrian shapes

builder form layout ^{gg} Mondrian shapes interaction





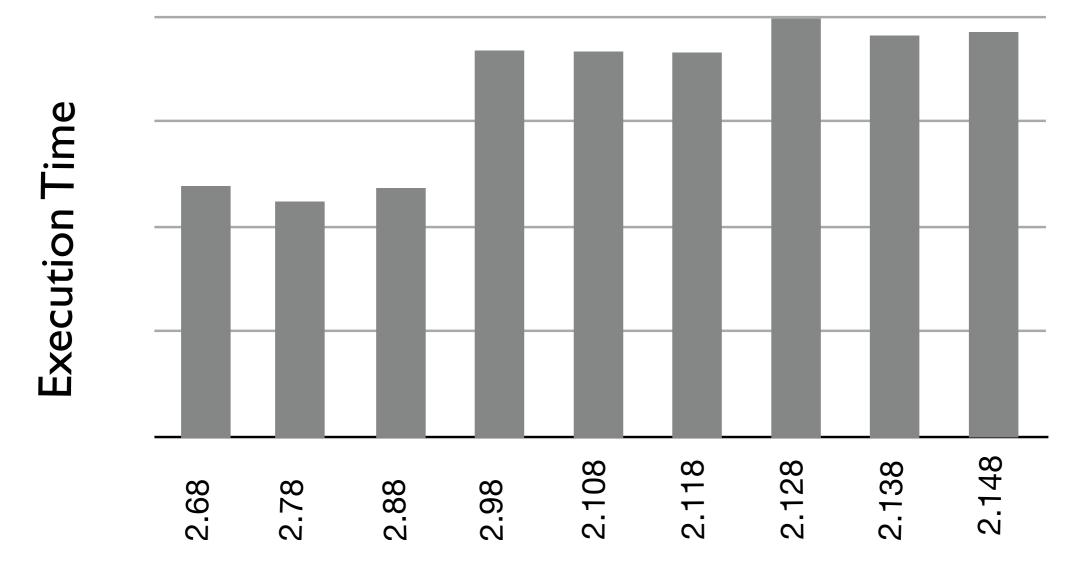
Mondrian has new cool features

a Mondrian user, 2010

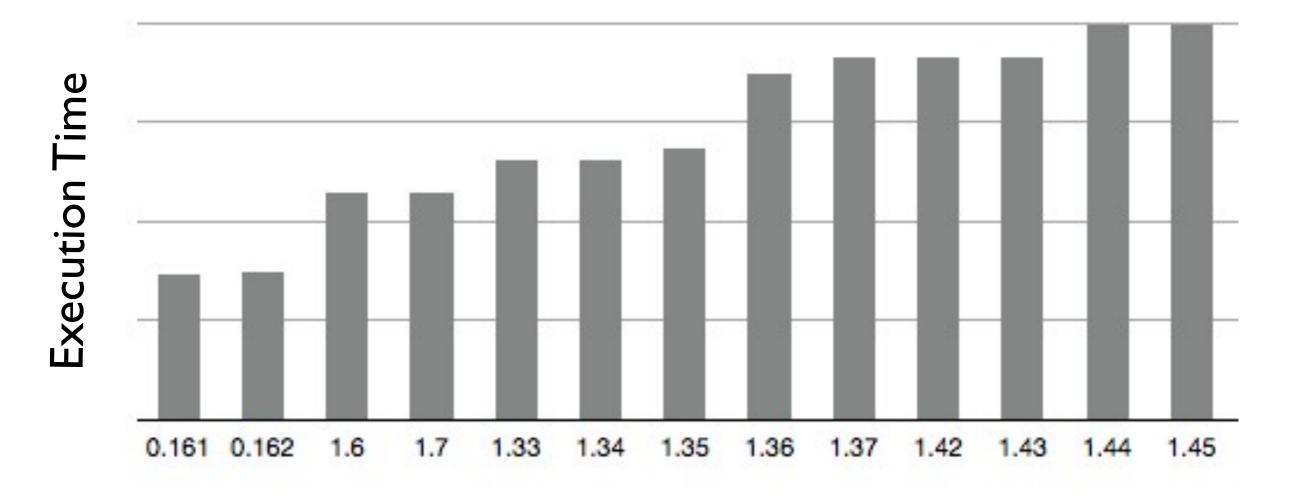
Mondrian has new cool features, but I feel it is now much slower than before

a Mondrian user, 2010

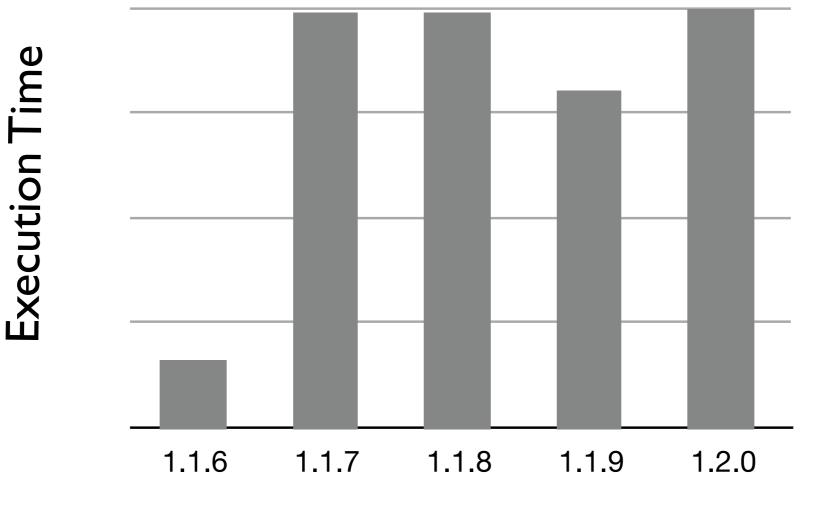
Performance Evolution (Mondrian)



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

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Roadmap

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

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Profiling a benchmark

Time profiler × - 🗆 🍪 Profile it Min time % 3 Threshold: 0 All processes Full t view bounds form canvas size | view := MOViewRenderer new. size = 30. view nodes: (1 to: size). view edges: (1 to: size) from: #yourself toAll: (1 to: size). view root applyl avout 22.0% {2431ms} InputEventPollingFetcher(InputEventFetcher)>>installEventLoop 22.0% {2431ms} InputEventPollingFetcher(InputEventFetcher)>>eventLoop 21.7% {2403ms} InputEventPollingFetcher>>waitForInput -21.7% {2403ms} Delay>>wait -0.3% {28ms} primitives 2.5% {277ms} WeakArray class>>restartFinalizationProcess 75.5% {8342ms} MORoot>>acceptVisitor: 75.5% {8342ms} MOMorphPainterVisitor>>visitRoot: 71.8% {7930ms} MOEdge>>acceptVisitor: T1 7% {7021 mc} MOMorphPainterVicitor>>vicitEdae

execution time: 11052 msec

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VI.0 VI.1 VI.5 VI.6 VI.7

changing benchmark

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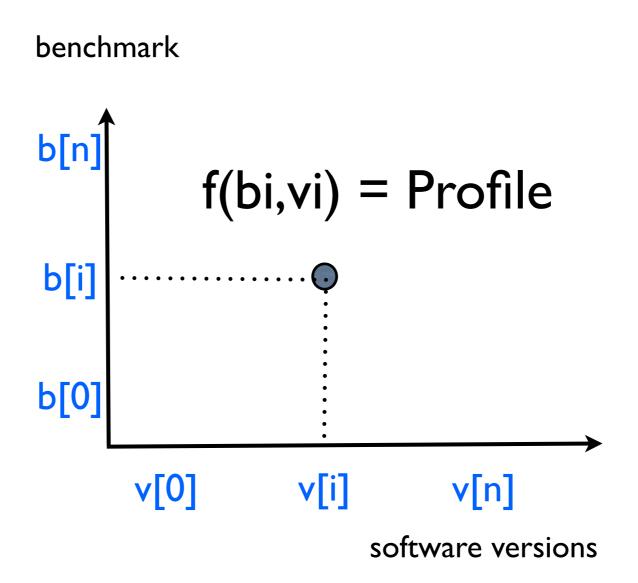


"Current profilers do not efficiently support performance comparison across multiple profiles"

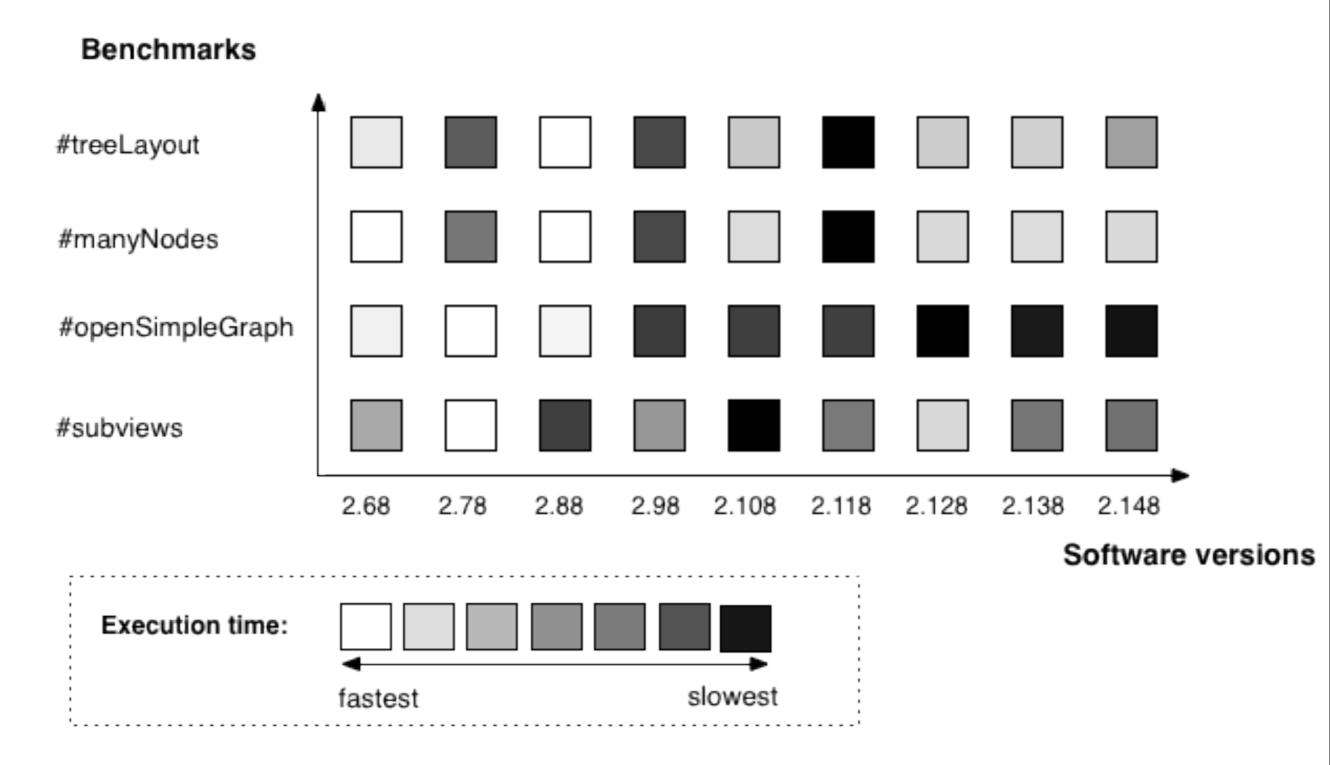
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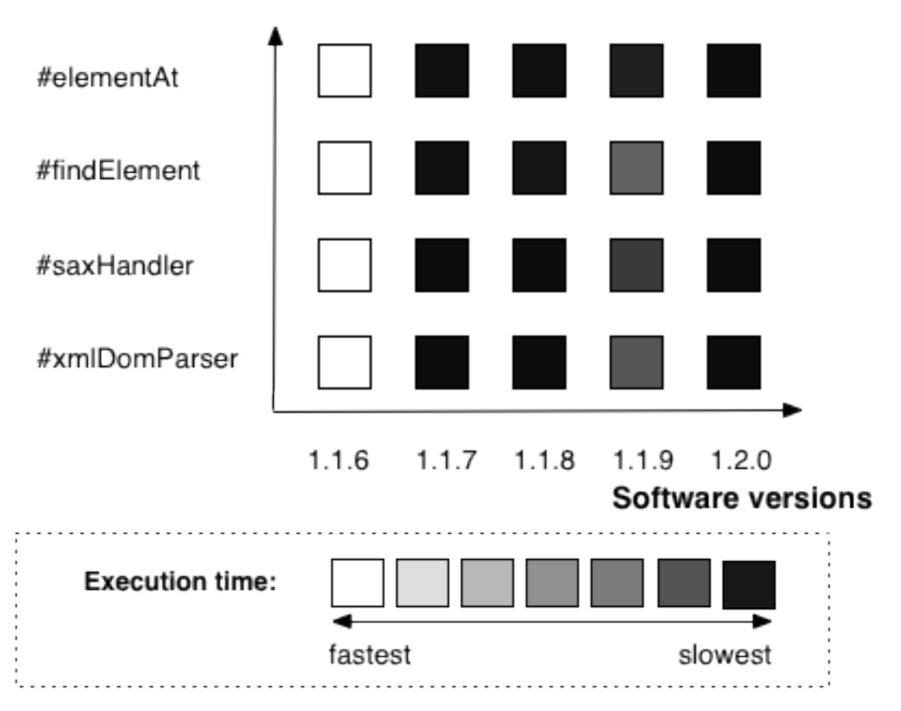
In a nutshell



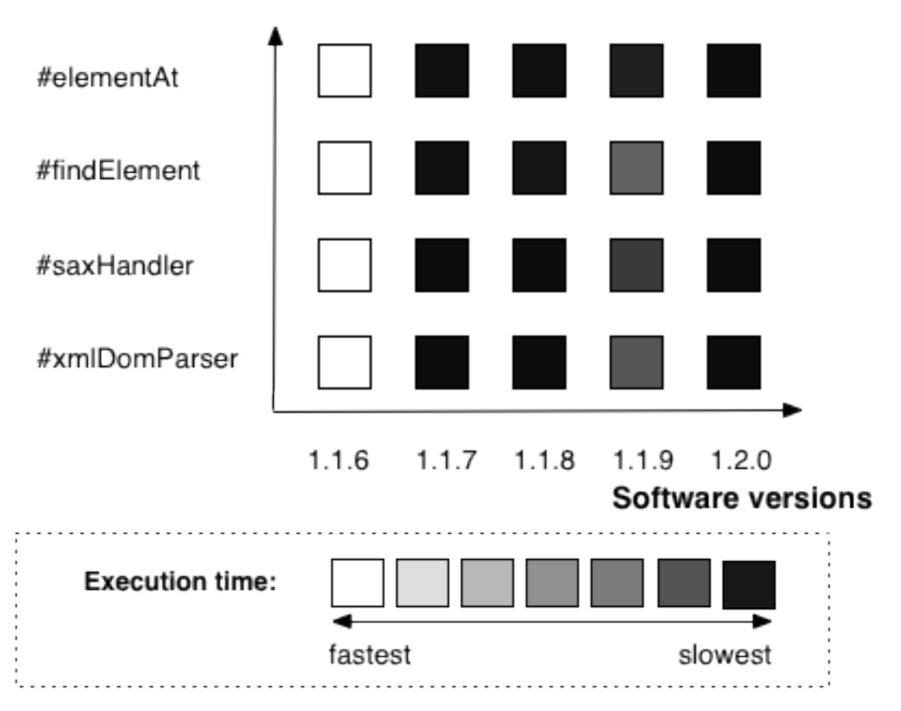
Performance Comparison Matrix (Mondrian)



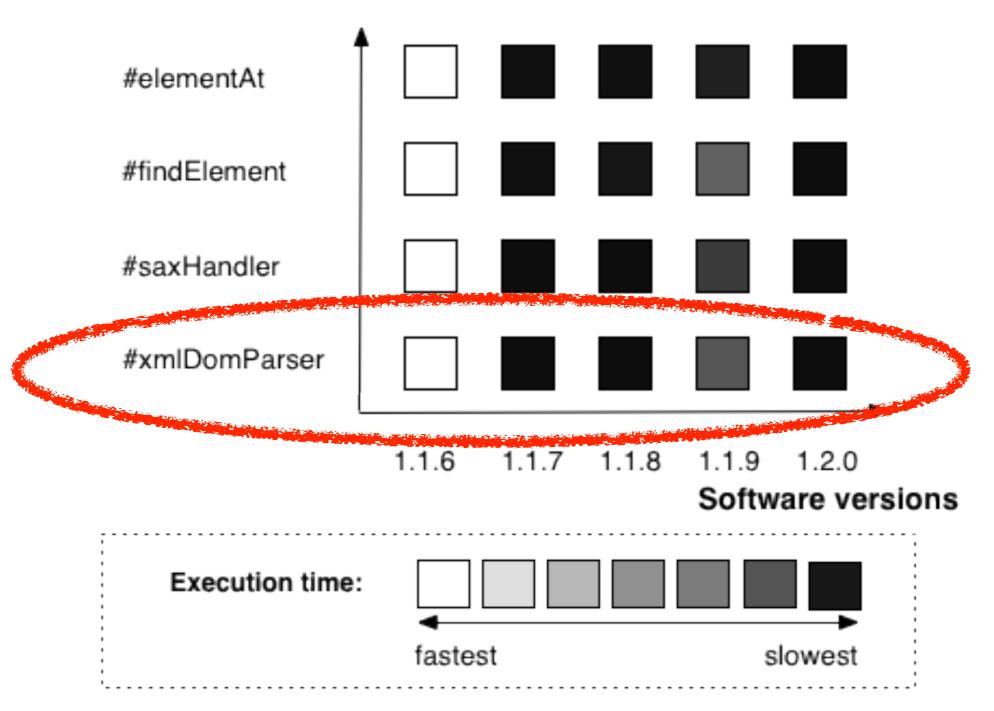
Benchmarks



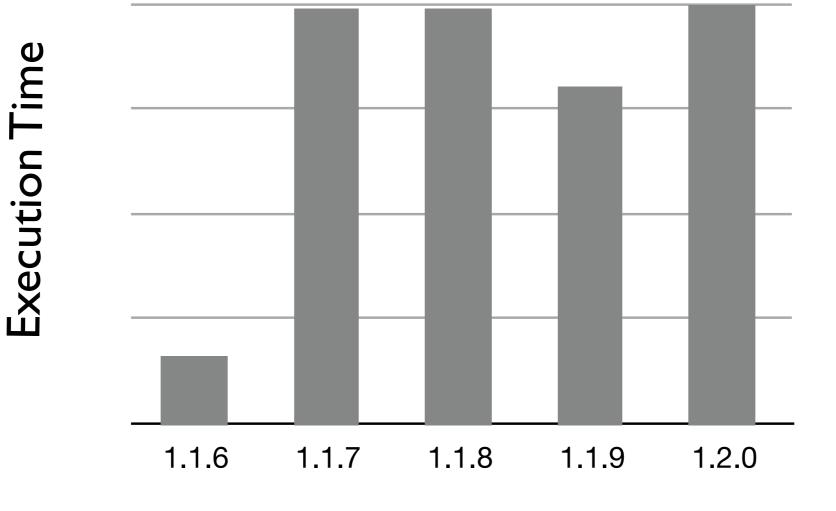
Benchmarks



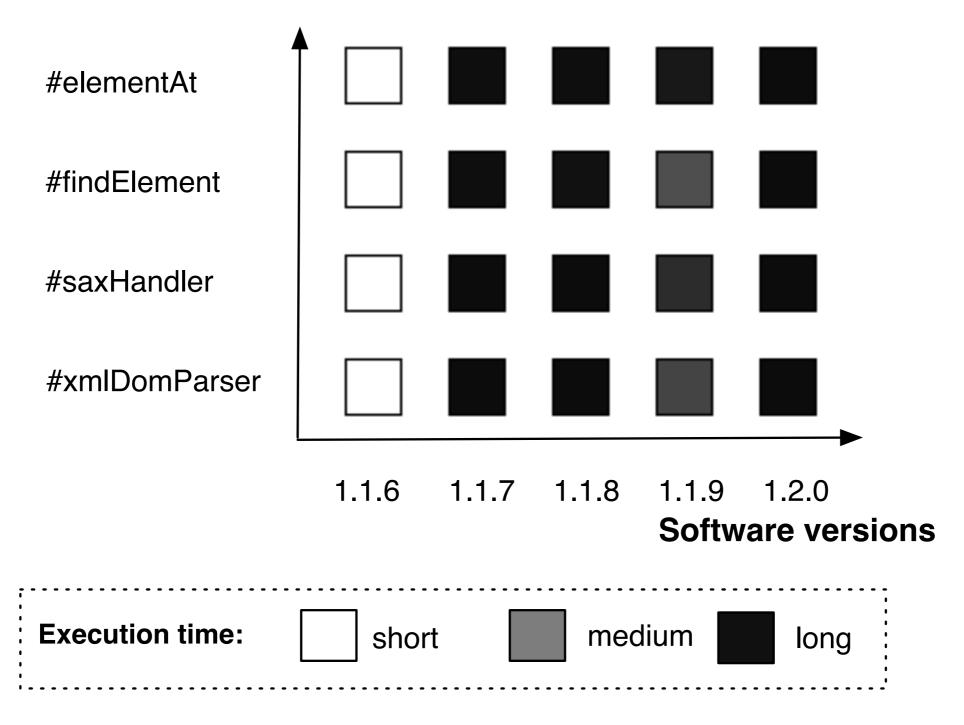
Benchmarks



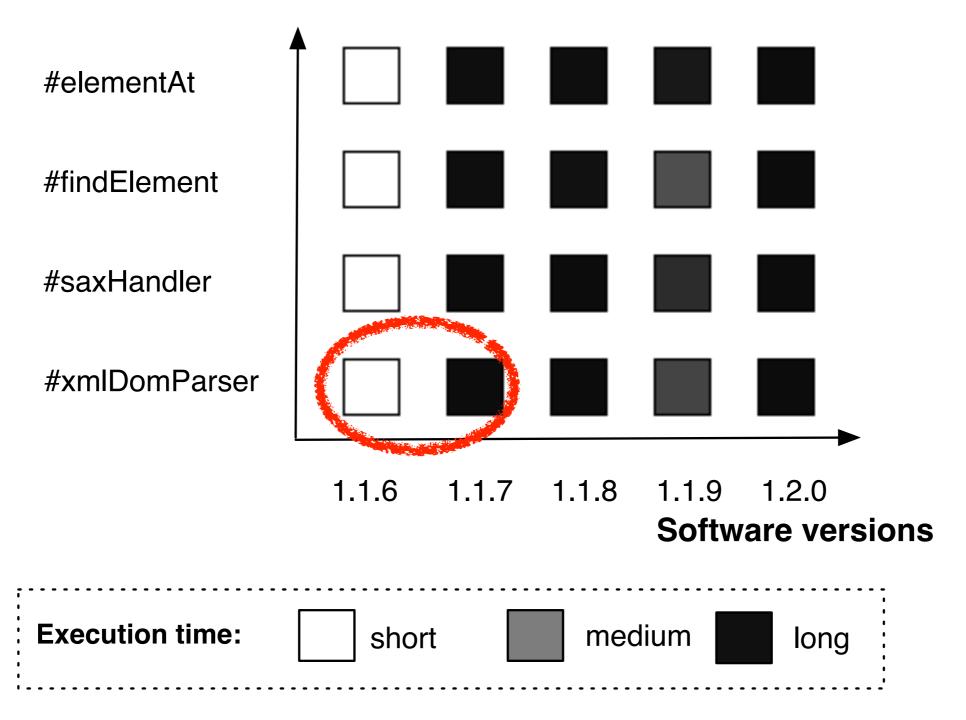
#xmlDomParser (XMLSupport benchmark)

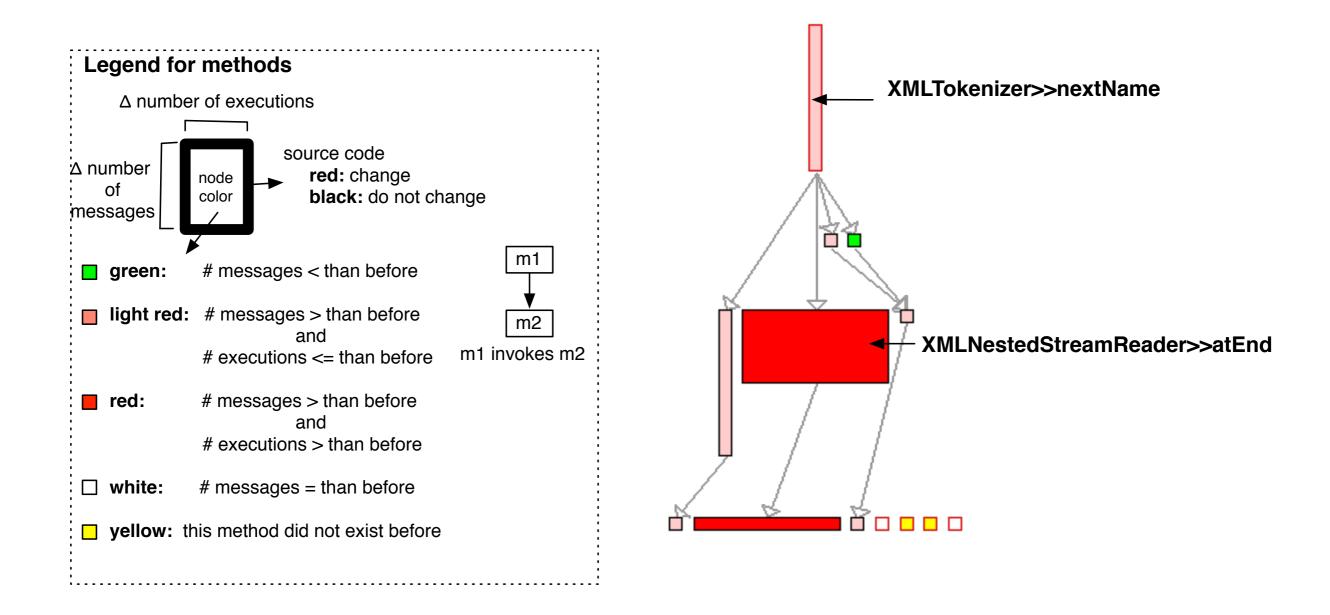


Benchmarks

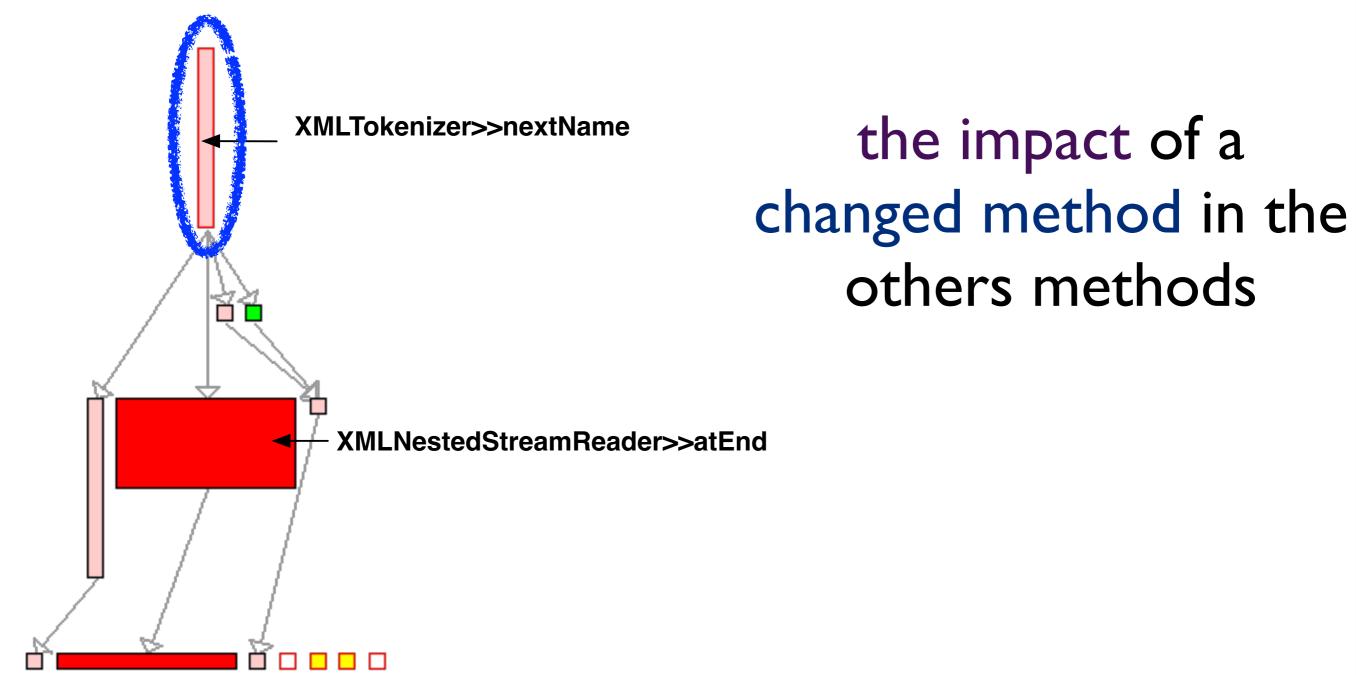


Benchmarks









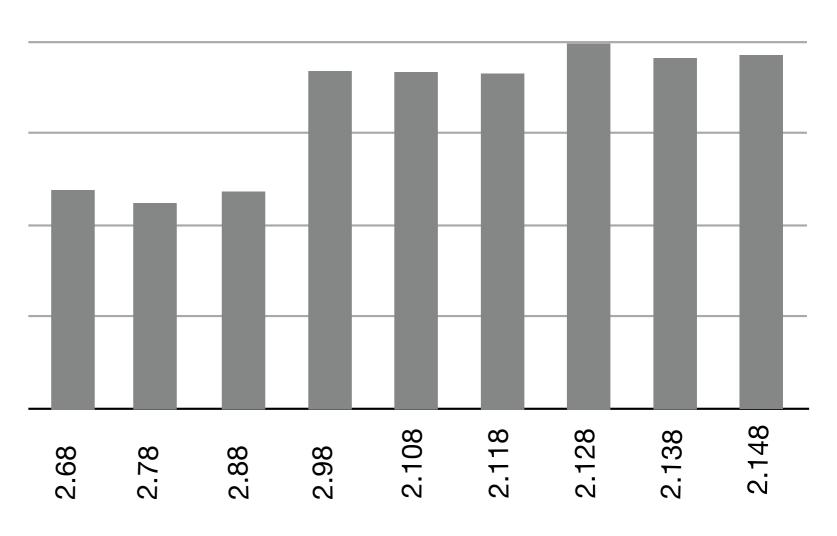


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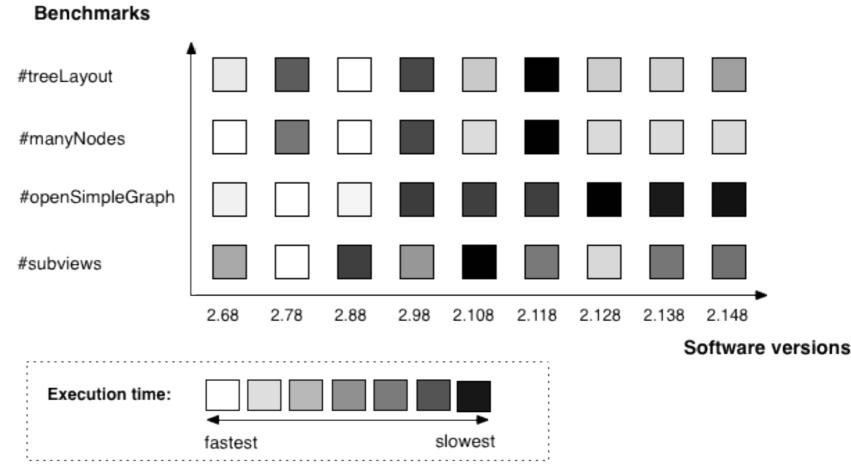
Conclusions

- Performance Evolution
- Multidimensional Profiling
- Future Work



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