

Tracking the Evolution of Object-Oriented Quality Metrics on Agile Projects

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Projects

- 7 projects:
 - 5 academic
 - 2 governmental
- First semester of 2006
- Classified on XP-EF on recent study ^[1]

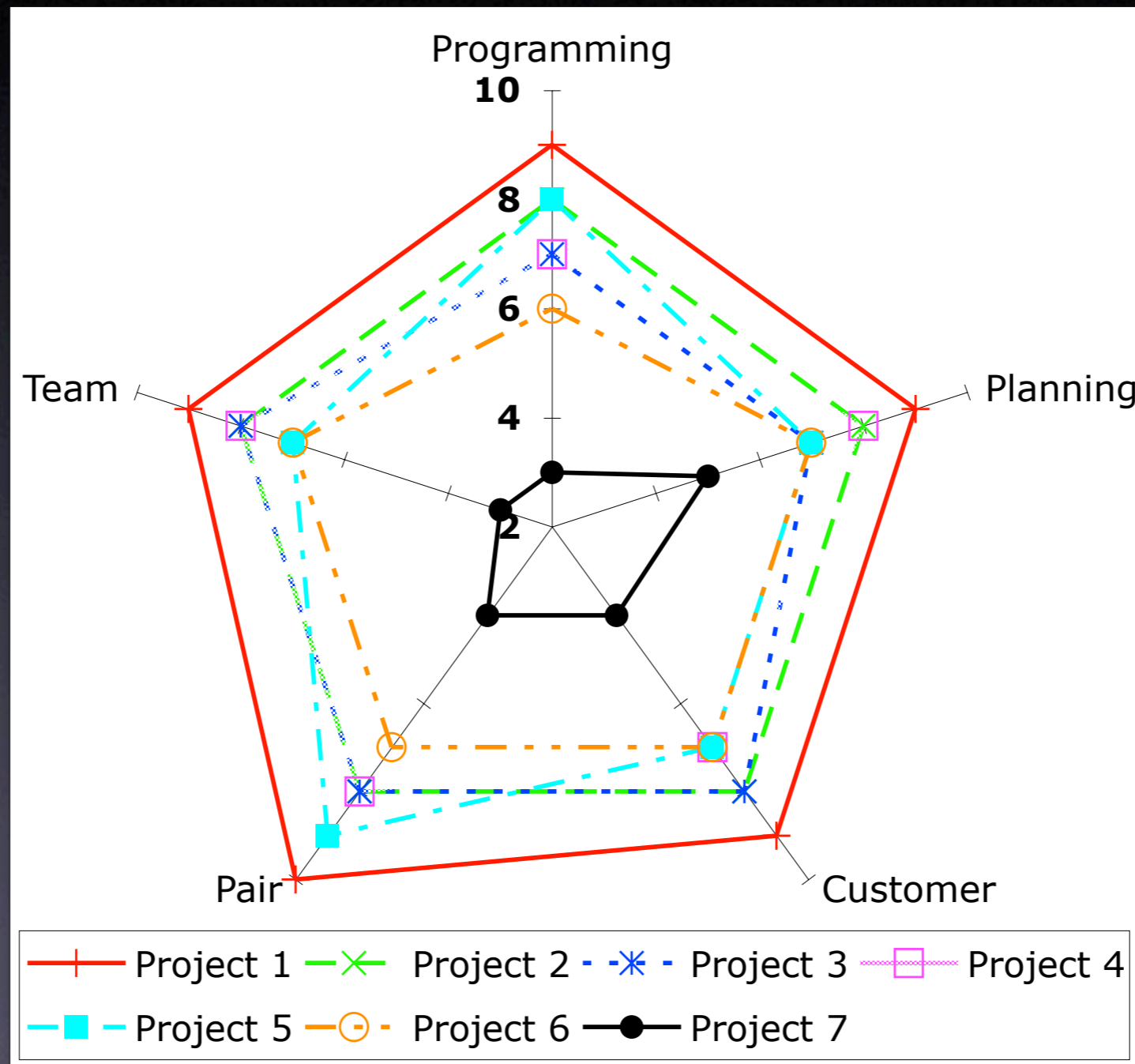
Projects::Academic

- Full-semester course on XP
- 6-8 weekly hours/student
- 2-4 iterations
- 3 greenfield projects
- 2 projects started in previous offerings

Projects::Governmental

- São Paulo State Legislative Body (ALESP)
- 30 weekly hours/employee + part-time consultants
- 1 greenfield project
- 1 legacy project (outsourced development)
- Our role: training + coaching

XP Radar Chart [2]



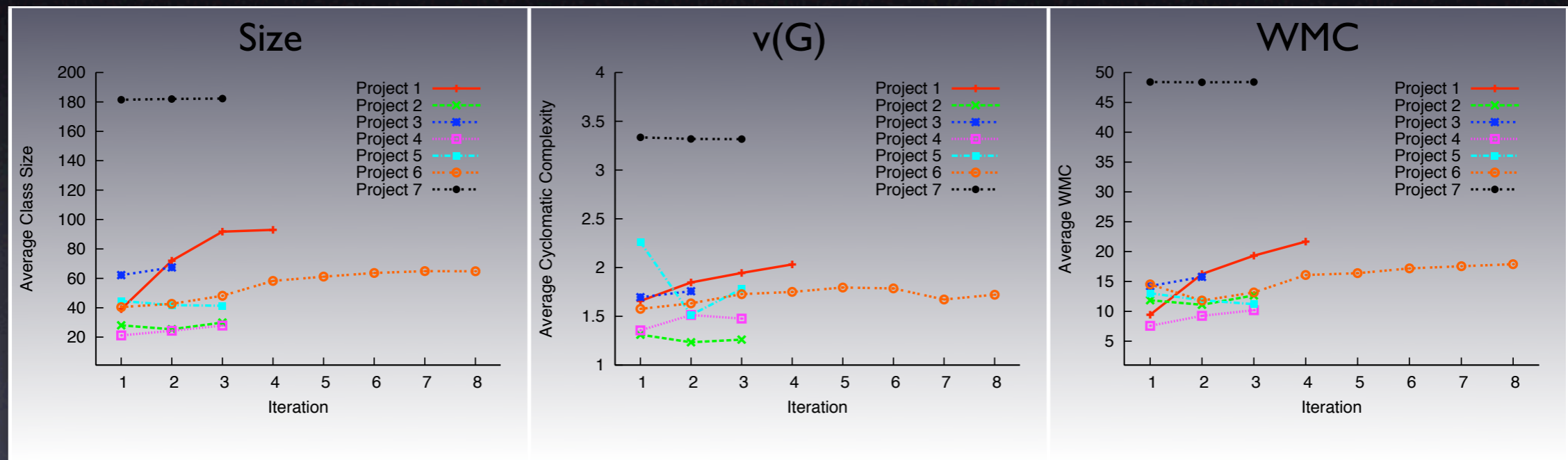
Method

- Extracted from source code repository
- XML exported by Eclipse Metrics Plugin ^[3]
- Post-processed by a Ruby script

Metrics

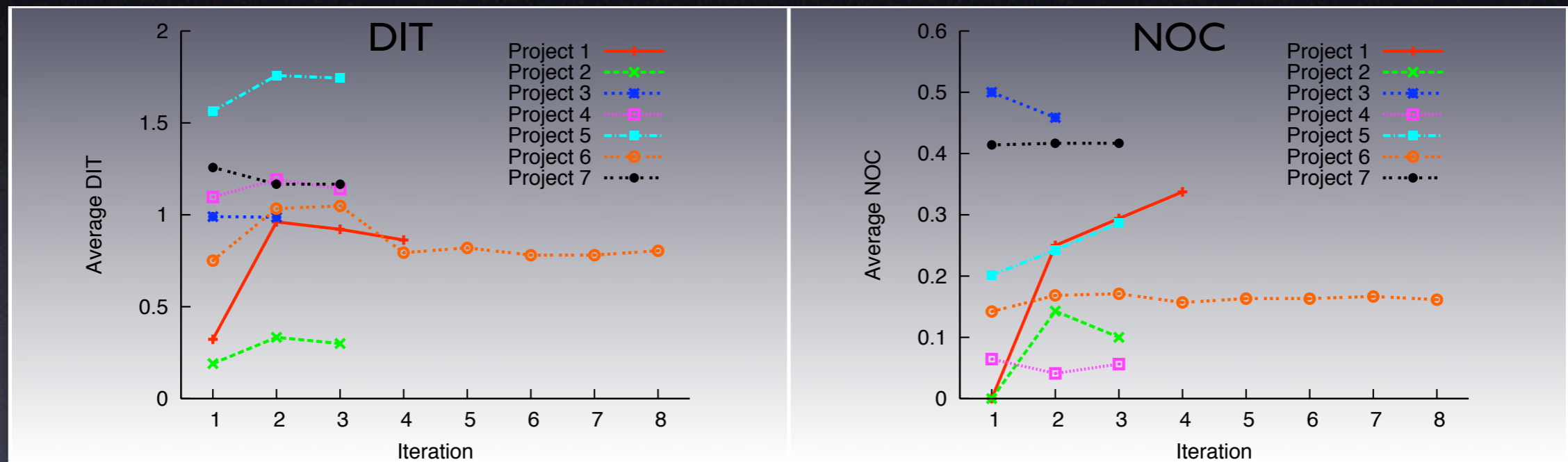
- Chidamber and Kemerer: CK suite ^[4]
 - WMC (Cyclomatic Complexity), LCOM, DIT, NOC
- Bob Martin ^[5]
 - Afferent/Efferent Coupling
- Size (Lines of Code)

Results



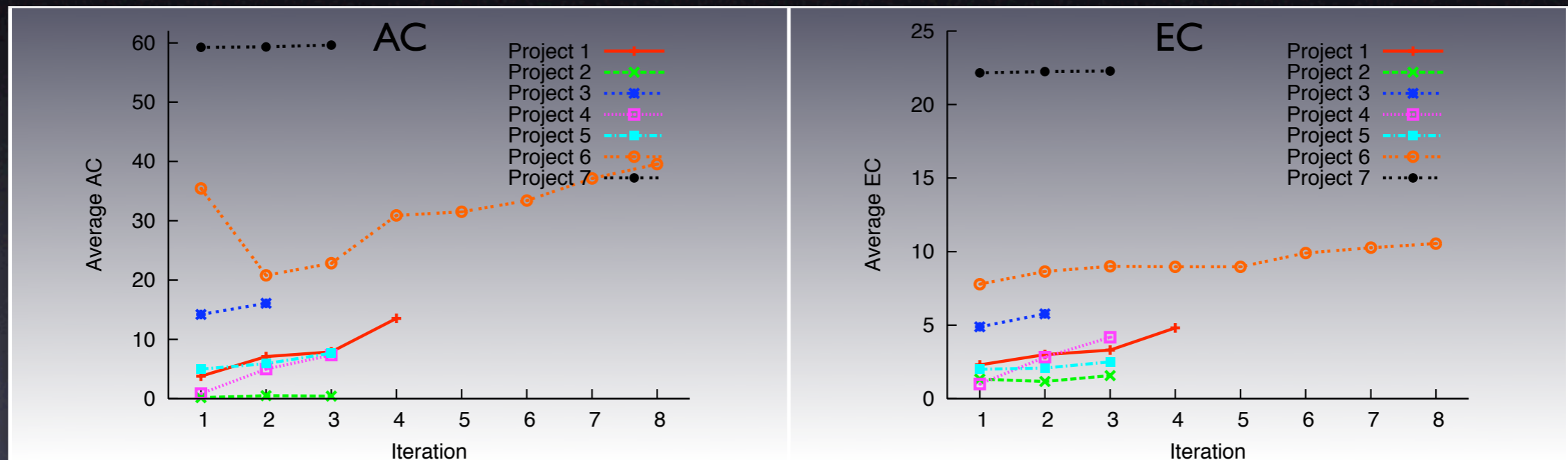
- Size, $v(G)$, and WMC are highly correlated
- Project 7 have higher values
- Trends vs. Practices

Results



- Use of inheritance not abused
- NOC lower for greenfield projects

Results



- AC and EC are correlated at package level
- Project 7 have higher coupling

Conclusions

- Project with less agile practices presented higher complexity, size, and coupling metrics
- High correlation between size/complexity metrics and between coupling metrics
- Automated collection of metrics can provide information to support the tracker
- Trends can indicate progress, or lack of progress, on practices such as testing and refactoring

References

[1] Danilo Sato, Dairton Bassi, Mariana Bravo, Alfredo Goldman, Fabio Kon. “Experiences Tracking Agile Projects: an Empirical Study”. *Journal of the Brazilian Computer Science*. 12(3):45-64, 2006.

[2] William Wake. “XP Radar Chart”. <http://www.xp123.com/xplor/xp0012b/index.shtml>, Jan. 2001.

[3] Eclipse Metrics Plug-in. <http://metrics.sourceforge.net>

[4] Shyam R. Chidamber and Chris F. Kemerer. “A Metrics Suite for Object Oriented Design”. *IEEE Transactions on Software Engineering*, 20(6):476–493, 1994.

[5] Robert C. Martin. “Agile Software Development: Principles, Patterns, and Practices”. Prentice Hall PTR, 2002.

Questions?

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