

A Systematic Literature Review of Software Product Line Metrics

Rodrigo Queiroz

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Introduction

- Software Product Lines

"A software product line (SPL) is a set of software-intensive systems that share a common, managed set of features satisfying the specific needs of a particular market segment or mission and that are developed from a common set of core assets in a prescribed way" [1]

SEI - Carnegie Mellon Institute

Motivation

- Measuring properties like complexity, understandability, maintainability, reusability, etc. can improve, influence and guide software development practices [2]
- Several metrics for SPLs have been proposed, but the field remains largely unexplored [3]
- The need of SPL metrics has been highlighted as one of the crucial items in the research agenda of the area [3]
- **Goal:** Identify and understand all the metrics that can be applied to the context of SPL to assess internal quality.

Research Questions

- What are the internal software quality metrics for Software Product Lines?
- There is divergence in the definition of those metrics?

Sources

- ACM Digital Library (<http://dl.acm.org/>)
- IEEE Xplore (<http://ieeexplore.ieee.org/>)
- ScienceDirect (<http://www.sciencedirect.com/>)

SLR Protocol

- Language: English
- Keywords: metrics, software product line, software product family, family based software, software variability, software mass customization, feature oriented software, software feature model.

Search String

(metric OR metrics)

AND

(“software product line” OR “software product family” OR “family based software ” OR “software variability” OR “software mass customization” OR “feature oriented software” OR “software feature model” OR “software product-line” OR “software product-family” OR “software-variability” OR “feature-oriented software”)

Selection Criteria

- Inclusion criteria
 - 2003 - present
 - Journals and Conferences
 - Publications found through snowballing
 - Capes Qualis A1, A2, B1

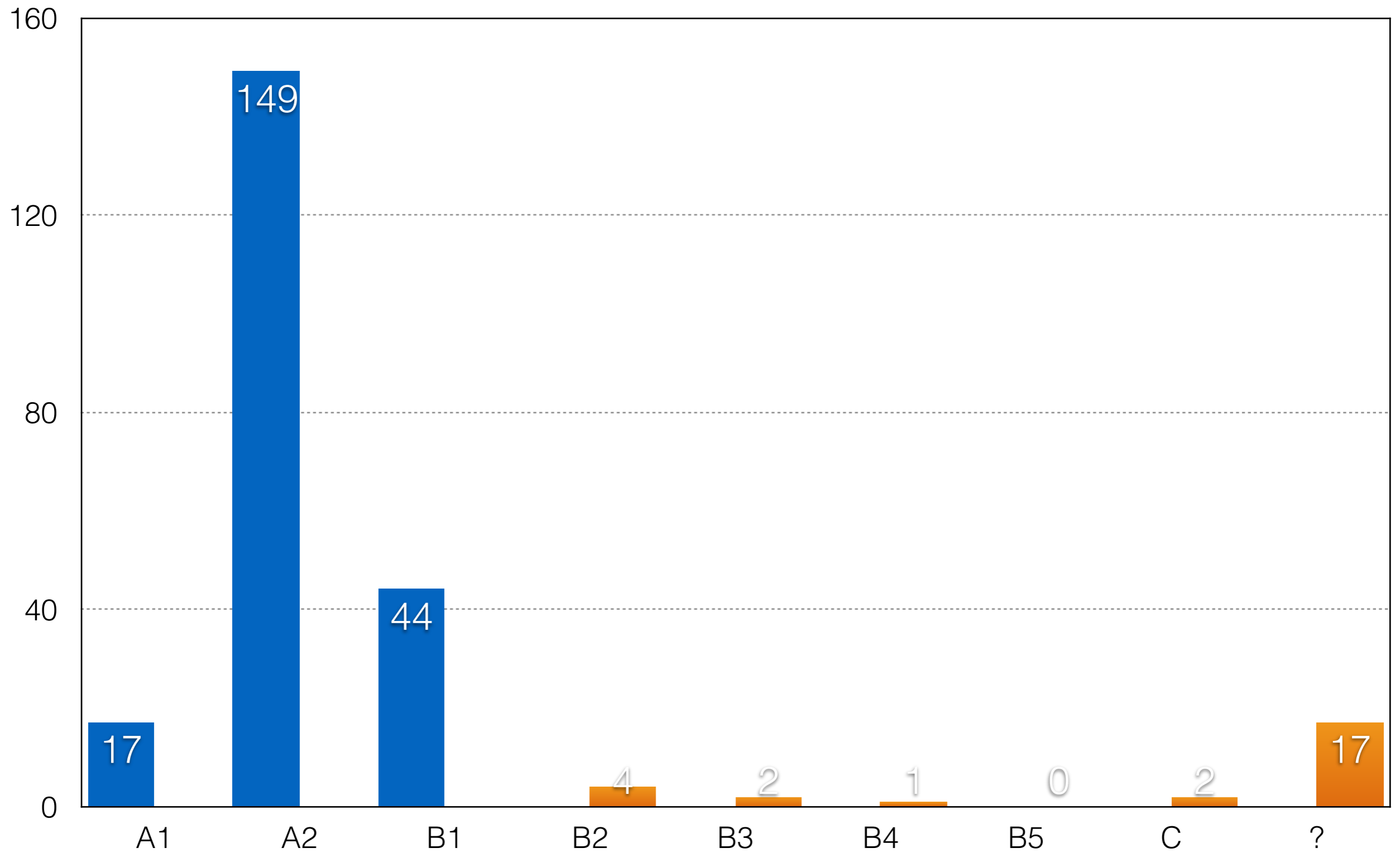
Selection Criteria

- Exclusion criteria
 - Master and Doctoral theses
 - Surveys
 - Books, magazines, web sites and technical reports
 - Publications without abstracts
 - Publications not related to Computer Science
 - Publications without explicit metrics for SPLs

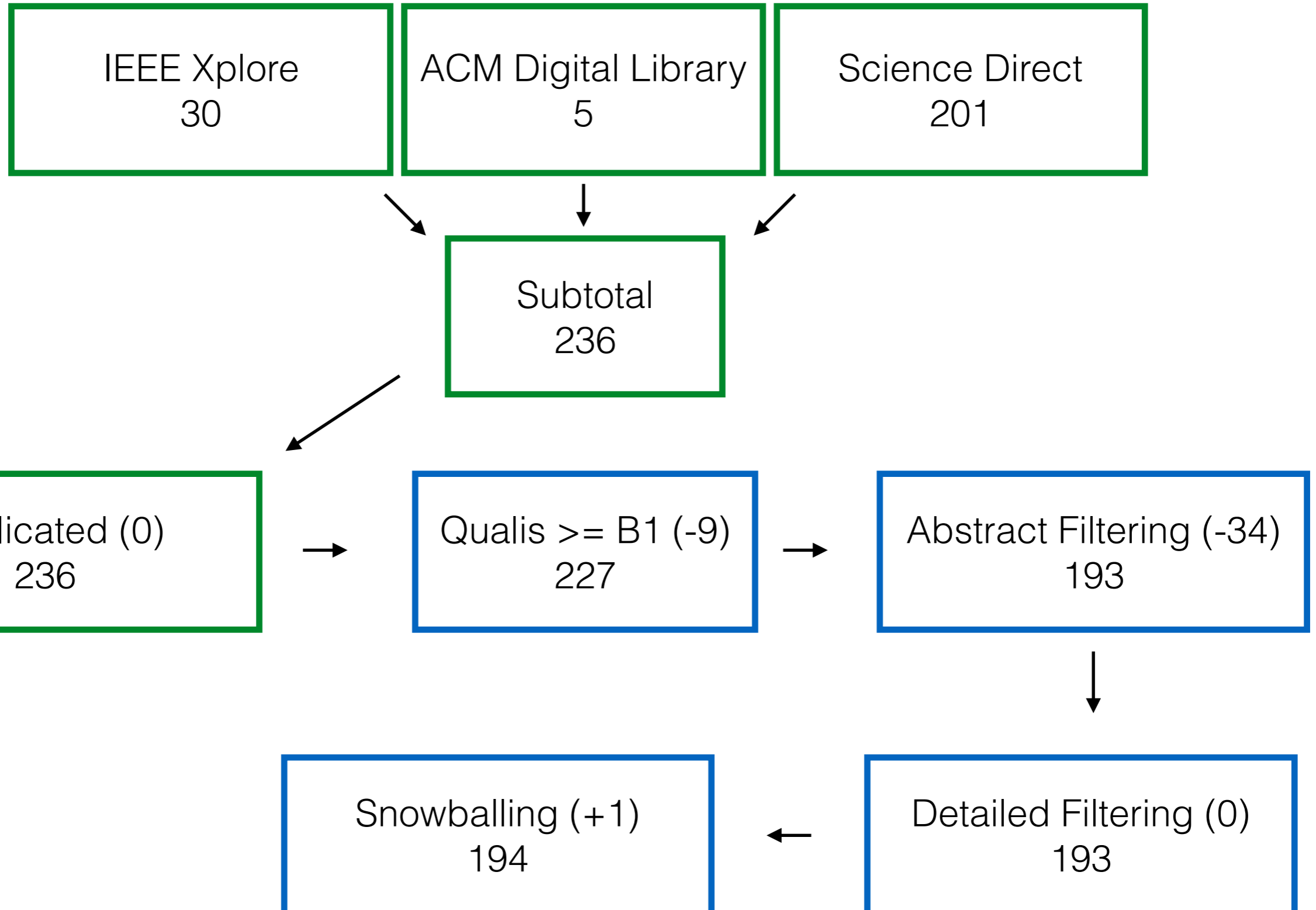
Preliminary Results

Source	Results
ACM Digital Library	5
IEEEXplore	30
ScienceDirect	201
TOTAL	236

Qualis



Selection Process



Data Extracted

- The list of all identified metrics for SPLs.
- Their definitions and main references.
- Analytical synthesis of the papers.
- Narrative synthesis of the results.

Thank You

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References

- [1] Software Engineering Institute - SEI. "Software Product Line" [Online]. Disponível: <http://www.sei.cmu.edu/productlines/>. Acesso: abril/2014.
- [2] .N. E. Fenton and S. L. . Pleeger. Software Metrics. A Rigorous and Practical Approach. Addison Wesley, 2 edition, 2003.
- [3] How complex is my Product Line? The case for Variation Point Metrics. Roberto E. Lopez-Herrejon, and Salvador Trujillo. VaMoS, page 97-100. (2008)