

# An Extraction Method to Collect Data on Defects and Effort Evolution in a Constantly Modified System

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## Context

- Goal:
  - search for technical debt via the analysis of anomalies in the evolution of defects and effort estimation deviation.
- Motivation:
  - we did not know where to look for technical debt; we needed to make some suppositions
- Specific goal:
  - definition of a systematic data extraction method
- Object of study: Groupware Solution for mobile devices
  - Mobile Application (SMB): +60,000 lines of code, evolution from 2005 to 2011, considerable number modifications due to very dynamic technology and market.

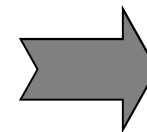
## The Data Extraction Method

- Definition of research questions:
  - What was the behavior of effort estimation deviation?
  - What was the behavior of defect evolution?
- Definition of keywords from each question:
  - Budget, actual cost, delay, duration, etc.
  - Defect, bug, error, etc.
- Data sources:
  - Project plans and weekly reports from each release.
  - Project communication, e-mails, etc.

## The Data Extraction Method

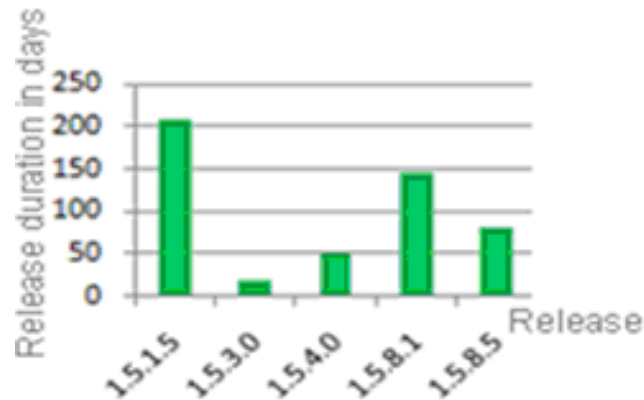
- Case study definitions:
  - Unit of analysis: individual releases
  - Sampling method: more problematic releases in terms of defects and effort deviation
- Consolidation of information via templates

<b>Changes (Qualitative)</b>
Change description:
Type of change:
Involved artifacts:
Time
Originating Release:
Planned Release:**
Actual Release:
Owner:
Defect ID:
Impact on structure complexity:
Complexity:



Relation of concepts

## Example of Findings



- Effort estimation deviation:
  - Two small releases followed by an atypical effort deviation.
  - **Evidence of technical debt?**

Release	Activity Name	Planned Work Time (h)	Replanned Work Time (h)	Realized Work Time (h)
1.5.3.0	Global tests and stabilization	92	38	38
1.5.4.0	Free test	15	15	15
1.5.8.1	Global tests and stabilization	108	76	360
1.5.8.5	Development tests and stabilization	15	15	15