Evaluating and managing technical debt in software development lifecycle

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”Hey guys, we are on a really tight schedule and we don’t have time to make all of these features perfect now. Let’s just fix them after the release.”

”We don’t have time to combine these two databases completely because customer needs them, so we will just write some patch code between them for now and we will rewrite this after the release.”
Technical debt

- Trading long-term quality to short-term gain
- Similarity to finance debt
- Shortcuts, workarounds and omitted quality in software development lifecycle
- Not just related to coding and source code
  - Architectural, requirements, testing, process, people debt etc.
- Intentional and unintentional technical debt
- Short-term vs. long-term effects
Research objectives

- Technical debt is an essential part of current software development and companies must be able to manage their technical debt.

- Focus is more on the management side of the technical debt causes and effects, rather than on the qualities of technical debt in source code and how to measure them.

- The current literature includes very few evaluation and management strategies for technical debt and lacks empirical evidence.

- The objective of this research is to create a theoretical model which describes the role of technical debt evaluation and management in the software development lifecycle.
Research questions

• “How to evaluate and manage technical debt in the software development lifecycle?”

  • What are the causes and effects of technical debt in software development life cycle?

  • What management and technical perspectives can be used in the evaluation and/or management of technical debt?

  • What are the current management strategies and practices for managing and reducing technical debt in software life cycle?
Research methodology

- Qualitative research and grounded theory method.
- Case studies and field interviews.
- The selection of case study companies mainly dictated by research program.
Outcome of the research

- Combining the information gathered during the research will help us to create a theoretical model of the technical debt evaluation and management in software development lifecycle.

- The model will describe the evaluation and management of technical debt with practices that help companies to manage and reduce it.

- The model of technical debt evaluation and management can be applied to practice for improving companies’ internal and external processes that will help to create high-quality products on time and budget.
Results so far

• Results have been promising and revealed several interesting aspects of the research topic.

• Total of 33 interviews conducted from 4 companies and 6 cases

• One published article:
  • *The sources and approaches to management of technical debt: A case study of two product lines in a middle-size Finnish software company*
Future research

- Conduct more case studies and field interviews to gather more data.
- Continue with existing companies and case studies.
- Systematic mapping study.