Research Proposal: Digging deeper into Software maintainability

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1 Introduction

Software maintenance can be defined as any modification to the product after delivery to the customer. Maintenance is considered the most expensive portion of a project's life-cycle and is known to take up around 40% to 80% of the total costs of the project according to a paper by Robert Glass [Glass,].

A 1999 study[Zhang and Pham,] after analysing 32 factors found that Software complexity, Programmer skill, testability and test coverage to the major factors affecting Software reliability and maintainability.

Considering the critical role played by maintainance in a software project's lifecycle I would like to focus my research on uncovering the influence of software models and quality attributes on Maintainability.

2 Description

My research into maintainability would consist of two sections. The first would be an analysis of software models and their influence on maintainability. For example in the paper "Long-term Life Cycle Impact of Agile Methodologies" [Kajko-Mattsson et al.,] Grace Lewis mentions that maintainability as a quality attiribute has to be baked into the system because of the small role that software architecture plays in agile methodologies.

The second section would be research into the effects of other quality attributes such as Useability, testability and Reuseability on Maintainability. For example in a paper discussing the effects dependency injection [Razina and Janzen,] the authors note how decreased coupling of software components improves testability and also maintainability.

3 Relevance

Annotated Biblography

[Glass,] Glass, R. Frequently forgotten fundamental facts about software engineering. 18(3):112–111.

[Kajko-Mattsson et al.,] Kajko-Mattsson, M., Lewis, G., Siracusa, D., Nelson, T., Chapin, N., Heydt, M., Nocks, J., and Snee, H. Long-term life cycle impact of agile methodologies. In *22nd IEEE International Conference on Software Maintenance, 2006. ICSM '06*, pages 422–425.

[Razina and Janzen,] Razina, E. and Janzen, D. Effects of dependency injection on maintainability. pages 7–12.

[Zhang and Pham,] Zhang, X. and Pham, H. An analysis of factors affecting software reliability. 50(1):43–56.