

Issues in Software Inspection Practices

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Abstract. The motivation for this research comes from a need to improve software inspection practices in software organizations. Even if inspections are well defined and regularly used in an organization, there may be some problems which can greatly reduce inspection effectiveness. The paper presents a list of inspection related problems which are known in the literature. It also relates some experiences from two case organizations. In addition, this paper provides an approach which helps identifying problems of this kind and directing limited improvement resources effectively.

1 Introduction

Since Michael Fagan published his software inspection method [2] almost 30 years ago, it has inspired several researchers who work with inspections. Existing research is strongly concentrated on different inspection methods and on different factors in inspection effectiveness. For example, Laitenberg and DeBaud [12] have introduced these research areas in their survey. There is very little systematic research conducted about inspection adoption and improvement in an organization.

Research which would describe how software industry is really practicing inspections is still lacking. However, some references are available. Johnson [7] reported about an informal survey, which indicated that 80% of the 90 respondents practised inspection irregularly or not at all. Also, CMM [18] assessment results may be a useful indicator about the use of inspections. A recent report of the Software Engineering Institute [19] shows that about 55% of the assessed organizations between the years 1999-2003 are still below the third level where some kinds of formal reviews are required. These statistics obviously emphasize organizations which take their process improvement seriously. It can only be guessed how small the fraction of the whole software industry that would reach the third CMM level is, and how well this indicates the use of inspections. Regardless of the missing facts about the inspection use in industry, there is certainly need for inspection improvement. The major motivation for this paper comes from that need.

There is already some support for inspection improvement in the form of maturity models (see [10] and [21]). Those models describe what kinds of elements an organization should have in their inspection practices, and can assess the current level of inspection practices in an organization. The assessment may also give some

suggestions about where the improvement actions should be directed to. However, even if inspections are formally defined and regularly used in an organization, there may be some problems which make inspections ineffective or in the worst case may totally prevent the inspection practice. This paper introduces a problem based approach to inspection improvement. This approach is created to help an organization to identify possible problems in their inspection practices. It may also help the organization to target its improvement actions effectively.

The major focus of this research was on the field of problems related to software inspections. There is no existing systematic research about inspection problems, although there are problems known in several areas. Therefore, the first thing in this research was to list the known problems in the literature. The second task was to collect empirical experiences from two case organizations. These experiences were used to evaluate the original problems listed to get some ideas for inspection improvement. An additional goal was to find some new problems from the case organizations.

The following section will give some background knowledge about the case studies. Section 3 will present a list of known inspection problems and possible solutions. It also includes some case experiences about the problems listed. Section 4 discusses more fully the case experiences, and Section 5 will introduce a problem based approach for inspection improvement.

2 Case Studies

The case studies in this research had the following goals:

- to evaluate the validity of the inspection related problems found in the literature
- to find some new problems
- to find out how the case organizations are practicing inspections or more informal reviews

The case experiences were collected from two organizations, the selection being based on their size. Both of these organizations (> 250 employees) have a quite well defined software development process. These organizations are referred to as the organization A and the organization B in this paper. It was a conscious decision to choose organizations which already had some experience about inspections. This naturally means that problems emphasized here may differ from those of a small organization which does not use inspections regularly.

2.1 How Were the Case Studies Conducted?

The case studies included three interviews in each of the two organizations. The organizations were asked to find interviewees from different levels in the organization. The recommended roles were *quality manager*, *project manager* and *software developer*. The case organizations had no difficulties in finding relevant interviewees.