

University of Calgary
Dept. of Electrical and Computer Engineering
Software Requirements Engineering – SENG471

Assignment 1

Formal Inspection of a Requirements Specification

Tutorial – About Inspections

Informal reviews happen all the time in software engineering, e.g. any time when two or more people chat about or comment on various aspect of the software. A formal inspection is a scheduled meeting, with an agenda, and a written output. Furthermore, it is ‘technical’ in the sense that it concentrates on the technical aspects of a product, rather than scheduling, budgeting, or other management concerns of the development process. There are many inspection types described in the literature, with different names: Formal technical reviews, Fagan inspections, etc. Many of the principles are the same, no matter which variety of inspection you use.

Objectives of a formal inspection process for requirements documents:

- to uncover errors in function, logic or understanding
- to verify that requirements are valid
- to ensure that standards are complied with
- to achieve uniformity (of style, quality, etc.) across a project
- to collect data on error profiles so that these errors can be avoided on future projects
- to train junior software engineers (by allowing them to review other’s work)
- to promote continuity across teams

For programs, formal inspection has been shown to be more effective than testing in ensuring that programs are error-free. Furthermore, it can be used on products which cannot be tested, such as specifications, designs, documentation, manuals, test plans, etc.

Formal inspections generally have two main parts: a scheduled review meeting, and individual inspection by each member of the team *prior to* the scheduled meeting. An inspection team should consist of between 3 and 7 people, depending on how experienced the review leader is, and how well the necessary types of expertise can be covered. The review meeting should last for no more than 2 hours. It should focus on a small manageable portion of a product, not on the whole thing. It should be held only after the author of that product has finished it, but in plenty of time to take action on the results of the review. All reviewers should agree on the outcome, which may be to accept or reject the product, or to recommend specific modifications.

The following roles (at least) are usually needed during the review meeting:

- Leader - chairs the review, ensuring it remains focused, and that everyone contributes
- Reader – (possibly the author) steps through the product inviting comments from the review team.

- Recorder - keeps a public record of issues raised, preferably visible to the reviewers (e.g. on a whiteboard)

The material to be inspected should be circulated to all reviewers in plenty of time for them to prepare for the review. Each reviewer should spend around two hours preparing, by familiarizing themselves with the product, and noting any issues they wish to raise in the review meeting. Unprepared reviewers are not much use.

- Don't proceed with the inspection if some of the reviewers are not present, or have not prepared properly.
- Review the product, not the person who wrote it
- Stick to the agenda
- Limit debate and rebuttal – defer contentious issues to be discussed after the meeting.
- Identify problems but don't try to solve them
- Use checklists where appropriate
- Schedule inspections into the project plan
- Train all reviewers
- Review the inspection process itself occasionally.

Finally, note that inspection meetings rapidly become unproductive after about two hours, because it is hard to sustain the level of attention needed. The leader needs to manage to the meeting to ensure the time is used carefully. If only part of the product has been inspected, it is better to adjourn the meeting. If the document to be inspected is large, then suitable portions of it should be selected for each inspection.

Types of Inspection:

- Checklist - use a checklist of questions or issues appropriate to the type of product being reviewed. The meeting is structured around the checklist – consider each item on the list in turn during the meeting.
- Walkthrough - One person presents the product step by step, with reviewers raising issues when necessary. The structure of the meeting reflects the structure of the product.
- Round Robin - Each reviewer in turn gets to raise an issue. The structure of the meeting reflects the composition of the review team.
- Speed Review - Each reviewer gets a short time (e.g. 3 minutes) to review a small chunk of the product, before passing it on to the next person. This combines a walkthrough with a round robin, and is good for assessing comprehensibility, as the reviewers only get a limited time to understand each chunk.

[**NOTE:** The meeting structure is independent of the logs/checklists used for the individual inspections.]