

University of Toronto

Department of Computer Science

CSC340F - Information Systems Analysis and Design

September 17, 2004
Prof. Steve Easterbrook

Assignment 1: Formal Inspection of a Requirements Specification

Due Date: 9:20am, Friday, October 8
(i.e. within 10 minutes of the start of the tutorial)

This assignment counts for 10% of the final grade

Conduct a formal inspection of an existing requirements specification. This project is designed to give you exposure real specifications, and some practice at critiquing specifications. In particular, it is a chance to apply the ideas covered in the lectures to see how well requirements are specified in practice.

The project is to be carried out in teams of three. Each team will submit one report.

I. Doing the Assignment

This assignment has ten steps. They are:

1. *Select a Specification to inspect.* Several sample specifications will be made available on the course website within a few days of the release of this assignment. You should choose *one* of these for your team to inspect. You will also need to decide which portions of the specification to inspect, if you don't think it is feasible to inspect the entire document in one meeting.
2. *Select an inspection process.* The course notes offer a number of ways of organizing an inspection. You will also need to gather any supporting documents, including checklists, role descriptions, defect recording forms, etc.
3. *Familiarize yourself with the inspection forms.* There are forms for documenting the defects discovered before and during the inspection meeting, and forms for summarizing the findings afterwards. These forms will be available on the course website.
4. *Choose the roles for your team members.* One person will need to chair the meeting. Another person will need to document the findings during the meeting. Other roles may be needed depending on your chosen inspection process.
5. *Set a date, time, and place to conduct the inspection meeting.* Make sure all team members are available, have at least 2 hours uninterrupted time, and a quiet place to work.
6. *Prepare for the inspection.* Each team member should prepare for the inspection meeting by reading the specification, and compiling an initial list of defects.
7. *Conduct the inspection meeting.* If your team is not prepared at the start of the meeting, the chairperson should postpone the meeting, and arrange an alternative date.
8. *Summarize the findings after the meeting.* Make sure someone collects all the forms together, and summarizes the defects discovered.
9. *Write a report* that describes the inspection process you used, your key findings, and a discusses any insights you gained, both on the nature of requirements specifications, and the nature of the inspection process. For example, if you had to do it again, what would you do differently?
10. *Document your teamwork* and complete a team report (see attached form)

II. What to Hand In

Hand in your report at the start of your tutorial on the due date. *Reports not handed in within the first ten minutes of the tutorial will be treated as late.*

The report describing your inspection should not exceed eight (8) pages (not counting references, appendices, forms or tables). It should include information on the following items:

1. A brief description of the specification you chose to inspect, with a brief rationale for why you selected it. Include any general observations of the quality of the specification that you made prior to the inspection process.
2. A description of the inspection process you used. What roles did your inspectors take on? How did you structure the inspection meeting?
3. The results of the inspection. Use the forms on the course website to document your inspection results. Use continuation sheets if you run out of space on a form.
4. A discussion of the lessons learnt from your inspection meeting. Use the “Inspection Lessons Learnt Questionnaire” as a guide to help you think about what you learnt.

Written Presentation Requirements

Be sure to include a cover page indicating the name of your team, the names of all team members, title of work, course, date and tutor's name. Assignments will be judged on the basis of visual appearance, grammatical correctness and quality of writing, as well as their contents. Please make sure that the text of your report is well-structured, using paragraphs, full sentences, and other features of a well-written presentation. The report must not consist of itemized lists of points (except when reporting your inspection data). Text font size should be either 10 or 12 points.

III. Suggestions

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 a variety of 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 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:

- 1) 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.
- 2) 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.
- 3) Round Robin - Each reviewer in turn gets to raise an issue. The structure of the meeting reflects the composition of the review team.
- 4) 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.

IV. Marking Scheme

Your assignment will be marked by your tutor. If you have questions about a marked assignment, you should first ask your tutor before/after a tutorial. If you don't get satisfactory answers, you should talk to your instructor.

Marks for this assignment will depend on the following factors:

Preparation (10%): Did you give a brief introduction to the specification, and describe your reasons for selecting it? Did you describe your initial assessment of its quality?

Inspection process (30%): Did you describe the process you used for the inspection, and the reasons for choosing this process? Were the roles of the members of your team clear?

Presentation of results (30%): Did you use the forms for describing the findings? Are the findings described clearly? Did you summarize and categorize the defects?

Description of insights (20%): Did you comment on the overall quality of the specification, and relate it to the ideas about requirements and specifications covered in the lectures? Did you critique your inspection process, and say what you would do differently if you had to do it again?

Presentation (10%): The style of your presentation, including language, grammar, clarity of the presentation etc. (5% - Language; 5% - Style and clarity)

Team Report Form

(must be submitted with assignment)

Description of roles and contributions of each team member:

Name	% of team Effort	Signature

Date submitted: _____