Procedures for Conducting Inspection*

Table of Contents

* This document is adopted by Y. Hu from "Peer Review Process Description."

1. Introduction

In an inspection (part of a peer review), co-workers of an author who created a software work product examine that product. The candidates for inspection includes all interim and final work products, including:

- ***Requirements specification*** (the focus of the course SENG 471)
- Design and specifications of user interface
- Architecture, high-level design, and detailed designs/models
- Source code
- Test plans, cases, and procedures
- Software development plans, including project management plan, configuration management plan, and quality assurance plan

The objective of the inspection is to identify defects and correct shortcomings by undertaking the follow actions:

- To verify whether the work product correctly satisfies the specifications found in any predecessor work product, such as requirements or design documents;
- To identify any deviation from standards, including issues that may affect maintainability of the software;
- To suggest improvement opportunities to the author;
- To promote the exchange of techniques and education of the participants.

This document gives an overall inspection procedure for peer review. Although the same procedure can be used to inspect all interim and final software work product, the content below is tailored to focus on inspection of ***requirements specification***.

2. Work Aids

The following work aids are normally used for an inspection:

- Inspection summery report;
- Issue log;
- Typo list;
- Inspection moderator's checklist;
- Inspection lessons learned questionnaire;
- Checklist for requirements specification;

3. Participants

In general, a work product should be reviewed by:

- The author of any predecessor document or specification;
- Someone whose subsequent work must be based on the work product;
- Peers of the author;
- Anyone responsible for a work, which the work product interfaces to.

Attendance by any supervisory authority over the author is by the invitation of the author only.

For inspecting ***requirements specification***, suggested participants are as follows:

- Requirements analyst;
- Project manager;
- Architect;
- Designer;
- System test engineer;

- Quality assurance manager;
- User or marketing representative;
- Documentation writer;
- Subject matter expert;
- Technical support representative.

4. Procedure

Participants

All participants are inspectors, in addition to any specialized roles that they might have. For an inspection, there should be at least three participants, including the author. If there are only three participant in an inspection, the moderator shall also serve as recorder or reader. The author may not serve as reader, moderator or recorder. The roles and their responsibilities are shown below pertain to the inspection process.

Role	Responsibilities
Author	• Be a creator or maintainer of the work product to be inspected. Initiates the inspection process by asking the peer review coordinator to assign a moderator. • State his/her objectives for the inspection. • Deliver work product and its specification or predecessor document to moderator. • Work with moderator to select inspectors and assign roles. • Address items on the Issue Log and Typo Lists. • Report rework time and defect counts to moderator.
Moderator	• Use Inspection Moderator's Checklist as a work aid. • Plan, schedule, and lead the inspection meeting. • Work with author to select inspectors and assign roles. • Assemble inspection package and deliver it to inspectors at least 3 days prior to the inspection meeting. • Determine whether preparation is sufficient to hold the meeting. If not, reschedule the meeting. • Facilitate the inspection meeting, correct any inappropriate behavior, solicit input from inspectors as reader presents each section of the work product, records any action items or side issues that arise during the inspection. • Lead inspection team in the product appraisal. • Deliver completed Inspection Summary Report to the organization's inspection coordinator.
Reader	• Present portions of the work product to the inspection team to elicit comments, issues, or questions from inspectors.
Recorder	• Record and classify issues raised during inspection meeting.
Inspector	• Examine work product prior to the inspection meeting to find defects and prepare for contributing to the meeting. • Record preparation time. • Participate during the meeting to identify defects, raise issues, and suggest improvements.
Verifier	• Perform follow-up to determine whether rework has been performed appropriately and correctly.

Inspection Coordinator	• Be custodian of the project's inspection metrics database. • Maintain records of inspections conducted and data from the Inspection Summary Report for each inspection. • Generate reports on inspection data for management, process improvement team, and peer review process owner.

Entry Criteria

- The author selects an inspection approach for the product being reviewed.
- All necessary supporting documentation is available.
- The author has stated his or her objectives for this inspection.
- Reviewers are trained in the peer review process.
- Documents to be inspected are identified with a version number. All pages are numbered and line numbers are displayed. The documents have been spell-checked.
- Requirements specification to be inspected is identified with a version number. Listings have line numbers and page numbers.
- For a re-inspection, all issues from the previous inspection have been resolved.
- Any additional entry criteria defined for the specific type of work product are also satisfied.

Planning

Tasks	Responsible
1. Give moderator the work product to be inspected and all supporting documents.	Moderator
2. Determine whether work product satisfies inspection entry criteria.	Author
3. Based on the size and complexity of the work product, determine how many inspection meetings will be required.	Moderator and Author
4. Select inspectors and assign roles to individuals. Gain agreement from the other inspectors to participate.	Moderator and Author
5. Determine whether an overview meeting is required.	Author
6. Schedule the inspection, and possibly overview, meetings and distribute a meeting notice.	Moderator
7. Distribute the inspection package to the participants at least 3 working days prior to the inspection meeting.	Moderator or Author

Overview

Task	Responsible
1. Describe the important features of the work product to the rest of the inspection team. State inspection objectives.	Author
2. Evaluate the assumptions, history, and context of the work product.	Inspectors

Preparation

Task	Responsible
1. Ask Individual inspectors to prepare with specific objectives in mind, such as: checking the consistency of cross-references; checking for interface errors; checking traceability to, and consistency with, predecessor specifications; or checking conformance to standards.	Moderator and Author
2. Examine the work product, to understand it, find defects, and raise questions about it. Use the appropriate defect checklist to focus attention on defects commonly found in the type of product being inspected. Use other analysis methods to look for defects as appropriate.	Inspectors
3. Log minor defects found, such as typographical errors or style inconsistencies, on the Typo List. Deliver this to the author at or prior to the inspection meeting.	Inspectors

Inspection Meeting

Task	Responsible
1. **Open the Meeting:** Introduce the participants (if necessary) and state their roles, state the purpose of the inspection, and direct inspectors to focus their efforts toward finding defects, not solutions. Remind participants to address their comments to the work product under review, not to the author.	Moderator
2. **Establish Preparedness:** Ask each inspector for his or her preparation time and records the times on the Inspection Summary Report. If preparation is insufficient, reschedule the meeting.	Moderator
3. **Present Work Product:** Describe portions of the work product to the inspection team.	Reader
4. **Raise Defects and Issues:** Point out concerns, potential defects, questions, or improvement opportunities after the reader presents each section.	Inspectors
5. **Record Issues:** Capture the information in Table 2 on the Issue Log for each issue raised. State aloud what was recorded to make sure it was recorded accurately.	Recorder
6. **Answer Questions:** Respond briefly to any specific questions raised, and contribute to defect detection based on special understanding of the work product.	Author
7. **Make Product Appraisal:** After all meetings scheduled for a given inspection are complete, decide on the work product appraisal, selecting from the options in Table 3. If the inspectors disagree, assign the most conservative appraisal offered by any of the inspectors.	Inspectors
8. **Sign Inspection Summary Report:** All participants sign the Inspection Summary Report to indicate their agreement with the inspection outcome.	Inspectors
9. **Collect Inspection Feedback.** Ask the inspectors to evaluate the inspection and suggest improvements, using the Inspection Lessons Learned Questionnaire.	Moderator

Table 1. Information to Record for Each Defect Found.

Column	Description
Origin	Development phase in which the defect was introduced
Type	• Missing (something needs to be there but is not) • Wrong (something is erroneous or conflicts with something else) • Extra (something unnecessary is present) • Usability • Performance • Non-defect issue (question, point of style, suggestion, clarification needed)
Severity	• Major (could cause product failure or cost significantly more to correct in the future) • Minor (non-fatal error, cosmetic problem, annoyance, or a workaround is available)
Location	Page and line or section number where the defect is located
Description	Concise description of the issue or possible defect

Table 2. Possible Appraisals of the Inspected Work Product.

Appraisal	Meaning
Accepted As Is	Modifications may be required in the work product, but verification of the modification is not necessary.
Accept Conditionally	Defects must be corrected, and the changes must be verified by the individual named on the Inspection Summary Report.
Re-inspect Following Rework	A substantial portion of the product must be modified, or there are many changes to make. A second inspection is required after the author has completed rework.
Inspection Not Completed	A significant fraction of the planned material was not inspected, or the inspection was terminated for some reason.

Rework

Task	Responsible
1. Correct defects and typos found, resolve issues raised, and modify work product accordingly. Mark issues list to indicate action taken.	Author
2. Correct any other project documents based on defects identified in the inspected work product.	Author
3. Record any uncorrected defects in the project's defect tracking system.	Author
4. If rework verification is not needed, report the number of major and minor defects found and corrected and the actual rework effort to the moderator.	Author
5. Record the actual rework effort on the Inspection Summary Report.	Moderator

Follow-up

Task	Responsible
1. Confirm that the author has addressed every item on the Issue Log. Determine whether the author made appropriate decisions as to which defects not to correct and which improvement suggestions not to implement.	Verifier
2. Examine the modified work product to judge whether the rework has been performed correctly. Report any findings to the author, so rework can be declared complete, incorrect rework can be redone, or items that were not originally pursued can be addressed.	Verifier
3. Report the number of major and minor defects found and corrected and the actual rework effort to the moderator.	Author
4. Check whether the exit criteria for the inspection and for the peer review process have been satisfied. If so, the inspection is complete.	Moderator
5. Check the base-lined work product into the project's configuration management system.	Author
6. Deliver Inspection Summary Report and counts of defects found and defects corrected to peer review coordinator.	Author

Deliverables

1. Base-lined work product
2. Completed Inspection Summary Report
3. Completed Issue Log
4. Completed Typo Lists
5. Counts of defects found and defects corrected

Exit Criteria

- All of the author's inspection objectives are satisfied.
- Issues raised during the inspection are tracked to closure.
- All major defects are corrected.
- Uncorrected defects are logged in the project's defect tracking system.
- The modified work product is checked into the project's configuration management system.
- If changes were required in earlier project deliverables, those deliverables have been correctly modified, checked into the project's configuration management system, and any necessary regression tests were passed.
- Moderator has collected and recorded the inspection data.
- Moderator has delivered the completed Inspection Summary Report and defect counts to the peer review coordinator.