Peer Review

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# Introduction

Peer: person, who is in an equal position as you are

Review: evolution of work

General term for ensuring the quality of work with the help of another person

# Quality Management:

The computer scientist Ian Summerville uses SQM as an umbrella-term that includes the following quality layers:

## Software Quality Assurance (SQA) layer

An Organizational quality guide of

* Standards, regulations, and procedures to produce, verify, evaluate and confirm work products during the software development lifecycle
* Incorporated knowledge base of best practices
* Off-the-shelf software tools selected to apply the above

## Software Quality Plan (SQP) layer

A project level quality plan written by each project for declaring project commitment to follow an applicable set of standards, regulations, procedures and tools during the development lifecycle. In addition, SQP should contain quality goals to be achieved, expected risks and risk management. SQP sources are derived from

* SQA components that are adopted as is or customized to the project's needs
* New procedures, standards and tools complementing missing or not-applicable SQA components that have been written in particular for the project, or imported from outside the organization.

Any deviation of an SQP from SQA should be justified by the project manager and be confirmed by the company management.

## Software Quality Control (SQC) layer

Ensures in-process that both SQA and SQP are being followed by the development teams.

SQC activities include

* Mentoring how to produce artifacts, such as well-defined engineering documents using standard templates
* Mentoring how to conduct standard processes, such as quality reviews
* Perform in-process quality reviews to verify, evaluate and confirm artifacts
* Verify and evaluate to improve the use of methods, procedures and adopted software tools

<https://en.wikipedia.org/wiki/Software_quality_management>

# Review Types

## Code Review

is systematic examination (often as peer review) of computer source code.

* Systematic examination (often as peer review) of computer source code intended to find and fix mistakes overlooked in the initial development phase, improving both the overall quality of software and the developers' skills.
* Code reviews can often find and remove common vulnerabilities such as format string exploits, race conditions, memory leaks and buffer overflows, thereby improving software security.
* Online software repositories based on Subversion others allow groups of individuals to collaboratively review code.
* Additionally, specific tools for collaborative code review can facilitate the code review process.

## Pair Programming

is a type of code review where two persons develop code together at the same workstation.

* Two programmers work together at one keyboard.
* One types in code, the other reviews each line of code as it's typed
* The person typing is called the driver
* The person reviewing the code is called the observer or navigator
* The two programmers switch roles frequently.
* While reviewing, the observer also considers the strategic direction of the work, coming up with ideas for improvements and likely future problems to address.
* Freeing the driver to focus all of his or her attention on the "tactical" aspects of completing the current task, using the observer as a safety net and guide.

## Inspection

is a very formal type of peer review where the reviewers are following a well-defined process to find defects.

* Refers to peer review of any work product by trained individuals who look for defects using a well defined process.
* An inspection might also be referred to as a Fagan inspection after Michael Fagan, the inventor of the process
* Examples:
* Requirement specification
* Software/Information System architecture
* Programming (for example for iterations)
* Software testing (for example when creating test scripts)

## Walkthrough

* A form of software peer review "in which a designer or programmer leads members of the development team and other interested parties through a software product, and the participants ask questions and make comments about possible errors, violation of development standards, and other problems
* "Software product" normally refers to some kind of technical document.
* A walkthrough differs from technical reviews in its openness of structure and its objective of familiarization.
* A walkthrough differs from software inspection in its ability to suggest direct alterations to the product reviewed, its lack of a direct focus on training and process improvement, and its omission of process and product measurement.

## Technical Review

* A form of peer review in which a team of qualified personnel ... examines the suitability of the software product for its intended use and identifies discrepancies from specifications and standards.
* Software product normally refers to some kind of technical document.
* Examples: software design document or program source code, but use cases, business process definitions, test case specifications, and a variety of other technical documentation
* Technical reviews may also provide recommendations of alternatives and examination of various alternatives
* Technical review differs from walkthroughs in its specific focus on the technical quality of the product reviewed.
* Technical review differs from software inspection in its ability to suggest direct alterations to the product reviewed, and its lack of a direct focus on training and process improvement.

<http://athena.ecs.csus.edu/~buckley/CSc233/Reviews_Types_Intro.pdf>

# Formal Process

IEEE Std 1028 defines a common set of activities for "formal" reviews (with some variations, especially for software audit). The sequence of activities is largely based on the [software inspection](http://en.wikipedia.org/wiki/Software_inspection) process originally developed at IBM by [Michael Fagan](http://en.wikipedia.org/wiki/Fagan_inspection).[[3]](http://en.wikipedia.org/wiki/Software_review#cite_note-MFaganPapers-3) Differing types of review may apply this structure with varying degrees of rigour, but all activities are mandatory for inspection:

* **0. [Entry evaluation]:** The Review Leader uses a standard checklist of entry criteria to ensure that optimum conditions exist for a successful review.
* **1. Management preparation:** Responsible management ensure that the review will be appropriately resourced with staff, time, materials, and tools, and will be conducted according to policies, standards, or other relevant criteria.
* **2. Planning the review:** The Review Leader identifies or confirms the objectives of the review, organises a team of Reviewers, and ensures that the team is equipped with all necessary resources for conducting the review.
* **3. Overview of review procedures:** The Review Leader, or some other qualified person, ensures (at a meeting if necessary) that all Reviewers understand the review goals, the review procedures, the materials available to them, and the procedures for conducting the review.
* **4. [Individual] Preparation:** The Reviewers individually prepare for group examination of the work under review, by examining it carefully for *anomalies* (potential defects), the nature of which will vary with the type of review and its goals.
* **5. [Group] Examination:** The Reviewers meet at a planned time to pool the results of their preparation activity and arrive at a consensus regarding the status of the document (or activity) being reviewed.
* **6. Rework/follow-up:** The Author of the work product (or other assigned person) undertakes whatever actions are necessary to repair defects or otherwise satisfy the requirements agreed to at the Examination meeting. The Review Leader verifies that all action items are closed.
* **7. [Exit evaluation]:** The Review Leader verifies that all activities necessary for successful review have been accomplished, and that all outputs appropriate to the type of review have been finalised

<http://s1oftware.blogspot.de/2013/09/ieee-1028-generic-process-for-formal.html>