Welcome to the Class

Department of Computing and Information System

Software Quality Assurance(SQA): Plan, Audit & Review

After completion of the seven phases of testing, the results look good. No significant issues occurred in the project . You managed the project well, and you were proud of the success of this project

Unfortunately, the Management Board thinks different

You don't have any evidence to show that you managed this project well. You asked an advisor for a solution. Here is the answer

This answer is a start, but you still have following questions -
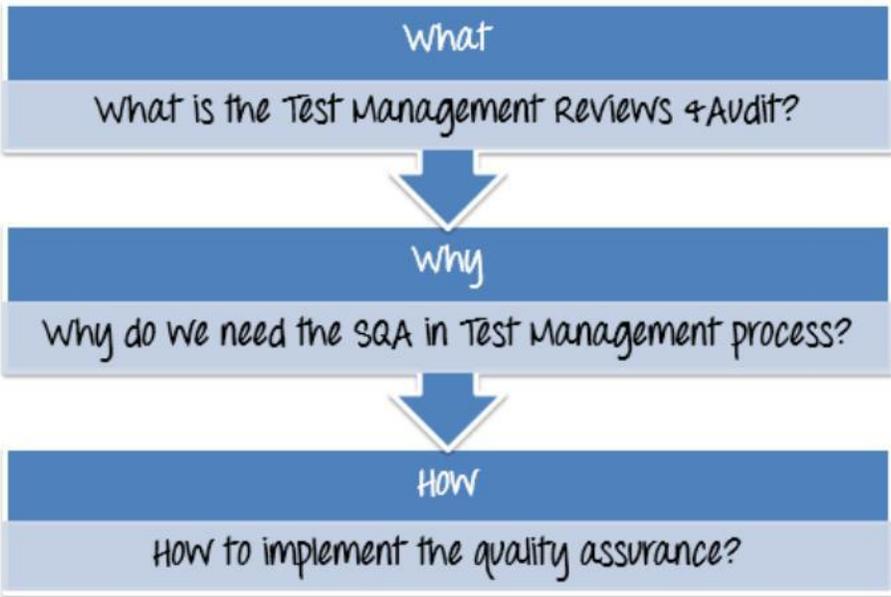
This tutorial will help you answer these questions -

## What is the Test Management Reviews & Audit?

- **Management Review:** Management Review is also known as Software [Quality Assurance](#) or (SQA). It focuses more on the software process rather than the software work products. Quality Assurance is a set of activities designed to ensure that the project manager follows the standard process which is already pre-defined. In other words, Quality Assurance makes sure the Test Manager is doing the right things in the right way.

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- **Audit:** An audit is the examination of the work products and related information to assesses whether the standard process was followed or not.

Why do we need SQA in Test Management process?

To understand this, consider the following scenario-

In the project Guru99 Bank, handles various test phases like -
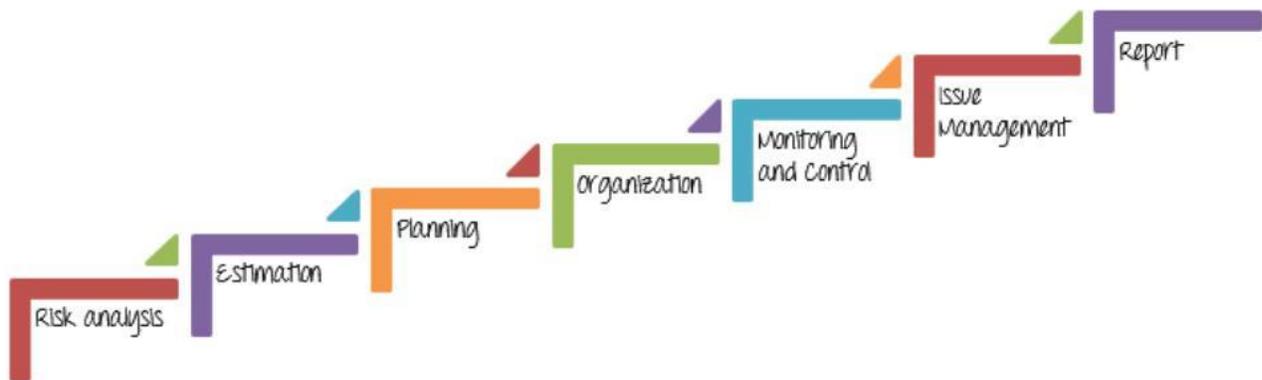
As a Test Manager, you are the person who takes in charge these activities. However, **you are at the highest position in the project team. Who will review your tasks and check the project management activities are executed to the highest standard?**

Well, SQA auditor is the person who reviews and checks the project management activities are executed to the highest possible **standard**. Only through the result of this review, the Management Board can evaluate the quality of your project handling.

This is the reason why we do need Management Review or SQA in Test Management process.

The SQA interviews you, the Test Manager, to benchmark the project against set standards.

Benefits of SQA are -

Monitoring and improving the process

Make sure that the standards and procedures are followed

Preventing the quality problems from occurring
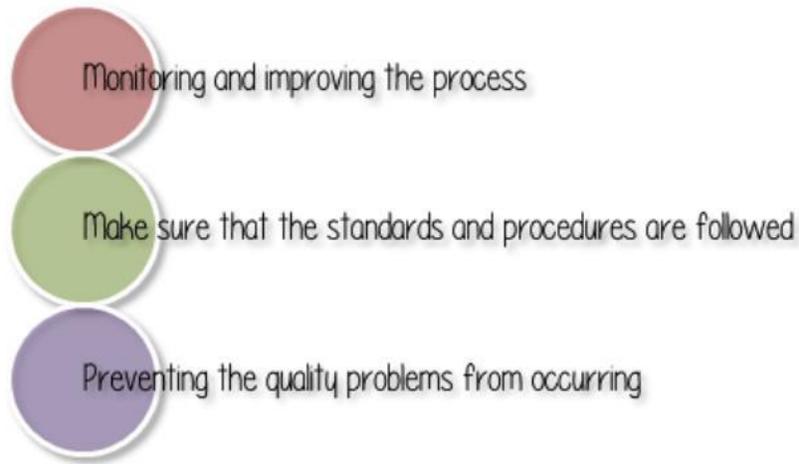
How to implement the quality assurance?

Step 1) Develop SQA plan

Step 2) Preparation

Step 3) Review the process

Step 1) Develop SQA Plan

Testing activity needs Test Plan likewise SQA activity also needs **a plan** which is called **SQA plan.**

The goal of SQA plan is to craft planning processes and procedures to ensure products manufactured, or the service delivered by the organization are of exceptional quality.

During project planning, Test Manager makes an SQA plan where SQA audit is scheduled periodically.

In the SQA Plan, the Test Manager should do as following

Identify the role and responsibilities of SQA team

List of the work products that the SQA auditors will review and audit

Create the schedule to perform the SQA tasks

Step 1.1) Identify the role and responsibilities of SQA team

In a project team, every member must have responsibility for the quality of his or her work. Each person has to make sure their work meet the QA criteria.

The SQA team is the group of person who plays the **major role in** the project. Without QA, no business will run successfully. Therefore, the Test Manager has to make clear the **responsibility** of each SQA member in SQA plan as below:

- **Review** and **evaluate** the quality of project activities to meet the QA criteria
- **Coordinate** with management board and project teams to assess requirements and engage in project review and status meetings.
- **Design track** and **collect** metrics to monitor project quality.
- **Measure** the quality of product; **ensure** the product meet the customer expectations.

For example, in the SQA Plan of the project Guru99 Bank, you can create the list members of **SQA team** as below

No	1
Member	Peter
Roles	SQA Leader
Responsibility	Develop and document quality standard and process for all management process Manage software quality assurance activities for the project
No	2
Member	James

Roles	SQA auditor
Responsibility	Perform SQA tasks, report to SQA leader the result of SQA review.
No	3
Member	Bean
Roles	SQA auditor
Responsibility	Perform SQA tasks, report to SQA leader the result of SQA review.

Step 1.2) List of the work products that the SQA auditor will review and audit

The Test Manager should

- **List** out all the work products of each Test Management Process
- **Define** which facilities or equipment the SQA auditor can access to perform SQA tasks such as process evaluations and audits.

For example, for the project Guru99 Bank, you can list out the work products of each Test Management Process and define permission for SQA members to access these work products as per the following table

No	1
Management Phases	Risk analysis
Work product	Risk Management document
Path	[Server path]
Permission	Read
Grant to Person	All SQA team members
No	2
Management Phases	Estimation

Work product	Estimation and Metrics report
Path	…
Permission	Read
Grant to Person	Peter
No	3
Management Phases	Planning
Work product	Test Planning document
Path	…
Permission	Read
Grant to Person	All SQA team members
No	4
Management Phases	Organization
Work product	Human resource plan, training plan
Path	…
Permission	Read
Grant to Person	All SQA team members
No	5
Management Phases	Monitoring and Control
Work product	Collected metrics of project effort
Path	…
Permission	Read

Grant to Person	Bean
No	6
Management Phases	Issue Management
Work product	Issue management report
Path	…
Permission	Read
Grant to Person	James
No	7
Management Phases	Test report
Work product	Test Report document
Path	…
Permission	Read
Grant to Person	All SQA team members

Step 1.3) Create the schedule to perform the SQA tasks

In this step, the Test Manager should describe the **tasks** to be performed by SQA auditor with special emphasis on SQA activities as well as the work product for each task.

Test Manager also creates the **scheduling** of those SQA tasks. Normally, the SQA schedule is driven by the project development schedule. Therefore, an SQA task is performed in relationship to what software development activities are taking place.

In the SQA plan, Test Manager makes the schedule for management review. For example

|	
Date	30-Oct-2014

SQA Tasks	Evaluate project planning, tracking and oversight processes
Personal in charge	James
Description	- Software Specification Review - Estimation, Master Schedule and Project Plan Review
Output	SQA planning report, SQA review minute
Date	15-Dec-2014
SQA Tasks	Review requirement analysis
Personal in charge	James
Description	- Review the software requirement development
Output	Process audit report
Date	30-Mar-2015
SQA Tasks	Review and Evaluate Test Design
Personal in charge	James
Description	- Review the Test Design document
Output	SQA report, SQA review minute
Date	30-Mar-2015
SQA Tasks	Review release
Personal in charge	Bean
Description	- Process Audit: Final Release

Output	SQA process audit report
Date	2-Apr-2015
SQA Tasks	Review Project closing
Personal in charge	Bean
Description	- External review after final delivery to customer
Output	SQA process audit report

Step 2) Define the standards/methodology

To review the Management activities against the standards process, you should do the following steps

1. Define the policies and procedures intended to prevent defects from occurring in the management process
2. Document the policies & procedures
3. Inform and train the staff to use it

Define the policies and procedures

Document the policy and guideline

Inform and train the staff
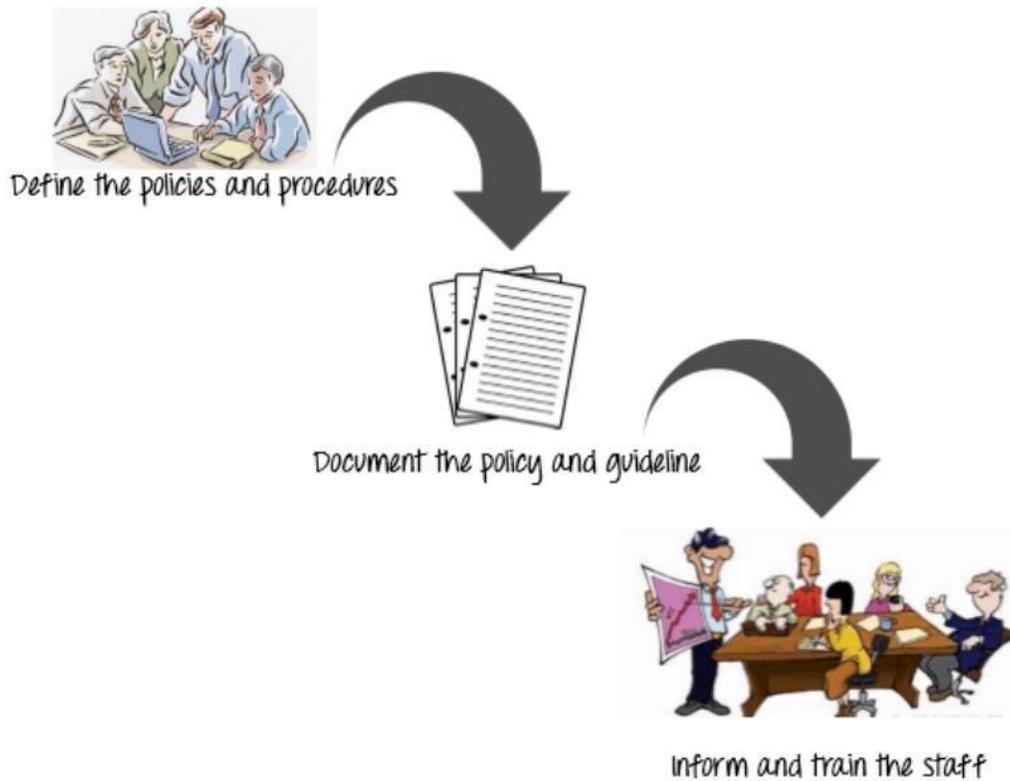
Step 3) Review the process

Review project activities to verify compliance with the defined management process. In the management review, the SQA members have to perform 5 SQA reviews as following

SQA0
- Review project planning

SQA1
- Review software requirement analysis

SQA2
- Review Test Design

SQA3
- Review before release

SQA4
- Review project closing
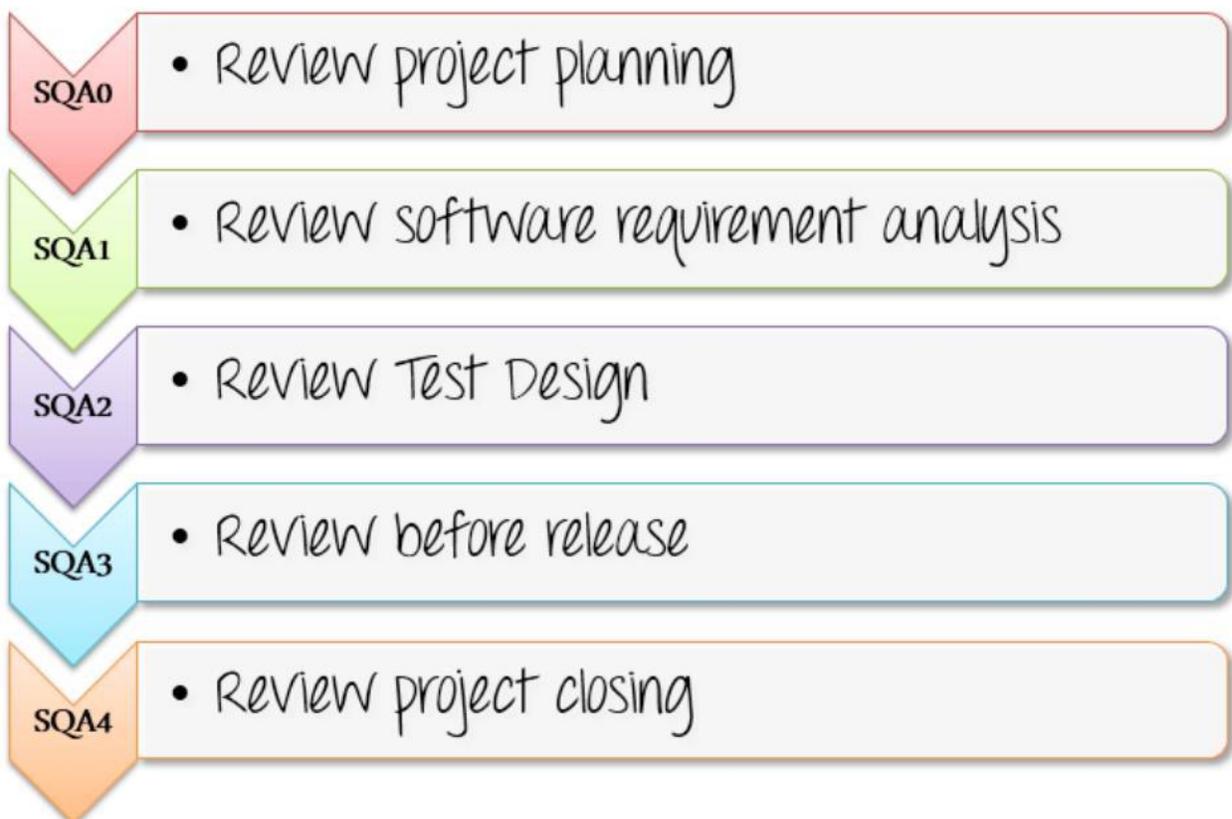
Review time for SQA depends on the project's development lifecycle model. In case of the project Guru99 Bank, the review schedule should be following
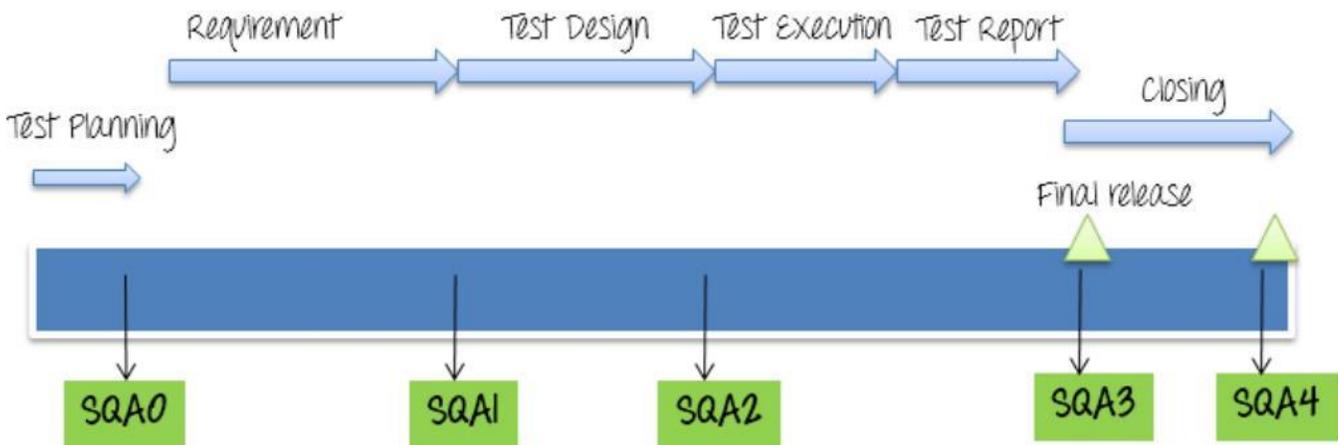
In each SQA phase, the **SQA members** provide **consultation** and **review** of the project plans, work product, and procedures regarding compliance to defined organizational policy and standard procedures.

During Audit, the SQA members should use [SQA review checklist](#)

After you walk through the 3 steps of software assurance implementation, you have the result of Test Management Review & Audit. This is the evidence to show to your stakeholders about your management quality.

Software quality assurance best practice

Here are some best practices for an effective SQA implementation

- **Continuous improvement:** All the standard process in SQA must be improved **frequently** and made **official** so that the other can follow. This process should be **certified** by popular organization such as ISO, CMMI… etc.
- **Documentation:** All the QA policies and methods, which are defined by QA team, should be documented for training and reuse for future projects.
- **Experience:** Choosing the members who are seasoned SQA auditors is a good way to ensure the quality of management review
- **Tool Usage:** Utilizing tool such as the tracking tool, management tool for SQA process reduces SQA effort and project cost.
- **Metrics:** Developing and creating metrics to track the software quality in its current state, as well as to compare the improvement with previous versions, will help increase the value and maturity of the [Testing](#)process
- **Responsibility:** The SQA process is not the SQA member's task, but **everyone**'s task. Everybody in the team is responsible for quality of product, not just the test lead or manager.