

# Quality Management

## Why, What, How?

### Quality Management vs Quality Audit

In the ePMbook, we will make a distinction between Quality Management and **Quality Audit**.

- By Quality Management, we mean all the activities that are intended to bring about the desired level of quality.
- By Quality Audit we mean the procedural controls that ensure participants are adequately following the required procedures.

These concepts are related, but should not be confused. In particular, Quality Audit relates to the approach to quality that is laid down in quality standards such as the ISO-900x standards.

The abbreviation "QA" has been generally avoided in the ePMbook as it can mean different things - eg "Quality Assurance", "Quality Audit", testing, external reviews, etc.

In this section, we discuss how to achieve quality.

### Quality is not an absolute requirement

It is wrong to assume that maximum quality is desirable. Should every car be built to the same quality as a Rolls Royce? Should every computer system be held back until there is not one single flaw remaining?

Required quality should be considered as part of the overall **Project Definition** work. It will impact upon such things as the **estimates** and **benefit** case. Such things are business decisions. They can only be taken by the Project Sponsor and senior management team of the organisation.

Quality decisions are not just a matter of the reliability of the end product - they can also affect the scope and project approach. This is particularly an issue with e-solutions:

- Do you want something magnificent, or do you want something fast before your competitors get ahead?
- Do you want a complete solution, or will you settle for a partial solution and come back to finish it at a later date?

You need to make it clear that these are mutually exclusive alternatives - you cannot do magnificent, complete and fast.

Very often, commercial pressures mean that the best business decision is to achieve an "80%" solution fast. Many early e-commerce business-to-consumer solutions looked great to the customer but involved staff re-keying data into the sales order systems or manually processing credit card transactions.

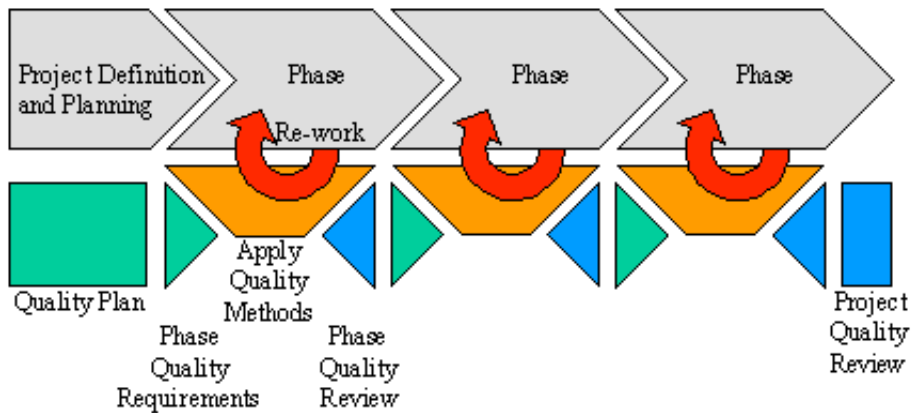
Case Study

A company decided to achieve a rapid deployment by focusing on 80% solutions and breaking their requirements into five phases of development and deployment.

A project reviewer asked if they had considered how functional the end result would be. Would it be 80% x 80% x 80% x 80% x 80%? That would be 33% - one third what you need.

Aspects of Quality Management

Here is a summary of the various aspects of Quality Management. Different organisations will use different expressions for these concepts and may package them into other activities. This description follows the logical requirements.



| Aspect                     | Summary                                                                                                                                                                                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Quality Plan               | Define and agree the needs for quality and the specific approaches to meet them.                                                                                                       |
| Phase Quality Requirements | For each phase, what specific things will be done and what specific deliverables will be produced                                                                                      |
| Apply Quality Methods      | Throughout the work the defined approach to quality will be followed. Work or deliverables falling short of the standards will need to be re-worked to achieve an acceptable standard. |
| Phase Quality Review       | Before each phase can be closed, a review is performed to ensure that acceptable quality standards have been achieved.                                                                 |
|                            |                                                                                                                                                                                        |

## Project Quality Review

Before the project can be completed, the overall conformance to Quality Methods and requirements should be assessed and approved.

### Responsibilities for quality

The Project Manager will, of course, have overall responsibility for the quality of the project. It is equally true that all participants have a role to play in delivering good results. Developing a quality culture amongst the team will normally generate greater value and satisfaction. Encourage the belief that the right level of quality is more important than getting things done fast. If there is a choice to be made between quality and progress it should be a matter for the Steering Committee to decide

Other managers will also be involved in the Quality Management process. In larger projects there may be a Quality Manager and Quality Team. Team Leaders and other senior staff will also be involved in the processes. In some environments, certain Quality Management functions may be performed by independent reviewers from outside the Project Team.

Responsibilities for quality should be agreed and communicated to all participants.

### The Quality Plan

The Quality Plan is a broad concept covering many aspects of achieving quality. In many projects these might be covered in an array of different deliverables. In particular, procedures and standards might be documented separately from quality goals and controls.

Many organisations will have pre-existing standards and procedures which should be applied. Check that they are appropriate to the current project - you do not want to develop a web site using standards that were written for custom development of mainframe applications.

Here are some types of thing you should consider.

| Type of content   | Description                                                                                                                                   | Examples                                                                                                                                                                              |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objectives</b> | What are the objectives of Quality Management? To what extent is quality a requirement in preference to timescales, costs, functionality etc? | <ul style="list-style-type: none"> <li>▪ Acceptable levels of functionality to achieve</li> <li>▪ Acceptable levels of security, bugs etc</li> <li>▪ Investment in testing</li> </ul> |

|                        |                                                  |                                                                                                                                                                                                                            |
|------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Requirements</b>    | What specific requirements are to be addressed   | <ul style="list-style-type: none"> <li>▪ Review and sign-off of specific deliverables or work by specified people</li> <li>▪ Types and depth of testing required</li> <li>▪ Availability of specified functions</li> </ul> |
| <b>Quality Methods</b> | What approaches and methods                      | <ul style="list-style-type: none"> <li>▪ Iterative development in specified stages</li> <li>▪ Methodology to be followed</li> <li>▪ Peer review of all deliverables</li> </ul>                                             |
| <b>Standards</b>       | What format and detail should deliverables be in | <ul style="list-style-type: none"> <li>▪ web page layout &amp; navigation standards</li> <li>▪ coding standards</li> <li>▪ documentation standards</li> </ul>                                                              |
| <b>Procedures</b>      | Specified procedures for project tasks           | <ul style="list-style-type: none"> <li>▪ check-in and check-out of code</li> <li>▪ documentation control procedure</li> <li>▪ issues management procedure</li> </ul>                                                       |

The Quality Plan is often an evolving document. As the project progresses it will need to adapt to changes and decisions. For example, detailed website design and navigation is unlikely to be defined at the start of the project unless you are adding to an existing solution.

## Preparing for Quality Management at the start of each phase

When the detailed plan for each phase is completed it will be possible to identify the specific Quality Methods and controls that should be applied - and what they should be applied to. One basic approach is to create two lists:

- all the work that should be done (including the methods, techniques and procedures to be used)
- all the deliverables that should be produced (including the formats and standards that should be applied)

This provides a guide for the people conducting the work and a checklist for the phase-end review.

It is good project management practice, as well as a Quality Management process, to identify in advance all the anticipated deliverables. For each one, you should identify:

- nature, description and purpose of the deliverable,
- quality standard (eg discussion draft, final quality, reviewed or tested for external publication)
- dependencies (what must be completed prior and what further deliverables depend upon this one)
- date required,
- author/creator,
- people who have to review it,
- people who have to approve it,
- people who should receive it for information or use (but who do not get the opportunity to review or approve)
- other distribution (eg third parties, auditors, publishing, filing)
- security/secrecy requirements - ie who can not see or use it
- currency information (eg must be maintained, updateable, one-off, temporary, final project deliverable)

## Bringing about quality during the work

The best Quality Methods will depend on the type of project - the team, application, language, technology, participants, environment, etc. They will also be affected by strategic decisions about the investment in quality.

Here are some examples:

- all requirements should be prototyped iteratively in collaboration with the responsible user manager
- designers are expected to consider any reasonable alternative approaches and discuss them with the responsible user manager before creating a detailed design
- any anticipated impact on timescales, resourcing, deliverables, or benefits should be communicated to the project manager as soon as possible and before any revised action is taken
- all documents should include control information such as version numbers, issue dates, status, authors, reviewers etc
- all designs should be reviewed by someone from a different sub-team and by the overall solution architect
- any aspect of a deliverable which could impact upon another deliverable should be noted in the issues management system
- only one person can have update access to a document or system component at any one time - access will be controlled through the configuration management and/or documentation control procedures
- all completed work will be signed off by the responsible user manager

- once a deliverable is completed, signed off and closed it can only be re-opened by following the change control procedure
- developers are not allowed to test their own work
- appropriate end users must be involved in all systems tests - each test must be signed off by the responsible user manager
- where any correction is applied to a deliverable, all other deliverables which could be affected must be re-examined and/or re-tested
- all components should be sized and tested for absolute peak usage
- developers cannot access live components directly - they need to check them out using the configuration management and/or documentation control procedures.

There will also be a number of rules, standards and procedures, eg:

- format of documents
- techniques to use (eg estimating technique, modelling technique)
- language(s) to use
- naming conventions
- documentation standards
- procedures to follow (eg documentation control, configuration management, issues management, bug reports, testing).

It will be easier to manage quality if the application of Quality Methods and controls is tracked continuously through the project, rather than relying solely on reviews at the end of each phase. The status of work and deliverables can be tracked against the lists prepared for the Phase. The tracking information should show the stage of progress (eg not started, in progress, completed, signed off), and the status of specific controls, reviews, signatures etc. In particular, completion should be logged and a check made to ensure that the correct methods, controls and approvals were completed.

One final thing to note about these Quality Methods: they are all rules for people to follow. In fact, most people do not respond well to being given rules. The most significant thing the Project Manager and Team Leaders can do to ensure appropriate quality is to take a personal interest in the quality of work being done, providing coaching and feedback as appropriate.

## Reviewing quality at the end of a phase

There should be little to do at the end of the phase - if there are significant problems it is too late to do anything without an adverse impact on costs and timescales. The Quality Methods you have applied throughout the phase should have ensured that there is no surprise at the end of the phase.

Before the phase can truly be considered to be complete, you should review that you have:

- done everything you said you would do in the way you said you would do it, and
- produced everything you said you would produce to an acceptable standard.

There will, of course, be deviations. In each case it should be clear whether:

- the change was agreed and its impact has been dealt with
- the shortcoming was not desirable but is acceptable in terms of delivering the overall benefit from the project
- the failure will be remedied at a later (defined) stage
- the fault must be remedied now before the phase can be completed.

The phase-end Quality Review should be agreed and signed off by the Project Sponsor and/or senior leadership representing the organisation.

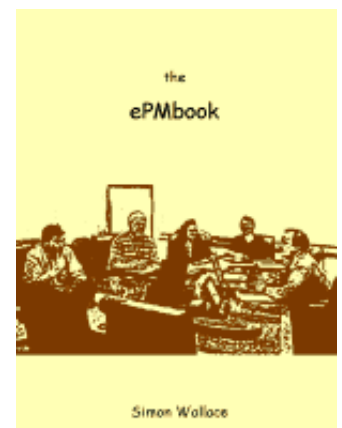
## Reviewing quality at the end of the project

Similar considerations apply at the end of the project. The senior leadership will consider the extent to which the project has adequately completed the planned work and deliverables (subject to agreed changes during its course). As well as the Quality Management aspect of such a review, there will also be many other reasons to examine the success of the project, for example, learning lessons, planning further improvements, improving estimating techniques, paying contractors and suppliers etc.

### Case Study

An airline ran its new financial system in live operation for six months - but from the QA environment, not with the other live systems in the live environment. Only when all outstanding concerns were fully addressed did they risk promoting the system to run alongside their mission-critical reservations and scheduling systems.

The system's supplier was not pleased with this outcome and underwent a lot of pressure to perfect the implementation. The contract said the large final payment was due when the system was live. But... "what is the meaning of live"?



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