QUALITY MANAGEMENT within PRINCE 2

PRINCE2

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within PRINCE 2

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PREFACE

There is no doubt that quality is receiving increasing attention in all projects. Part of this is the development of quality standards which have national and international standing. More and more companies will be looking at their project management method to see if it contains the necessary elements to meet their customers' quality requirements. PRINCE 2 has been enhanced in its quality provisions. In itself it may not meet every requirement of these new quality standards. This is not surprising since PRINCE 2 is project-orientated, whilst the mentioned standards require elements which will be company-wide (or whatever section of a company seeks accreditation under the standard). As it stands, PRINCE 2 meets about nine of the twenty points of one of these international quality standards, ISO 9001, on its own, and is therefore an excellent starting point for any organisation looking for a total quality system. This book looks at an overview of the PRINCE 2 method, and then concentrates on the detail of the quality provisions within it.

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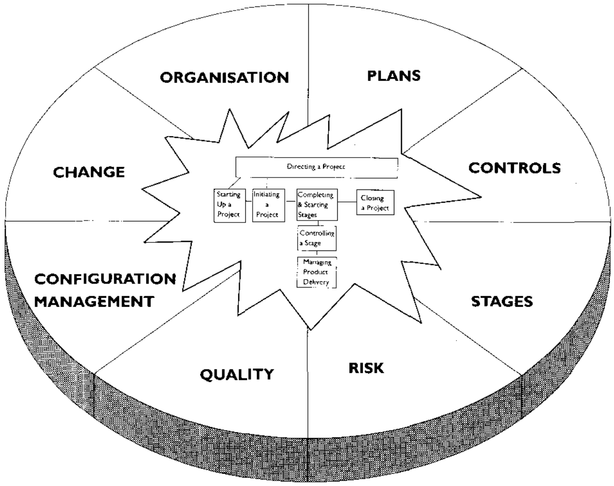
INTRODUCTION

The PRINCE project management method has its origins in a method called PROMPT II, devised in 1975. This provided a rigidly structured project life cycle, management and control framework within which a product could be correctly specified, designed, developed and installed. In March 1989 the name PRINCE was adopted to differentiate the version modified by the CCTA (the government's Central Computer and Telecommunications Agency), following the introduction of a number of new features. This was put into the public domain and no licence fee was therefore required in order to use it.

PRINCE 2 was launched on October 1st, 1996. The new version has a number of improvements and is designed to be applicable to all types and size of project. The basic principles of the method have not been changed, but the standard has been strengthened in such areas as the management of risk, details of the steps of the project and the quality management process.

This book is a revision of the one which looked at the handling of quality matters under PRINCE version 1.

PRINCE 2 OVERVIEW



PRINCE 2 encourages and supports the involvement of the USER in defining and managing the quality of the end-product throughout the project.

PRINCE 2 recommends that a project is subdivided into STAGES to provide assessment points for senior management to monitor progress and quality and control the project. This is a key part of the PRINCE 2 philosophy for senior management of 'Management by Exception'. The end of each stage represents a key decision and commitment point. The number of stages is totally flexible and determined by senior management, based on such considerations as project size, risk and criticality.

PRINCE 2 is designed to meet all the requirements of the international quality standard, ISO 9000, which apply to an individual project.

PRINCE 2 provides standards, techniques and guidelines in:

- ORGANISATION
- PLANS
- CONTROLS
- STAGES
- QUALITY
- RISK
- CHANGE
- CONFIGURATION MANAGEMENT
- THE PROJECT MANAGEMENT PROCESS

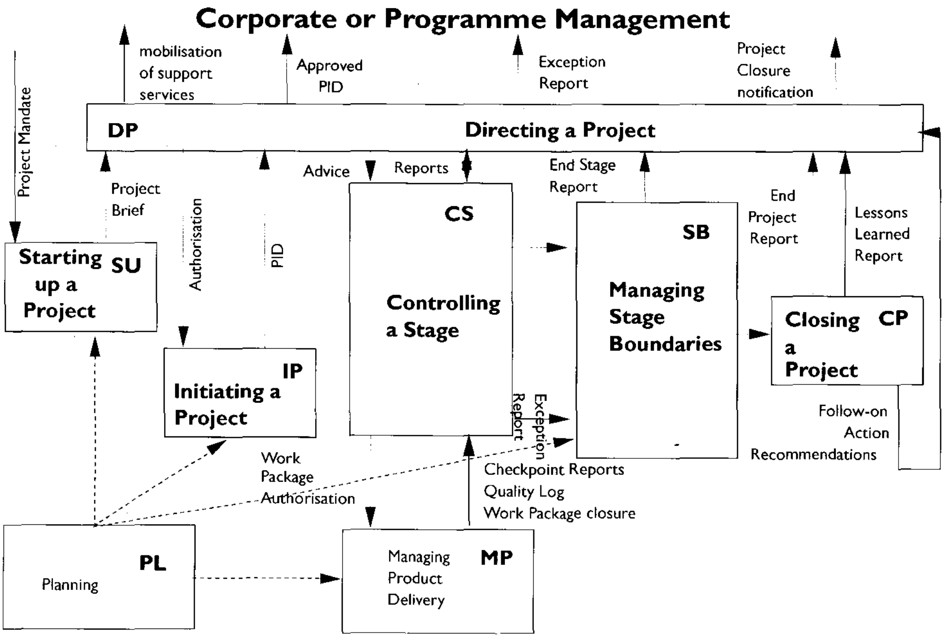
THE CUSTOMER/SUPPLIER ENVIRONMENT

PRINCE 2 is defined in terms of a Customer/Supplier environment. This assumes that within any project there are various groups of people with an interest in the project and its outcome, including:

- Customers who have commissioned the work and want an end result of good quality which will achieve the expected business benefits
- Users who will use or operate the final product and therefore have a vested interest in monitoring and assuring the quality of the product throughout its development
- Suppliers who provide the solution and bear responsibility for its quality

PRINCE 2 accepts that the customer and supplier may come from separately managed areas and typically from commercially separate organisations.

THE PROJECT MANAGEMENT PROCESS



PRINCE 2 documents all the project management steps in a process model. This has eight processes which describe the steps to take from the inception of a project to its close. The steps towards a quality product are contained in these processes.

The processes do not represent a sequential step-by-step guide to project management. Many of the steps are iterative, some can be done in parallel with others, and each process is scaleable according to the needs of the project. The amount of work required to implement a process is that which is required to implement the purpose of the process.

Starting Up A Project (SU)

This is a pre-project process, designed to do five things:

- ensure that the necessary authority for undertaking the project exists
- ensure that sufficient information about the project objectives, scope and constraints is available
- design and appoint management decision-makers (the project board)
- decide on the approach to be used to provide a solution

- create the initiation stage plan.

Directing A Project (DP)

This process covers the duties of the project board and runs from the start-up of a project to its closure. The key processes for the project board break into five main areas:

- approving the project brief and authorising initiation
- authorising the Project Initiation Document at the end of initiation
- checking project status at the end of each stage before authorising continuation to the next stage
- providing advice and guidance as requested and reacting to exception situations
- confirming project closure.

Initiating A Project (IP)

This process is aimed at laying down a firm and accepted foundation for the project.

- Check that everyone involved understands the scope and objectives of the project
- Check that a suitable business case exists for the project
- Check that the project has been adequately planned and costed
- Check that the risks are acceptable
- Encourage the project board to take ownership of the project
- Obtain commitment from the project board of the resources for the next stage.

Controlling A Stage (CS)

This process gives the steps to handle day-to-day management of the project. Use of the steps will be cyclic, consisting of:

- authorising work to be done
- capturing and acting on all project problems and queries
- monitoring progress and events
- taking any necessary corrective action
- taking delivery of completed products from teams or team members.

Managing Product Delivery (MP)

This process is designed for projects which use team managers.

- negotiating and accepting work packages from the project manager
- ensuring that the work is done
- reporting on progress and quality work done

- ensuring that completed products meet their quality criteria
- obtaining approval for completed products.

Managing Stage Boundaries (SB)

This process covers the project manager's steps needed at the end of a stage to provide the project board with the information necessary for it to decide whether to continue to the next stage.

- Report on the delivery of all expected products
- Collate information relating to the continuing viability of the project
- Re-assess the risk situation
- Produce the next stage plan.

Closing A Project (CP)

A clear and unambiguous end to a project is required, whether it is a successful completion or early termination. The purpose is to prepare input to the project board to obtain its confirmation that the project may close.

- Report on fulfilment of the Project Initiation Document's objectives
- Confirmation that the customer is satisfied and that the relevant group(s) are ready to take the final product into its operational life
- Recommend any follow-up actions
- Record any useful lessons learned

Planning (PL)

Planning is a common process, used by several of the other processes. It describes the construction of any level of plan. The PRINCE 2 planning process and framework can be applied to any type of project.

The first sub-process is done only once, at the beginning of the project. It makes decisions on any planning tools, estimation methods, levels of plan and monitoring methods to be used. Then the PRINCE 2 product-based planning technique is used to define and analyse the products. This has three steps:

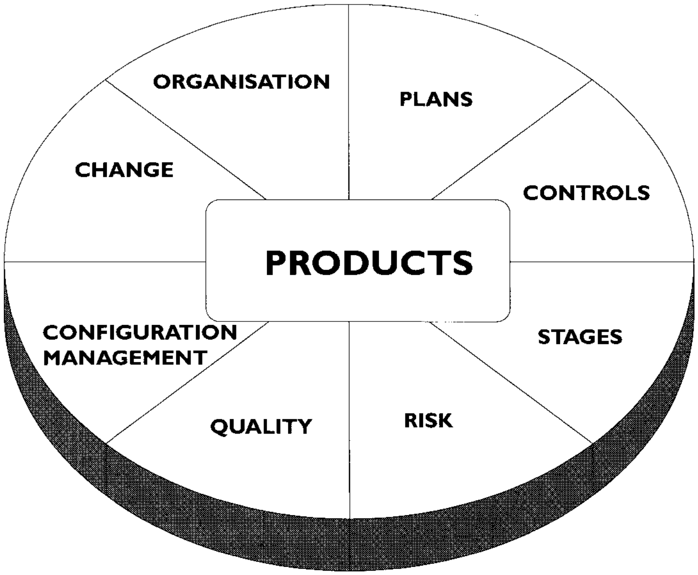
- create a **Product Breakdown Structure** which identifies the business products plus the management and quality products to be produced
- write **Product Descriptions** which describe the products in terms of their purpose, composition, derivation, quality requirements and method of quality checking to be used, and ensure that these descriptions are fully understood and agreed by everyone involved, including the user and developer of the product.

- draw a **Product Flow Diagram** which shows the logical order of creation of these products and any dependencies between the products. For detailed plans, this will include management and quality products need to be produced.

Further steps in the process identify the required activities to produce the products, estimate the effort and duration for each activity, calculate the cost of the plan, assess the inherent risks and identify the management control points needed.

The whole planning process is intended to by cyclic, and several iterations of its steps are normally needed.

The PRINCE 2 Components



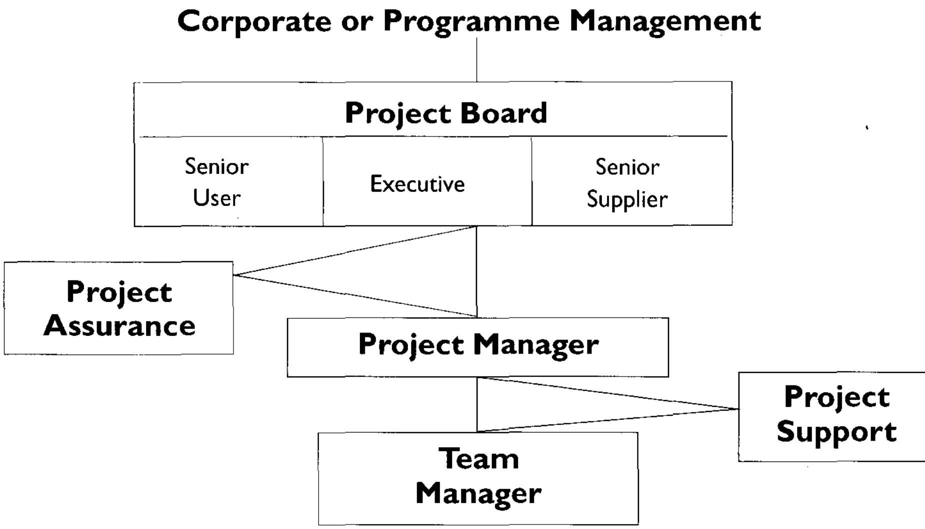
The components of PRINCE 2 explain what part they play in a project and give the PRINCE 2 approach to their use. The processes link the components together and show how and when they are used in the project.

Organisation

However small or large the project, there needs to be general agreement on:

- who is responsible for the specification of what is needed
- who provides the budget
- who provides the development resources
- who authorises any changes to the agreed specification
- who manages the day-to-day work
- who defines any standards to be met.

In a small project the answer to a number of these questions may be the same person. In a large project a number of people may be the answer to one of these questions. The PRINCE 2 solution to this need for flexibility is to provide a project management structure consisting of a number of ROLES. A role can be allocated to one person, shared between a number of people or combined with another role.



Project Board

Corporate or programme management delegate the overall management of a project to the project board, a group of managers who can make the decisions required by the project on behalf of corporate or programme management.

At the start of the project the project board:

- confirms the objectives and any limitations (such as target date and costs) with the appropriate body of senior management
- confirms that there is a valid business case for the project
- agrees on the project manager's responsibilities and objectives.

As the project progresses the project board:

- reviews the project status at the end of each completed stage and approves progress to the next stage if the project is still on track to meet the defined business need
- makes decisions on any problems which fall outside the project manager's terms of reference
- approves any changes to the product specification
- reports to corporate or programme management
- may recommend project termination if there ceases to be a viable business case.

At the end of the project the project board:

- ensures that all expected products have been delivered satisfactorily
- confirms that operational and support groups are prepared to take responsibility for the product

- authorises project closure.

The project board consists of three roles, those of executive, senior user and senior supplier.

Executive

The executive is ultimately accountable for the project to corporate or programme management. The executive has to ensure that the project is value for money, continually monitors that the project is justifiable in business and risk terms, and balances the differing demands of business, the users and suppliers.

Senior User

The senior user is accountable for the accurate and full specification of the required products and for ensuring that the solution and its quality meet user needs within the constraints of the business case.

Senior Supplier

This role represents the interests of those designing, developing, procuring and implementing the project products. The senior supplier must have the authority to commit or acquire the required supplier resources and is accountable for the quality of the delivered products.

Project Manager

- manages on a day-to-day basis that part of the project which has been approved by the project board (a stage)
- plans and controls the project work
- monitors and controls progress and quality
- negotiates the performance of work packages with team managers (where applicable)
- prepares reports for the project board
- enforces quality and change control procedures
- ensures the maintenance of risk, quality and issue logs.

Team Manager

This is an optional role. It is likely to be used in larger projects where teams of different skills or knowledge are required. The role:

- negotiates work packages with the project manager
- plans and allocates work within the team
- monitors team progress and quality work

- reports on progress and the result of quality checks to the project manager
- reports any team problems which are outside the work package terms to the project manager

Project Assurance

Project assurance is a check, independent of the project manager, that the project continues to meet its specification, the required technical standards and its business case.

In PRINCE 2 each project board member is accountable for assurance. It can be delegated if warranted by the size or complexity of the project. Assurance responsibilities can be viewed under these headings:

Business

- focus on the business case is maintained
- risks are being controlled
- liaison between customer and supplier is maintained
- expenditure and schedule are monitored
- the project remains viable
- fit with company or programme strategy

User

- user needs and expectations are being met or managed
- products of an acceptable quality are being developed

Supplier

- liaison is being maintained between customer and supplier
- products are being produced which meet the customer's quality requirements
- the scope of the project is not increasing unnoticed
- the required technical standards are being used, used correctly and are working.

Project Support

The project manager may need administrative help. This may stem from the sheer volume of work to be done or the mandated use of certain tools where the project manager has insufficient expertise, such as in planning and control or configuration management.

A Project Support Office is one which supports one or more projects with such skills and can be a good way of providing scarce skills in a cost-effective manner.

PLANS

PLAN

Principal User		Created When
Project Board	Project Plan	Project Initiation
Project Manager	Stage Plan	End of previous stage
Team Manager	Team Plan	As required

The **Project Plan** is the only mandatory plan in PRINCE 2. It is a high-level plan showing the key deliverables and major control points of the project, such as stage boundaries. It summarises the resource requirements and costs, and is used by the project board as a baseline against which to monitor actual costs and progress stage by stage.

A **Stage Plan** contains the level of detail needed to be an adequate basis for day-to-day control by the project manager. Each stage plan is produced near the end of the previous stage and must be approved by the project board as part of authorising the start of that stage.

Team Plans may be used when there are a number of teams working in a stage, especially if those teams are from different skill groups or work for external suppliers.

Part way through a stage the project manager may be asked by the project board to produce an **Exception Plan**. This would follow an exception report describing a forecast deviation beyond the tolerance levels agreed for the stage plan. The format of an exception plan is the same as that of the stage plan. An exception plan replaces the remainder of the stage plan and shows the work and resources necessary to react to the deviation.

CONTROLS

PRINCE 2 provides a series of controls to support 'management by exception'. That is, having agreed a plan, no management intervention is required until that plan is complete unless an exception arises. An 'exception' is identified by setting deviation limits (tolerances) to the plan. Any change which results in the project or stage going beyond these limits would constitute an exception.

Stages

The division of a project into stages is to permit the project board to set a number of control points beyond which the project manager may not proceed without the project board having the opportunity to re-examine the viability and quality of the project.

The project board only commits to one stage at a time (See End Stage Assessment).

Start-Up

At the outset of a project the project board is appointed and approves the resource and time expenditure needed to produce the Project Initiation Document.

Project Initiation

This is a project board control point to:

- confirm who is responsible/has authority for what in the project
- ensure that the project objectives are understood and agreed by all
- ensure that business reasons and a valid business case exists for the project
- review the risks and ensure that proposals to meet them are adequate.
- ensure that the customer's quality expectations are understood and that a general plan exists of how products will be produced which meet these quality requirements.

Tolerances

These are the amounts by which the project may deviate from a plan without having to ask for a decision on the action to take. Tolerance limits are always set for cost and schedule. Corporate or programme management set project tolerance limits for the project board to define its flexibility in decision-making before referring problems back to higher management.

The project manager should always provide a forecast of deviation beyond tolerance, rather than wait for a deviation to occur.

Quality is the dangerous tolerance because, faced with an impossible deadline, a team may take it into their own hands to reduce quality, e.g. not carry out all the expected tests, without referring to the project manager. The project manager has to be aware of this temptation and watch out for it at times of tight target dates.

The project board sets tolerances for each stage for the project manager to work within. The stage tolerances are based on the degree of uncertainty about the stage and are a portion of the overall project tolerances. There are two other tolerance parameters which can be used in addition to time and cost. These are scope and quality. If the project runs into time and/or cost tolerance difficulties one solution may be to agree with the customer to deliver less than was expected, i.e. reduce the scope of the project. It may also be a possibility to reduce the quality of what is provided, e.g. put in something "off the shelf" as opposed to creating a bespoke solution.

Checkpoints

Regular team meetings and reports to the project manager on progress, problems and future expected targets.

Highlight Reports

Regular reports from the project manager to the project board on progress against the stage plan, current or potential problems and expected events in the near future. These are based on and consolidate the checkpoint reports.

End Stage Assessment

project board mandatory control point to review:

- actual completion of a stage against the stage plan
- the quality of the products delivered
- the status of the project plan
- the status of the business case
- the status of risks.
- the next stage plan (and approve it if satisfied).

Exception Report

This is a report sent by the project manager to the project board when the tolerances for the project or a stage are forecast to be exceeded. The reason for the deviation may be a major change to requirements, a major quality problem or a failure by the project to meet its planned costs or schedule or to fulfil some part of the requirements. The report describes the problem, the options available, the impact on the Project Plan, business case and risks, and makes a recommendation. The project board may decide on the premature close of the project if it is deemed to be no longer viable, or may ask the project manager to prepare an Exception Plan on the basis of the recommendation.

Mid Stage Assessment

This is an unplanned project board control point at which it would consider an exception plan.

Project Closure

This is a mandatory control point for the project board, usually a meeting. It is often combined with the end stage assessment of the final stage. It:

- confirms that all expected products have been delivered to the required quality
- checks that any issues raised have been resolved or documented for passage to the group which will support the finished product
- checks that any lessons learned have been documented and ensures their passage to the relevant group
- approves any plan for subsequently checking that the expected business benefits have been achieved
- reviews the project performance against the original Project Initiation Document
- authorises formal closure of the project.

CHANGE

A major aim of quality is the delivery of a product which meets the specification agreed between customer and supplier. Any change to that specification of a product must, therefore, be agreed, otherwise the customer will not consider it to be a quality product. Changes to specification often cause extra work and their impact on time and cost must also be agreed. A plan which is not amended to include the cost and time of agreed changes is no longer a "quality" product. It has no chance of success.

PRINCE 2 contains a change control mechanism which is capable of capturing all types of issue and tracking them to completion. The mechanism is designed to fit in with all other PRINCE 2 controls, such as configuration management and exception reports.

All changes are treated as types of project issue and are handled through the same change control approach. Project issues can be:

- REQUESTS FOR CHANGE: any proposed modification to the agreed specification or acceptance criteria.
- OFF-SPECIFICATIONS: a current or forecast failure to meet part of the agreed specification or an acceptance criterion.
- PROJECT ISSUES: a question, a concern or anything which does not fall into the two types above. These can usually be answered directly and do not lead to extra work.

Every issue is recorded in the Issue Log, which allocates a unique number and records the author, date, priority and type of project issue. A copy of the project issue is returned to the author to acknowledge its receipt and an updated copy sent to the author whenever extra information is added or the status of the project issue changes.

If the project issue is not simply a question which can be satisfied with an immediate answer, an impact analysis is carried out, after which the priority is reviewed by the senior user role (or someone delegated). The general procedure is for the senior user role to decide which changes should be implemented, persuade the other project board roles, then get the project manager to incorporate the changes in the project. This often leads to the creation of an exception plan.

Changes can be implemented, rejected or held over for possible later implementation by staff supporting the final product.

CONFIGURATION MANAGEMENT

The assets of a project are the products which it delivers. These are not only the specialist or business products, but also the management and quality products, such as contracts, plans, approvals and the results of quality checks. The name for the combined set of these assets is the configuration. The purpose of configuration management is to identify, track and protect the project's products.

Configuration management consists of four basic functions:

- **identification** - identifying and describing all the products required to be delivered by the project
- **control** - the ability to agree and 'freeze' products and then to make changes only with the agreement of appropriate named authorities.
- **status accounting** - the recording and reporting of the information about a product, and the ability to track a product through all the changes in its status
- **verification** - a series of reviews and audits to ensure that there is conformity between the actual state of a product and the details of its status recorded in the configuration management records.

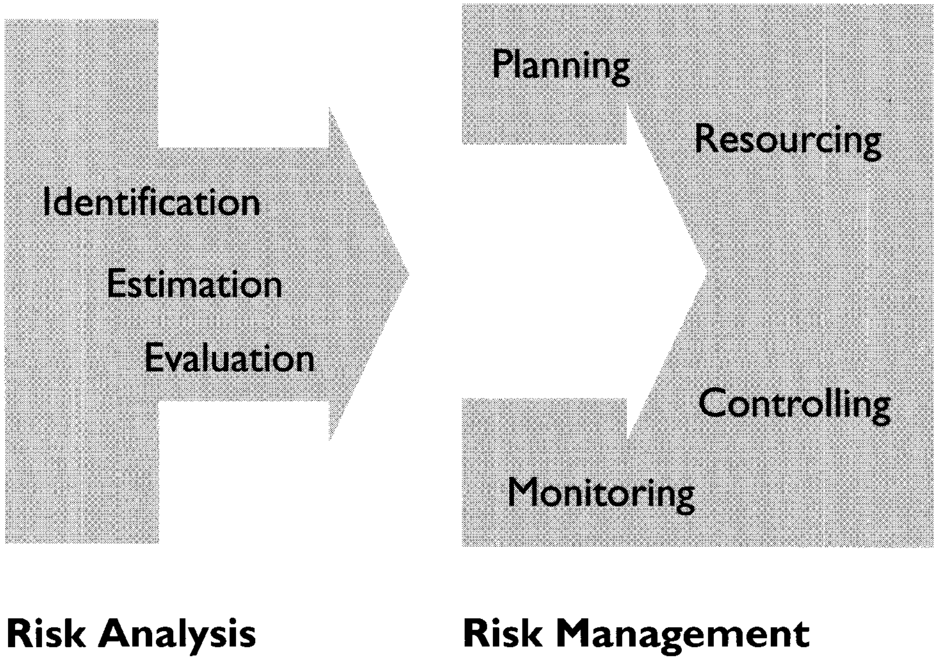
Close liaison is needed between configuration management and change control. Once a product has been approved, that version of the product never changes. If a change is required, a copy of the product is created with a new version number and the change incorporated into the new version. This new version should be linked to documentation about the change which caused the need for the new version.

RISK

The management of risk is one of the most important parts of the project manager's and project board's jobs. The project manager is responsible for ensuring that risks are identified, recorded and regularly reviewed. The project board has three responsibilities:

- notifying the project manager of the project's exposure to any external risks, such as competition or changes in company policy
- making decisions on the project manager's recommended reactions to risks
- striking a balance between level of risk and the cost of countermeasures.

In PRINCE 2 risks are controlled by a procedure summarised in the figure below.



Risk analysis covers:

- **risk identification**, which determines the potential risks which could be faced by the project
- **risk estimation**, which determines how important each risk is, based on an assessment of its likelihood and consequences to the project and the business
- **risk evaluation**, which decides whether the level of a risk is acceptable or not and, if not, what actions can be taken to make it more acceptable.

Risk management consists of four activities:

- **planning** the countermeasures
- **resourcing** these countermeasures

- **monitoring** work on the countermeasures and any changes to the risk
- **controlling** by taking actions to ensure that the countermeasures are successful.

The management of risk needs to be conducted continuously throughout the project as information becomes available and as circumstances change. In PRINCE 2 risks are formally assessed at project initiation, the end of each stage and as part of any exception situation. Risk assessment is also part of the impact analysis of all major change requests.

QUALITY DEFINITIONS

Quality

In PRINCE terms, quality is not another word for perfection. It is 'fitness for purpose', adherence to relevant standards. BS4778 defines quality as the:

'totality of features and characteristics of a product or service which bear on its ability to satisfy a given need.'

Quality Management

Quality Management is the process of ensuring that adequate inspection facilities covering key quality criteria are being effectively used within a project development cycle.

Quality Assurance

Quality assurance is the establishment of standards and procedures to ensure quality, and the audit of all work to ensure that quality checks are being planned and carried out. Quality assurance is the responsibility of bodies external to any single project.

NB Quality assurance should be site-wide and therefore not part of PRINCE 2. Quality assurance may be given a role within a project as part of project assurance.

The responsibilities of quality assurance are:

- establishing the standards and quality control system to be used for a site or organisation
- monitoring the effectiveness of the quality control system
- the provision of an external quality assurance body. Such a body needs adequate records of the quality control performed in order to operate. This also covers the opportunity for user inspection of the quality checking work being carried out.

If given a role as part of project assurance , the quality assurance representative's main contribution would be:

- agreeing appropriate levels of quality control. This must be done at project initiation and will probably reflect department policy as well as project specifics. The user must be involved in this.
- independent observation of quality reviews and other means of quality checking or testing. This includes observing the quality checking of interfacing products and external teams who contribute to the final products
- monitoring the quality log and quality file.

Quality assurance begins with a policy statement from the department or organisation of its attitude towards quality, its aims and what it is prepared to do to meet the aims. It covers the organisational responsibilities for quality. Quality assurance defines how quality work should be planned and the procedures for doing it. It also provides procedures to review the quality procedures themselves, define whether they are working correctly or need modification; also procedures to allow the client to check on quality procedures, quality work being done, the documentation being kept and so on.

Quality Control

The British Standard defines this as:

'The operational techniques and activities which sustain the product or service quality to the specified requirements.'

In straightforward terms it is the actual monitoring of work against standards and the keeping of records on the quality of work. Quality control is done within the project.

Summary

Quality assurance sets up the quality environment and defines the procedures, Quality control operates the procedures.

Quality Control in PRINCE 2

The work of quality control in PRINCE can be summed up as:

- planning and resourcing quality reviews and testing
- setting quality criteria for products prior to their production
- demonstrating that those quality criteria have been met in the finished product
- detecting and correcting quality problems as early as possible
- undertaking changes to an existing product in a controlled and documented fashion.

QUALITY PLANNING

Quality Management System (QMS)

There is a requirement for any company looking for certification under ISO 9001 to have a Quality Management System. This is not mandatory within PRINCE, although PRINCE does provide the project management procedures which would form part of such a book. For those readers who may be wondering whether their area meets the requirements it is worth a brief examination of the required QMS.

The QMS does not simply document the quality review procedures. It should contain standards and procedures for all activities carried out, management and technical, development and operation. A QMS contains procedures for every aspect of work. It should be an indication that any piece of work will be carried out in the same, approved manner by any member of staff appointed. The prior approval of each procedure means that it has been checked and verified that it should produce an end product of the required quality.

PRINCE 2 Quality Plans

A Quality Plan is required as part of:

- The Project Initiation Document
- Each stage plan.

Quality planning cannot be separated from the other planning work. The activities and resources required for quality will appear in the relevant plans. The plan description will contain details of how quality will be ensured.

Project Quality Plan

This is produced as part of the Project Initiation Document.

The quality strategy of the project needs to be stated here. This defines the desired quality of project products. It will contain general criteria and specific quality standards, such as documentation. There may be external constraints imposed by elements such as the configuration management method used. This information will appear in the product description and be used during the production, review and testing of the product. The quality strategy must be agreed between those who develop and those who will use and operate the product. Once agreed, it cannot be changed.

At this level it should state:

- The quality standards to be followed by the project. If there is no customer or supplier standard already in existence, ISO 9001 is a good start point.

- The quality control methods to be used in the project. This indicates the major types of test which will be carried out, such as the quality review method.
- The major products of the project which will be subjects of a quality review or formal test.

The content is intended to be generic. Anything in brackets is a hint on what to add to a specific plan. The example given here ranges wider than the composition shown in the product description for a project quality plan, but it does not matter whether the extra headings are under the banner of project initiation document or at a lower level under project quality plan. The essential is to cover everything somewhere.

SECTION 1: INTRODUCTION

This section of the Project Initiation Document contains the quality plan for the project and details the baseline against which project performance and end products may be measured.

(The project quality plan should reflect any constraints which may affect the quality of the end product, and be achievable within those constraints.)

SECTION 2: PROJECT PRACTICES, METHODS AND TOOLS

2.1 INTERNAL STANDARDS

The standards applicable to projects are listed in Appendix ( ). Those marked with an (M) are applicable to all projects. Additionally, those marked with a (P) are required for this project.

(It is useful to attach an index of all the internal project standards and mark those which are mandatory or are selected for the project.)

Where only part of a standard is appropriate, the extent to which the standard will be used is shown below:

(Any partially-required standards should be identified here, highlighting either the sections to be used or those to be excluded.)

2.2 PROJECT SPECIFIC STANDARDS

The following project specific practices, methods and tools apply:

(Enter here details of any standards which will govern the way the project team work and which are not normal internal standards.)

Copies of the above are stored in the project library.

SECTION 3: CONFIGURATION MANAGEMENT

3.1 PROJECT DOCUMENTATION

Project documentation is maintained in three categories:

- Project Management - identified by the mnemonic MD
- Technical - identified by the mnemonic TD
- Quality - identified by the mnemonic QD

Constituent items in those categories for this project are listed in Appendix ( ). Project documentation is held by the project librarian, except where otherwise stated in the Appendix. The project librarian is (identify the role).

3.2 CHANGE CONTROL

Change control will be implemented on this project. The project librarian is responsible. Change forms are held in MD( ).

3.3 DOCUMENTATION STANDARD

Documentation will be produced to the style and standards pertaining in the (company standard reference)

(This could also refer to the format section of the product descriptions.)

3.4 PROJECT ENVIRONMENT

The project environment (i.e. text processing equipment, computers, operating products, testing, etc., including version numbers) will be recorded and maintained by the Project Librarian. It will be stored under project documentation reference MD( ).

Logs of all equipment loaned or otherwise provided by the customer for use within the project will be kept by the project librarian and stored in project reference MD( ).

SECTION 4: PROJECT PLANNING

4.1 MANDATORY PLANNING REQUIREMENTS

The following mandatory plans will be produced on this project:

PLAN	STANDARD	REFERENCE
Project Plan	PRINCE	PMG Section C
Stage Plans	PRINCE	PMG Section C
Quality Plan	PRINCE	PQM Section B2

(Other plans should be added to the standard list when they are adopted.)

4.2 OTHER PLANNING REQUIREMENTS

In addition to the above mandatory plans, the following plans will be mandatory for this project

PLAN	STANDARD	REFERENCE

(Enter details of any other level/type of plan to be used.)

SECTION 5: PROJECT CONTROLS

5.1 PRINCE CONTROLS

The following controls are mandatory:

CONTROL	STANDARD	REFERENCE
Project Initiation	PRINCE	PMG D1.3
Checkpoint Reports	PRINCE	PMG D1.7
Highlight Reports	PRINCE	PMG D1.8
Mid Stage Assessments	PRINCE	PMG D1.5
Quality Reviews	PRINCE	PQG C
Quality Audits	(Company standard)	( )
End Stage Assessments	PRINCE	PMG D1.4
Project Closure	PRINCE	PMG D1.6

5.2 OTHER CONTROLS

In addition to the above mandatory controls, the following controls will be applied to this project:

(Enter here details of any extra controls to be applied.)

SECTION 6: STAGES AND END PRODUCTS

6.1 STAGES

Stages on this project will conform to the model project defined in the standard ( ), except where otherwise indicated below.

(Only enter details of the stages into which the project is to be divided where they do not match the standard defined above.)

6.2 END PRODUCTS

End products deliverable to the customer and other users of the product being developed which vary from the above standard are as follows:

STAGE	END PRODUCT NAME

(Only enter here end products which are not standard within the above standard.)

6.3 STAGE AND END PRODUCT VARIATIONS

For stages and end products not covered by the development life cycle standard, initial stage definitions and product descriptions are given in chapters 'Stage Quality Plan' and 'Product Descriptions' respectively.

Stage Plan Level

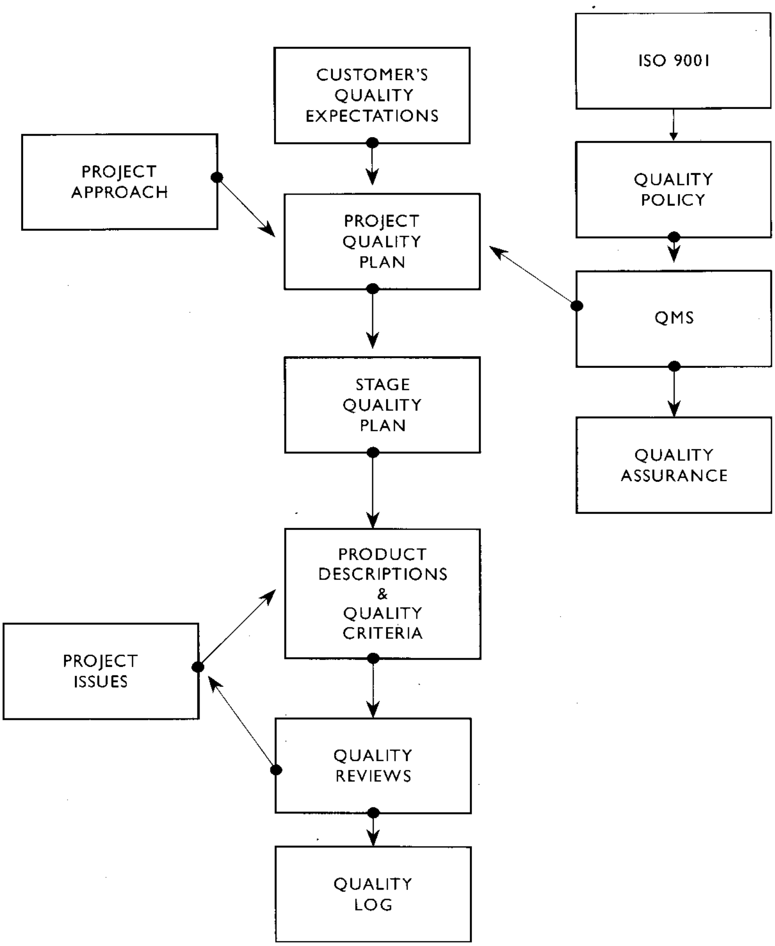
At this level the quality plan should identify:

- Specific quality reviews to be held
- Planned dates for the reviews
- Expected attendees at each review (minimally the Chairman)
- Product descriptions for every stage product
- Review checklists for each product
- Product tests contained in the stage and the test methods to be used.
- Timings and resources for these activities plus an allowance for error correction should be shown and clearly identified as such in the stage plan.

(It should be remembered when planning the reviews that all test products can be the subject of quality reviews, e.g. test specifications, test results.)

In the Lessons Learned Report the experiences from the quality work should be documented as an input to future projects' quality strategies.

THE QUALITY PATH



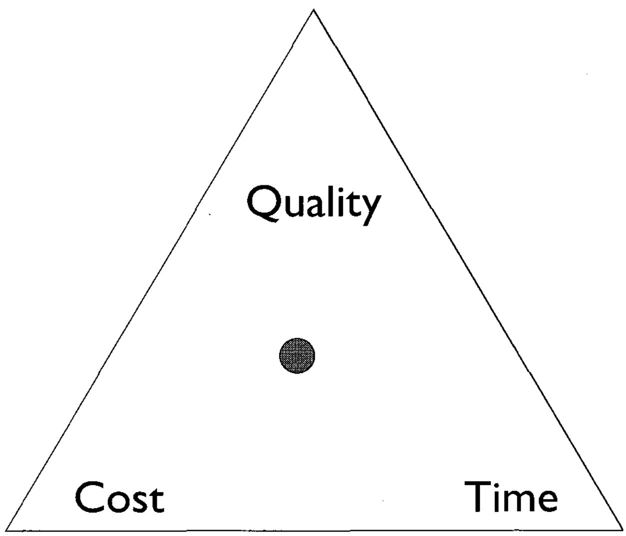
The first approach to quality in PRINCE 2 is shown in the above diagram. Each element of the diagram will be explained with cross-references to the areas of PRINCE 2 which relate to it.

Customer's Quality Expectations

In PRINCE 2 quality considerations begin with discovering what the customer's quality expectations are. This should be done in the process **"Starting Up a Project" (SU)**. It should be part of the **project mandate**. Remember, this is the information which triggers the project. It comes from some external source, so PRINCE 2 has no management control over its content. There is a standard product description of what PRINCE 2 would like to see as its contents, but in reality it could be anything from a sentence or two on the back of an envelope, a short memo, a verbal request to the ideal, complete project mandate. One of the tasks in this pre-project process is to add any missing information to the project mandate in order to turn it into a project brief, the formal terms of reference which are a required input to project initiation.

We cannot plan to provide the customer with a quality product until both customer and supplier understand and agree what that quality should be. We all understand that "we have to pay for quality". What is implied in that statement is "top quality", use of the best materials, expert craftsmanship, inspection at all points of the product's development, thorough testing beyond all its expected limits. If you buy a new coat, you would expect to pay more for a "quality" coat than one turned out in its thousands for, say, a chain store.

So, if there is a price tag to it, is the customer prepared to pay for "top quality"? Is the customer prepared to wait the extra time for a top quality product to be created and checked? A traditional way of viewing this dilemma can be seen in the diagram below.



Faced with this triangle the customer is asked to place the ball in the triangle to show the preferred relationships between time, cost and quality.

All products do not have the same quality expectations. An international oil company went to its data processing group with the results of a seismic survey done in a South American country. They had very little time left before their exploration contract ran out to find out if there were oil or gas reservoirs in the area. They wanted a suite of programs writing which would provide accurate results very quickly. As the results were to be examined by scientists, the product did not need to be easy to use, nor did it need to be well documented nor easy to extend. Compare their quality expectations to an airline needing an on-line reservation system, or a car manufacturer needing a new model to be developed.

Quality expectations could be considered under a number of headings, such as:

- functional requirements
- performance
- practicability
- security
- compatibility
- reliability
- maintainability
- expandability
- flexibility
- clarity
- comparison to another product
- cost
- delivery date.

ISO 9001

ISO 9001 is part of an international standard for quality systems, issued under the authority of the International Organisation for Standardisation (ISO). It applies to quality assurance in the design/development, production, installation and servicing of a product.

The quality standard ISO 9001 can be used by a company when:

- setting up a quality assurance function
- examining the quality assurance system of a supplier.

It therefore may have several impacts on the quality considerations for a project:

- It may have been used by the customer and/or the supplier as a checklist when creating its Quality Management System
- The supplier's development methods may be accredtied under ISO 9001
- The customer may wish to match a supplier's quality methods against the requirements of ISO 9001 or insist on a supplier who holds ISO 9001 accreditation.
- It may have been used as the basis for the corporate quality policy of the supplier.

Quality Policy

The customer and/or the supplier may have a quality policy. This may be a simple statement laying down the company's attitude towards the quality of anything which they make or use. If it has any meaning, it should direct and influence the supplier's attitude in construction, testing and reaction to any customer complaints about quality.

If both customer and supplier have quality policies, it is sensible to check that they are in harmony.

Quality Management System

Two things should follow-up a quality policy; a quality management system (QMS) and a quality organisation structure.

The QMS is a set of standards which covers all the normal work done by that company. Each standard will cover the techniques, tools, required expertise and steps to be used in the creation of a specific type of product. If the product is a document, the standard will also cover its format or appearance.

If both the customer and supplier have quality management systems, there must be agreement on which QMS or what amalgamation of standards from both sets of standards will be used.

Quality Assurance

Responsibility for setting and monitoring the standards should be given to a group, normally known as quality assurance. The organisation structure should indicate where responsibility for quality lies. When I asked the assistant general manager of the large IT function of a major oil company in the 1980's who was responsible for quality, the answer was "the project manager." When I asked "What if the customer complains about quality?" I was told "We kick the project manager." I then visited Scicon, a well-known consultancy group. When I asked who was responsible for quality there, the answer was "the managing director". This was a key part of their quality organisation structure. A project manager might take a few short-cuts with regard to quality and testing when faced with a looming deadline, but if any complaints were to come back to the managing director, it would be a brave (and foolish) project manager who would take that chance.

Project Approach

How the project plans to meet the customer's quality expectations will be affected by the approach chosen for the provision of the end product. Typical approaches would include:

- The product is built from scratch by the customer's staff
- An external supplier builds the product from scratch
- The product is built from scratch with contributions from many external organisations
- An existing product is modified to meet the new needs
- An off-the-shelf product is bought.

Quality checking methods and responsibilities will vary according to the approach chosen.

The project approach is confirmed as part of **"Starting Up a Project" (SU)**, therefore it is in place and can be used by the initiation sub-process **"Planning Quality" (IP1)**.

It is normally impossible to be involved in the testing of an off-the-shelf product. A privileged customer might be asked to participate in an alpha or beta test of a product, but this only happens when the organisation is already a customer. Checks on the quality of such products can be made with existing customers. Sometimes for more expensive products there is a trial period when testing can be done.

PRINCE 2 offers a good method of checking quality where a product is to be developed by external contractors. This is through use of the project assurance function. Each time that an external team manager plans work for the project, the project assurance role should insist on seeing the draft plan. The purpose is to identify products being developed in the plan which are of interest to the assurance function. Project assurance then verify that quality checking arrangements for these products are satisfactory. This covers the method of inspection, the points in the products' development when inspections are to be held and the people to be involved in the inspection. There should be the option to specify people to be included in the inspections for the purpose of project assurance. This is particularly relevant and important for user and the customer's specialist assurance. One word of warning. This requirement to inspect and modify the contractor's plans should be included in the contract.

Project Quality Plan

This is created in the process **"Initiating a Project" (IP)**. It forms part of the **Project Initiation Document**. It defines in general terms how the project will meet the customer's quality expectations.

It will identify the techniques and standards to be used. If there is a QMS in existence, it is normally sufficient to simply point to the QMS manual which contains the standards. If necessary, the project quality plan will identify any standards in the QMS which will not be used, or any extra standards not in the QMS which will be used.

The plan should also identify quality responsibilities for the project. For example, if the customer or the supplier has a quality assurance function, this would explain how that function will play a part in the project. This links with the **Organisation** component of PRINCE 2, where the external quality assurance function would take a **project assurance** role.

Stage Quality Plan

Encompassed within a stage plan will be details of how the project quality plan will be implemented in that stage. This will go down to the level of each product to be produced in the stage, defining how its quality will be tested or checked and who will be involved in each check. For example, if the product is a document which is to be quality reviewed, the stage plan should show the time and effort allocation of the chairman and reviewers to be used. The stage plan should show in diagrammatic form when the review will take place and how long it will take.

The stage plan is a key time for the involvement of the **project assurance** function. On production of a draft stage plan, the project manager should discuss the quality requirements with those appointed to an assurance role, particularly user and specialist assurance. They have the opportunity to identify the products which are important to those whose interests they represent. They can then insist on:

- identifying people who should be involved in the check
- the points in the development of the product where it should be reviewed.

This is particularly important where work is being allocated to an external team. Rather than wait until the "finished" product is handed over for acceptance trials, it is better for the final user to have people checking the product all the way through its design and development. Finding out that a product doesn't meet requirements during its acceptance trials is expensively late, maybe fatally so. I have known of several products where the customer refused to accept the product after unsuccessful acceptance trials. In many cases this has resulted in litigation, the customer suing for the money paid so far, the supplier claiming the fault was in the specification and suing for the remaining money. Nobody wins such cases except the lawyers.

NB Where external teams are to be used, it is important to define in the contract that project assurance has the right to see draft plans and insist on their people being part of quality checks wherever they wish.

Product Descriptions and Quality Criteria

As part of a stage plan there should be a product description for each major product to be created during that stage. This indicates, among other things, the quality criteria that the product must meet and the method of checking that those criteria exist in the finished product.

It is very sensible, even essential, to involve the customer's staff in defining the product descriptions, including the quality criteria. Not only are they the people who should know best, but if the product meets their quality criteria, it is very difficult for them to refuse to accept the product.

An inherent quality criterion for every product is that the product should satisfy the other elements of the product description. For example, it should contain those elements mentioned under "Composition" and be capable of satisfying the defined purpose of the product.

Quality Review

The detailed steps of a quality review are explained in its own chapter. Basically it is a structured review of a document by a group of people in a planned, documented and organised fashion. The people involved have been planned as part of creating the stage plan. The technique links with the **configuration management** part of the project organisation, which will be responsible for releasing copies of the document to be reviewed, freezing the original copy and updating the status of the product.

There is also a link with the **project support office**, which might undertake the organisation of the review, the dissemination of the documentation.

Quality Log

The quality log is the record of all the quality checking done in the project. It is updated by the team manager or individual team member charged with the development and testing of a product. It forms an audit trail of the quality work done in the project.

The quality log is created during **"Initiating a Project" (IP).**

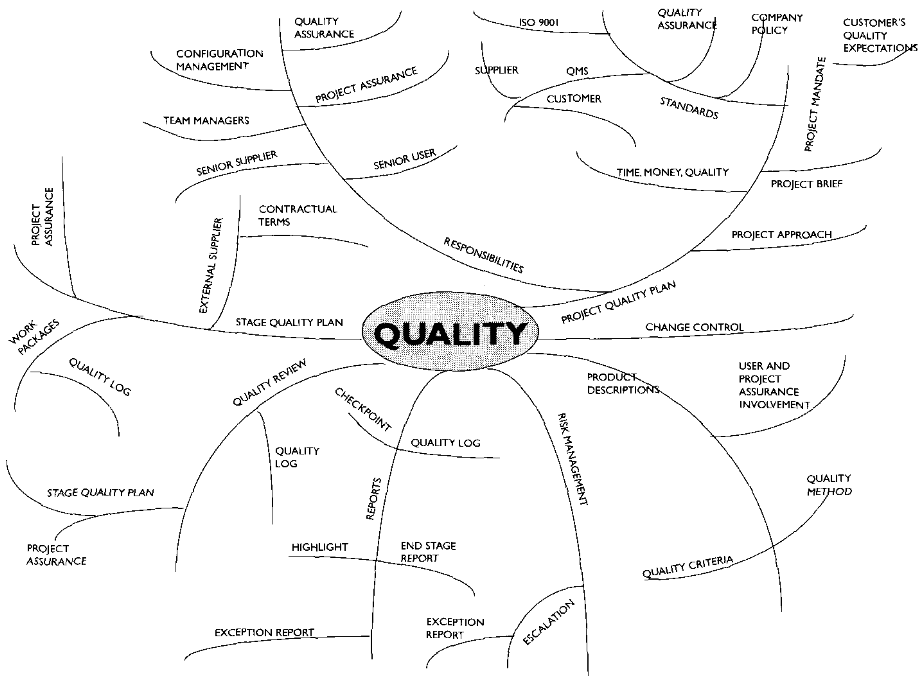
Project Issues

Project issues have many potential impacts on quality. A project issue may be reporting a quality problem with a product. It might be thought that such problems would be handled on an action list as part of a quality review or some other test. But a quality problem may be found in a product which has already been approved, or a review might discover a problem in a product which is not the one being inspected. There is also the possibility that an action item from a quality review may be found to require a lot of time. It may even be decided, because of time constraints, to approve a product which contains an error. In both these cases the error can be transferred to a project issue, so that a record exists and the error will not be overlooked.

The other point to mention here is that if a project issue requires changes to one or more products, the relevant product descriptions should be checked to see if they also need changing.

THE QUALITY MIND MAP

The mind map below forms the basis of the second view of quality under PRINCE 2.



Project Quality Plan

Responsibilities

The identification of responsibilities for quality is part of the Project Plan. Depending on the project, this will cover any specific responsibilities for, for example, the project manager, team managers, project assurance, any quality assurance or internal audit from customer and/or supplier.

Senior Supplier

The senior supplier is responsible for the quality of the products to be delivered by those he or she represents. This means that the other members of the project board can press the senior supplier on matters which affect the quality of the products to be delivered. This is a very effective way of bringing pressure to bear on the relevant team managers from their own management. One useful check during the design of the project management team is to ensure that the senior supplier has sufficient authority for this task.

Senior User

The senior user has a dual quality role. Firstly, the role is responsible for the quality of the requirements specification, its completeness and clarity. Secondly, the senior user must check regularly that a product is being designed and developed which will satisfy those requirements. Where the project is large or complex the senior user may wish to delegate the assurance of these two things.

Project Assurance

Members of the project board may decide to delegate their assurance work (but not their accountability for it) to the project assurance role. Any assurance job descriptions should make clear for what they are responsible and to whom. The latter should always be a member of the project board, even if someone from an "independent" quality assurance function is performing a project assurance function. In such a case, if the quality assurance group belongs to the customer, this particular project assurance function would report to the senior user. For the supplier's quality assurance, this job would report to the senior supplier.

Quality Assurance

If an organisation has a quality assurance group this needs a place in the project organisation structure. The quality assurance group will have set the standards which will be used in the project and part of their job is to monitor the implementation of those standards. A role as part of the project assurance is the ideal way to establish a formal position in the project for quality assurance.

Both the customer and supplier may have a quality assurance group. Both may require a project assurance role. They report to a member of the project board, for example, senior user and senior supplier, as well as to whoever in the organisation has overall quality responsibility, such as the managing director.

Remember - quality assurance is not the same as project assurance. Quality assurance is site- or company-wide. It may be given a role as part of project assurance, but this is a choice made per project. Project assurance is part of the responsibilities of each project board member which may be delegated.

Team Managers

As part of a work package a team manager agrees with the project manager what the quality requirements are for the product(s) of the package. The quality criteria are written down in the product descriptions. As part of their reporting arrangements team managers must complete entries in the quality log for all the quality inspections (of any type) carried out by the team.

Configuration Management

Configuration management plays several roles in ensuring the project quality. Use of the correct version of a product is clearly a quality requirement. Identifying all products affected by a requested change is a quality matter, because failure to spot such a product will give rise to a failure or quality problem later on. An example of this would be the failure to update documentation in line with the change to a product.

Configuration management provides the ability to trace the origin of work which causes a later fault. It can also tell the project manager of the status of a product, for example, any product which has not yet been quality checked.

A configuration audit identifies any disparity between the actual and recorded version numbers, thus providing the information to avoid people using the wrong version. Imagine producing a bill of material to tell a car assembly line what is needed to produce thousands of a particular model. It would be essential to state the correct version numbers of all the parts or the whole thing wouldn't fit together or wouldn't work properly when built.

Standards

Company Quality Policy

A company's approach to quality should stem from a mission statement from its senior management about the quality expected from its workers. One seen recently said simply "If it's not excellent, it's not good enough." The company quality policy should be backed up by the allocation of quality responsibilities, defined in the company's Quality Management System if it has one. To have any teeth, these responsibilities should reach high enough in the organisation to ensure that quality concerns are not overridden by cost or time constraints.

ISO 9001

This is one example of a set of national or international standards (or quality requirements) which might form the basis for a customer's quality expectations or the way in which those requirements might be met. For example, a customer might look for a supplier whose work is certificated as meeting the requirements of that standard. An example here would be looking for a heating engineer who is a registered CORGI gas installer. You know that this means the company's work has been independently inspected and meets a certain standard.

ISO 9001 is more fully described in its own chapter in this book.

QMS

The set of standards, work steps and responsibilities to be used for a particular type of work should be recorded in a company's Quality Management System. This will certainly be so if the company is registered or certificated under any national or international standard, such as ISO 9001 described above.

Customer

The customer may have a QMS which it requires its own people to use. If so, it may wish to have these used on the project.

Supplier

The supplier may have a QMS which it wishes to use for the work. The supplier's staff may be more familiar with the requirements of their own QMS and be more efficient using this than having to swop to new standards. On thing to be considered here is whether the customer's staff will be responsible for the maintenance and enhancement of the product after it is delivered. If so, will they be able to deal with a product built to standards which are different to their own?

There must be agreement during the initiation stage on which set of standards or what amalgamation of the two sets will be used for the project.

Quality Assurance

A QMS is normally created by and would be monitored by an independent quality assurance group, thus creating the reason why this group might want representation on the project through the project assurance role.

When designing the assurance part of the team, it is necessary to consider the potential of both the customer and supplier having quality assurance functions which require representation.

Project Brief

The project manager has to ensure that the project brief contains a statement of the customer's quality expectations. This is done as part of the pre-project process **"Starting Up a Project" (SU)**. This will go forward and become part of the project quality plan in the Project Initiation Document, created during the process **"Initiating a Project" (IP)**.

Project Mandate

This is the original request to carry out a project. It may be formal and contain all the information required, or it may need expansion before the project can begin. It should contain the customer's quality expectations. If not, it is the project manager's job to ascertain what the expectations are. The information goes forward to the project board as part of the project brief

Customer's Quality Expectations

The customer should give a lot of thought to the required quality of the end product. The construction, testing and customer verification of quality all take time and money. The customer must balance the desired quality with these considerations. The quality expectation should consider such things as the potential impact of the product's failure, for how long it is to be used and the added value of its use. This implies that the senior user should discuss the quality expectations and their financial implications with the executive.

Project Approach

How a solution is to be provided will affect how its quality can be tested. This is a chicken-and-egg situation, because the required quality may influence the choice of project approach. For example, should a company create its own word processor or buy one off-the-shelf? The bespoke version would provide a complete fit with some special requirements, but the cost and time taken compared to buying an off-the-shelf product would be very difficult to justify. This is the kind of question which a feasibility study would be asked to resolve prior to the project.

Stage Quality Plan

This is where the detail of how, when and by whom quality will be checked is planned. The stage quality plan is part of the stage plan and will be reflected in its Gantt or bar chart and text. It is created as part of the stage plan in the sub-process **"Planning a Stage" (SB1)**.

For each product delivered by the stage the plan should show when quality is to be tested and the resources to be used. The product descriptions will show the method to be used.

Work Packages

Part of a work package authorisation is agreement on how the product(s) will be tested. This links across to the need of project assurance to see the team manager's plans, agree with the quality checking method to be used, and add any relevant checkers of their own. This may mean that the agreement and the team plan go through a negotiation until project manager, team manager and project assurance are agreed.

Quality Log

As part of the reporting arrangements of a work package authorisation the team manager is required to complete entries in the quality log, giving dates and details of each quality inspection or test. The details would include who was involved, reference to any test products used and what the results were.

Project Assurance

Project assurance has the responsibility to satisfy itself that draft stage and team plans contain adequate details of when, how and by whom products in the plan are to be inspected.

External Supplier

It is dangerous for the project manager to rely completely on an external supplier to deliver products of the required quality. Finding out that quality is inadequate after product delivery is going to be expensive in terms of time and cost to correct. There have been some well-publicised examples of the user rejecting the final product from an external supplier as not meeting specification. These usually end up in litigation, where only lawyers are going to win. Whatever the outcome, the project manager does not come out of it well.

There are many facets to obtaining "the expected quality" from external suppliers. Firstly, is there a clear definition of "expected quality" or was it assumed? PRINCE 2 offers the **product description** with its quality criteria as a good basis for the definition of the quality expected.

Secondly, has the project manager put in place the necessary monitoring of the quality of the external supplier's work during development, rather than leave it until the supplier delivers? At these times is quality being checked by people who represent the customer, rather than relying on the supplier's staff? This is part of **project assurance**, checking that the supplier's plans contain sufficient quality checks and that the right people are to be involved in the checks.

Contractual Terms

When dealing with external contractors it may be necessary to insert into the contract the right of project assurance to examine team plans and insist on the inclusion of identified resources in quality checking. Otherwise there may be difficulties with the contractors in getting them to accept this modification of their plans by project assurance.

Product Descriptions

A product description is written for each major product of a plan. It defines the:

- Title
- Purpose
- Composition
- Derivation
- Format
- Quality criteria
- Quality method.

Writing the product description tells the planner whether he or she knows enough about the product to estimate the work needed, and can often trigger realisation of another required product. These can improve the quality of the plan.

Quality Criteria

An essential part of the PRINCE 2 quality approach is the definition before a product is built of the quality criteria required from that product. This is given to the developer as part of the work package. Those reviewing the completed product also use the quality criteria as a measure of its quality. It is therefore important that a lot of thought is given to appropriate, measurable and meaningful criteria, otherwise they do not act as a yardstick of whether the product is of the required quality or not.

Writing good quality criteria is not a trivial job and requires experience. As an example, a list of general quality criteria for any document is given below:

- Clear and concise
- Accurate
- Comprehensive
- The composition matches that stated in the Product Description
- The grammar and spelling are correct
- The product meets the defined standard
- The product is on the required form
- Reflects accurately the information contained in/required by the derivation material
- The information is at the correct level for the readership
- Free from jargon which is unknown or unexplained to the readership
- Information is provided under every expected heading
- The information provided under each heading is appropriate to that heading
- Input has been provided from all the relevant parties
- The document's summary/conclusions are consistent with the body of the report
- The product fulfils its stated purpose
- Delivered on time
- The contents match the contents page
- The product's author is clearly indicated
- The distribution list is provided and correct
- The version number is clearly indicated and correct
- The header and footer information matches the required standard

Quality Method

Each product description should identify the method, tool or technique to be used to check the product quality. It can also state who should carry out the quality inspection or approval.

User/Project Assurance Involvement

It is important to involve the user and project assurance in the writing of product descriptions. These are the best people to define the information required, especially the quality criteria.

Quality Reviews

Quality Log

The results of each quality review should be entered on the quality log, which is used as a quality audit trail by the project manager. If planned participants and dates are in the log as well as actual results, the project manager can spot any slippages or quality problems.

The maintenance of a quality log is also part of the requirements of standards such as ISO 9001.

Stage Quality Plan

The stage quality plan is not a separate document, but part of the stage plan. It defines how, when and by whom a product is to be tested. The stage quality plan is a lower and more detailed level of part of the project quality plan. The two should therefore be in harmony. No test methods should be used at stage level which were not identified in the project quality plan.

Project Assurance

Quality reviews are a key point at which project assurance can check the quality of the products. They may either attend personally or identify resources who should attend on their behalf. For example, if the senior user in a small project was carrying out his or her own assurance, they might examine the draft stage plan, identify products of key importance to them, but delegate inspection of the product to people with more detailed experience.

Change Control and Quality

The key point here is that if close control is not kept over changes, quality is likely to suffer in one or more ways.

If uncontrolled changes are made, the financial quality of the project may suffer. Changes incur cost. If there has been no agreement from customer and supplier to add this to the project's budget, it is likely that the project will overrun its budget.

For the same reasons uncontrolled changes may also affect the ability of the project to complete on time.

If changes are made without project board approval, the final product may not be what the project board expects, thus representing a quality problem.

If a change is made which is not properly tested and contains errors, this is another quality problem. If all associated products, such as documentation, are not updated at the same time as the change, there is yet another quality problem.

Reports

Quality Log

The quality log is the audit trail of quality work. The customer (or project assurance) can inspect it at any time to verify that quality work is being carried out. It is therefore another check on quality for project assurance apart from appointing resources to attend the quality checks.

It is also a way in which the project manager can check on what is happening about quality checking and check back on who was involved if a later quality problem appears.

Checkpoint Report

A checkpoint report is the time-driven progress report from a team to the project manager. To make consolidation easier, it will normally have the same three sections as the highlight report; products delivered in the current period, products to be delivered in the next period and problems. The last section is where a team manager would report on any quality problems, possibly to back up with more detail an entry in the quality log. This report can be either written or verbal, according to the wishes of the project manager. Its frequency is defined as part of the work package authorisation.

Highlight Report

The highlight report is a time-driven report from the project manager to the project board. The project board defines the frequency in the Project Initiation Document. It is usually a summary of a number of checkpoint reports. It gives the project manager the first formal avenue to tell the project board of any quality problems. Remember, quality may refer to products, time or cost. It can be used to get project board pressure brought to bear on the source of the quality problem. Examples of this might be:

- The users are too busy to properly identify their requirements or assist in writing product descriptions

- Supplier staff are delivering products of poor quality or obstructing project assurance staff in quality inspections.

End Stage Report

Part of each end stage report should cover the quality work of the stage; how may checks of each type were carried out, confirmation that the quality of all products has been checked in some way, any quality problems (e.g. inadequate tools) and confirmation of the project assurance work.

Exception Report

If there is a serious quality problem, this should be entered on a project issue. The project manager can then bring this to the attention of the project board by means of an exception report, which not only defines the problem, but describes the options, impacts on the business case and risks and makes a recommendation. Documentation in this formal way does not preclude informal discussions between project manager and project board, but it does protect the project manager, being proof that the matter was raised at a certain time with the project board.

Risk Management and Quality

This can be seen in one of two ways; a quality problem represents a risk to the project, or a risk or its countermeasure threatens the quality of the project. An example of the first might be a contractor using an inadequate sand and cement mix for the foundations of a bridge. An example of the second might be a threatened rail strike. The countermeasure adopted is, for the sake of this example, to rush the product through to beat the strike. The side effect is that some quality testing has to be dropped in order to save the time needed.

Escalating Project Issues

Any quality problems arising in these ways can be put onto project issues. This gives them a formal means of being documented in more detail than the risk log. The issue can then be escalated to the attention of the project board by means of an exception report.

Exception Report

This identifies the problem, the options, the impact on business case and risks and makes a recommendation. It is studied by the project board as part of the sub-process "Giving Ad Hoc Advice" (DP4). The project board may then ask the project manager to make out an exception plan to replace the remainder of the plan concerned, or may even direct the premature closure of the project if it feels the impact on either the business case or risks is too great.

QUALITY REVIEW

Purpose of a Quality Review

Under PRINCE 2 it is recommended that the quality of any document is controlled through the quality review (QR) technique. This is a team method of assuring product quality by a review process. The purpose of the review is to inspect a product for errors in a planned, independent, controlled and documented manner. Quality review documentation, when filed in the quality file, provides a record that the product was inspected, that any errors found were corrected and the corrections themselves checked.

Knowing that a product has been checked and declared error-free provides a more confident base to move ahead and use that product as the basis of future work.

Objectives

The major aim is to **improve product quality.** There are several subordinate objectives. These are to:

- trap errors as early in the development cycle as possible
- encourage the concept of products as team property rather than belonging to an individual
- enhance product status data (i.e. not only has the creator declared it finished, but others have confirmed that it is of good quality)
- monitor the use of standards
- spread knowledge of the product among those whose own products may interact with it.

People Involved

The interests of parties who should be considered when drawing up the list of attendees are:

- product author (in PRINCE called the presenter)
- project board (or their assurance representatives)
- the users of the finished product
- operations
- staff from other systems which will be affected by the product
- independent observers (perhaps to confirm the completeness of the review procedure and the attitude of attendees)
- project management
- specialists in the relevant product area

- standards representatives.

The fact that these interests should be considered does not mean that a Quality Review must have representatives from all these areas. As with most things in PRINCE 2, it is scaled to what is appropriate for the particular project.

Roles at the Quality Review

The roles involved in the quality review technique are:

The presenter, who is usually the author of the product being reviewed. This role has to ensure that the reviewers have all the required information in order to perform their job. This means getting a copy of the product to them during the preparation phase, plus any other documents needed to put it in context, then answering questions about the product during the review until a decision can be reached on whether there is an error or not. Finally the presenter will do most, if not all, of the correcting work. The presenter must not be allowed to be defensive about the product.

The chairman. Required attributes are:

not the product author

understands the quality review process thoroughly

has sufficient authority to control the review

has chairmanship experience.

The chairman is responsible for ensuring that the quality review is properly organised and that it runs smoothly during all of its phases.

For the Preparation phase this includes checking that administrative procedures have been carried out and that the right people have been invited. This needs consultation with the stage or team plan.

The reviewers, who must be competent to assess the product from their particular viewpoints

A Scribe, someone to record the agreed action points. The job could be done by the chairman, but if there are several reviewers at the review, it is a good idea to make the scribe task someone's sole job and leave the chairman to control the meeting.

It must be remembered that these are roles. They must all be represented at a quality review, but a person may take on more than one role.

If the project has a Project Support Office it would be a good idea to train an administrator to act as the scribe for all quality reviews, so that there is expertise in doing this job.

Quality Review Phases

There are three distinct phases within the quality review procedure: Preparation; Review; Follow-up.

Phase 1 - Preparation

- The objective of this phase is to examine the product under review and to create a list of questions (or possible errors) for the review.
- The chairman checks with the presenter that the product will be ready on time. If not, the project manager is advised in order to update the stage plan. The chairman ensures that the planned team of reviewers will all be available and that the venue has been arranged.
- An invitation to the review is sent to each reviewer with details of time, place and duration, a copy of the product, its product description and any checklist available. Enough time should be allowed for the reviewers to have the chance to thoroughly study the product.
- Each reviewer will compare the product against the quality criteria included in the product description, annotate the product, and complete a question list.
- A copy of the question lists will, wherever possible, be sent to the presenter before the review. These should be reviewed by presenter and chairman to allow the chairman to merge any duplicated questions, set up an agenda, prioritise the questions and roughly allocate time to each point. If there is time, the presenter should examine the questions and identify any which point out errors or omissions which can be agreed without discussion.

Phase 2 - Review

- The objective of the review is to agree a list of any actions needed to correct or complete the product. The chairman and the presenter do not have to reconcile these actions at the meeting - it is sufficient for the chairman and reviewers to agree that a particular area needs re-examination. Provided that the action is logged, the reviewers have an opportunity during the follow-up phase to confirm that action has been taken.
- The chairman opens the meeting and introduces those present if necessary. All should have a copy of the agenda.
- The chairman then identifies those questions on the agenda which the presenter has already agreed need amendment. This saves time during the review. The rest of the agenda should be used to control the passage through the document, rather than move through it page-by-page. This not only speeds up the review but also shows up any reviewers who have not read the document beforehand.

- The chairman controls the discussion during the walk-through ensuring that no solutions are discussed (other than obvious and immediately accepted solutions!), all who have a question are allowed to ask it, and that any discussions which stagnate are stopped. Follow-up actions are noted on the action list by the scribe. No minutes are taken of the review other than the action items.
- At the conclusion of the walk-through, the chairman asks the scribe to read back the action list and determines responsibility for correction of each point. Responsibility will usually lie with the presenter, but there may be joint efforts, e.g. unresolved disagreements. A target date is set for each action and the identity of the reviewer(s) who will sign-off each corrective action as acceptable are recorded on the action list by the scribe. Minimally the person who raised the error should sign off the correction, but all reviewers have the option of asking to sign off any corrections which they see as key to the interests of those they represent.
- The chairman, after seeking the reviewers' opinions, will decide on the outcome of the review. There can be one of three "normal" outcomes:
  - the product is error-free
  - the product will be acceptable on completion of the actions noted
  - there is so much corrective work to be done that the entire product needs to be re-reviewed.

In abnormal circumstances there may be a decision to accept a product without correcting the errors found. This should be a last resort, say, when meeting a deadline is of overwhelming importance. The errors found should be transferred to project issues so that they are not forgotten.

- The chairman will inform the project manager of the result so that the stage plan can be updated. This is often done by the chairman updating the quality log with the results.
- The reviewers' question lists, copies of the product (probably containing the reviewer's annotations) and any other relevant documentation are collected by the chairman and passed to the presenter to assist in the Follow-up.

Phase 3 - Follow-up

- The objective of the follow-up phase is to ensure that all actions identified on the action list are dealt with.
- Those to whom corrective work has been allocated (often just the presenter) make the amendments to the product.
- When an error has been fixed, the person making the correction will obtain sign-off from whoever is nominated on the action list. When all errors have been reconciled and sign-off obtained, the chairman will update the quality log, sign off the action list and arrange for it to be filed in the quality file.

Quality Review Responsibilities

Chairman's Responsibilities

Preparation Phase

- Check with the presenter that the product is ready for review. If not, provide as much detail as possible, e.g. a revised completion date, to the project or team manager.
- Consult with the presenter and those with project assurance roles that the planned reviewers are still available.
- Agree the amount of preparation time required with the presenter (and reviewers, if this is appropriate).
- Arrange a time, location and duration for the review in consultation with the presenter and reviewers.
- Advise the project or team manager if there is to be any delay in holding the review.
- Arrange for copies of any relevant checklist or standard to be provided
- Ensure product descriptions and product copies are provided for all reviewers. The configuration librarian does this job, if one has been appointed.
- Send an invitation, product description, product copy, checklist and standard to each reviewer. If there is administrative support provided in project support this can be delegated to this area.
- Decide if a short overview presentation of the product to the reviewers is required prior to reviewing the product, and arrange it if it is.
- Arrange with the reviewers for collection of their question lists prior to the review.
- Create an agenda for the review from the question lists in consultation with the presenter. Mark any questions where the presenter acknowledges that the product needs amendment.
- Prioritise the remaining questions and roughly allocate time.
- Confirm attendance with each reviewer shortly before the review.

Review

- Provide a copy of the agenda to all attendees.
- Open the review, stating objectives and apologising for any non-attendees.
- Decide whether the reviewers present and the question lists from any unable to attend are sufficient to review the product. If not, the review should be stopped and re-scheduled. The chairman may decide to continue with the review if a reviewer cannot attend, but has submitted a question list.
- Advise the reviewers of any questions where the presenter has already agreed to take corrective action.

- Step through the agenda, with the appropriate reviewer enlarging where necessary on the question.
- Allow reasonable discussion on each question between presenter and reviewers to decide if action is required.
- Document any agreed actions required on an action list.
- Prevent any discussion of possible solutions or matters of style.
- Ensure every reviewer is given a chance to voice comments.
- Where agreement cannot be reached on a point in a reasonable time frame, declare it an action point and also note the reviewer(s) concerned on the action list.
- Where necessary, decide on the premature close of the review in the light of the comments made.
- If faults are identified in products not under review, ensure that a project issue is raised.
- Have the action list read back and obtain confirmation from the presenter and reviewers that it is complete and correct.
- Identify who is to be involved in working on each action item. Obtain a target date for completion of the work.
- Agree with the reviewers who is to approve the work done on each action item and note this on the action list.
- Collect any annotated products detailing minor or typographical errors.
- Pass the action list and all copies of the annotated product to the presenter. Lodge a copy of the action list in the quality file.
- Decide with the reviewers what the status of the review is. It can be:-
  - ☐ complete with no errors discovered
  - ☐ complete with some re-work required
  - ☐ in need of re-work and another review.
- Complete a quality log entry with the result.

If the review is incomplete, recommend a course of action to the stage or team manager. There are five possible courses of action. The last two of these are ***not*** recommended:

- the product should be re-worked prior to another review
- the review should be reconvened to finish with no interim need for re-work
- the review should be reconvened without re-work with a different set of reviewers
- the review should be declared complete, the errors found so far corrected and the rest of the product accepted as is
- the review should be abandoned and the product used as is, i.e. none of the errors corrected, but noted in a project issue.

Follow Up

- Monitor the correction of errors and sign off the action list when all corrections have been approved.
- If an action cannot be taken within the time allowed, the chairman and presenter may decide to transfer it to a project issue for referral as a possible off-specification. This requires the agreement of the project manager. The action list is updated with the project issue number and those waiting to sign off the action item informed.
- On completion and sign-off of all action items, sign off the action list as complete and pass it to the quality file with copies to all reviewers.
- Supervise the passage of the error-free product to the configuration librarian.

Presenter's Responsibilities

Preparation

- Ask the stage or team manager to nominate a chairman if none is identified in the stage or team plan.
- ***If required***, arrange a short overview presentation to all or some of the reviewers prior to the review. For example, this might need to cover:
  - ☐ why it was produced and for whom
  - ☐ any assumptions made
  - ☐ what standards and techniques have been used
  - ☐ the approach taken and reasons for the approach
- Confirm with the chairman that the product is ready for review. This should occur prior to the planned review date to allow for preparation time.
- Agree with the chairman and reviewers the length of preparation time needed and review location.
- Assess the question lists from the reviewers.
- Agree the agenda with the chairman in the light of the question lists.

Review

- Answer any questions about the product.
- Offer an opinion to the chairman on whether a question has highlighted an error in the product or not.
- If the review is judged to be complete, collect from the chairman the action list and any annotated copies of the product from the reviewers.

Follow Up

- Resolve all allocated action items.

- Obtain sign-off for each action item from the nominated reviewers.
- If an action item cannot be resolved within the time allowed, then decide with the chairman if the item can be transferred to a project issue.
- Inform the chairman if the resolution of the action items cannot be completed within the time allowed and agree new target dates.
- Pass the action list to the chairman on resolution of all the action items.

Reviewer Responsibilities

Preparation

- Consult the product description and any pertinent checklists and standards against which the product should be judged.
- Allow sufficient time to prepare for the review.
- Consult any necessary source documents from which the product is derived.
- Annotate any spelling or typographical mistakes on the product copy, but do not add these to the question list.
- Check the product for completeness, defects, ambiguities, inconsistencies, lack of clarity or deviations from standards. Note any such items on the question list.
- Forward the question list to the presenter in advance of the review. If possible, this should be done early enough to give the presenter time to digest the points and prepare an agenda with the chairman.
- Forward a question list and the annotated product copy to the chairman if unable to attend the review.

Review

- Ensure that the points noted on the question list are raised at the review.
- Restrict comments to faults in the product under review.
- Avoid attempting to redesign the product.
- Avoid "improvement" comments if the product meets requirements and standards.
- Verify and approve the action list as complete and correct when read back by the chairman or scribe.
- Agree to assist in the resolution of any action items if requested by the chairman.
- Request to check and sign off any action items either raised personally or which impact an area of expertise or interest.

Follow Up

- Work with the presenter to resolve any allocated action item.
- Check and sign off those action items where allocated as reviewer.

Project Support Office (if present)

Preparation

- Allocate a unique number for the quality review in the quality log.
- Confirm with the chairman that the review is to be held on time.
- File a copy of the quality review invitation in the quality file.

Review

- If requested by the chairman, act as scribe for the action items.

Follow Up

- File the completed action list in the quality file.
- Update the quality log as appropriate.

Formal and Informal Reviews

Quality reviews can be either formal (i.e. a scheduled meeting conducted as described above) or informal (i.e. a 'get-together' between 2 or 3 people to informally walk through a product). Informal quality reviews will follow a similar format to the formal quality reviews - the paperwork emerging from both meetings is similar. The main difference will be the informality of the proceedings during the three phases and the overall time required.

For informal quality reviews two people can be given the task of checking each other's work on an on-going basis. Alternatively an experienced person can be asked to regularly hold reviews of an inexperienced person's work as it develops.

Factors in deciding whether a formal or informal review is needed are:-

- the importance of the product
- is it a final deliverable?
- is it the source for a number of other products?
- the author's experience
- who is the product's consumer?
- is it a review of a partial document?

Summary

The PRINCE 2 quality review technique is a structured way of running a meeting to ensure that all aspects are properly covered. It needs to be used with common sense (to avoid the dangers of an over-bureaucratic approach) but with an intent to follow the procedures laid down (to ensure nothing is missed).

CONFIGURATION MANAGEMENT

Definition

Configuration management is part of the quality control of a project. Configuration management is not optional. Without it, managers have little or no control over the products being produced, e.g. what their status is, where they are, whether they can be changed, what the latest version is.

The configuration of a project is the sum total of products which will form part of the final released system. Each part of that final system is known as a configuration item. The specialist products of a project are all configuration items. Management and quality documentation ***may optionally*** be treated as configuration items in order to control the issue of various versions of them. Therefore every configuration item is a product, but a product may not necessarily be a configuration item. In PRINCE 2 terms a configuration item description record (CIDR) equates to a product description with extra fields. Throughout the remainder of this chapter to avoid confusion we shall use the PRINCE terms of product and product description.

The job of configuration management is to provide:

- the mechanisms for managing, tracking and keeping control of all the project's specialist products. It keeps files and libraries of all the products of a project once they have been quality reviewed, controls access to them and maintains records of their status.
- the ability to select and package the products which comprise the final working system. This covers releasing the complete system, or updates to it.
- a system for logging, tracking and filing all project issues.

A specimen job description for a configuration librarian appears below. All the listed functions are necessary for successful projects.

Configuration Librarian (CI)

The configuration librarian is the custodian and guardian of all master copies of the project's specialist products. The role also maintains the issue log.

Role

- To control the receipt, identification, storage, and issue of all project products.
- To provide information on the status of all products.
- To number, record, store and distribute project issues.

Specific Activities

- Assist the project manager to prepare the configuration management plan (during Initiation).
- Create an identification scheme for all products.
- Create libraries or other storage areas to hold products.
- Assist in the identification of products.
- Create product description "skeletons".
- Maintain current status information on all products.
- Accept and record receipt new or revised products into the appropriate library.
- Archive superseded product copies.
- Hold the master copies of all project products.
- When authorised to do so, issue copies of products for review, change, correction or information.
- Maintain a record of all copies issued.
- Notify holders of any changes to their copies.
- Maintain the issue log.
- Monitor all project issues and ensure they are re-submitted to the configuration library after any authorised change.
- Gather and retain information which will assist in the assessment of what other products are impacted by a change to a product.
- Produce configuration status accounting reports.
- Assist in conducting configuration audits.
- Liaise with other configuration librarians where products required by the project are common to other systems.

Configuration Management Method

A configuration management method may be manual or automated, whichever is available and most appropriate for the project.

Because the system will exist after the project has finished, the first two parts of configuration management mentioned above refer to the products rather than the project. For this reason it is usually managed on a departmental basis, the same method being used to look after many final products. This is a good reason for having configuration librarians in a Project Support Office, providing the method and expertise to all projects.

Configuration management performs the following functions:

- Identifying the individual sub-products and types of product of the final product.
- Identifying those products which will be required in order to produce the products

- Establishing a coding system which will uniquely identify a product
- Identifying the 'owner' of a product, the person to whom creation or amendment of that version of a product has been delegated
- Recording, monitoring and reporting on the current status of each product as it progresses through its own specific life- cycle
- Filing all documentation produced during the development life of the product
- Retention of master copies of every completed product within the configuration library
- Provision of procedures to ensure the safety and security of the products and to control access to them
- Distribution of copies of all products and recording of holders of product copies
- Maintenance of relationships between products so that no product is changed without being able to check for possible impact on its neighbours
- Managing change to all products, from receipt of project issues, through assessment of the impact of proposed changes, release of copies of products to the eventual receipt of the amended versions
- Establishment of baselines
- Performance of configuration audits.

Apart from the configuration management work the librarian also creates and maintains the project and stage files.

Products which are of interest to more than one project may be held centrally.

Items can only be created, amended or deleted through submission of a formal project issue to the configuration librarian. Once authorised this becomes either a Request For Change or an Off-Specification.

Configuration Management Plan

This plan forms part of the plan description of the project quality plan. It consists of:

- An explanation of the purpose of configuration management
- A description of (or reference to) the configuration management method to be used. Any variance from installation or department standards should be highlighted together with a justification for the variance
- Reference to any other configuration management systems with which links will be necessary
- Identification of the configuration librarian
- Identification of the products, levels of product or classes of product which will be controlled under configuration management
- A plan of what libraries and files will be used to hold products
- Confirmation that the relevant project and next stage files have been set up.

Configuration Identification

As a start, the coding scheme should identify:

- the project
- type of product
- product
- latest version number

as elements of the unique key required. This is apart from the other information needed to fulfil the needs stated above, such as:

- product description
- a description of the life cycle steps appropriate to the product
- 'owner'
- date allocated
- library or location where the product is kept
- source, e.g. in-house, purchased from company x
- links to related products
- status
- copy holders
- cross-reference to the Project Issue(s) which caused the change to this product
- cross-references to relevant correspondence.

Baseline

A baseline is the moment when the product passes to the configuration library after a successful test or quality review. This changes its status and 'freezes' the content. It can now be used as a firm basis for the development of any later product. If the item itself is to be changed at a later date, the baselined version stays unchanged, a new version number must be allocated, a copy is issued bearing this new version number and all the facts noted in the configuration management records. When this amended version is finished and has been quality reviewed, it is passed into the library and a new baseline established. The old baselined version is never discarded. The configuration management method must always permit the recreation of any version of the released system.

A baseline is also a complete and consistent set of products which forms a fixed reference point in the development of the end product. The most obvious baseline is the final product to be handed over at the end of the project. It is normal to establish intermediate system baselines to provide a firm, agreed foundation for later work, preferably at natural breakpoints in the development cycle. This baseline document can be considered as a Bill of Material, is a list of all products which make up that release or baseline, showing each item's version number and baseline date.

Configuration Control

Configuration control is concerned with physically controlling receipt and issue of products, protecting finished products and controlling any changes to them.

Product Submission

When a product is allocated to an 'owner', the person who will develop it (or later amend it), a copy of the identifying information should go with it. When the item or any part of it is submitted to the Librarian, this information identifies it. Additional information is required on the status of the item and the names of any reviewers who should receive copies.

Any current holders of the product should receive copies of the new version with an indication of its status.

Product Issue

A log should be kept, detailing:

- product identity and version number
- recipient's name
- date of issue
- authority for issue
- any sensitivity indication.

All product copies formally issued by the librarian should be stamped as such and numbered. This is to ensure that only official copies are in circulation, as only these will on record to receive any updates. This will prevent people from working with out-of-date products. Ideally copies of old versions should be recalled and destroyed.

Change Control

A product which has been baselined can only be changed under formal change control. This means that a project issue has been authorised and presented to the librarian.

A product should not be issued for change to more than one person at a time. The changes must be combined in some way and the return of the product encompassing all changes must be delegated to one of the people involved.

The master copy of any product should never be issued, only a copy.

Machine readable products should follow the same general principles as human readable ones in terms of submission and issue control.

Configuration Audits

Configuration audits are comparisons of the recorded product descriptions and the current physical representation of them to ensure that they match. The audit also checks that all product descriptions are present, complete and to standards. They are normally carried out at the end of each stage.

Normally someone with assurance responsibility is responsible for configuration audits with help from the configuration librarian. If project assurance is being carried out by the project board, the project manager must appoint someone else.

Project Files

There are three major types of file in PRINCE:

- Management
- Specialist
- Quality.

Management Files

These comprise:

- a project file
- a stage file for each stage.

The Project File

This has the following sections:

- ☐ **Organisation** - the project organisation chart and job descriptions
- ☐ **Plans** - the project plans. This should include any versions developed, not only the ones approved at the project initiation meeting. All the various components of each version should be kept with clear identification of their date, version number and reasoning, such as change of assumptions, scope, resource availability and so on.

The approved project plans should be updated (and therefore given a new version number) at least at the end of each stage.

- **Controls** - copies of project initiation and closure documents, copies of any final acceptance letters.

Stage Files

These have more sections than the project file.

- ☐ **Organisation** - stage organisation, team members, individual work plan copies. These should reflect all work assignments, achievements and the project manager's assessment of the work performance.
- ☐ **Plans** - copies of the stage plans, any detailed plans and exception plans, updated with actual information as available.
- ☐ **Controls** - copies of checkpoint reports, highlight reports, the end-stage Assessment plus any mid-stage assessments held.

- ☐ **Daily Log** - a diary of events, problems, questions, answers and actions for the stage.
- ☐ **Correspondence** - copies of management correspondence or other papers associated with the stage.

The Specialist File

This contains all the specialist products of the project, and is the centre of the configuration management activity referred to in the earlier sections of this chapter.

There will be a log with identification details of every specialist product and a reference to its physical location. This method also caters for sensitive products which must be filed separately.

If an off-specification is raised about a product, a copy of the off-specification form is filed with the product in this section.

Technical Correspondence - There may also be a need to create this section of the specialist file, where correspondence or external documents cannot be specifically related to one product. The section should have its own log of entries, showing cross-references to the products concerned.

The Quality File

There is one quality file for the whole project. It has three major divisions; product descriptions, quality checks and project issues. The quality file provides the information for an audit at any time of the quality work being done and to confirm adherence to quality standards.

Product Descriptions

There should be a product description for every major product in the project, and the master copy of each is retained here.

Quality Checks

It is useful to head this section with the quality log giving a number to each check, the type of check or test (e.g. quality review), the product and date. This is a quick reference to see or show how many checks have been held in a particular stage and a guide to where the appropriate documentation can be found.

The sub-division of the quality check section will depend on the type(s) of check or test being made. The filing for quality reviews, for example, should have separate sections for:

- Invitations
- Result notifications
- Action lists.

Project Issues

This should have the issue log at the front as an index to the remainder of the section, which contains the master of each project issue.

PROJECT ISSUES

Change Control

It is part of the quality function in a project to control any attempt to change what the project originally set out to do. As part of this quality control there must be procedures which cater for possible deviations from specification. These deviations occur for many reasons:

- the user's opinion changes on what is wanted
- government legislation changes and the product specification must be changed to accommodate it
- the user wants to change or add an acceptance criterion
- during the development cycle extra features suggest themselves to the user for inclusion
- there are internal organisation or business changes which alter the scope and objectives of the project
- the supplier or developer finds that it will be impossible to deliver everything within the agreed schedule or cost
- a question arises on whether the developer can meet a particular part of the specification or acceptance criterion.
- an outside contractor or interfacing product fails to meet its planned commitment.

Apart from deviation possibilities, there will also be a need for an avenue into the project for questions or concerns. All of these need a process to control them and their effect on the project. In PRINCE 2 any possible changes are handled by a set of procedures under the heading of project issues. This process ensures that all such questions, concerns or suggestions are answered, but that nothing is undertaken without the knowledge of the appropriate level of management, including the project board. Apart from controlling possible changes, it provides a formal entry point through which all points can be raised. Procedures for change control are a prerequisite for any group looking for certification of their quality system.

Capturing Project Issues (Sub -process CS3)

It is part of the configuration librarian's role to control project issues.

A project issue is the formal means used to submit any enquiry, complaint or request to a project. The only exceptions to this are the items raised on a quality review action list. A project issue can be raised by anyone associated with the project about anything, for example:

- a desired new or changed function

- a failure of the project in meeting some aspect of the user requirements. In such cases the report should be accompanied by evidence of the failure and, where appropriate, sufficient material to allow someone to recreate the failure.
- a question about a possible misunderstanding
- a question about a plan
- a failure of communication.

There is no limit to the subject of a project issue beyond the fact that it should be about the project.

In PRINCE 2 project issues may also provide a connection between quality reviews and the rest of the project:

- where an error is found during a quality review which belongs to a different product than the one under review
- where work to correct an action list item cannot be completed during the agreed follow up period.

The configuration librarian will record receipt of the project issue, allocate the unique identifier, and pass a copy back to the originator. The original is filed and a copy sent to the project or team manager. The project issue is now classed as "open". This work is part of the sub -process **"Capturing Project Issues" (CS3).**

Examining Project Issues (Sub -process CS4)

All issues should pass through impact assessment. On a technical level this means evaluation to find out what products are affected by the issue, how much work would be involved to respond to the issue, how much time it would take and the cost. This is where the configuration librarian uses the information stored by the configuration management method to identify what other products will be affected. It is particularly important that the librarian identifies any baselined products which will need to change. This is because the project board will have previously approved of the completion of those items. The project board must endorse any change to such items.

Another form of impact assessment would be carried out by whoever has responsibility for business assurance. This would assess the impact of the issue (and the impact of its solution) on the project risks and its business case. From the point of view of user assurance the assessment would be of the impact of the issue and its resolution on the user community. The project manager will need to know if the work can be done within the tolerance levels of the current plan. For this reason it is best that a number of requests are studied at the same time, to give a clearer picture of the effect on the plans.

All open project issues are reviewed at regular meetings, called and chaired by either the project or team manager and attended by those with assurance responsibilities. The outcome is normally one of the following:

- the issue has been raised due to a misunderstanding by the originator. The misunderstanding should be explained to the originator and the issue closed.
- the issue is proposing a change to a baselined product and is therefore a request for change.
- the issue requests a change to the agreed user specification, an acceptance criterion or a product description and is therefore treated as a request for change.
- a product does not meet its specification and the issue is therefore an off-specification

The frequency of such meetings will depend on the volume of project issues being received, but they should be held regularly and sufficient frequently to ensure that no delay occurs in taking action.

All project issues have to be closed by the end of the project unless the project board agrees to their being transferred to a follow-on action list.

When considering the procedures for handling project issues, there may be a subject which is outside the scope of the project. An example might be an observed weakness in a standard. Although it is being used in the project it clearly has a wider implication. There should be a procedure to close the issue off as far as the project is concerned and transfer it to a departmental level.

Request For Change

A request for change is used to record any proposed modification to the user requirements. It can only be raised on the authority of the project manager after assessment of a project issue.

When a request for change has been authorised, the status of the project issue is updated by the configuration librarian.. A copy of the project issue is then sent to its author.

As additional input to the next decision, a request for change may be awarded a priority rating. This can be one of four:

- high
- medium
- low
- cosmetic.

The senior user or a delegated representative should do this.

In order for the request for change to be implemented, it must be approved by either the project manager or the project board. Whose decision it is depends on the following:

- if the work to implement the request for change cannot be done within the tolerance levels of the current stage plan, the project manager must escalate the issue to the project board **(CS8 - Escalating Project Issues)**. The project board **(Giving Ad Hoc Direction (DP4))** considers this. As a result, the project manager may be asked to submit an exception plan to cover the work needed by the request for change **(Producing an Exception Plan (SB6))**. The decision on action must come from the project board **(Authorising a Stage or Exception Plan (DP3))**:
- if the change affects products which have already been baselined, i.e. declared complete, only the project board can approve their modification.
- if it is not a change to a product which has already been baselined **and** the work can be done within the current plan's tolerances, the project manager **can** make the decision to implement it. Alternatively it can be passed to the project board for its decision.

The senior user on the project board is the key role in its decisions on whether to implement the changes. The configuration librarian therefore passes to the senior user all those requests for change which have not been decided by the project manager. It is the senior user's job to put them in order of priority for consideration by the board. The project board's decision may be to:

- implement the change. If the change required an exception plan, then this means approving the exception plan.
- delay the change to an enhancement project after the current one is finished
- defer a decision until a later meeting
- ask for more information
- cancel the request.

The decision is documented on the project issue and the issue log, an updated copy filed in the quality file, and a copy sent to the originator.

The project or team manager is responsible for scheduling any approved changes. This work may require the issue of a copy of one or more baselined products by the configuration librarian.

On receipt of a completed request for change the configuration librarian should ensure that any amended products have been re - submitted to the configuration library. The quality file should be updated with the finalised request, the log annotated and the originator advised.

Off -Specification

An off-specification is used to document any situation where the system fails to meet its specification in some respect.

The configuration librarian allocates the next unique number from the log, sends a copy of the issue to its author and files the issue in the quality file.

Specialist staff carry out an impact analysis with the help of the configuration librarian to discover which products are affected by the off-specification and then assesses the effort needed.

If it is discovered that the off-specification has been raised in error, and should have been a request for change, the project issue is amended, suitably commented. The issue log is updated and the originator informed.

As with requests for change, the decision on action is taken by either the project manager or project board:

- If the off -specification does not involve a change to a product which has already been baselined **and** the work can be done within the current plan's tolerances, the project manager **can** make the decision to implement it.
- If the off -specification requires changes to one or more products which the project board has already been told are complete (to any baseline, not necessarily the final one), the decision must be made by the project board.
- If the work to do the off -specification cannot be done within the tolerance levels of the current stage plan, the decision on action must come from the project board. The project manager must submit an exception report with the off - specification showing the new schedule and cost for the rest of the stage.

The project board's decision may be to: -

- correct the fault. If the work required an exception plan, then this means approving the exception plan.
- delay correction of the fault to an enhancement project after the current one is finished
- defer a decision until a later meeting
- ask for more information.

The decision should be documented on the off -specification and the issue log, and an updated copy filed in the quality file. Whenever its status changes, a copy should be sent to the originator.

The project or team manager is responsible for scheduling any approved work to correct off -specifications. This work may require the issue of a copy of one or more products by the configuration librarian.

On receipt of a corrected off-specification the configuration librarian should ensure that any amended products have been re-submitted to the configuration library. The quality file should be updated with the finalised off-specification, the issue log annotated and the originator advised.

Change Authority

For any of a number of reasons the project board may wish to delegate its authority and responsibility for deciding what action to take about changes. The volume of changes for a volatile product may demand too much of its time, or it may not have the detailed expertise to assess the usefulness of the change.

In larger projects change authority is often vested in a separate group. In PRINCE 2 terms, this may even be the project assurance group.

If authority is delegated, a change budget must be set aside to pay for any changes authorised by the group. There are usually some constraints laid down by the project board to control the expenditure of this budget. These constraints might include how much can be spent in any stage and how much can be spent on any single change without reference to the project board.

The Quality File

There is one quality file for each PRINCE project. It is created by and remains the responsibility of the configuration librarian. The quality file contains the forms which are produced as part of the quality controls applied during the life of the project. The quality control documents are those created by **quality reviews** or **project issues**. It is an important part of the audit trail of a project to assess what quality checking has been carried out and how effective it has been. The quality file is a deliverable quality product.

Wherever possible the originals of documents should be filed in the quality file. A copy can be filed if the original has to be circulated for signature or comments, but on its return the original should be replaced in the quality file.

The quality file should have sections for:

- Quality Log

  Each quality review should have a unique number to identify it and provide the basis for statistics on how many reviews have been carried out.

- Quality Review Invitations

  On filing this document the configuration librarian should check that there is no unreported date slippage compared to the planned review date. If there is, the project or team manager should be notified.

- Quality Review Result Notifications

If the review is terminated prematurely, all review documents such as action list, annotated product copies, question lists should be attached and passed to the project or team manager, and the quality log updated..

When all corrective actions on the list have been taken and the list signed off by the chairman of the review, it is filed here.

PRINCE AND BS EN ISO 9001:1994

ISO 9001 is part of the international standard for quality systems, issued under the authority of the International Organisation for Standardisation (ISO). It applies to quality assurance in design/development, production, installation and servicing.

There are equivalent British and European quality standards which are currently identical in wording to the international standard, although this may change in the future. The equivalence is:

International	British	European
ISO 9001	BS 5750 Part 1	EN29001
ISO 9002	BS 5750 Part 2	EN29002
ISO 9003	BS 5750 Part 3	EN29003

Quality applies to two areas of production, the product itself and the processes which give rise to the product. The international standards vocabulary (ISO 8402) defines quality as:

'*The totality of features and characteristics of a product or service which bear on its ability to satisfy stated or implied needs.*'

Widely used informal interpretations of this definition are:

- The **quality of a product** is its suitability for the purpose for which it is intended. (Products include both services and tangible items)
- The **quality of a process** is its ability to deliver its products in a trouble-free way.

The quality standard ISO 9001 can be used by a company when:

- setting up a quality assurance function
- examining the quality assurance system of a supplier.

PRINCE is not and was not designed to be a comprehensive quality system. However, three of its constituents contribute to a significant part of such a system. These are:

- **quality controls** which are clearly defined technical and management procedures
- **product-based planning** and the product descriptions which define the product quality criteria
- the PRINCE 2 **organisation.**

ISO 9001 prescribes what should be done within a quality system, but does not say how it should be done. For a quality system to conform to ISO 9001, it must satisfy each of the twenty clauses and associated sub-clauses of the standard relevant to the environment in which the quality system operates. This section looks at the requirements of the quality standard. Each part of ISO 9001 is briefly defined, followed by how PRINCE meets each requirement. The requirements are presented with the same numbering system and in the order in which they appear in ISO 9001.

Management Responsibility

Quality Policy

Requirement

The supplier's management shall define and document its policy with respect to quality

PRINCE Approach

The quality policy should include the use of PRINCE 2 as the standard project management method.

Organisation

Responsibility and Authority

Requirement

Responsibilities/authority and interrelation of all personnel who manage, perform and verify work affecting quality must be defined. Particularly, personnel who need the organisational freedom and authority to:

- initiate action to prevent product non-conformity
- identify and record product problems
- initiate, recommend or provide solutions
- verify the implementation of solutions
- control further processing of a non-conforming product until the satisfactory condition has been corrected.

PRINCE Approach

This would normally be a responsibility of a quality assurance function which sits above all projects.

Within a project this requirement is fully satisfied. The organisation roles contain responsibilities/authority for quality. Part of the process **"Starting Up a Project"** is the allocation of these roles to individuals.

The **quality review** technique clearly defines the responsibilities listed above for a quality check of an individual product.

Verification Resources and Personnel

Requirement

The supplier shall identify in-house verification requirements and assign trained personnel for verification activities. Personnel independent of those having direct responsibility for the work being performed shall carry out verification.

PRINCE Approach

Within the context of projects, this requirement is addressed. Product descriptions contain quality criteria. The stage quality plan contains details of each quality check, who will attend and perform what role.

Any specific responsibilities within a project for corrective actions would be defined in the job descriptions.

Management representative

Requirement

The supplier shall appoint a management representative who shall ensure that the requirements of the standard are implemented and maintained.

PRINCE Approach

This is intended for a higher level than individual project control. Within a project this responsibility is allocated to the Senior Supplier role.

Management Review

Requirement

There should be a regular review of the quality system to ensure its continuing suitability and effectiveness.

PRINCE Approach

The update of the **lessons learned report** throughout the project goes some way to meeting the requirement of a regular review, but it should really be a corporate-wide quality assurance function to fully meet the requirement.

The logging and filing of quality checking documentation in the **quality file** provides the records for customer inspection. The **project assurance** responsibilities of the project board can be tailored to ensure that any review of the quality records is allocated to one or more customer representatives.

Quality System

Requirement

The supplier shall establish and maintain a documented quality system as a means of ensuring that products conform to specified requirements. This shall include:

- the preparation of documented quality system procedures and instructions;
- the effective implementation of the documented procedures and instructions.

A supplier should be able to demonstrate compliance with the quality system.

PRINCE Approach

This requirement is not addressed in full. PRINCE 2 presents a framework of procedures and a model **organisation** structure which enforces adherence to procedures. The adoption, therefore, of PRINCE 2 contributes a major part of the quality system.

As part of the quality organisation there may be a separate, independent quality assurance function which oversees implementation of the quality system by all projects.

The **Project Initiation Document** contains the **project quality plan** of the project. The **project mandate** and **project brief** look for a statement of the customer's quality expectations.

The project **organisation** defines the quality responsibilities. In particular, the **project board** roles contain responsibilities for assurance. A project board may wish to delegate certain of their assurance responsibilities to a permanent quality assurance group when the roles are being converted into job descriptions.

Inclusion of quality activities in **stage plans** demonstrates that procedures are being followed. Planning steps recommend that the assurance functions are involved in identifying quality checks and participants at stage planning time. This allows demonstration of compliance with the quality system.

The **quality review** output demonstrates that services conform to specification.

The **quality log** and **quality file** provide an audit trail of the quality work carried out, again demonstrating compliance.

Contract Review

Requirement

The supplier shall establish and maintain procedures for contract review. Each contract shall be reviewed by the supplier to ensure that:

- the requirements are adequately defined and documented;
- any requirements differing from those in the tender are resolved;

- the supplier is capable of meeting the contractual requirements.

Records of such contract reviews shall be maintained and review activities co-ordinated with the purchaser's organisation.

PRINCE Approach

This requirement is partial satisfied. Where there is no formal contract, the acceptance of the **Project Initiation Document** by the **project board** is a confirmation of the supplier's ability to carry out the customer's requirements.

The monitoring and review of changing requirements is controlled in PRINCE 2 by the **project issue** procedure. In the case of exceptions or deviations, the **project board** has the authority to either commit further resources to maintain the supplier's ability to deliver or reduce the scope of the project. The involvement of the **senior user** and anyone to whom any of that role's assurance responsibilities are delegated ensures liaison with the purchaser's organisation. The senior supplier is part of the project board which would have to agree to any change in requirements. The end stage assessment is another control point to ensure supplier review and approval of the contract.

Design Control

General

Requirement

The supplier shall establish and maintain procedures to control and verify the design of the product in order to ensure that the specified requirements are met.

PRINCE Approach

All the requirements of this clause are satisfied or addressed in the following sub-paragraphs.

Design and Development Planning

Requirement

The supplier shall draw up plans to identify the responsibility for each design and development activity. Plans shall be updated as the design evolves.

PRINCE Approach

This requirement is fully satisfied. PRINCE 2 defines the management organisation and responsibilities in the **Project Initiation Document**.

Stage and team plans identify responsibility for each design and development activity.

The updating of plans is carried out on a regular basis in the process **"Controlling a Stage"** (CS) and also occurs during **"Managing Stage Boundaries"** (SB).

Activity Assignment

Requirement

The design and verification activities shall be planned and assigned to qualified personnel equipped with adequate resources.

PRINCE Approach

This requirement is fully satisfied. Each **work package** authorised by the project manager identifies the responsibility for that work. Each **stage** and **team plan** identifies the responsibility for each activity.

The stage or team plans show the assignment of personnel to activities. They also specify the necessary equipment and facilities.

PRINCE 2 procedures and role descriptions would require addition to embrace relevant staff qualifications.

Organisational and Technical Interfaces

Requirement

Organisational and technical interfaces between different groups shall be identified and the necessary information documented, transmitted and regularly reviewed.

PRINCE Approach

This requirement is fully satisfied. The interfaces between groups and the job descriptions for the various PRINCE 2 roles are defined and documented in the **Project Initiation Document.**

The interfaces are reviewed at the following meetings:

- **Project Initiation**
- **Stage Assessments**
- **Project Closure.**

Design Input

Requirement

Design input requirements relating to the product shall be identified and reviewed by the supplier. Incomplete, ambiguous or conflicting requirements shall be resolved with those responsible for drawing up the requirements.

PRINCE Approach

This requirement is fully satisfied. The **product description** for design input requirements would state its content, form and quality criteria. Any problems would be raised at its **quality review** which representatives of the customer and supplier would attend. Any changes to the design requirements document would be controlled under **change control** and **configuration management.**

Design Output

Requirement

Design output shall be documented and expressed in terms of requirements, calculations and analyses. Design output shall:

- meet the design input requirements
- contain or reference acceptance criteria
- conform to appropriate regulatory requirements
- identify those characteristics of the design which are crucial to the safe and proper functioning of the product.

PRINCE Approach

This requirement is partially satisfied.

Quality criteria within product descriptions allow the:

- definition of the need for products to conform to legislative requirements and meet the design requirements
- inclusion of acceptance criteria to meet the above list.

This would be checked at a quality review.

Design Verification

Requirement

The supplier shall plan, establish, document and assign to competent personnel functions for verifying the design. Design verification shall establish that design output meets the design input by means of appropriate control measures.

PRINCE Approach

This requirement is fully satisfied. The **quality review** technique would allow the assembly of the appropriate personnel to check that the design output meets the requirements. Competent personnel for the review would be assigned at stage or team planning time.

Unless the design passes its quality check, it is not accepted under configuration control.

Design Changes

Requirements

The supplier shall establish and maintain procedures for the identification, documentation and appropriate review and approval of all changes and modifications.

PRINCE Approach

This requirement is fully satisfied. The **project issue** and **configuration management** procedures ensure that all the design documents are subject to change control, and thus any changes are subject to review and approval.

Document Control

Requirement

The supplier shall establish and maintain procedures to control all documents and data which relate to the requirements of ISO 9001. Authorised personnel prior to issue shall review these documents for adequacy. The pertinent issues of the documents are to be available at all locations where operations are performed. Changes to documents shall be reviewed by the same functions which performed the original review, unless specifically designated otherwise. Versions of documents are to be available where needed and obsolete copies promptly withdrawn.

PRINCE Approach

This requirement is fully satisfied by product control within a project. The **project issue** technique covers the review of any changes, but product control or **configuration management** procedures are required to fully handle the issue of copies and withdrawal of obsolete ones.

A **configuration management** method is needed to fully meet this quality requirement. Because there are so many automated and manual implementations of configuration management, this is regarded as being outside the scope of the project management method. The configuration management method to be used is defined in the **Project Initiation Document.**

Purchasing

Requirement

The supplier shall ensure that purchased products conform to specified requirements.

PRINCE Approach

Product descriptions would include the quality criteria for purchased documents, just as they would for internal products. Purchased products would be required to pass the same quality inspections as internal products. The checking requirements would be part of the **work package authorisation (CS1).**

This would also be a prime target for whoever carries out the assurance responsibilities defined for the **senior supplier.**

Purchaser Supplied Product

Requirement

The supplier shall establish and maintain procedures for verification, storage and maintenance of purchaser supplied products.

PRINCE Approach

Design reviews and testing requirements for purchaser-supplied products are defined as part of the **work package.** Configuration management provides storage and maintenance.

Product Identification and Traceability

Requirement

Where appropriate, the supplier shall establish and maintain procedures for identifying the product from drawings, specifications or other documents during all stages of production, delivery and installation. Where traceability is specified, products shall have a unique identity.

PRINCE Approach

This requirement is fully satisfied through:

- **product breakdown structures, product flow diagrams** and **product descriptions** which state the types of product to be produced, how they are derived and how they may be identified;
- **configuration management** procedures which identify individual items and their relationship with other items;
- **change control** procedures which ensure that any changes to requirements are properly authorised and reflected throughout all relevant products.

Process control

Requirement

The supplier shall identify and plan the production and installation processes which directly affect quality and shall ensure that these processes are carried out under controlled conditions. Controlled conditions shall include:

- documented work instructions
- monitoring and control of process and product characteristics
- the approval of processes and equipment
- stipulating the criteria for workmanship.

PRINCE Approach

Within a PRINCE project this requirement is fully satisfied. **Product descriptions** must include:

- references to procedures, standards or working practices, i.e. documented work instructions, and to special processes;
- quality criteria, i.e. criteria for workmanship.

Stage and team plans cover the production and installation processes.

Inspection and Testing

Receiving Inspection and Testing

Requirement

The supplier shall ensure that an incoming product is not used until it has been inspected or otherwise verified as conforming to specified requirements. In case of urgency, the product may be used without such inspection, provided that it has been positively identified in case it needs to be recalled.

PRINCE Approach

Where a product is being received as part of a PRINCE 2 project, then this requirement is satisfied. When the need for the incoming product has been identified, a **product description** is written which must specify the verification and testing required. All products are the subject of an inspection, recorded in the quality log.

In-process Inspection and Testing

Requirement

The supplier shall:

- inspect, test and identify products as required in the quality plans or documented procedures;
- establish product conformance to specified requirements by process monitoring and control methods;
- hold products until the required inspection and tests have been completed;
- identify non-conforming products.

PRINCE Approach

This requirement is fully satisfied. Required tests, inspections and associated procedures are specified with the **product descriptions**. The quality plan is incorporated into the **stage** and **team plans.**

PRINCE 2 recommends the **quality review** as one mechanism for checking test results. The objective of a quality review is to establish conformance to requirements, the results being recorded in the follow-up **action list.**

Non-conforming products are identified:

- through outstanding errors following a quality review
- as off-specifications by the **project issue** procedure.

Final Inspection and Testing

Requirement

The quality plan or documented procedure shall require that all specified reviews and tests are carried out before the product is released to a customer, and that the associated data and documentation is available and authorised.

The supplier shall carry out final inspection and testing in accordance with the quality plan or documented procedures. No product shall be despatched until all the activities specified in the quality plan or documented procedures have been satisfactorily completed and associated data and documentation is available and authorised.

PRINCE Approach

This requirement is partially satisfied. The documented procedures and techniques of PRINCE 2, the **project quality plan** and the **stage quality plans** fully meet the requirement for final testing, including customer acceptance testing. The quality log and quality file provide evidence that all checks have been carried out as specified in the quality plans.

Inspection, Measuring and Test Equipment

Requirement

The supplier shall control, calibrate and maintain inspection, measuring and test equipment.

PRINCE Approach

This requirement is not addressed, being very specific to each project.

Inspection and Test Status

Requirement

The inspection and test status of a product shall be identified in such a way as to indicate its conformance or non-conformance to inspections and tests. The identification of inspection and test status shall be maintained throughout production and installation.

PRINCE Approach

This requirement is fully satisfied. The **quality log** shows the inspection status of products. **Configuration management** also maintains product status.

Control of Non-conforming Product

Requirement

The supplier shall establish and maintain procedures to ensure that products not conforming to specified requirements are prevented from inadvertent use or installation. Controls shall provide for the identification and disposition of non-conforming products and for those concerned to be notified.

PRINCE Approach

This requirement is fully satisfied. Non-conforming products are managed under the **project issue** procedure as off-specifications. The decision is documented as part of the procedure, ensuring that:

- the product is identified
- the problem is evaluated
- a properly authorised decision on disposition is made
- all relevant parties are notified.

In **configuration management**, the configuration status account traces products which are affected by non-conformance.

Corrective Action

Requirement

The supplier shall establish, document and maintain procedures for:

- investigating the cause of non-conforming products;
- analysing processes, work operations, concessions, quality records, service reports and customer complaints;
- initiating and applying preventative actions to deal with problems;
- implementing and recording changes to procedures.

PRINCE Approach

This requirement is partially addressed. The **lessons learned report** is gradually built up through the stages, looking at procedures which are working badly as well as those which are working well. Where possible, corrective actions are built into future **stage plans** and procedures. When the final **lessons learned report** is presented to the **project board** at **project closure (CP)**, it is passed on to any central quality assurance function which is empowered to take global corrective action.

Handling, Storage, Packaging and Delivery

Requirement

The supplier shall establish, document and maintain procedures for the handling, storage, packaging and delivery of products.

PRINCE Approach

This requirement is only partially addressed. If a **configuration management method** is in use, this will define procedures for the storage, reproduction and delivery of products.

Quality Records

Requirement

The supplier shall establish and maintain procedures for the identification, collection, indexing, filing, storage, maintenance and disposition of quality records.

Quality records shall be maintained to demonstrate achievement of quality and the effective operation of the quality system.

All quality records must be legible and identifiable to the product concerned. They must easily be retrieved and stored in such a way as to prevent deterioration or loss. Retention times should be stated, and where required, the records should be made available to the customer.

PRINCE Approach

The retention of quality checking documentation in a **quality file** plus the maintenance of a **quality log** fulfils this requirement.

The feedback of progress information from the teams provides a channel for obtaining the necessary information. According to the type of project there may be a need for other types of quality checking. PRINCE 2 does not attempt to define these, but its planning and control structure gives a platform on which extra types of check can be built. These can be compared to the feedback and audit trail from **quality reviews** to ensure that they provide the same information. The basic need is to document any checks and keep this documentation.

The **lessons learned report** is a vehicle to record whether the quality system was effective or not.

Internal Quality Audits

Requirement

The supplier shall carry out a comprehensive system of planned and documented internal quality audits to verify whether quality activities comply with planned arrangements and to determine the effectiveness of the quality system.

PRINCE Approach

This requirement is not directly addressed, but PRINCE 2 does contain the necessary structure for it.

Internal audit responsibilities in line with this requirement can be allocated to personnel as part of the project assurance role. Such a role can monitor the quality checks in use in a project to verify:

- that they are being used as planned
- whether they are effective or not.

Training

Requirement

The supplier shall establish and maintain procedures for the identification of training needs and provide for the training of all personnel performing activities affecting quality. Appropriate records shall be maintained.

PRINCE Approach

This requirement is not addressed. The PRINCE 2 framework of **role** descriptions, its requirement for job descriptions and the detailed **product descriptions** do, however, assist the supplier in identifying training needs.

Servicing

Requirement

Where servicing is specified in the contract, the supplier shall establish and maintain procedures for performing and verifying that servicing meets the specified requirements.

PRINCE Approach

As this activity comes within service delivery, it is not directly addressed by PRINCE 2, which assumes a finite project life.

Statistical Techniques

Requirement

Where appropriate, the supplier shall establish procedures for identifying adequate statistical techniques for verifying the acceptability of process capability and product characteristics.

PRINCE Approach

This requirement is not directly addressed, but data suitable for statistical analysis is produced in the **lessons learned report.**

The option to tune and use the **assurance** roles can assist in the monitoring and inspection requirements.

PRODUCT DESCRIPTIONS

Descriptions for all the major management and quality products of a PRINCE project are given in this appendix. The documentation in this manner of all products is part of product-based planning and one of the main procedures in quality assurance.

The reasoning behind this is simple. In order to quality review a product there must be something against which its quality can be measured. That measure includes the definition of the product's expected composition and the quality criteria for it, both parts of the product description. This is why it is important to think carefully about the product descriptions. They set the quality goals for each product. The criteria should be expressed in clear, measurable terms. Together with the statement of composition they should permit assessment of the product's completeness and acceptability to the user.

Quality criteria should consider:

- functional requirements
- performance
- practicability
- security
- compatibility
- reliability
- maintainability
- clarity.

They can include department standards, project, national and international standards plus review checklists (see Appendix 3).

A product description should exist for every product to be created in a PRINCE project. Each product should be described under the headings:

- Purpose
- Composition
- Derivation
- Format
- Quality Criteria
- Quality Method

The PRINCE manual suggests that there should be a heading for Format. But since the normal entry here for any generalised list would be "According to site standards", this has been omitted from this appendix. This description ensures that the person who is to develop it has a clear idea of what is required. It also acts as a measurement of the completed product when submitted for review.

Where product descriptions are being combined with configuration item description records (CIDRs) there would be other headings created for configuration requirements.

This appendix contains descriptions of the normal management and quality products of a computer project. They can be used as templates for any specific project and give an idea of what PRINCE requires as product descriptions.

Acceptance Criteria

Purpose

A definition in measurable terms of what must be done for the final product to be acceptable to the customer and staff who will be affected.

Composition

This will vary according to the type of final product. The list below contains suggestions for criteria.

- target dates
- major functions
- appearance
- personnel level required to use/operate the product
- performance levels
- capacity
- accuracy
- availability
- reliability (mean/maximum time to repair, mean time between failures)
- development cost
- running costs
- security
- ease of use
- timings

Derivation

- Project Brief
- Senior User.

Quality Criteria

- All criteria are measurable
- Each criterion is individually realistic

The criteria as a group are realistic, e.g. high quality, early delivery and low cost may not go together.

Business Case

Purpose

To document the justification for the undertaking of a project based on the estimated cost of development and the anticipated business benefits to be gained.

The business case is used to say why the forecast effort and time will be worth the expenditure. The on-going viability of the project will be monitored by the project board against the business case.

Composition

- Reasons
- Benefits
- Cost and timescale
- Investment appraisal
- Derivation

Information for the business case is derived from:

- Project Mandate/Project Brief (reasons)
- Project Plan (costs)
- the Customer.

Quality Criteria

- Can the benefits be justified?
- Do the cost and timescale match those in the project plan?
- Are the reasons for the project consistent with corporate or programme strategy?

Checkpoint Report

Purpose

To report at a frequency defined in the stage plan the status of work for each member of a team.

Composition

- Date held
- Period covered

- Follow-ups from previous reports
- Activities during the period
- Products completed during the period
- Quality work carried out during the period
- Actual or potential problems or deviations from plan
- Work planned for the next period
- Products to be completed during the next period.

Derivation

- Verbal reports from team members
- Stage or team plan
- Previous checkpoint

Quality Criteria

- Every item in the stage or team plan for that period covered
- Every team member working to an agreed schedule
- Every team member's work covered.
- Includes an update on any unresolved problems from the previous report.

End Project Report

Purpose

The report is the project manager's report to the project board (which may pass it on to corporate or programme management) on how well the project has performed against its Project Initiation Document, including the original planned cost, schedule and tolerances, the revised business case and final version of the project plan.

Composition

- Achievement of the project's objectives
- Performance against the planned target time and cost
- the effect on the original project plan and business case of any changes which were approved
- final statistics on change issues received during the project
- the total impact of approved changes
- Statistics for all quality work carried out.
- Any planned post implementation review date

Derivation

- The updated project plan
- The Project Initiation Document
- Issue Log

Quality Criteria

- Does the report describe the impact of the approved changes on the Project Initiation Document?
- Does the report cover all the benefits which can be assessed at this time?
- Does the quality work done during the project meet the quality expectations of the customer?

End Stage Report

Purpose

The purpose of the end stage report is to give a summary of progress to date, the overall project situation and sufficient information to ask for a project board decision on what to do next with the project.

The project board use the information in the end stage report to decide what action to take with the project; approve the next stage, ask for a revised next stage plan, amend the project scope, or stop the project.

Composition

- Current stage plan with all the actuals
- Project plan outlook
- Business case review
- Risk review
- Project issue situation
- Quality statistics
- Project manager's report on any events which affected stage performance.

Derivation

Information for the report is obtained from:

- the stage plan and actuals
- the next stage plan (if appropriate)
- the updated project plan
- the embryo lessons learned report

- data from the quality log
- completed work package data.

Quality Criteria

- Does it clearly show stage performance against the plan?
- Were any abnormal situations described, together with their impact?
- Do any appointed project assurance roles agree with the report?

Exception Report

Purpose

An exception report is produced when costs and/or timescales for an approved stage plan are forecast to exceed the tolerance levels set. It is sent by the project manager in order to appraise the project board of the adverse situation.

An exception report will normally result in the project board asking the project manager to produce an exception plan.

Composition

- A description of the cause of the deviation from the stage plan
- The consequences of the deviation
- The available options
- The effect of each option on the business case, risks, project and stage tolerances
- The project manager's recommendations.

Derivation

The information for an exception report may come from:

- Current stage plan and actuals
- Issue log
- Risk log
- Checkpoints
- Project board advice of an external event which affects the project.

Quality Criteria

- The current stage plan must accurately show the status of budget and schedule
- The reason(s) for the deviation must be stated
- The exception plan must show both technical and resource needs.

Highlight Report

Purpose

To provide the project board with a summary of the stage status at intervals defined by them.

The project board use the report to monitor stage and project progress. The project manager also uses it to advise the project board of any potential problems or areas where the project board could help.

Composition

- Date
- Period covered
- Budget status
- Schedule status
- Products completed during the period
- Actual or potential problems
- Products to be completed during the next period
- Project Issue status
- Budget and schedule impact of the changes.

Derivation

Information for the highlight reports is derived from:

- Checkpoints
- the issue log
- Stage plan
- the risk log.

Quality Criteria

- Accurate reflection of checkpoint information
- Accurate summary of the issue log
- Accurate summary of plan status
- Highlights any potential problem areas.

Issue Log

Purpose

The purpose of the issue log is to:

- allocate a unique number to each project issue;
- record the type of project issue;
- be a summary of the project issues, their analysis and status.

Composition

- Project issue number
- Project issue type (Issue, request for change, off-specification)
- Author
- Date identified
- Date of last update
- Description
- Status.

Derivation

Project issues may be raised by anyone associated with the project at any time.

Quality Criteria

- Does the status indicate whether action has been taken?
- Are the project issues uniquely identified, including to which product they refer?
- Is access to the issue log controlled?
- Is the issue log kept in a safe place?

Lessons Learned Report

Purpose

The purpose of the lessons learned report is to pass on any lessons which can be usefully applied to other projects.

The data in the report should be used by a corporate group, such as quality assurance, who are responsible for the Quality Management System, in order to refine, change, improve the standards. Statistics on how much effort was needed for products can help improve future estimating.

Composition

What management and quality processes:

- went well
- went badly
- were lacking
- A description of any abnormal events causing deviations
- An assessment of technical methods and tools used
- An analysis of project issues and their results
- Recommendations for future enhancement or modification of the project management method
- Useful measurements on how much effort was required to create the various products
- Statistics on how effective quality reviews and other tests were in error trapping (e.g. how many errors were found after products had passed a quality review or test)

Derivation

Information for the report is derived from:

- observation and experience of the processes
- quality log
- completed work packages
- stage plans with actuals.

Quality Criteria

- Every management control has been examined
- Input to the report is being done, minimally, at the end of each stage
- Every specialist technique is included
- Statistics of the success of quality reviews and other types of test used are included
- Details of the effort taken for each product are given.

Off-Specification

Purpose

To document any situation where a product is failing, or is forecast to fail, to meet its specification.

Composition

- Date
- Issue log number
- Class
- Status
- Description of the fault
- Impact of the fault
- Priority assessment
- Decision
- Allocation details, if applicable
- Date allocated
- Date completed

Derivation

Normally will come from the supplier, but can be raised by anyone associated with the project.

Quality Criteria

- Logged in the issue log
- Accurate description of the problem

Post Implementation Review

Purpose

The purpose of the post implementation review is to find out:

- whether the expected benefits of the product have been realised;
- if the product has caused any problems in use.

Each expected benefit is assessed for the level of its achievement so far, any additional time needed for the benefit to materialise.

Use of the product may have brought unexpected side effects, beneficial or adverse. These are documented with explanations of why these were not foreseen.

Recommendations are made to realise or improve benefits, or counter problems.

Composition

- Achievement of expected benefits
- Unexpected benefits

- Unexpected problems
- User reaction
- Follow-on work recommendations

Derivation

The expected benefits should have been defined in the project brief and expanded in the Project Initiation Document.

General comments should be obtained about how the users feel about the product. The type of observation will depend on the type of product produced by the project, but examples might be its ease of use, performance, reliability, contribution it makes to their work, and suitability for the work environment.

Quality Criteria

- Covers all benefits mentioned in the project brief and business case.
- Describes each achievement in a tangible, measurable form.
- Makes recommendations in any case where a benefit is not being fully met, a problem has been identified, or a potential extra benefit could be obtained.
- Is conducted as soon as the benefits and problems can be measured.

Product Checklist

Purpose

To list the products to be produced within a stage plan, together with key status dates.

Used by the project board to monitor progress.

Composition

- Plan identification
- Product names (and reference numbers if appropriate)
- Planned and actual dates for:
  - ☐ draft ready
  - ☐ quality check
  - ☐ approval

Derivation

Extracted from the stage plan

Quality Criteria

Do the details and dates match those in the stage plan?

Project Brief

Purpose

To provide a full and firm foundation for the initiation of the project.

The contents are extended and refined into the Project Initiation Document which is the working document for managing and directing the project.

The project brief is a key document in its own right. It is the basis of the Project Initiation Document, which gives the direction and scope of the project and forms the 'contract' between the project management team and corporate or programme management. Any significant change to the material contained in the project brief will thus need to be referred to corporate or programme management.

Composition

The following is a suggested list of contents which should be tailored to the requirements and environment of each project.

Project Definition, explaining what the project needs to achieve. It will contain:

- background
- project objectives
- project scope
- outline project deliverables and / or desired outcomes
- any exclusions
- constraints
- interfaces
- Outline business case
- description of how this project supports business strategy, plans or programmes
- reason for selection of this solution
- Customer's quality expectations
- Acceptance criteria
- Any known risks.

If earlier work has been done, the Project Brief may refer to the document(s) containing useful information, such as:

- Outline project plan rather than include copies of them.

Derivation

It is developed from the project mandate supplied at the start of the project, produced by the process 'Starting up a Project' (SU), and accepted via 'Authorising Initiation' (DP1).

If the project is part of a programme, the programme should provide the project brief. In such circumstances it will not have to be derived from a project mandate.

If no project mandate is provided, the project manager has to generate the project brief from scratch in discussions with the customer and users.

Quality Criteria

- Does it accurately reflect the project mandate?
- Does it form a firm basis on which to initiate a project (Initiating a Project (IP))?
- Does it indicate how the customer will assess the acceptability of the finished product(s)?

Project Initiation Document

Purpose

To define the project, to form the basis for its management and the assessment of overall success.

There are two primary uses of the document:

1. to ensure that the project has a sound basis before asking the project board to make any major commitment to the project;
2. to act as a base document against which the project board and project manager can assess progress, change management issues, and on-going viability questions.

Composition

The following are the base elements of information needed to correctly direct and manage a project. They cover the following fundamental questions about the project:

- **what** a project is aiming to achieve;
- **why** it is important to achieve it;
- **who** is going to be involved in managing the process and what are their responsibilities;
- **how** and **when** it is all going to happen.

The information will be held in various ways and the following contents should not be read as a list of contents for one document, but should rather be seen as the information needed in order to make the initiation decisions.

- **Background**, explaining the context of the project, and how we have arrived at the current position of requiring a project.

- **Project Definition**, explaining what the project needs to achieve. Under this heading may be:
  - ☐ project objectives
  - ☐ defined method of approach
  - ☐ project deliverables and/or desired outcomes
  - ☐ project scope
  - ☐ constraints
  - ☐ exclusions
  - ☐ interfaces
- **Assumptions**
- **Initial Business Case**, explaining why the project is being undertaken
- **Project Organisation Structure,** explaining who will be on the project management team:
- **Project Quality Plan**

(See the separate project quality plan product outline)

- **Initial Project Plan**, explaining how and when the activities of the project will occur. (For details of the project plan content see the separate product outline.)
- **Project Controls**, laying down how control is to be exercised within the project, and the reporting and monitoring mechanisms which will support this
- **Exception process**
- **Initial Risk Log**, documenting the results of the risk analysis and risk management activities
- **Contingency Plans**, explaining how it is intended to deal with the consequences of any risks which materialise
- **Project Filing Structure**, laying down how the various elements of information and deliverables produced by the project are to be filed and retrieved.

Derivation

Supplier's project management standards

Customer's specified control requirements

Much of the information should come from the project mandate, enhanced in the project brief. Initially the Project Initiation Document will be completed during the initiation stage. Parts of it, such as the project plan and business case, may be updated and refined by each pass through the process 'Managing Stage Boundaries' (SB) and will finally be archived as part of the process 'Closing a Project' (CP).

Quality Criteria

- Does the document correctly represent the project?

- Does it show a viable, achievable project which is in line with corporate strategy, or overall programme needs?
- Is the project organisation structure complete, with names and titles?
- Have all the roles been considered?
- Does it clearly show a control, reporting and direction regime which is implementable, and appropriate to the scale, business risk and business importance of the project?
- Is the project organisation structure backed up by agreed and signed job descriptions?
- Are the relationships and lines of authority clear?
- Does the project organisation structure need to say to whom the project board reports?
- Do the controls cover the needs of the project board, project manager and team managers?
- Do the controls satisfy any delegated assurance requirements?
- Is it clear who will administer each control?

Project Issue

Purpose

A generic term for any matter which has to be brought to the attention of the project, and requires an answer. After receiving a unique reference number, project issues are evaluated in terms of impact on the product, effort and cost. The project manager may make a decision on what action to take, or the project issue may be referred to the project board. A project issue may be a:

- Request For Change
- Off-Specification
- Question
- Statement of concern.

Composition

- Author
- Date
- Issue number
- Description of the issue
- Priority
- Impact analysis
- Decision
- Signature of decision maker(s)
- Date of decision.

Derivation

Anyone may submit a project issue. Typical sources are users and specialists working on the project.

Quality Criteria

- Is the problem/requirement clear?
- Have all the implications been thought out?
- Has the project issue been correctly logged?

Project Mandate

Purpose

The information in the mandate is used to trigger the process 'Starting Up a Project'. It should contain sufficient information to identify at least the prospective executive of the project board and indicate the subject matter of the project.

It will be used to create the project brief.

Composition

The actual composition of a project mandate will vary according to the type and size of project and also the environment in which the mandate is generated. The project may be a completely new piece of work which has just arisen, it may be the outcome of an earlier investigation or it may be part of a larger programme.

The following list contains suggested contents, and should be tailored to suit the specific project.

- Authority responsible
- Background
- Project objectives
- Scope
- Constraints
- Interfaces
- Quality expectations
- Outline business case (reasons)
- Reference to any associated documents or products
- An indication of who are to be the project executive and project manager
- The customer(s), user(s) and any other known interested parties.

If the mandate is based on earlier work, there may be other useful information, such as an estimate of the project size and duration, a view of the risks faced by the project.

Derivation

A project mandate may come from anywhere, but it should come from a level of management which can authorise the cost and resource usage.

Quality Criteria

- Is the level of authority commensurate with the anticipated size, risk and cost of the project?
- Is there sufficient detail to allow the appointment of an appropriate executive and project manager?
- Are all the known interested parties identified?
- Does the mandate describe what is required?

Project Plan

Purpose

A mandatory plan which provides a statement of how and when a project's objectives are to be achieved, by showing the major products, activities and resources required on the project.

It provides the business case with planned project costs, and identifies the management stages and other major control points.

It is used by the project board as a baseline against which to monitor project progress and cost stage by stage.

Composition

This product forms part of the Project Initiation Document and will contain the following.

- Plan description, giving a brief description of what the plan covers
- Project pre-requisites, containing any fundamental aspects which must be in place at the start of the project, and which must remain in place for the project to succeed
- External dependencies
- Planning assumptions
- Project Plan, covering:
- project level Gantt or bar chart with identified management stages
- project level product breakdown structure
- project level product flow diagrams
- project level product descriptions
- project level activity network.
- project financial budget
- project level table of resource requirements

- requested/assigned specific resources.

Derivation

- Refined from the outline project plan in the project brief during the process 'Initiating a Project' (IP).
- Modified during the process 'Updating a Project Plan' (SB5).
- Quality criteria
- Is the plan achievable?
- Does it support the rest of the Project Initiation Document?

Project Quality Plan

Purpose

The project quality plan is part of the Project Initiation Document.

The purpose is to define how the supplier intends to deliver products which meet the customer's quality expectations and the supplier's quality standards.

Composition

- Quality responsibilities
- Reference to any standards which need to be met
- Key product quality criteria
- The quality control and audit processes to be applied to project management
- Quality control and audit process requirements for specialist work
- Change management procedures
- Configuration management plan (see the configuration management chapter for explanation of the term)
- Any tools to be used to ensure quality.

Derivation

- Customer's quality expectations
- Corporate or programme Quality Management System (QMS).

Quality Criteria

- Does the plan clearly define ways in which the customer's quality expectations will be met?
- Are the defined ways sufficient to achieve the required quality?

- Are responsibilities for quality defined up to a level which is independent of the project and project manager?
- Does the plan conform with the corporate quality policy?

Quality Log

Purpose

To issue a unique reference for each quality check planned.

To act as a pointer to the quality check documentation for a product.

To act as a summary of the number and type of quality checks held.

The log summarises all the quality checks which are planned/have taken place, and provides information for the end stage and end project reports, as well as the lessons learned report.

Composition

For each entry in the log:

- Reference number
- Product
- Planned date
- Actual date
- Result
- Number of action items
- Target sign-off date
- Actual Sign-off date.

Derivation

The first entries are made when a quality check or test is entered on a stage plan. The remaining information comes from the actual performance of the check. The sign-off date is when all corrective action items have been signed off.

Quality Criteria

- Is there a procedure in place which will ensure that every quality check is entered on the log?
- Has responsibility for the log been allocated?

Request For Change

Purpose

To request a modification to a product or an acceptance criterion as currently specified.

Composition

- Date
- Issue Log number
- Class
- Status
- Description of the proposed change
- Impact of the change
- Priority assessment
- Decision
- Allocation details, if applicable
- Date allocated
- Date completed.

Derivation

Anyone connected with the project.

Quality Criteria

- Source clearly identified
- Logged in the issue log
- Accurate description of the requested change
- Benefit of making the change clearly expressed and, where possible, in measurable terms.

Risk Log

Purpose

The purpose of the risk log is to:

- allocate a unique number to each risk;
- record the type of risk;
- be a summary of the risks, their analysis and status.

Composition

- Risk number
- Risk type (business, project, stage)
- Author
- Date identified

- Date of last update
- Description
- Likelihood
- Severity
- Countermeasure(s)
- Status.

Derivation

Business risks may have been identified in the project brief and should be sought during project initiation. There should be a check for any new business risks every time the risk log is reviewed, minimally at each end stage assessment. The project board has the responsibility to constantly check external events for business risks.

Project risks are sought during project initiation when the project plan is being created. Some project risks may have been identified in work which led up to the project mandate. Project risks should be reviewed every time the risk log is reviewed, minimally at each end stage assessment.

Risks to a stage plan should be examined as part of the production of that plan. They should be reviewed at each time of plan update.

Quality Criteria

- Does the status indicate whether action has been taken or is in a contingency plan?
- Are the risks uniquely identified, including to which project they refer?
- Is access to the risk log controlled?
- Is the risk log kept in a safe place?
- Are activities to review the risk log in the stage plans?

Stage Plan

Purpose

Used as the basis for project management control throughout the stage.

Identifies all the products which the stage must produce.

Provides a statement of how and when a stage's objectives are to be achieved, by showing the deliverables, activities and resources required.

Identifies the stage's control and reporting points and frequencies.

Provides a baseline against which stage progress will be measured.

Records the stage tolerances.

Specifies the quality controls for the stage and identifies the resources needed for them.

Composition

This product will contain the following:

- Plan Description, covering:
  - ☐ a brief description of what the plan covers;
  - ☐ a brief description of the planned approach;
- Quality Plan;
  - ☐ the quality control methods to be used;
  - ☐ the resources to be used in each quality test or check;
- Plan Prerequisites;

containing any fundamental aspects which must be in place at the start of the stage , and which must remain in place for the plan to succeed;

- External Dependencies;
- Tolerances (time and budget);
- How will the plan be monitored and controlled?
- Reporting
- Planning Assumptions;
- Graphical Plan, covering:
  - ☐ diagram showing identified resources, activities, start and end dates (usually a Gantt or Bar Chart);
  - ☐ Product Breakdown Structure;
  - ☐ Product Flow Diagram;
  - ☐ activity network;
  - ☐ financial budget;
  - ☐ table of resource requirements;
  - ☐ Risk assessment.
- Product Descriptions for the major products;

Derivation

- Refined from the project plan during the process 'Planning a Stage' (SB1).
- Based on resource availability.
- Updated during 'Assessing Progress (CS2).
- May be modified during 'Reviewing Stage Status' (SB5) and 'Taking Corrective Action' (CS7).

An exception plan or any other detailed plan will have the same format as a stage plan.

Quality criteria

- Is the plan achievable?
- Do any team managers involved in its operation believe that their portion is achievable?
- Does it support the project plan?
- Does it take into account any constraints of time, resources and budget.
- Has it been taken down to the level of detail necessary to ensure that any deviations will be recognised in time to react appropriately? (e.g. within the stage tolerances, and within the activity 'floats'.)
- Has it been developed according to the planning standard?
- Does the stage plan contain activities and resource effort to review the issue log?

Work Package

Purpose

A set of information about one or more required products collated by the project manager to formally pass responsibility for work or delivery to a team manager or team member.

Composition

This product will vary in content, and indeed in degree of formality, depending on circumstances.

Where the work is being conducted by a team working directly under the project manager, the work package may be a verbal instruction, although there are good reasons for putting it in writing, such as avoidance of misunderstanding and providing a link to performance assessment. Where the work is being carried out by a supplier under a contract and the project manager is part of the customer organisation, there is a need for a formal written instruction in line with standards laid down in that contract.

Although the content may vary greatly according to the relationship between the project manager and the recipient of the work package, it should cover:

- Work Package description
- Stage Plan extract
- Joint agreement on effort, cost, start and end dates
- Any other constraints to be observed
- Product Description(s)
- Techniques/processes/procedures to be used
- Interfaces to be satisfied by the work
- Interfaces to be maintained during the work

- Quality checking arrangements
- Reporting requirements.

There should be space to record acceptance of the return of the completed Work Package. This can be enhanced to include an assessment of the work and go towards performance appraisal.

Quality Criteria

- Is there agreement between project manager and the recipient on exactly what is to be done?
- Is there agreement on the constraints, including effort, cost and targets?
- Are the dates and effort in line with those shown in the stage plan?
- Is the required work package clearly defined and understood by the assigned resource?
- Is there a product description for the required product(s) with clearly identified and acceptable quality criteria?
- Does the product description match up with the other work package documentation?
- Are standards for the work agreed?
- Are the defined standards in line with those applied to similar products?
- Have all necessary interfaces been defined?
- Do the reporting arrangements include the provision for exception reporting?

QUALITY REVIEW INVITATION

Project: QR No:

To:

From:

Telephone

You are cordially invited to attend the Quality Review of

Product: Configuration Identity

Chairman:

Presenter:

Scribe:

Reviewers:

Attachments			Useful references
Product:	☐	Checklist	
Product Description	☐	Standards	
Question List	☐	Other products	

Please return a copy of your Question List to

No later than

QUALITY REVIEW QUESTION LIST

Project: QR No:

Product: Date

Question No	Location	Description

QUALITY REVIEW ACTION LIST

Project:	QR No:
Stage:	Date:
Product:	

Action No	Description	Action By	Target Date	Checked By

Chairman's sign-off Date:

PROJECT ISSUE

Project: Issue No:

Author Date:

Situation Description

Appraisal

Affected Products

Technical Impact

Business Case and Risk Impact

Recommendation

Date: Appraised by:

Action	Date
Closed ☐ RFC ☐ O-S ☐	Date:

CHECKLISTS

Checklists are used within a quality review to confirm that deliverables are produced using the requisite standards. They should be derived from the product descriptions and chosen methodology, tools and techniques.

The following generic checklists are designed to give guidance. They do not claim to be a "tick list" og every expected finding or event, but do provide a basis from which to start.

Problem Definition Checklist

1. Is the correct person defining the problem?
2. Has the describer a sufficient grasp of the problem background, environment and future actions planned?
3. Is it the real problem or only a symptom?
4. Is there a danger of solving a small problem which is in fact part of a larger problem, whose solution would be a totally different one?
5. Is the author merely describing the problem or attempting to define the solution?
6. Have the major business functions required been identified?
7. Objectives:
    - are they clearly defined?
    - what is mandatory?
    - have the 'wants' been prioritised?
8. Was the correct level of management authority obtained when considering quality expectations, cost, delivery date and other acceptance criteria?
9. Why do they want a new product? What is wrong with the current product? Are the reasons real or imaginary?
10. Are the limits of the project clearly defined?
11. Is the scope compatible with the project's objectives?
12. Have any constraints been identified? Are they genuinely necessary? Are they reasonable?
13. Have any restrictions on the use of specific equipment been defined?
14. Do the terms of reference make clear the number, location and grade of users for the product, and the type of environment?
15. Have any known future additional requirements been defined?
16. Have acceptance criteria been defined? Are they prioritised? Are they all stated in measurable terms?
17. Is there a specific duration to the need for the new product?
18. Is it clear if (and which) other departments must be consulted?

19. Has any required data already been gathered?
20. Is the expected time-frame feasible and necessary? Have the necessary project stages been provisionally identified?
21. Is the problem definition understood?
22. Is it acceptable without modification?

Acceptance Criteria Checklist

1. Are all criteria expressed in measurable terms?
2. Have all levels of user, operator and those responsible for support and maintenance been canvassed for their criteria?
3. Do the user criteria cover the following areas?:

   Cost

   - development costs
   - operating costs
   - maintenance costs

   Performance

   - major functions to be performed
   - ease of use
   - reliability
   - flexibility
   - quality of user staff required
   - documentation required
   - availability of the product
   - durability/ruggedness
   - error reporting and recovery
   - mean time between failures
   - mean time to repair
   - security

   Capacity

   - volumes to be processed by the product
   - frequency of use
4. Has each criterion been identified as either 'mandatory' or 'desirable'?
5. Have the desirable criteria been given a priority rating?

Project Start-Up Checklist

1. Have the executive and project manager been appointed?
2. Has the project management team been designed?
3. Have the other members of the project board been appointed?
4. Has consideration been given to the allocation of assurance roles? Have internal audit and quality assurance been considered when allocating assurance roles?
5. Do agreed, documented and signed job descriptions exist for all appointed members of the project management team?
6. Is there a project brief which meets its product description?
7. Has a risk log been created?
8. Has the initiation stage plan been prepared?
9. Has the project's approach to a solution been defined?
10. Were all reasonable alternative approaches considered and fully evaluated?
11. Does the business case cover at least the reasons for the project?

Planning Checklist

1. Has sensible time been allowed for each task?
2. Is there a sensible sequence of tasks?
3. If any tasks overlap, is this justified? Is the amount of overlap reasonable?
4. Do certain consecutive tasks need a gap between them?
5. Is there a specific target date for the plan imposed from client/management? If so, does the plan meet this deadline?
6. What contingency has been included in the plan? Does the amount of contingency relate to the level of experience of the team in doing this type of project?
7. Is the timescale chosen for the plan reasonable when compared to the duration of the plan?
8. Is there a description of the plan?
9. Has the plan been examined for any assumptions made in its preparation?
10. Have any pre-requisites been identified?

If it is a Stage Plan:

11. Have resources been identified against every task?
12. Has sensible resource availability been defined? Has allowance been made for the fact that human resources are not 100% efficient?
13. Has sufficient time been allowed to carry out the impact analysis on project issues?
14. Are there adequate quality reviews? Has sufficient time been allowed for preparation and the quality review? Has any time been allowed for revision of the product after quality review?

15. Has enough time been allowed for project management activities, e.g. updating the plan, work allocation, reporting, checking on critical specialist activities, monitoring risks?
16. Have resources been overscheduled on this project?
17. Are any resources also doing other work outside this project, where the combination of the jobs will overschedule them?
18. If any overscheduling is deliberate, is it reasonable, and has it been agreed with the resource?
19. Has the workload for each resource been balanced in a reasonable way?
20. Have the resources been consulted about their part in the plan? Do they agree that they can reasonably be expected to attain their targets?
21. Has the expected quality level of the work been identified to the resources? Does a product description exist for all the products to be produced in the plan?
22. Is any special people preparation required for the next stage (eg Training etc)?
23. Has the plan been broken down to sufficiently small tasks (e.g. maximum 5 days) that it will be possible to control accurately against it?

Project Initiation Checklist

1. Has the project brief been confirmed? Has this been discussed and agreed informally between project manager and project board?
2. Has any strategy documentation affecting the project been obtained and studied?
3. Is there any other background material which would be of use?
4. Has the correct level of management authority been obtained when considering cost, delivery date and other acceptance criteria?
5. What justification, benefits and expenditure have been considered?
6. Are any suggested benefits/savings valid?
7. Are benefits/savings defined in a way which will be measurable after the product is delivered?
8. Has a risk assessment been carried out?
9. Are all high-scoring risks covered by a countermeasure?
10. Have business risks been considered as well as project risks?
11. What business situations might cause a significant change in direction during the project?
12. Has the project management organisation structure been defined and agreed with all members?
13. Have job descriptions been tailored and signed off?

14. Do product descriptions exist? Have they been done in sufficient detail to assist the planning process? Have the quality criteria been carefully thought out? Were users involved in creating the product descriptions, particularly the quality criteria?
15. Is there a project plan? Is there a description with it?
16. Are the planning assumptions and pre-requisites clearly stated?
17. Have any external dependencies been identified?
18. Is there a project quality plan? Does it meet the requirements of the customer's quality expectations? Are quality responsibilities clearly defined and satisfactory in the eyes of the customer?
19. Has the project plan been broken down into stages which offer a sensible balance between adequate control and management by exception for the project board?
20. Is the reporting frequency and content acceptable to the project board?
21. Have tolerances been defined for the project? Do the tolerances on time and cost match with the timeframe of the project and its risk situation?
22. Have scope and quality tolerances been discussed with the project board, especially if the time and cost tolerances are tight?
23. Is there a clear definition of how change control will be exercised?
24. Is the escalation procedure for forecast deviations clearly defined?
25. Has the approach to configuration management been established?
26. Is there a next stage plan?
27. Has the end stage assessment been arranged?

Analysis of Benefits Checklist (computer products)

Here are a number of headings under which savings and/or benefits might be obtained.

1. Staff reduction, e.g. salary + overheads x no. of staff saved = saving
2. Saving bureau costs
3. Work now to be done by lower grades
4. Lower equipment rental charges
5. Disposal of current equipment (or share of its costs)
6. Lower communication costs
7. Paper saving
8. Less wastage
9. New method of generating income
10. Competitive advantage leading to increased business
11. Increased profit margins
12. Avoidance of penalties or fines

13. Faster response/turnaround time:
    - does faster response mean cash gets to the bank faster?
    - does faster response mean that invoices are sent earlier?
    - does faster response save business which otherwise would be lost?
    - does faster response mean fewer transactions need price (or other data) corrections later?
    - might a faster decision save the company from some problems
14. Facilities not available at present:
    - does a new facility offer a clerical saving? (Clerical staff cost x number of annual repetitions = value)
    - does this new facility prevent a staff increase?
    - will current staff be able to do other work with the time saved?
15. Removal of repetitive work?
16. Staff time saving? Will some old tasks no longer be required, freeing up staff to tackle other work (which can be costed)?
17. More accurate and timely management information for decision-making?
    - does the more timely information show up theft or staff error which can be remedied before it is too late? How much time is saved and what is the amount involved?
    - what are the major management decisions being made using output from this product? How much earlier can these now be made? What is the value of that time saving? Is it a once-only saving or a regularly recurring saving?
    - do earlier management decisions bring forward a product launch date? (This would be an example of a once-only saving)
18. Saving on current maintenance contracts?

Development Costs Checklist

1. User staff training
2. Development staff training
3. Preparation of training material
4. Equipment purchase/rental
5. Communication costs
6. Documentation costs
7. Development/contractual staff costs
8. Consultancy costs
9. Travel costs
10. Installation costs

11. Maintenance costs
12. Inflation.

Post Implementation Review Checklist (computer products)

1. Are input schedules met? If not, what are the causes and results?
2. Are there severe peaks?
3. Do all input documents reach the product?
4. Are all rejected errors accounted for?
5. Is the correct calibre of staff used and supervision exercised?
6. Are any code books used effective and up-to-date?
7. Is the input media the correct one for the product?
8. Is the retention period of source documents correct and adhered to?
9. Are files the expected size? Do they contain too many deleted records waiting for file cleaning? Who can authorise deletions?
10. Is there sufficient room in files for anticipated expansion?
11. Are security and standby arrangements satisfactory?
12. Is the usage of tapes and disk packs as expected?
13. Is expansion as expected?
14. Are processing times as expected?
15. Have programs proved effective? What is their efficiency?
16. What program changes should be made? How many changes are waiting to be made?
17. Are programs easy to modify?
18. Is data held in programs which should be held on file?
19. Are security and standby arrangements adequate? Have they been tested?
20. Is program documentation adequate?
21. Do programs aid the operator in terms of lining forms up for printing, disk changing procedures, sequence of job step run?
22. Are re-start facilities adequate?
23. Does the product report on an exception basis, and does the information provided meet the needs of the users?
24. Is every report definitely needed?
25. Could reports be divided between users or circulated to two or more users?
26. Are hard copy reports produced which would be better as ad hoc screen enquiries?
27. Do decisions result from the use of the reports?

28. Is output punctual?
29. Is it noticed when it is late?
30. Could it be produced later?
31. Are performance statistics available?
32. Are data communications adequate?
33. Could plain paper be used instead of pre-printed forms?
34. Could microfiche be used instead of paper?
35. Are stationery stock levels and re-ordered quantities correct?
36. Could shorter outputs be designed?
37. Are error message volumes as expected?
38. What are the principal causes of error messages?
39. Do errors get through undetected?
40. Are errors quickly corrected?
41. Are retention periods correct?
42. Are the volumes of output as expected?
43. Have any unexpected benefits been found?
44. Has the user manual been found to be easy to understand and comprehensive?
45. Are there good controls against error, loss or fraud?
46. Are there any new techniques available on the market now which could improve product efficiency?
47. How many modification requests have there been?
48. What percent of modifications arise from:
    - auditors
    - error correction
    - new needs
    - efficiency improvements
    - format changes
    - expansion
49. Is there a formal, working method for registration of complaints/change requests?
50. What is the average time to implement a change request?
51. Is there a bottleneck in incorporating enhancements in the production product?
52. Is there a formal method for testing changes before incorporating them?
53. Was the training adequate?
54. Is there adequate training for new users?

Quality Review Checklist

Preparation

1. Have invitations been sent? Did the invitation contain all the necessary information?
2. Has adequate preparation time been allowed between sending the invitation and holding the review? Did this allow for post, travel, complexity, other work?
3. Did the invitation make the roles known to the attendees? (Chairman, scribe, reviewer, reviewee, standards)

Review

4. Is time wasted in repeating what was in the preparation documentation?
5. Have the reviewers prepared a list of questions?
6. Did the chairman merge and prioritise the questions?
7. Was the available time divided according to the number of questions and their priorities?
8. Were all reviewers involved?
9. Were any dead-end arguments identified and either resolved or made into action points?
10. Was any attempt by reviewers at re-design spotted and stopped?
11. Was the scribe allowed enough time to document action points?
12. Were read-backs of action points taken from the scribe? At the end and at suitable moments during the review?
13. Were corrective actions allocated?
14. Were people identified to check each corrective action?
15. Was a decision reached on the overall result of the review?
16. Was the project manager informed of the result?

Follow Up

17. Were the action points followed up and all checked off?
18. Were all attendees informed of the final sign-offs?
19. Was the project manager informed of the final sign-off?
20. Was all the review documentation filed correctly?

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More and more companies are realising the cost of poor quality in projects and are looking for ways to improve that quality. PRINCE 2 is a project management method which offers a generic approach to quality management within a project from the establishment of the customer's quality expectations to final approval of the products. It gives the opportunity to define the quality criteria for each product when planning its creation and the flexibility to check on a product's quality at any point in that creation process.

This book is written by Colin Bentley, one of the co-authors of the PRINCE 2 manual. It delves deeper into all aspects of the quality provisions of the PRINCE 2 method, looking at quality from several different viewpoints, including mind-mapping. It will be of benefit to anyone concerned with quality work within projects.

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