Team Consultants
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Implementing & Auditing ISO 9001: 2000 Standard

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These documents provide an outline of a presentation, and are incomplete without the accompanying oral commentary and discussion.

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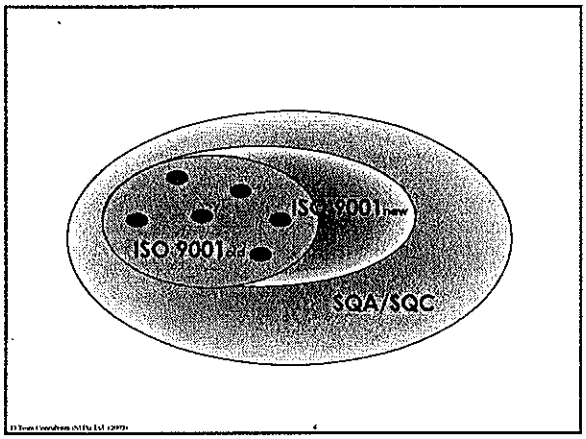
IMPLEMENTING & AUDITING TO ISO 9001:2000 *STANDARD*

Presented by Dennis KW Soh

COURSE OBJECTIVES

- ☑ To learn the differences between ISO 9001:1994 and ISO 9001:2000 and how to smoothly integrate & implement their requirements.
- ☑ To learn how to conduct Internal Audits effectively.

IMPLEMENTING ISO 9001 : 2000



Changes to current QMS

Necessary changes due to

✓ additional requirements introduced

✓ new requirements introduced

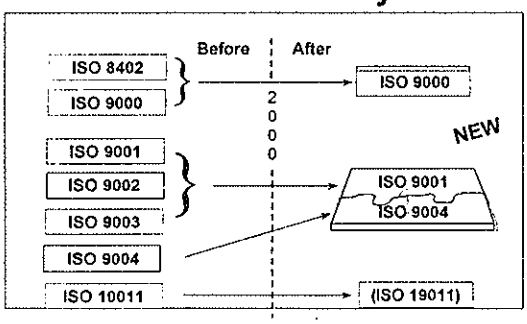


Optional changes due to

extension of scope of QMS

organisational changes affecting existing system

ISO 9000 Family



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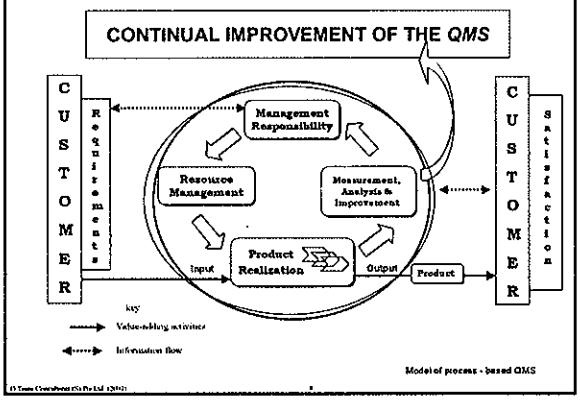
Structure of ISO 9001: 2000

Radical Changes - Process Model Approach

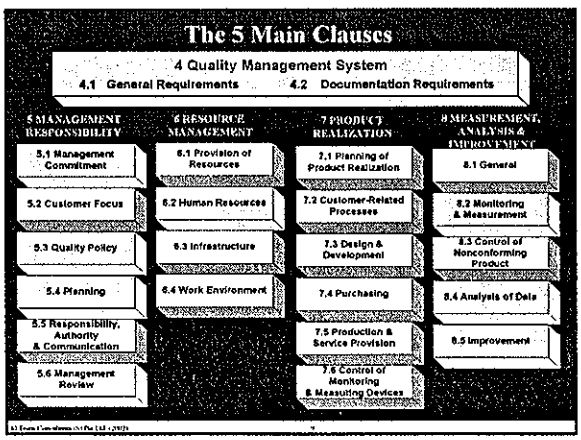
5 Clauses:

- **Quality Management System** *(Set-up Clause)*
- **Management Responsibility** *(Leadership Clause)*
- **Resource Management** *(Asset Clause)*
- **Product Realization** *(Delivery Clause)*
- **Measurement, Analysis & Improvement** *(The Closed-Loop Clause)*





Model of process - based QMS



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Changes Introduced

1. Promotes continual improvement
2. Increased emphasis on the role of top management
3. Consideration of statutory/regulatory requirements



Changes Introduced

4. Establishment of measurable objectives at relevant functions & levels
5. Monitoring of information on customer satisfaction as a measure of system performance



6. Increased attention to resource availability

Changes Introduced

7. Determination of training effectiveness
8. Measurements extended to system, processes & product
9. Analysis of collected data on the performance of the QMS



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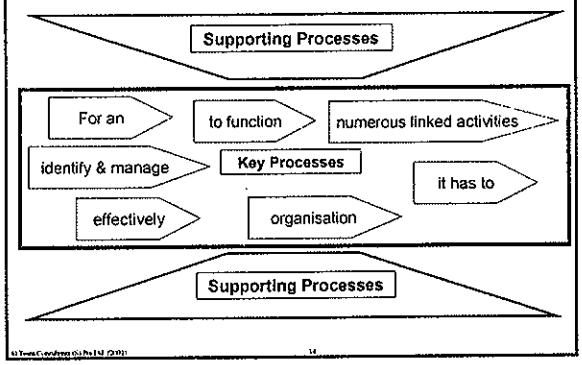
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Changes Introduced

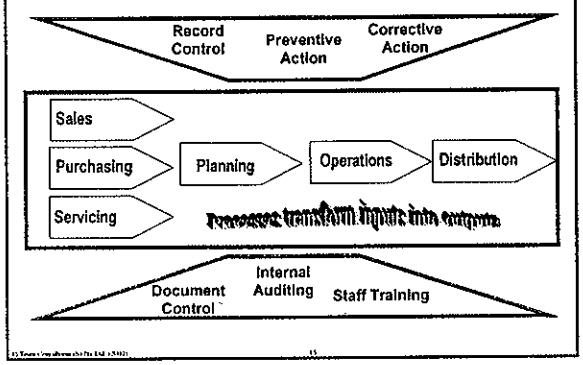
10. Reduced emphasis for documentation, promote effectiveness of doing work
11. Promote communication (internal & external)
12. Adopt process-approach to setting up of the QMS



Types of Organisational Processes



Example of Organisational Processes



DOCUMENTING THE QUALITY MANAGEMENT SYSTEM

Extent of Documentation

Differs from one organisation to another due to

- **its size and type of activities,**
- **the complexity of processes & their interactions, &**
- **the competence of personnel**



KEY FEATURES OF ISO 9001 STANDARD

- **Tells** us what we need to do, does not tell us how to do it, who to do it, at what ***quality level*** to aim for.
- **Emphasizes** customer satisfaction, prevention of mistakes and effectiveness of doing our work.
- **Adopt**
  "Say what you do . . *(Documents)*
  Do what you say. ... *(Action)*
  Be able to show..." *(Evidence)*
  to satisfy requirements.

DOCUMENTATION....



The key

- to link up your **Q**uality **M**anagement **S**ystem (QMS).
- to reducing mistakes, wastes & variation in work.



Quality System Documentation Structure

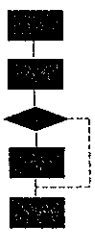
Level 1
Quality Manual
Brief description of Company's background & Quality Management System.

Level 2
Procedure Manual
A 'road directory' showing the way we do things & the interfacing with other departments.

Level 3
Various Supporting Documents *(optional)*
- Work Instructions
- Technical/Operational Manuals
- Applicable Standards
- Specifications

Format of Procedure

Simple Flowchart may be used



Purpose
Scope
Suggested Headings
Purpose.. Scope ..
Definition *(if applicable)* ***..***
Reference *(if applicable)* ***..***
Responsibility / Owner ..
Procedure *(Text)* ***..***
Quality Record .. Appendix

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THE MEANING OF QUALITY
&
CUSTOMER SATISFACTION



Quality ....



A
Race
without
a
finishing
line

A Race you got to keep moving

OUR PRODUCT

In ISO 9000, Product is defined as :
"Result of a process"



We all have a product.



We use it to satisfy our customer.

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Our Customer



Who is our Customer ?

What are his needs ?

How can we meet his needs ?

How do we know his needs have been met ?

The Customer is the organization or person that receives a product.

Customer Focus

Do What You Do So Well That People Will Want You To Do It Again & Will Tell Others What You Do



-Walt Disney-

THE 'PQC' RELATIONSHIP



SATISFY OUR CUSTOMER
BY DELIVERING QUALITY PRODUCTS

Key Terms On Quality

Quality Policy	Overall intentions and direction of an organization related to quality, as formally expressed by top management.
Quality Culture	The way employees think, take pride in and act about things with regard to quality.
Top Management	Person or group of people who directs and controls an organisation at the highest level.
Customer Satisfaction	Customer's perception of the degree to which their requirements have been fulfilled.
Continual Improvement	Recurring activity to increase the ability to fulfill requirements.

Misconceptions of Quality



- × Others who approve/inspect our work is responsible for Quality.
- × Quality cost more money to achieve.
- × Quality involves more paper work and slows things down.
- × Increased inspection will improve Quality.
- × Quality involves operational staff only.

WHAT TO DO WHEN THE AUDITOR COMES ?



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WHAT TO DO *WHEN* THE AUDITOR COMES ?

✓ **Organise the opening meeting properly.**

✓ **Answer to the point on what is asked. Do not volunteer additional information.**



✗ **Do not discuss problems or argue amongst each other in front of the Auditor.**

✗ **Do not try to cover up. *Answer honestly.***

WHAT TO DO *WHEN* THE AUDITOR COMES?

✗ **Do not answer a question regarding work that is not under your responsibility.**

✗ **Do not guess the meaning of the Auditor's question.**



✓ **Ask him to repeat or re-word his question if you do not understand.**

✗ **Do not answer questions that are confidential to the organization. Refer the Auditor to your Supervisor.**

WHAT TO DO *WHEN* THE AUDITOR COMES?

✓ **Continue your work as usual. If you have to stop your work to attend to the Auditor's questions, make sure you know when to stop and where to resume. Do not stop in the middle of performing a task.**



✓ **Avoid argument with auditors. State your facts clearly instead.**

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WHAT TO DO *WHEN* THE AUDITOR COMES?

- ✓ **Correct nonconformity found immediately, if possible.**
- ✓ **Conduct a meeting to share experience at the end of each day**
- ✓ **Understand auditor's report before signing on it.**
- ✓ **Confirm scope of registration.**
- ✓ **Record findings/Take notes/ Show interest !**
- ☺ **Be relax . Don't forget to smile. Go about your business as usual.**



INTRODUCTION TO AUDITING

WHY WE NEED TO AUDIT?

1. **To determine conformity or nonconformity of System to specified requirements.**
2. **To determine the effectiveness of the System implementation.**
3. **To provide an opportunity for improvement.**
4. **To use results as input for Management Review.**
5. **To improve staff awareness.**
6. **It is a requirement of ISO 9001.**



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AUDIT VOCABULARY

1. **QUALITY AUDIT**

   A systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.



AUDIT VOCABULARY *(continued)*

2.  **AUDIT CRITERIA**

   Set of policies, procedures or requirements used as a reference.

3.  **AUDIT EVIDENCE**

   Records, statements of fact or other information which are to the audit criteria and verifiable

AUDIT VOCABULARY *(continued)*

4. **QUALITY AUDITOR** 

   A person with the competence to conduct an audit.

5. **AUDITEE** 

   The organisation being audited.

AUDIT VOCABULARY *(continued)*

6. **QUALITY**

   Degree to a set of inherent characteristics fulfils requirements.

7. **CLIENT**

   A person or organisation requesting the audit.

AUDIT VOCABULARY *(continued)*

8. **NONCONFORMITY**

   The non-fulfilment of a requirement (may be classified as minor or major nonconformity).

   NB: The definition covers the departure or absence of one or more quality characteristics or quality system elements from specified requirements.

AUDIT VOCABULARY *(continued)*

9. **OBSERVATION** *(as used by some Certification Bodies)*

   A finding that could pose a potential nonconformity or offer an opportunity for improvement.



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PLANNING THE AUDIT

ESTABLISH THE AUDIT SCHEDULE

Management Representative



1. **Decides Scope of Audit.**
2. **Specifies standards and documents for compliance.**
3. **Identifies Quality Elements, Physical Location and Organisational Activities.**
4. **Establishes Audit Frequency, Schedule and Timetable. Propose / select Auditors.**

RESPONSIBILITIES OF TEAM LEADER

1. **Leads the opening and closing meetings.**
2. **Represents the audit team in meeting with auditee's management.**
3. **Submits the combined reports.**
4. **Makes the final decision regarding the conduct of the audit and any audit findings.**







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RESPONSIBILITIES OF AUDITOR

1. **Complies with applicable audit requirements.**
2. **Plans and carry out assigned responsibilities effectively.**
3. **Document and report the findings and results respectively.**



RESPONSIBILITIES OF AUDITOR (continued)

4. **Ensures privileged information remains confidential.**
5. **Co-operates with and supports the Team Leader.**
6. **Identifies applicable documents.**
7. **Understands the auditee's documentation structure and coding.**



WHAT AUDITOR NEEDS ?

1. **Procedures to be audited.**
2. **Forms *(checklist, audit reports, etc.).***
3. **Copies of relevant standard and common procedures.**
4. **Audit Timetable.**
5. **Clip-board and other stationery.**
6. **Supporting documentation *(Optional).***



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CHECKLISTS

1. Indispensable aid for auditor.
2. Consist of Questions derived from Specified Requirements of *(procedures, ISO 9000 Standard, customers, regulatory bodies etc.)*.
3. Guide the Auditor on the information to collect. Provide continuity.

CHECKLISTS *(continued)*

4. Should not be rigidly adhered to. Branch out to other areas when necessary but remember where to resume.
5. Re-phrase procedure text to derive checklists.
6. Checklists for internal audit tend to be more specific compared to those for external audits.

PERFORMING THE AUDIT

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OPENING MEETING

1. Introduce Auditors & Auditee representatives and their roles.
2. Re-confirm Purpose and Scope of Audit.
3. Confirm the latest documents to be audited.
4. Confirm relevant activities and personnel are available for audit.



OPENING MEETING *(continued)*

5. Confirm detail time-table.
6. Request for a guide, additional facilities / documents, if needed.
7. Decide on time and place for Closing Meeting.
8. Invite questions.



SKILLS & TECHNIQUES USED IN AUDITING

1. Breakdown any psychological barriers.
2. Do not take things for granted.
3. Be attentive to body language used.
4. Have ability to make the auditee relax and co-operate. Vary the approach.
5. Use Checklist effectively



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SKILLS & TECHNIQUES USED IN AUDITING *(continued)*

6. **Trace business process forward/backward, by departments or by ISO 9000 elements. Follow audit trails.**
7. **Manage time carefully. Control the sampling.**
8. **Use the following methods to collect evidence**
   - **Interviews.**
   - **Examination of documents.**
   - **Observation of activities.**
   - **Observation of conditions of areas.**



SKILLS & TECHNIQUES USED IN AUDITING *(continued)*

9. Take good notes.
   - **Who were spoken to.**
   - **What records were seen.**
   - **Places visited.**



10. Speak to the person **doing the work.**
11. Pay attention to details. **Return later if information is not immediately available.**



SKILLS & TECHNIQUES USED IN AUDITING *(cont'd)*

12. **Ask one question at a time. Use the language of the auditee.**



13. **Ask "What, Where, When, Why, How and Who (*Which*)" and "Show me !".**
14. **Be diplomatic when a nonconformity is encountered.**

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QUESTIONING TECHNIQUES

1. **OPEN-ENDED QUESTIONS**
   - a) Can you **briefly describe your job duties?**
   - b) How do you **teach a new employee about about ISO 9000?**
   - c) **What do you do when an equipment breaks down?**
   - d) **What happens if the Manager is not in?**

QUESTIONING TECHNIQUES *(continued)*

2. **CLOSED-ENDED QUESTIONS**
   - a) **Were the right materials used ?**
   - b) **Is this the way you do it ?**
   - c) **Is this an approved supplier ?**
   - d) **Do you only accept written complaints ?**

QUESTIONING TECHNIQUES *(continued)*

3. **PROBING**
   - a) **Are you familiar with the procedure?**
   - b) **How long have you been implementing the procedure?**
   - c) **Where are the quality records kept? Show me.**



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CHECKLISTS *(EXAMPLE)*

Are Customer's request for changes properly co-ordinated?

1. **What are the usual changes requested?**
2. **How often do we get such requests?**
3. **Describe how you evaluate their requests?**
4. **Are there any records kept of such changes?**
5. **Who will follow-up on the changes?**
6. **What happens if we could not meet their requests?**
7. **Who are involved in receiving the changes?**
   (Describe how initial requests are handled)



A BAD AUDITOR

A Bad Auditor is one who

1. **Does not prepare well for the audit.**
2. **Does not give auditee time to response to questions.**
3. Is **easily influenced or distracted.**
4. Gets **easily drawn into an argument.**
5. **Asks too many hypothetical questions.**



A BAD AUDITOR *(continued)*

6. Is **poor at timekeeping.**
   Arrives late or falls behind schedule.
7. Is **lazy.**
8. **Confuses people** by asking too many questions at one time.
9. **Answers his own questions.**
10. ***Goes beyond scope of objectives*** of the audit.
11. **Does not keep detailed record.**



AUDITEE TACTICS



1. **Waste Auditor's time.**
2. **Argues a lot.**
3. **Being defensive.**
4. **Restrict availability of people, records, etc.**
5. **Giving long explanations.**
6. **Take long breaks.**
7. **Pleading of special cases.**

REPORTING & FOLLOW-UP

AUDIT REPORT

1. **Ensure sufficient time** is allocated for report writing.
2. **Review** notes to determine which to report as findings and which to discard.



3. **Ensure findings** are documented in Clear, Concise manner and are supported by objective evidence.
4. **Nonconformity and observations** should make reference to specific requirements of the standard or related document (s).

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AUDIT REPORT *(continued)*

5. **Avoid mentioning names.** People may feel victimised.



6. **Avoid words** like maybe, perhaps, it seems that, probably.



7. **Team Leader to ensure completeness and accuracy of audit reports.**



AUDIT REPORT *(continued)*

8. **Reports should reveal** what was found, where was it found, who was present (if applicable), why is it a nonconformity or observation and the (specified) requirements to be referenced to.



9. **Remember**, a good report
   (a) gets accepted readily.
   (b) helps auditee performs investigation.
   (c) provides good traceability for the future.

AUDIT REPORT

Do not confuse



A man sends a robot from the future to the past to protect himself from another robot who was sent back in time to kill him when he was a boy.

Terminator 2

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CLOSING MEETING



1. Be well prepared.
2. Express thanks for hospitality and assistance.
3. Explain that audit was based on random samples of documents, people, products, process, etc.
4. Request that questions concerning the findings to be held till after the presentation is completed.
5. Stress that emphasis on negative aspects must not be taken to imply that auditee's system has no satisfactory features.

CLOSING MEETING *(continued)*

6. Team members to present findings. Ensure auditee fully understand.
7. Team Leader to give summary and conclusion.
8. Invite questions and comments from auditee.
9. If possible establish time period for
   - corrective action reply
   - corrective action implementation



10. Do not give advice. Why?
11. Avoid being drawn into arguments.

AUDIT FOLLOW-UP

Auditee to:

1. Rectify nonconformity or observation reported.
2. Take timely action to prevent existing problem from re-occurrence or potential problem from occurrence.
3. Conduct investigation.
4. Propose a solution.
5. Implement solution.
6. Initiate changes to affected documents.



AUDIT FOLLOW-UP (continued)

Auditor or Management Representative **to :**



1. **Verify effectiveness**
   a) **problem corrected.**
   b) **problem prevented.**
   c) **If possible, visit the site, talk to people, examine records, watch the work being performed, etc.**
2. **Consider timeframe or number of occurrences for effectiveness to be achieved.**
3. **Ensure affected documents are revised.**

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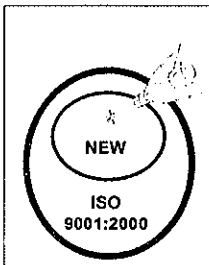
APPENDICES

ISO 9001:2000 CLAUSES

CHANGE SUMMARY

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Structure of ISO 9001:2000



4. Quality Management System
5. Management Responsibility
6. Resource Management
7. Product Realization
8. Measurement, Analysis and Improvement

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ISO 9001:2000

4.0 Quality Management System
4.1 General Requirements
4.2 Documentation Requirements
- 4.2.1 General
- 4.2.2 Quality Manual
- 4.2.3 Control of Documents
- 4.2.4 Control of Records



ISO 9001:2000

5.0 Management Responsibility
5.1 Management Commitment
5.2 Customer Focus
5.3 Quality Policy
5.4 Planning
- 5.4.1 Quality Objectives
- 5.4.2 QMS Planning



ISO 9001:2000

5.5 Responsibility, Authority and Communication
- 5.5.1 Responsibility and Authority
- 5.5.2 Management Representative
- 5.5.3 Internal Communication

5.6 Management Review
- 5.6.1 General
- 5.6.2 Review Input
- 5.6.3 Review Output



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ISO 9001:2000

6.0 Resource Management
6.1 Provision of Resources
6.2 Human Resources
- 6.2.1 General
- 6.2.2 Competence, Awareness & Training



6.3 Infrastructure
6.4 Work Environment



ISO 9001:2000

7.0 Product Realization
7.1 Planning of Product Realization
7.2 Customer-related Processes
- 7.2.1 Determination of Requirements
- 7.2.2 Review of Requirements
- 7.2.3 Customer Communication



ISO 9001:2000

7.3 Design and Development
- 7.3.1 Design & Development Planning
- 7.3.2 Design & Development Inputs
- 7.3.3 Design & Development Outputs
- 7.3.4 Design & Development Review
- 7.3.5 Design & Development Verification
- 7.3.6 Design & Development Validation
- 7.3.7 Control of Design & Development Changes

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ISO 9001:2000

7.4 Purchasing

7.4.1 Purchasing Process

7.4.2 Purchasing Information

7.4.3 Verification of Purchased Product



ISO 9001:2000

7.5 Production and Service Provision

- 7.5.1 Control of Production & Service Provision
- 7.5.2 Validation of Processes for Production & Service Provision
- 7.5.3 Identification & Traceability
- 7.5.4 Customer Property
- 7.5.5 Preservation of Product

7.6 Control of Monitoring & Measuring Devices

ISO 9001:2000

8.0 Measurement, Analysis & Improvement



8.1 General

8.2 Monitoring & Measurement

- 8.2.1 Customer Satisfaction
- 8.2.2 Internal Audit
- 8.2.3 Monitoring & Measurement of Processes
- 8.2.4 Monitoring & Measurement of Product

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ISO 9001:2000

8.3 Control of Nonconforming Product
8.4 Analysis of Data
8.5 Improvement
8.5.1 Continual Improvement
8.5.2 Corrective Action
8.5.3 Preventive Action



4 Quality Management System

4.1 General requirements

Establish, document, implement, maintain & continually improve a QMS in accordance with ISO 9001 requirements.

a) identify the processes needed for the QMS

b) determine the sequence & interaction of these processes

4 Quality Management System

4.1 General requirements



c) determine criteria & methods needed to ensure the effective operation & control of these processes

d) ensure the availability of resources & information necessary to support the operation & monitoring of these processes

e) measure, monitor & analyze these processes

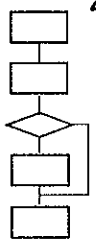
f) implement actions necessary to achieve planned results & continual improvement

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4 Quality Management System

4.2 Documentation Requirements



4.2.2 Quality Manual

Establish & maintain a quality manual that includes:

a) scope of QMS, including details of justification for any exclusions

b) the documented procedures or reference to them

c) a description of the interaction between the processes of the QMS

Management Responsibility 5

5.1 Management Commitment

Provide evidence of top management's commitment to the development & improvement of the QMS

(a) communicate the importance of meeting customer, statutory & regulatory requirements

(b) establish the quality policy

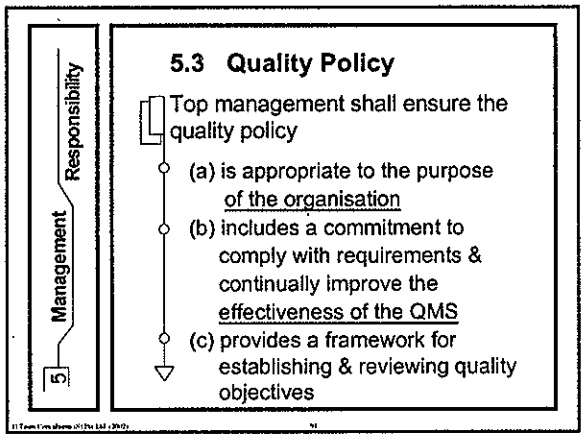
Management Responsibility 5

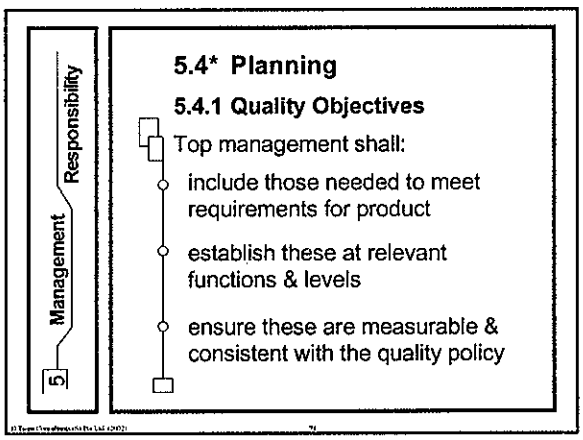
5.2* Customer Focus

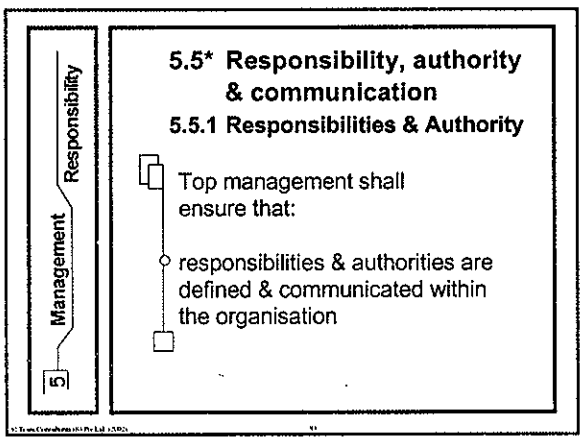
Top management shall:

ensure that customer requirements are determined & are met with the aim of enhancing customer satisfaction

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Management Responsibility
5
5.3 Quality Policy
Top management shall ensure the quality policy
(a) is appropriate to the purpose of the organisation
(b) includes a commitment to comply with requirements & continually improve the effectiveness of the QMS
(c) provides a framework for establishing & reviewing quality objectives


Management Responsibility
5
5.4* Planning
5.4.1 Quality Objectives
Top management shall:
include those needed to meet requirements for product
establish these at relevant functions & levels
ensure these are measurable & consistent with the quality policy


Management Responsibility
5
5.5* Responsibility, authority & communication
5.5.1 Responsibilities & Authority
Top management shall ensure that:
responsibilities & authorities are defined & communicated within the organisation

Management Responsibility 5

5.5 Responsibility, authority & communication

5.5.2 Management Representative

Top Management shall appoint a Management Representative who shall

- ensure that processes needed for QMS are established, implemented & maintained
- report on performance of the QMS & any need for improvement
- ensure the promotion of awareness of customer requirements

Management Responsibility 5

5.5 Responsibility, authority & communication

5.5.3* Internal Communication

Top management shall ensure that appropriate communication processes are established &

- communication takes place regarding the effectiveness of the QMS

6.2 Human Resources

6.2.1 General

Ensure personnel performing work affecting quality are competent on the basis of

- **education**
- **training**
- **skills &**
- **experience**



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6.2 Human Resources

6.2.2 Competence, Awareness & Training

The organization shall:

a) determine necessary competence for personnel

b) provide training or other actions to satisfy these needs

c) evaluate the effectiveness of actions taken

6.2 Human Resources

6.2.2 Competence, Awareness & Training

d) ensure employees are aware of the relevance & importance of their activities & how they contribute to the achievement of quality objectives

e) maintain appropriate records of education, training, skills & experience

6.3 Infrastructure

Determine, provide & maintain the infrastructure needed to achieve the conformity of product; it includes

a) buildings, workspace & associated utilities

b) process equipment (hardware & software)



c) supporting services (eg. transport or communication)

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6.4 Work Environment

Determine & manage the work environment needed to achieve conformity to product



7.2* Customer Related Processes

7.2.1* Determination of requirements related to the product

c) Statutory & regulatory requirements related to the product

d) any other additional requirements determined by the organisation

7.2 Customer Related Processes

7.2.3 *Customer Communication

Identify & implement arrangements for communication with customers relating to

a) product information

b) enquiries, contracts or order handling, including amendments

c) customer feedback, including customer complaints

8.2* Monitoring & Measurement

8.2.1* Customer Satisfaction

Monitor information on customer perception as one of the measurements of performance of the QMS

Methods for obtaining & using this information shall be determined

8.2 Monitoring & Measurement

8.2.2 Internal Audit

Plan the audit program taking into consideration the status & importance of the activities & the results of previous audits. Define audit criteria, scope, frequency & methods

Ensure objectivity & impartiality in auditor selection & conduct of audits

Auditors shall not audit their own work.

8.2 Monitoring & Measurement

8.2.3 Monitoring & Measurement of Processes

Apply suitable methods for monitoring &, where applicable, measurement of the QMS. These methods shall demonstrate the ability of the processes to achieve planned results. Take correction & corrective action to ensure conformity of the product when planned results are not achieved

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8.3 Control of Nonconformity

Subject rework to re-verification after correction

Take action appropriate to the effects, or potential effects, of the nonconformity when it is detected after delivery or use has started

8.4* Analysis of Data

Collect & analyse appropriate data to determine the suitability & effectiveness of the QMS. Evaluate where continual improvements of the effectiveness of the QMS can be made



8.4* Analysis of Data

Analyse this data to provide information on

a) customer satisfaction
b) conformance to product requirements
c) characteristics & trends of processes & products including opportunities for preventive action
d) suppliers

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8.5* Improvement



8.5.1 Continual Improvement

Continually improve the effectiveness of QMS through the use of the quality policy, quality objectives, audit results, analysis of data, corrective & preventive action & management review

THANK YOU !

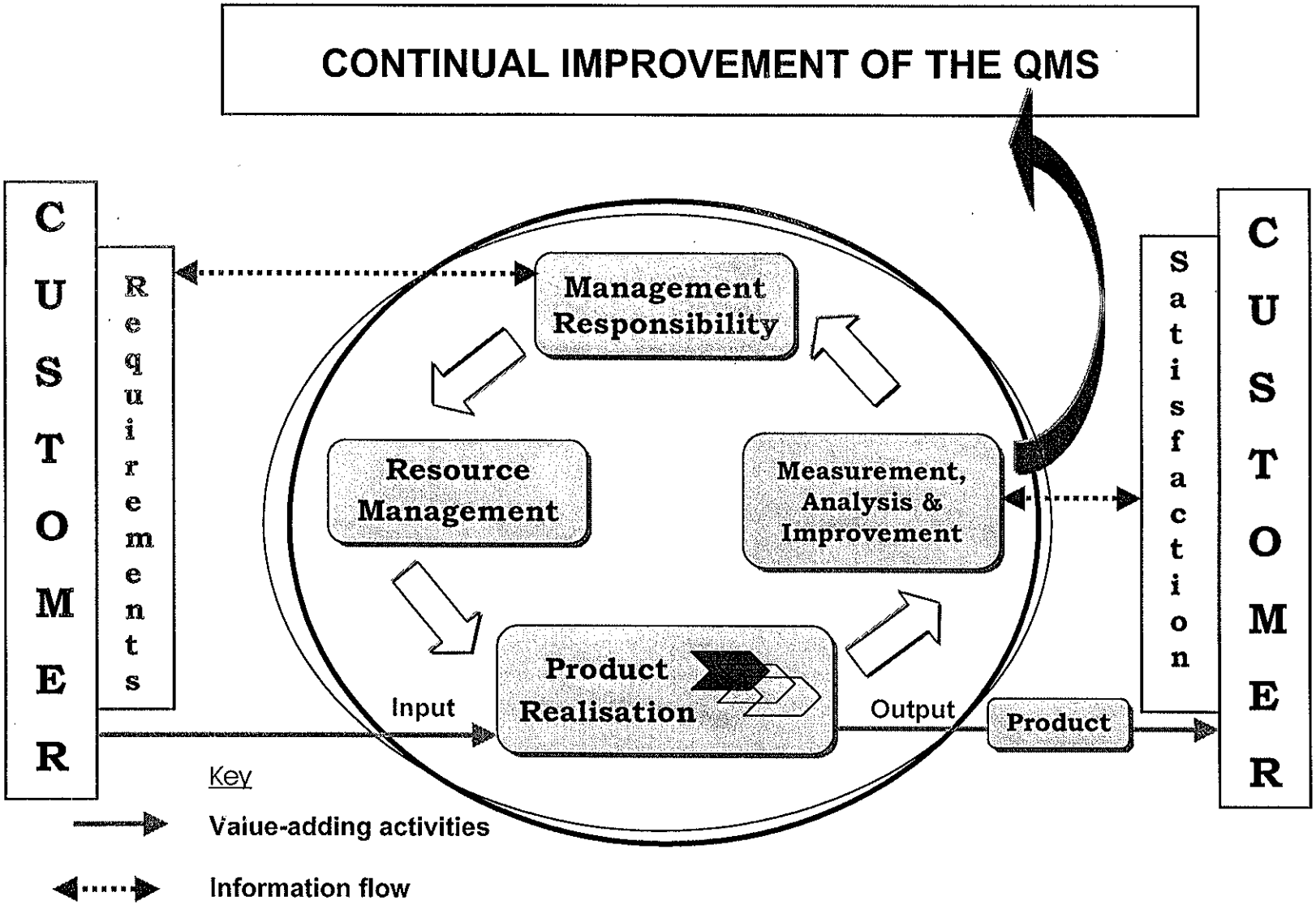
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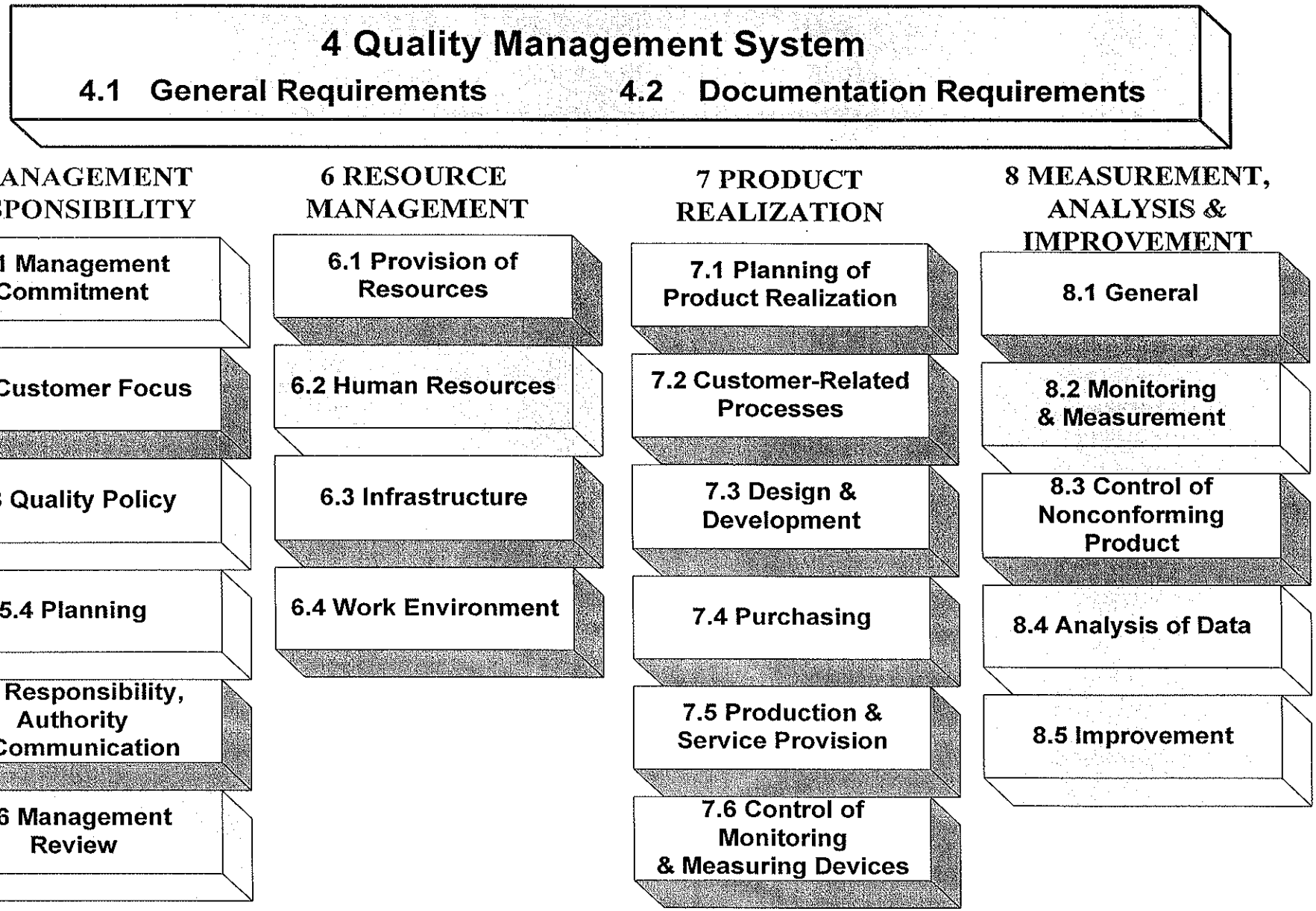
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Model of the process approach

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The 5 Main Clauses



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Key Terms On Quality

Quality Policy	Overall intentions and direction of an organization related to quality, as formally expressed by top management.
Quality Culture	The way employees think, take pride in and act about things with regard to quality.
Top Management	Person or group of people who directs and controls an organisation at the highest level.
Customer Satisfaction	Customer's perception of the degree to which their requirements have been fulfilled.
Continual Improvement	Recurring activity to increase the ability to fulfill requirements.

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Introduction

0.1 General

The adoption of a quality management system should be a strategic decision of an organization. The design and implementation of an organization's quality management system is influenced by varying needs, particular objectives, the products provided, the processes employed and the size and structure of the organization. It is not the intent of this International Standard to imply uniformity in the structure of quality management systems or uniformity of documentation.

The quality management system requirements specified in this International Standard are complementary to requirements for products. Information marked "NOTE" is for guidance in understanding or clarifying the associated requirement.

This International Standard can be used by internal and external parties, including certification bodies, to assess the organization's ability to meet customer, regulatory and the organization's own requirements.

The quality management principles stated in ISO 9000 and ISO 9004 have been taken into consideration during the development of this International Standard.

0.2 Process approach

This International Standard promotes the adoption of a process approach when developing, implementing and improving the effectiveness of a quality management system, to enhance customer satisfaction by meeting customer requirements.

For an organization to function effectively, it has to identify and manage numerous linked activities. An activity using resources, and managed in order to enable the transformation of inputs into outputs, can be considered as a process. Often the output from one process directly forms the input to the next.

The application of a system of processes within an organization, together with the identification and interactions of these processes, and their management, can be referred to as the "process approach".

An advantage of the process approach is the ongoing control that it provides over the linkage between the individual processes within the system of processes, as well as over their combination and interaction.

When used within a quality management system, such an approach emphasizes the importance of

a) understanding and meeting requirements,

b) the need to consider processes in terms of added value,

c) obtaining results of process performance and effectiveness, and

d) continual improvement of processes based on objective measurement.

The model of a process-based quality management system shown in Figure 1 illustrates the process linkages presented in clauses 4 to 8. This illustration shows that customers play a significant role in defining requirements as inputs. Monitoring of customer satisfaction requires the evaluation of information relating to customer perception as to whether the organization has met the customer requirements. The model shown in Figure 1 covers all the requirements of this International Standard, but does not show processes at a detailed level.

NOTE In addition, the methodology known as "Plan-Do-Check-Act" (PDCA) can be applied to all processes. PDCA can be briefly described as follows.

Plan: establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organization's policies.

Do: implement the processes.

Check: monitor and measure processes and product against policies, objectives and requirements for the product and report the results.

Act: take actions to continually improve process performance.

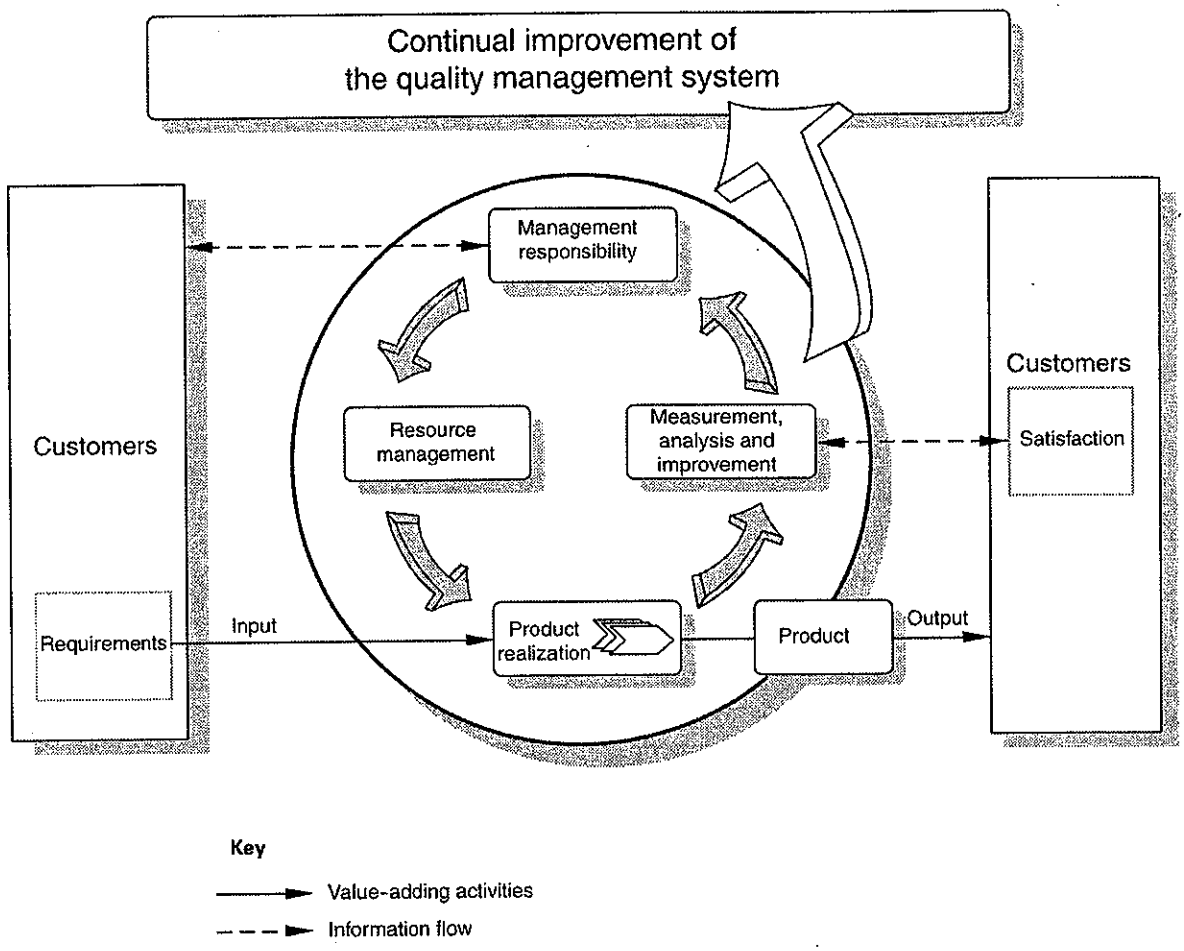


Figure 1—Model of a process-based quality management system

0.3 Relationship with ISO 9004

The present editions of ISO 9001 and ISO 9004 have been developed as a consistent pair of quality management system standards which have been designed to complement each other, but can also be used independently. Although the two International Standards have different scopes, they have similar structures in order to assist their application as a consistent pair.

ISO 9001 specifies requirements for a quality management system that can be used for internal application by organizations, or for certification, or for contractual purposes. It focuses on the effectiveness of the quality management system in meeting customer requirements.

ISO 9004 gives guidance on a wider range of objectives of a quality management system than does ISO 9001, particularly for the continual improvement of an organization's overall performance and efficiency, as well as its effectiveness. ISO 9004 is recommended as a guide for organizations whose top management wishes to move beyond the requirements of ISO 9001, in pursuit of continual improvement of performance. However, it is not intended for certification or for contractual purposes.

0.4 Compatibility with other management systems

This International Standard has been aligned with ISO 14001:1996 in order to enhance the compatibility of the two standards for the benefit of the user community.

This International Standard does not include requirements specific to other management systems, such as those particular to environmental management, occupational health and safety management, financial management or risk management. However, this International Standard enables an organization to align or integrate its own quality management system with related management system requirements. It is possible for an organization to adapt its existing management system(s) in order to establish a quality management system that complies with the requirements of this International Standard.

Quality management systems — Requirements

1 Scope

1.1 General

This International Standard specifies requirements for a quality management system where an organization

a) needs to demonstrate its ability to consistently provide product that meets customer and applicable regulatory requirements, and

b) aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable regulatory requirements.

NOTE In this International Standard, the term "product" applies only to the product intended for, or required by, a customer.

1.2 Application

All requirements of this International Standard are generic and are intended to be applicable to all organizations, regardless of type, size and product provided.

Where any requirement(s) of this International Standard cannot be applied due to the nature of an organization and its product, this can be considered for exclusion.

Where exclusions are made, claims of conformity to this International Standard are not acceptable unless these exclusions are limited to requirements within clause 7, and such exclusions do not affect the organization's ability, or responsibility, to provide product that meets customer and applicable regulatory requirements.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9000:2000, *Quality management systems — Fundamentals and vocabulary.*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 9000 apply.

The following terms, used in this edition of ISO 9001 to describe the supply chain, have been changed to reflect the vocabulary currently used:

supplier ⟶ **organization** ⟶ **customer**

The term "organization" replaces the term "supplier" used in ISO 9001:1994, and refers to the unit to which this International Standard applies. Also, the term "supplier" now replaces the term "subcontractor".

Throughout the text of this International Standard, wherever the term "product" occurs, it can also mean "service".

4 Quality management system

4.1 General requirements

The organization shall establish, document, implement and maintain a quality management system and continually improve its effectiveness in accordance with the requirements of this International Standard.

The organization shall

a) identify the processes needed for the quality management system and their application throughout the organization (see 1.2),

b) determine the sequence and interaction of these processes,

c) determine criteria and methods needed to ensure that both the operation and control of these processes are effective,

d) ensure the availability of resources and information necessary to support the operation and monitoring of these processes,

e) monitor, measure and analyse these processes, and

f) implement actions necessary to achieve planned results and continual improvement of these processes.

These processes shall be managed by the organization in accordance with the requirements of this International Standard.

Where an organization chooses to outsource any process that affects product conformity with requirements, the organization shall ensure control over such processes. Control of such outsourced processes shall be identified within the quality management system.

NOTE Processes needed for the quality management system referred to above should include processes for management activities, provision of resources, product realization and measurement.

4.2 Documentation requirements

4.2.1 General

The quality management system documentation shall include

a) documented statements of a quality policy and quality objectives,

b) a quality manual,

c) documented procedures required by this International Standard,

d) documents needed by the organization to ensure the effective planning, operation and control of its processes, and

e) records required by this International Standard (see 4.2.4).

NOTE 1 Where the term "documented procedure" appears within this International Standard, this means that the procedure is established, documented, implemented and maintained.

NOTE 2 The extent of the quality management system documentation can differ from one organization to another due to

a) the size of organization and type of activities,

b) the complexity of processes and their interactions, and

c) the competence of personnel.

NOTE 3 The documentation can be in any form or type of medium.

4.2.2 Quality manual

The organization shall establish and maintain a quality manual that includes

a) the scope of the quality management system, including details of and justification for any exclusions (see 1.2),

b) the documented procedures established for the quality management system, or reference to them, and

c) a description of the interaction between the processes of the quality management system.

4.2.3 Control of documents

Documents required by the quality management system shall be controlled. Records are a special type of document and shall be controlled according to the requirements given in 4.2.4.

A documented procedure shall be established to define the controls needed

a) to approve documents for adequacy prior to issue,

b) to review and update as necessary and re-approve documents,

c) to ensure that changes and the current revision status of documents are identified,

d) to ensure that relevant versions of applicable documents are available at points of use,

e) to ensure that documents remain legible and readily identifiable,

f) to ensure that documents of external origin are identified and their distribution controlled, and

g) to prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose.

4.2.4 Control of records

Records shall be established and maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system. Records shall remain legible, readily identifiable and retrievable. A documented procedure shall be established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records.

5 Management responsibility

5.1 Management commitment

Top management shall provide evidence of its commitment to the development and implementation of the quality management system and continually improving its effectiveness by

a) communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements,

b) establishing the quality policy,

c) ensuring that quality objectives are established,

d) conducting management reviews, and

e) ensuring the availability of resources.

5.2 Customer focus

Top management shall ensure that customer requirements are determined and are met with the aim of enhancing customer satisfaction (see 7.2.1 and 8.2.1).

5.3 Quality policy

Top management shall ensure that the quality policy

a) is appropriate to the purpose of the organization,

b) includes a commitment to comply with requirements and continually improve the effectiveness of the quality management system,

c) provides a framework for establishing and reviewing quality objectives,

d) is communicated and understood within the organization, and

e) is reviewed for continuing suitability.

5.4 Planning

5.4.1 Quality objectives

Top management shall ensure that quality objectives, including those needed to meet requirements for product [see 7.1 a)], are established at relevant functions and levels within the organization. The quality objectives shall be measurable and consistent with the quality policy.

5.4.2 Quality management system planning

Top management shall ensure that

a) the planning of the quality management system is carried out in order to meet the requirements given in 4.1, as well as the quality objectives, and

b) the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.

5.5 Responsibility, authority and communication

5.5.1 Responsibility and authority

Top management shall ensure that responsibilities and authorities are defined and communicated within the organization.

5.5.2 Management representative

Top management shall appoint a member of management who, irrespective of other responsibilities, shall have responsibility and authority that includes

a) ensuring that processes needed for the quality management system are established, implemented and maintained,

b) reporting to top management on the performance of the quality management system and any need for improvement, and

c) ensuring the promotion of awareness of customer requirements throughout the organization.

NOTE The responsibility of a management representative can include liaison with external parties on matters relating to the quality management system.

5.5.3 Internal communication

Top management shall ensure that appropriate communication processes are established within the organization and that communication takes place regarding the effectiveness of the quality management system.

5.6 Management review

5.6.1 General

Top management shall review the organization's quality management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. This review shall include assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives.

Records from management reviews shall be maintained (see 4.2.4).

5.6.2 Review input

The input to management review shall include information on

a) results of audits,

b) customer feedback,

c) process performance and product conformity,

d) status of preventive and corrective actions,

e) follow-up actions from previous management reviews,

f) changes that could affect the quality management system, and

g) recommendations for improvement.

5.6.3 Review output

The output from the management review shall include any decisions and actions related to

a) improvement of the effectiveness of the quality management system and its processes,

b) improvement of product related to customer requirements, and

c) resource needs.

6 Resource management

6.1 Provision of resources

The organization shall determine and provide the resources needed

a) to implement and maintain the quality management system and continually improve its effectiveness, and

b) to enhance customer satisfaction by meeting customer requirements.

6.2 Human resources

6.2.1 General

Personnel performing work affecting product quality shall be competent on the basis of appropriate education, training, skills and experience.

6.2.2 Competence, awareness and training

The organization shall

a) determine the necessary competence for personnel performing work affecting product quality,

b) provide training or take other actions to satisfy these needs,

c) evaluate the effectiveness of the actions taken,

d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and

e) maintain appropriate records of education, training, skills and experience (see 4.2.4).

6.3 Infrastructure

The organization shall determine, provide and maintain the infrastructure needed to achieve conformity to product requirements. Infrastructure includes, as applicable

a) buildings, workspace and associated utilities,

b) process equipment (both hardware and software), and

c) supporting services (such as transport or communication).

6.4 Work environment

The organization shall determine and manage the work environment needed to achieve conformity to product requirements.

7 Product realization

7.1 Planning of product realization

The organization shall plan and develop the processes needed for product realization. Planning of product realization shall be consistent with the requirements of the other processes of the quality management system (see 4.1).

In planning product realization, the organization shall determine the following, as appropriate:

a) quality objectives and requirements for the product;

b) the need to establish processes, documents, and provide resources specific to the product;

c) required verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance;

d) records needed to provide evidence that the realization processes and resulting product meet requirements (see 4.2.4).

The output of this planning shall be in a form suitable for the organization's method of operations.

NOTE 1 A document specifying the processes of the quality management system (including the product realization processes) and the resources to be applied to a specific product, project or contract, can be referred to as a quality plan.

NOTE 2 The organization may also apply the requirements given in 7.3 to the development of product realization processes.

7.2 Customer-related processes

7.2.1 Determination of requirements related to the product

The organization shall determine

a) requirements specified by the customer, including the requirements for delivery and post-delivery activities,

b) requirements not stated by the customer but necessary for specified or intended use, where known,

c) statutory and regulatory requirements related to the product, and

d) any additional requirements determined by the organization.

7.2.2 Review of requirements related to the product

The organization shall review the requirements related to the product. This review shall be conducted prior to the organization's commitment to supply a product to the customer (e.g. submission of tenders, acceptance of contracts or orders, acceptance of changes to contracts or orders) and shall ensure that

a) product requirements are defined,

b) contract or order requirements differing from those previously expressed are resolved, and

c) the organization has the ability to meet the defined requirements.

Records of the results of the review and actions arising from the review shall be maintained (see 4.2.4).

Where the customer provides no documented statement of requirement, the customer requirements shall be confirmed by the organization before acceptance.

Where product requirements are changed, the organization shall ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements.

NOTE In some situations, such as internet sales, a formal review is impractical for each order. Instead the review can cover relevant product information such as catalogues or advertising material.

7.2.3 Customer communication

The organization shall determine and implement effective arrangements for communicating with customers in relation to

a) product information,

b) enquiries, contracts or order handling, including amendments, and

c) customer feedback, including customer complaints.

7.3 Design and development

7.3.1 Design and development planning

The organization shall plan and control the design and development of product.

During the design and development planning, the organization shall determine

a) the design and development stages,

b) the review, verification and validation that are appropriate to each design and development stage, and

c) the responsibilities and authorities for design and development.

The organization shall manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.

Planning output shall be updated, as appropriate, as the design and development progresses.

7.3.2 Design and development inputs

Inputs relating to product requirements shall be determined and records maintained (see 4.2.4). These inputs shall include

a) functional and performance requirements,

b) applicable statutory and regulatory requirements,

c) where applicable, information derived from previous similar designs, and

d) other requirements essential for design and development.

These inputs shall be reviewed for adequacy. Requirements shall be complete, unambiguous and not in conflict with each other.

7.3.3 Design and development outputs

The outputs of design and development shall be provided in a form that enables verification against the design and development input and shall be approved prior to release.

Design and development outputs shall

a) meet the input requirements for design and development,

b) provide appropriate information for purchasing, production and for service provision,

c) contain or reference product acceptance criteria, and

d) specify the characteristics of the product that are essential for its safe and proper use.

7.3.4 Design and development review

At suitable stages, systematic reviews of design and development shall be performed in accordance with planned arrangements (see 7.3.1)

a) to evaluate the ability of the results of design and development to meet requirements, and

b) to identify any problems and propose necessary actions.

Participants in such reviews shall include representatives of functions concerned with the design and development stage(s) being reviewed. Records of the results of the reviews and any necessary actions shall be maintained (see 4.2.4).

7.3.5 Design and development verification

Verification shall be performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements. Records of the results of the verification and any necessary actions shall be maintained (see 4.2.4).

7.3.6 Design and development validation

Design and development validation shall be performed in accordance with planned arrangements (see 7.3.1) to ensure that the resulting product is capable of meeting the requirements for the specified application or intended use, where known. Wherever practicable, validation shall be completed prior to the delivery or implementation of the product. Records of the results of validation and any necessary actions shall be maintained (see 4.2.4).

7.3.7 Control of design and development changes

Design and development changes shall be identified and records maintained. The changes shall be reviewed, verified and validated, as appropriate, and approved before implementation. The review of design and development changes shall include evaluation of the effect of the changes on constituent parts and product already delivered.

Records of the results of the review of changes and any necessary actions shall be maintained (see 4.2.4).

7.4 Purchasing

7.4.1 Purchasing process

The organization shall ensure that purchased product conforms to specified purchase requirements. The type and extent of control applied to the supplier and the purchased product shall be dependent upon the effect of the purchased product on subsequent product realization or the final product.

The organization shall evaluate and select suppliers based on their ability to supply product in accordance with the organization's requirements. Criteria for selection, evaluation and re-evaluation shall be established. Records of the results of evaluations and any necessary actions arising from the evaluation shall be maintained (see 4.2.4).

7.4.2 Purchasing information

Purchasing information shall describe the product to be purchased, including where appropriate

a) requirements for approval of product, procedures, processes and equipment,

b) requirements for qualification of personnel, and

c) quality management system requirements.

The organization shall ensure the adequacy of specified purchase requirements prior to their communication to the supplier.

7.4.3 Verification of purchased product

The organization shall establish and implement the inspection or other activities necessary for ensuring that purchased product meets specified purchase requirements.

Where the organization or its customer intends to perform verification at the supplier's premises, the organization shall state the intended verification arrangements and method of product release in the purchasing information.

7.5 Production and service provision

7.5.1 Control of production and service provision

The organization shall plan and carry out production and service provision under controlled conditions. Controlled conditions shall include, as applicable

a) the availability of information that describes the characteristics of the product,

b) the availability of work instructions, as necessary,

c) the use of suitable equipment,

d) the availability and use of monitoring and measuring devices,

e) the implementation of monitoring and measurement, and

f) the implementation of release, delivery and post-delivery activities.

7.5.2 Validation of processes for production and service provision

The organization shall validate any processes for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement. This includes any processes where deficiencies become apparent only after the product is in use or the service has been delivered.

Validation shall demonstrate the ability of these processes to achieve planned results.

The organization shall establish arrangements for these processes including, as applicable

a) defined criteria for review and approval of the processes,

b) approval of equipment and qualification of personnel,

c) use of specific methods and procedures,

d) requirements for records (see 4.2.4), and

e) revalidation.

7.5.3 Identification and traceability

Where appropriate, the organization shall identify the product by suitable means throughout product realization.

The organization shall identify the product status with respect to monitoring and measurement requirements.

Where traceability is a requirement, the organization shall control and record the unique identification of the product (see 4.2.4).

NOTE In some industry sectors, configuration management is a means by which identification and traceability are maintained.

7.5.4 Customer property

The organization shall exercise care with customer property while it is under the organization's control or being used by the organization. The organization shall identify, verify, protect and safeguard customer property provided for use or incorporation into the product. If any customer property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the customer and records maintained (see 4.2.4).

NOTE Customer property can include intellectual property.

7.5.5 Preservation of product

The organization shall preserve the conformity of product during internal processing and delivery to the intended destination. This preservation shall include identification, handling, packaging, storage and protection. Preservation shall also apply to the constituent parts of a product.

7.6 Control of monitoring and measuring devices

The organization shall determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements (see 7.2.1).

The organization shall establish processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements.

Where necessary to ensure valid results, measuring equipment shall

a) be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded;

b) be adjusted or re-adjusted as necessary;

c) be identified to enable the calibration status to be determined;

d) be safeguarded from adjustments that would invalidate the measurement result;

e) be protected from damage and deterioration during handling, maintenance and storage.

In addition, the organization shall assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements. The organization shall take appropriate action on the equipment and any product affected. Records of the results of calibration and verification shall be maintained (see 4.2.4).

When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application shall be confirmed. This shall be undertaken prior to initial use and reconfirmed as necessary.

NOTE See ISO 10012-1 and ISO 10012-2 for guidance.

8 Measurement, analysis and improvement

8.1 General

The organization shall plan and implement the monitoring, measurement, analysis and improvement processes needed

a) to demonstrate conformity of the product,

b) to ensure conformity of the quality management system, and

c) to continually improve the effectiveness of the quality management system.

This shall include determination of applicable methods, including statistical techniques, and the extent of their use.

8.2 Monitoring and measurement

8.2.1 Customer satisfaction

As one of the measurements of the performance of the quality management system, the organization shall monitor information relating to customer perception as to whether the organization has met customer requirements. The methods for obtaining and using this information shall be determined.

8.2.2 Internal audit

The organization shall conduct internal audits at planned intervals to determine whether the quality management system

a) conforms to the planned arrangements (see 7.1), to the requirements of this International Standard and to the quality management system requirements established by the organization, and

b) is effectively implemented and maintained.

An audit programme shall be planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency and methods shall be defined. Selection of auditors and conduct of audits shall ensure objectivity and impartiality of the audit process. Auditors shall not audit their own work.

The responsibilities and requirements for planning and conducting audits, and for reporting results and maintaining records (see 4.2.4) shall be defined in a documented procedure.

The management responsible for the area being audited shall ensure that actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities shall include the verification of the actions taken and the reporting of verification results (see 8.5.2).

NOTE See ISO 10011-1, ISO 10011-2 and ISO 10011-3 for guidance.

8.2.3 Monitoring and measurement of processes

The organization shall apply suitable methods for monitoring and, where applicable, measurement of the quality management system processes. These methods shall demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, correction and corrective action shall be taken, as appropriate, to ensure conformity of the product.

8.2.4 Monitoring and measurement of product

The organization shall monitor and measure the characteristics of the product to verify that product requirements have been met. This shall be carried out at appropriate stages of the product realization process in accordance with the planned arrangements (see 7.1).

Evidence of conformity with the acceptance criteria shall be maintained. Records shall indicate the person(s) authorizing release of product (see 4.2.4).

Product release and service delivery shall not proceed until the planned arrangements (see 7.1) have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

8.3 Control of nonconforming product

The organization shall ensure that product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product shall be defined in a documented procedure.

The organization shall deal with nonconforming product by one or more of the following ways:

a) by taking action to eliminate the detected nonconformity;

b) by authorizing its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer;

c) by taking action to preclude its original intended use or application.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, shall be maintained (see 4.2.4).

When nonconforming product is corrected it shall be subject to re-verification to demonstrate conformity to the requirements.

When nonconforming product is detected after delivery or use has started, the organization shall take action appropriate to the effects, or potential effects, of the nonconformity.

8.4 Analysis of data

The organization shall determine, collect and analyse appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made. This shall include data generated as a result of monitoring and measurement and from other relevant sources.

The analysis of data shall provide information relating to

a) customer satisfaction (see 8.2.1),

b) conformity to product requirements (see 7.2.1),

c) characteristics and trends of processes and products including opportunities for preventive action, and

d) suppliers.

8.5 Improvement

8.5.1 Continual improvement

The organization shall continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

8.5.2 Corrective action

The organization shall take action to eliminate the cause of nonconformities in order to prevent recurrence. Corrective actions shall be appropriate to the effects of the nonconformities encountered.

A documented procedure shall be established to define requirements for

a) reviewing nonconformities (including customer complaints),

b) determining the causes of nonconformities,

c) evaluating the need for action to ensure that nonconformities do not recur,

d) determining and implementing action needed,

e) records of the results of action taken (see 4.2.4), and

f) reviewing corrective action taken.

8.5.3 Preventive action

The organization shall determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions shall be appropriate to the effects of the potential problems.

A documented procedure shall be established to define requirements for

a) determining potential nonconformities and their causes,

b) evaluating the need for action to prevent occurrence of nonconformities,

c) determining and implementing action needed,

d) records of results of action taken (see 4.2.4), and

e) reviewing preventive action taken.

THE ROLE OF TOP MANAGEMENT

TQC Promotion for Supporting Quality Assurance

--- Largest cost for TQC promotion is for training & education. Training and education of employees for quality is one of the items whose effects are not simply nor theoretically calculated. Hence, this cannot be promoted without thestrong leadership of top mgt.

6. Personnel mgt for quality promotion
Selection of personnels is a good opportunity to demonstrates to the people what top mgt really think of quality.

7. Good communications and frank discussion among top mgt

Personal Qualification of Top Mgt of Quality Company

In addition to general qualifications;

1. Man of great belief that the source of company revenue and profit is rooted in quality as well as man of strong willingness to achieve quality in his company.

2. Understander of the virtue of sharing profit with employees and being concerned with employees' well-being.

3. Man who studies TQC ahead of anyone else in your company.