

Quality Control

Introduction to Quality

Definitions of Quality

What is Quality?

- Degree of excellence, or general excellence (...has quality)
- Attribute or faculty (...Has many good qualities)
- Relative nature, character, or property

Definitions of Quality-Continued

What is Quality?

- ❑ Quality is conformance to requirements or specifications (Crosby 1979)
- ❑ Fitness for use (Juran 1988)
- ❑ Degree to which a set of inherent characteristics fulfills requirements (ISO 9000-2000)

Definitions of Quality-Continued

- ❑ **Transcendent definition:** excellence
- ❑ **Product-based definition:** quantities of product attributes
- ❑ **User-based definition:** fitness for intended use
- ❑ **Value-based definition:** quality vs. price
- ❑ **Manufacturing-based definition:** conformance to specifications

The Dimensions of Quality

DIMENSION	MEANING
Performance	Primary product characteristics
Features	Secondary characteristic
Conformance	Meeting specifications or industry standards
Reliability	Consistency of performance over time
Durability	Useful life
Service	Resolution of problems and complaints
Response	Human-to-human interface
Aesthetics	Sensory characteristics
Reputation	Past performance and other intangibles

Techniques and Activities of Quality Control

Quality control is the use of techniques and activities to achieve, sustain, and improve the quality of a product or service. It involves integrating the following related techniques and activities:

- ❑ *Specifications* of what is needed
- ❑ *Design* of the product or service to meet the specifications
- ❑ *Production* or *installation* to meet the full intent of the specifications
- ❑ *Inspection* to determine conformance to specifications
- ❑ *Review of usage* to provide information for the revision of specifications if needed

Total Quality Management (TQM)

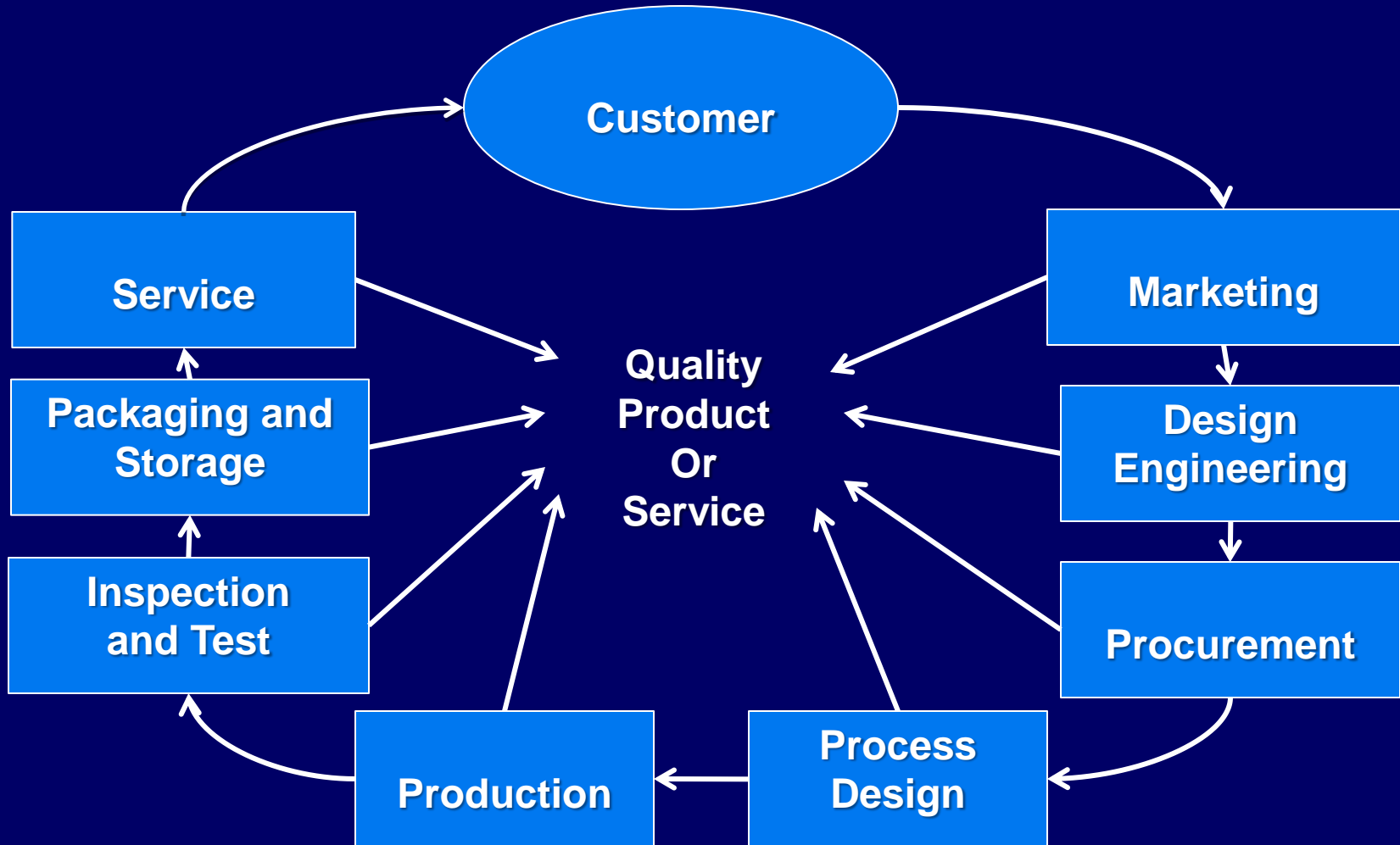
What is Total Quality Management (TQM)?

Total quality management (TQM) is both a philosophy and a set of guiding principles that present the foundation of continuously improving organization. It is the application of quantitative methods and human resources to improve all the processes within an organization and to exceed customer needs now and in the future. TQM integrates technical tools under a disciplined approach.

Historical Review

- ❑ Skilled craftsmanship during Middle Ages
- ❑ Industrial Revolution: rise of inspection and separate quality departments
- ❑ Statistical methods at Bell System (1924)
- ❑ The American Society for Quality (1946)
- ❑ Deming (1950)
- ❑ Juran (1954)
- ❑ First Quality Control Circles (1960)
- ❑ 1980s
 - ❑ TQM
 - ❑ Statistical Process Control, SPC
 - ❑ Malcolm Baldrige National Quality Award
 - ❑ Taguchi
- ❑ ISO (1990)
- ❑ Via Internet (2000)

Responsibility for Quality



Responsibility for Quality

Marketing

- ❑ Help to evaluate the level of product quality that a customer wants, needs..

Design Engineering

- ❑ Translate the customer's requirements into operating characteristics, exact specifications, and appropriate tolerances

Procurement

- ❑ Responsible for procuring quality materials and components

Responsibility for Quality

Process Design

- ❑ Develops processes and procedures that will produce a quality product/service

Production

- ❑ Produce quality products and services

Inspection and Test

- ❑ Appraise the quality of purchased and manufactured items and to report the results

Responsibility for Quality

Packaging and Storage

- Preserve and protect the quality of the product

Inspection and Test

- Appraise the quality of purchased and manufactured items and to report the results

Service

- Fully realizing the intended function of the product during its expected life

Computers & Quality Control

Can be programmed to perform complex calculations, to control a process or test, to analyze data, to write reports, and to recall information on command

Computers & Quality Control

Benefits:

- ❑ Information is stored in the computer and transmitted efficiently to remote terminals
- ❑ Information is provided to employee at the same time the work assignment is given
- ❑ Ability to quickly update or change the information
- ❑ The probability of fewer errors
- ❑ Powerful tool to help in the improvement of quality
- ❑ The use of computers in quality is as effective as the people who create the total system

Computers & Quality Control

Quality functions needs:

- Data collection
- Data analysis and reporting
- Statistical analysis
- Process control
- Test and inspection
- System design