Construction Management:

Quality Control

'Project Quality Management'

-Includes the processes required to ensure that the project will satisfy the needs for which it was undertaken.

- It includes "all activities of the overall management function that determines the quality **policy, objectives and responsibilities** and implements them by means such as quality **planning**, quality **control**, quality **assurance** and quality **improvement** within the quality

‘Project Quality Management’

Major process

1. Quality Planning – identifying which quality standards are relevant and determining how to satisfy them

2. Quality Assurance – evaluating all project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards

3. Quality Control – monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate cause of unsatisfactory performance

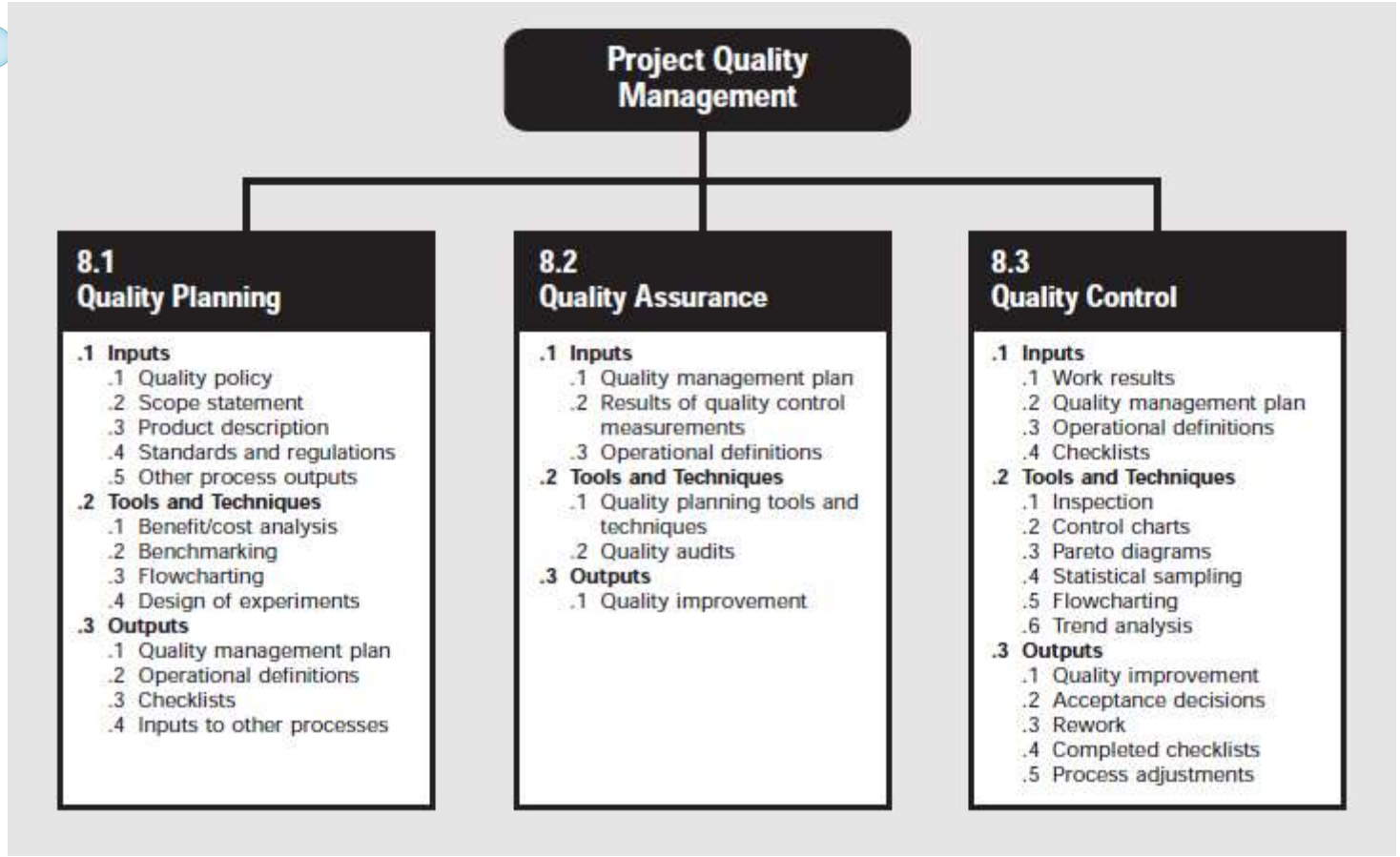
‘Project Quality Management’

Project Quality Management must address both,

- The management of the project
- The product of the project

‘What might be the consequences of meeting project schedule objectives by rushing planned quality inspection?’

– produce negative consequences when errors go undetected


Project Quality Management
8.1 Quality Planning
.1 Inputs
.1 Quality policy
.2 Scope statement
.3 Product description
.4 Standards and regulations
.5 Other process outputs
.2 Tools and Techniques
.1 Benefit/cost analysis
.2 Benchmarking
.3 Flowcharting
.4 Design of experiments
.3 Outputs
.1 Quality management plan
.2 Operational definitions
.3 Checklists
.4 Inputs to other processes
8.2 Quality Assurance
.1 Inputs
.1 Quality management plan
.2 Results of quality control measurements
.3 Operational definitions
.2 Tools and Techniques
.1 Quality planning tools and techniques
.2 Quality audits
.3 Outputs
.1 Quality improvement
8.3 Quality Control
.1 Inputs
.1 Work results
.2 Quality management plan
.3 Operational definitions
.4 Checklists
.2 Tools and Techniques
.1 Inspection
.2 Control charts
.3 Pareto diagrams
.4 Statistical sampling
.5 Flowcharting
.6 Trend analysis
.3 Outputs
.1 Quality improvement
.2 Acceptance decisions
.3 Rework
.4 Completed checklists
.5 Process adjustments

Quality – "the totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs"

Project quality management **complements** modern project management

Project quality management and project management recognize the importance of

- *Customer satisfaction* – understanding, managing and influencing needs so that customer expectations are met or exceeded
- *Prevention over inspection*
- *Management responsibility* – success requires the participation of all members of the team, but management must provide the resources to succeed
- *Processes within phases* – the repeated plan-do-check-act cycle

Quality Planning

Inputs to Quality Planning

1. Quality Policy – the overall intentions and directions of an organization with regard to quality as formally expressed by top management
2. Scope statement – it documents major project deliverables as well as the project objectives which serve to define stakeholder requirements
3. Product description – contain details of technical issues and other concerns that may affect quality planning
4. Standards and specifications
5. Other process inputs – For example: Procurement planning may identify contractor quality requirements that should be reflected in the overall quality management plan

Quality Planning

Tools and Techniques for Quality Planning

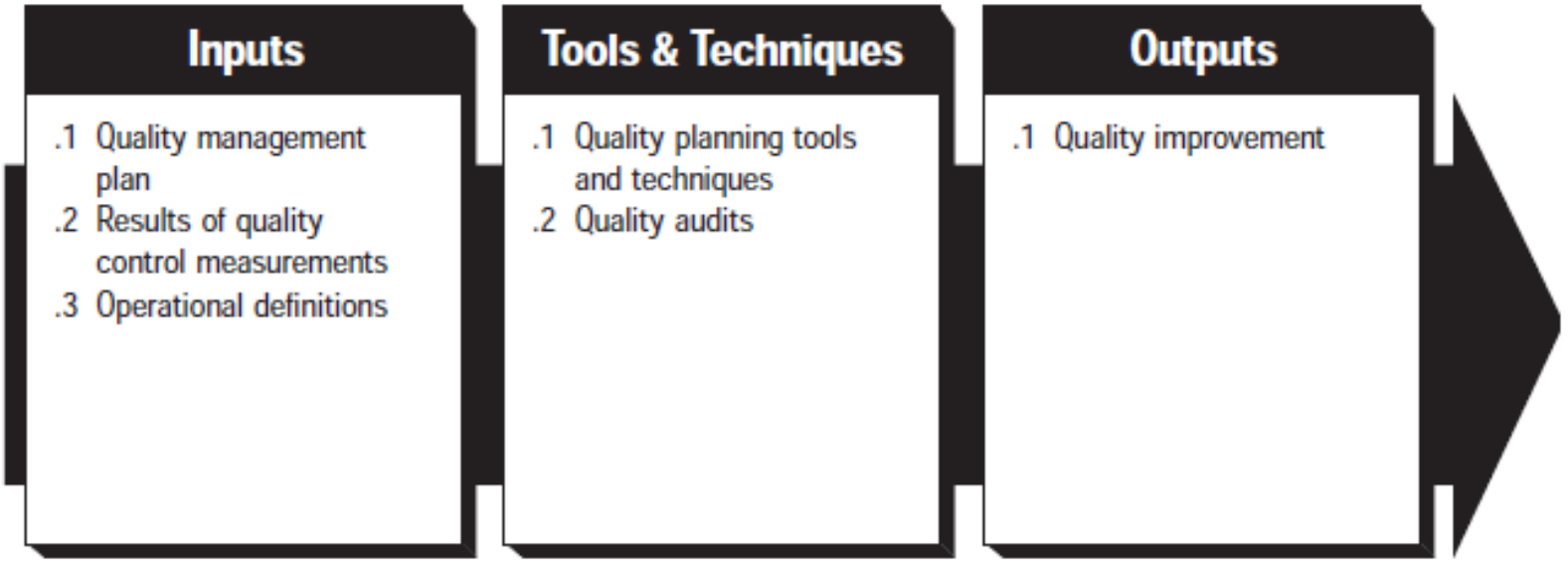
1. Benefit/cost analysis – benefit and cost
2. Benchmarking– comparing actual or planned project practices to those of other projects in order to generate ideas for improvement and to provide a standard by which to measure performance
3. Flow charting
4. Design of experiments – analytical technique to indentify which variables have the most influence on the overall project

Quality Planning

Output from Quality Planning

1. Quality Management plan – should describe how the project management team will implement its quality policy. According to ISO 9000 terminology, it should describe quality system " the organizational structure, responsibilities, procedures, processes and resources needed to implement quality management"
2. Operational definition – what quality is, and how it is measured
3. Checklist
4. Inputs to other variables – analytical technique to indentify which variables have the most influence on the overall project

Quality Assurance



Quality Control

-Monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of an unsatisfactory results

- It should perform throughout the project

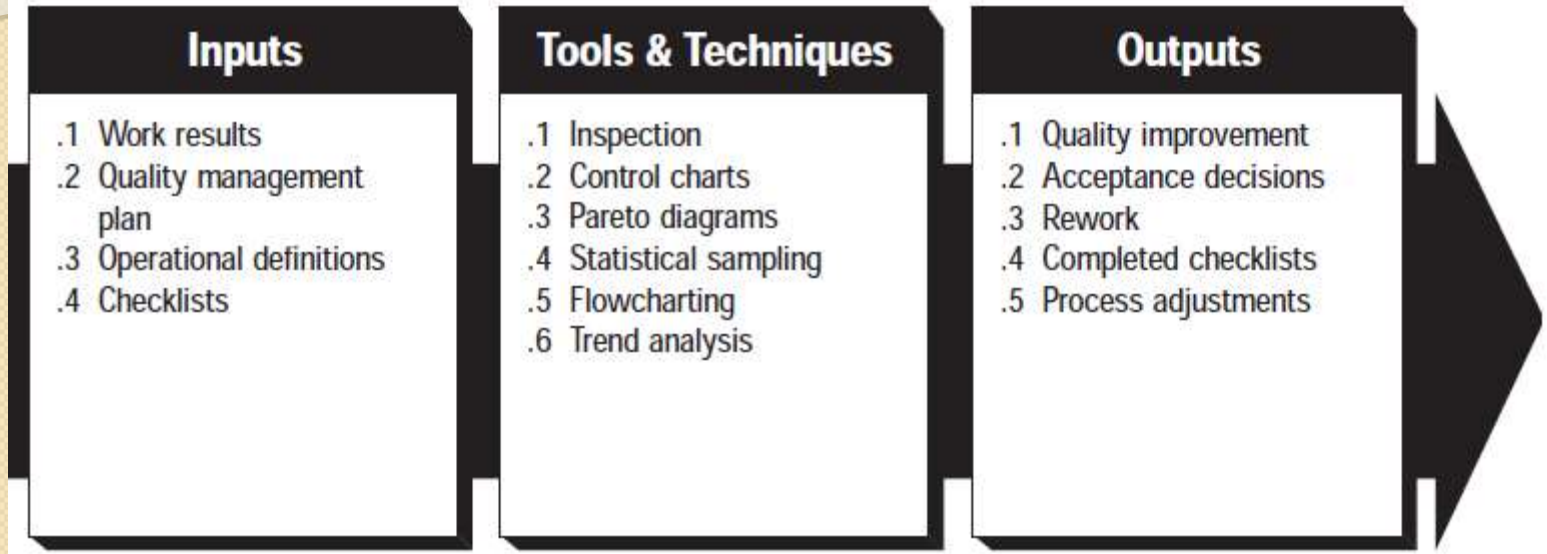
Project management team should have a working knowledge of statistical quality control, especially sampling and probability to help them evaluate quality control outputs

Quality Control

- Project management team should know the differences between;

1. Prevention and inspection
2. Attribute sampling and variable sampling
3. Special Causes and random causes
4. Tolerances and control limits

Quality Control



Accident during Excavation

Accident during Pile Construction

Accident during Over bridge Construction