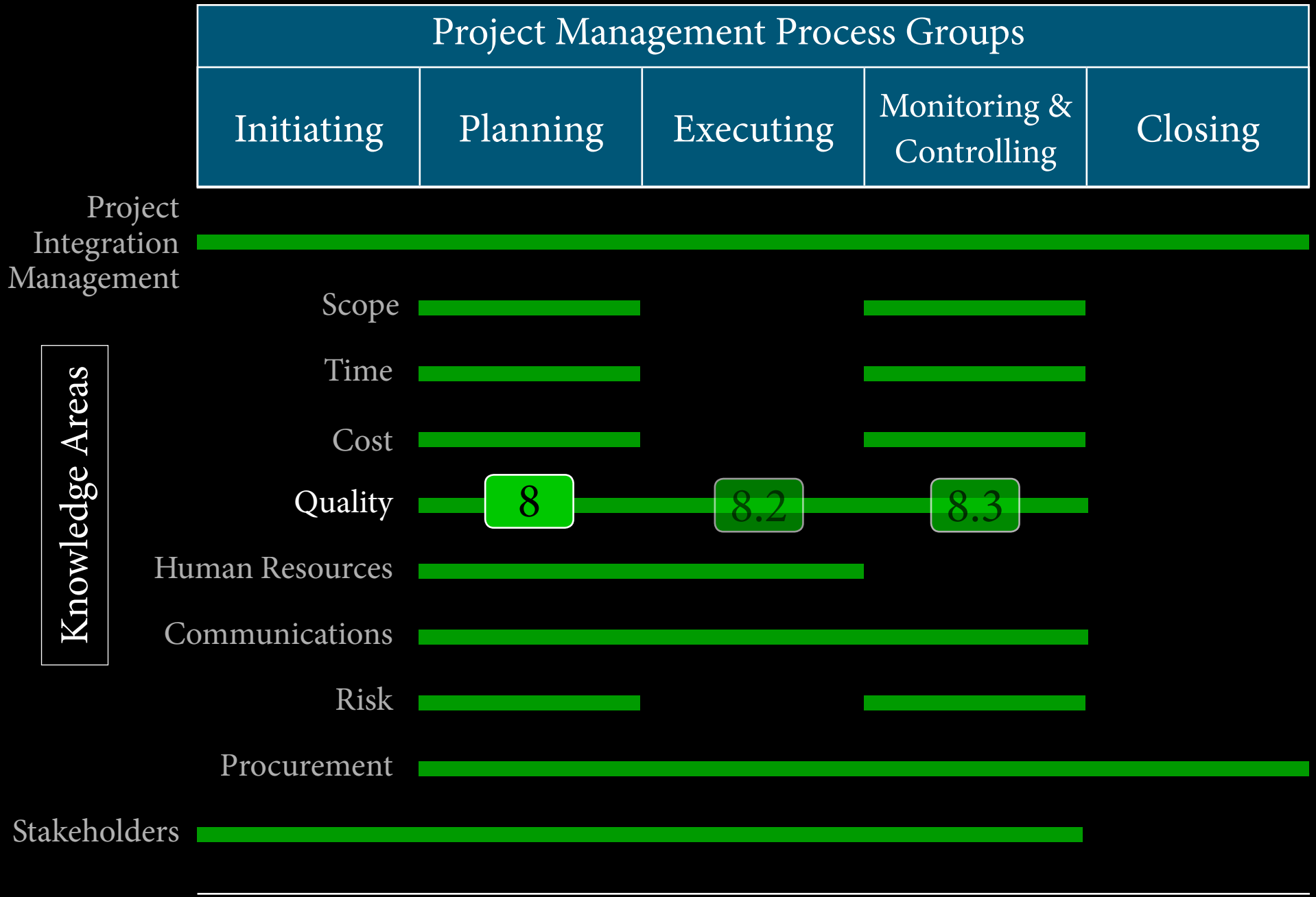
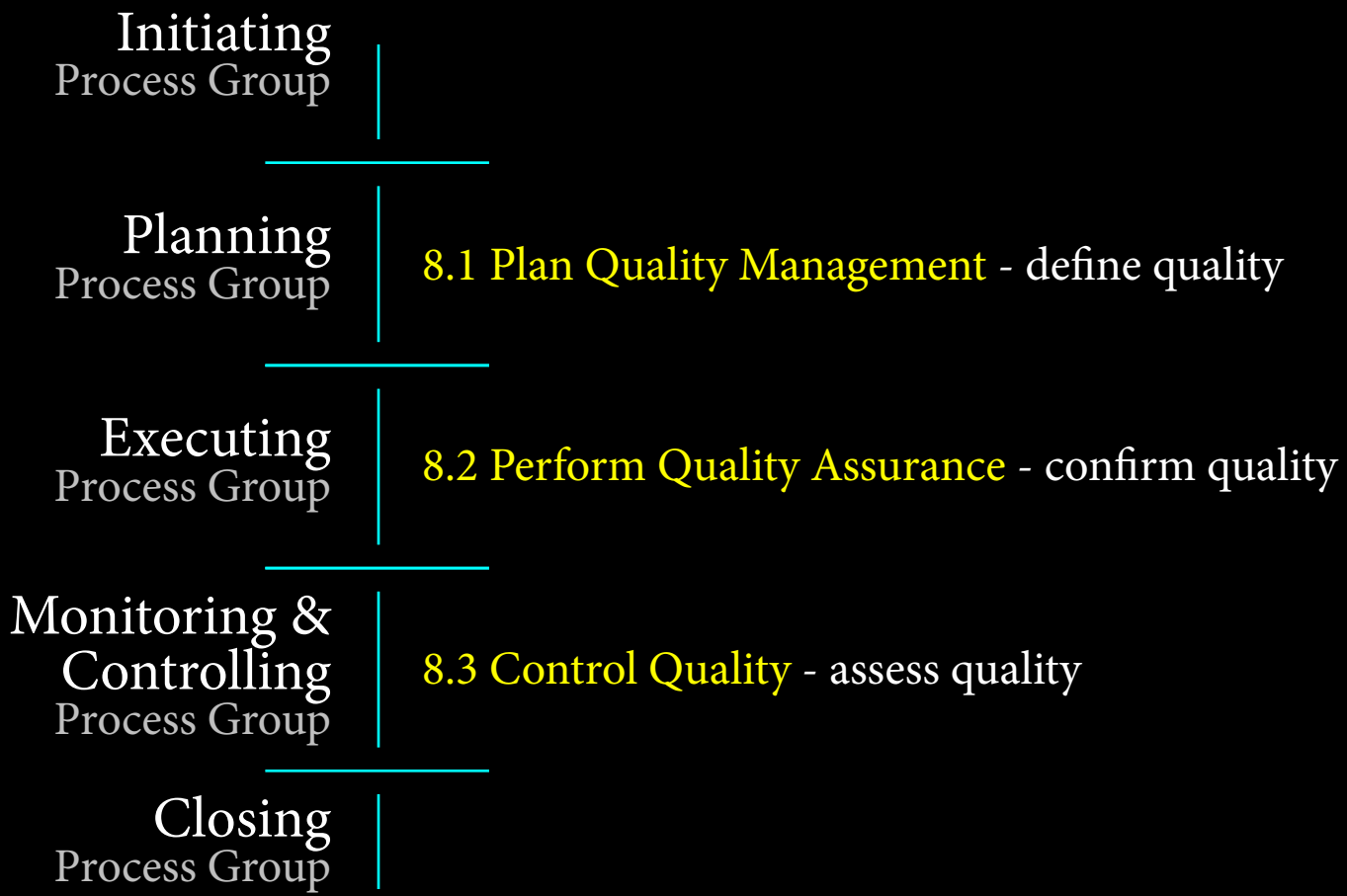
Hai

Malay (Rumi, Roman script)



The Planning Process Group

Project Quality Management



What is Quality?

What is Quality?

The degree to which the project fulfills requirements”

The basic approach to project quality management is intended to be compatible with International Organization for Standardization quality standards (ISO 9000) PMBOK p.228

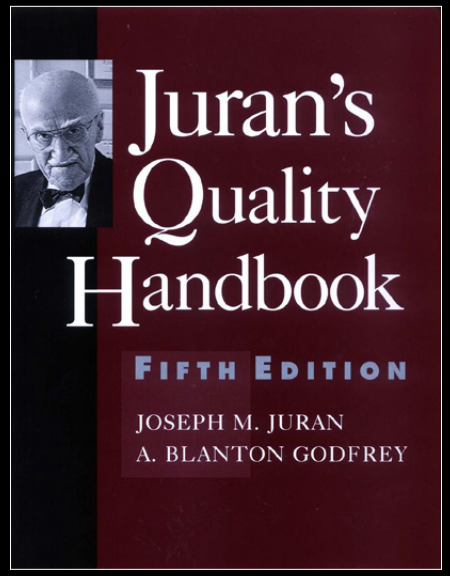
PMBOK & ISO 9000 (PMBOK p.228) recognize the importance of:

Customer satisfaction: Understanding, evaluating, defining, and managing requirements so that customer expectations are met and the project achieves:

> fitness for use: the product or service needs to satisfies the real needs of the customer
> (Non-conformance, reject or defect as is defined as “unfit for use”)

Prevention over inspection: Quality should be planned, designed, and built into (not inspected into) the project’s management and deliverables

“Fitness for use”



(December 24, 1904 – February 28, 2008)
was a Romanian-born American engineer and management consultant.

Does the product/service meet customer’s need with regard to:

i) Grade

ii) Quality conformance

iii) Reliability/maintainability

iv) Safety

v) Actual Use

PMBOK & ISO 9000 (PMBOK p.228) recognize the importance of:

Continuous improvement: PDCA - plan-do-check-act and including other quality improvement processes:

- Total Quality Management (TQM)
- Six Sigma
- Organizational Project Management Maturity Model (OPM3)-PMI
- Capability Maturity Model Integrated (CMMI)
- see website for links to information on these

Management Responsibility: The buck stops with management

Cost of quality (COQ): the total cost of the conformance and non-conformance work required

Is it better to plan in quality or inspect to find quality problems?

The exam will present questions from the perspective that planing for quality had not happened

The exam:

Questions are focused on manufacturing projects but the industry is irrelevant - you are being tested on process

It is important to know in advance what is acceptable quality and how it will be measured:

- This will likely be a part of the acceptance criteria
- You then need to decide how you will meet this standard

Know the difference between:

- Quality - the degree to which the project fulfills requirements
- Grade - the category or specifications assigned to a product or service

- as well as -

- Precision - exactness
- Accuracy - correctness

"Quality related questions can be confusing..." (Rita p. 294)

- because many of the question topics are not in the PMBOK
- PMI's quality philosophy may be different the yours

The exam: (Rita p. 294)

The PM should recommend improvements to the company's standards, policies and processes - such recommendations are expected and welcomed by management

Quality should be considered when there is a change to any constraint

The PM must determine the quality metrics before work begins

The PM must spend time trying to improve quality

The PM must put in place a plan for continually improving processes

The PM must make sure authorized approaches & processes are followed

Some quality activities may be done by a quality control department

The exam: (Rita p. 294)

How?

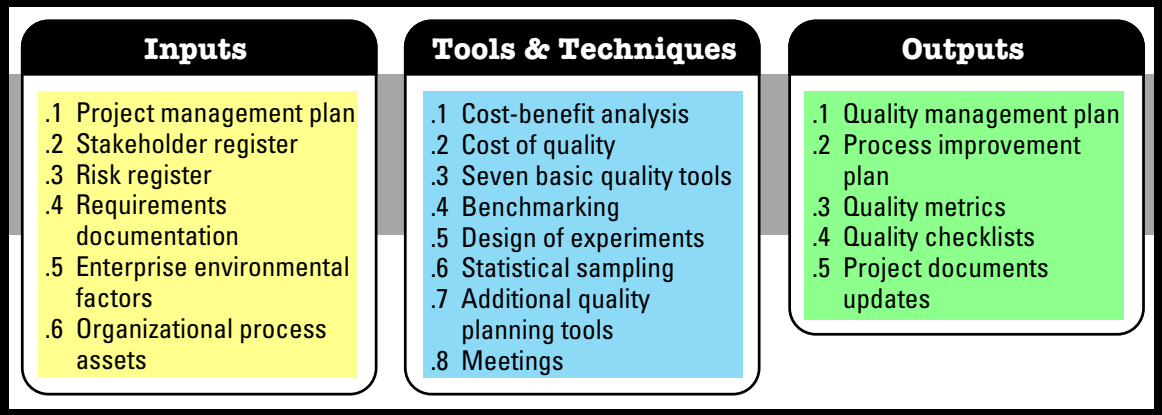
Review the project management plan, particularly the project baselines and relevant documents

Make sure you know and understand the customers definition of quality

Identify the levels of performance in the product and its components

see Rita p 296 for more...

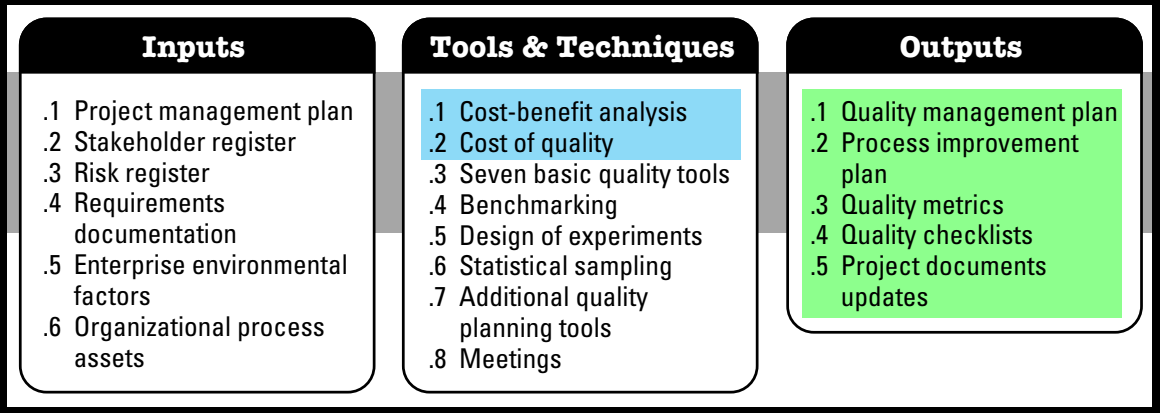
8.1 Plan Quality Management



What & Why?

What practices, standards and requirements are required to assure the quality of the project?

8.1 Plan Quality Management



Cost Benefit analysis: compares the cost of the quality to the expected benefit

Cost of quality: The sum of all costs over the life of the product including:

- preventing non-conformance
- appraising the product or service for conformance
- failing to meet requirements (rework)

Cost of quality

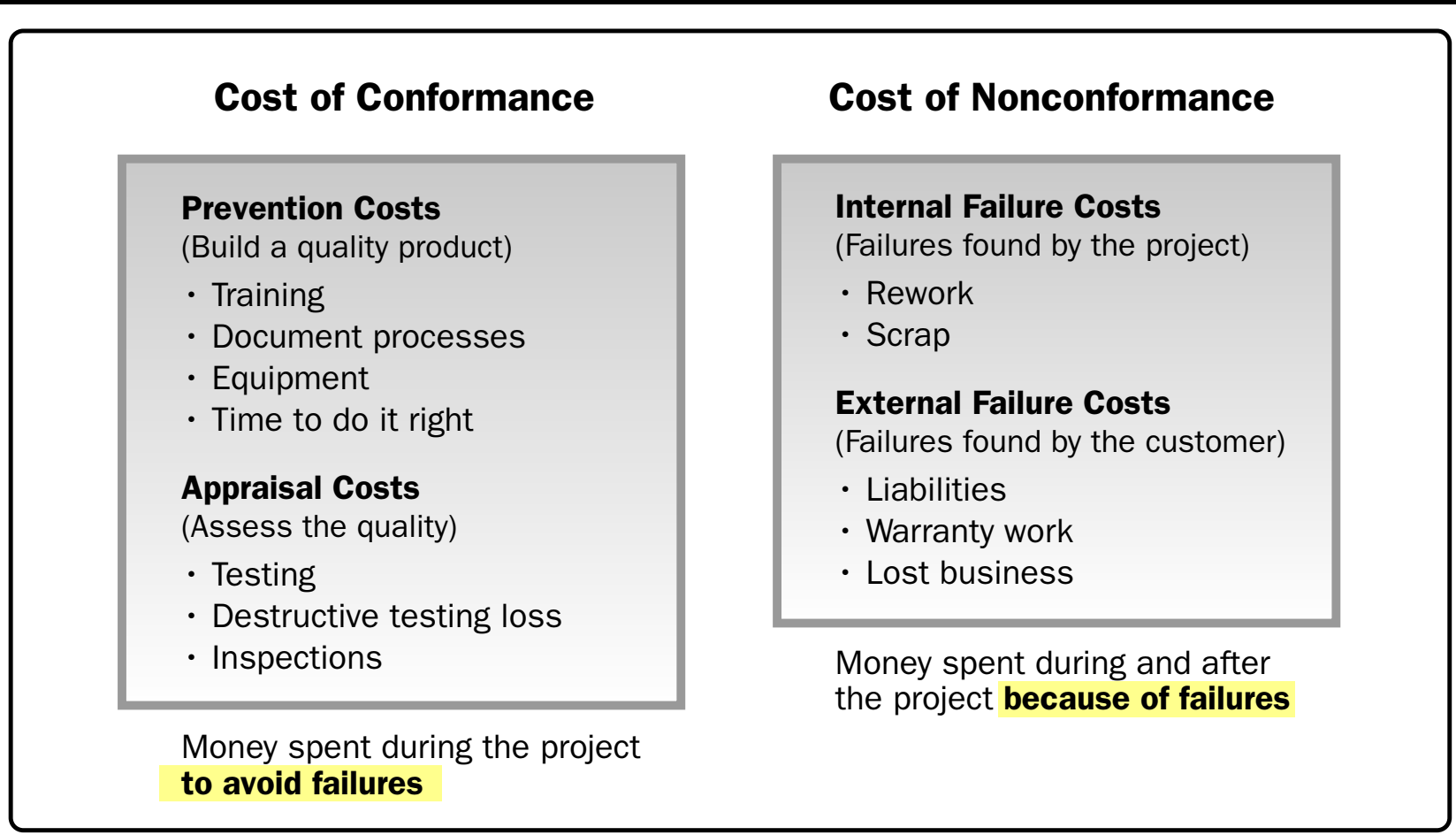
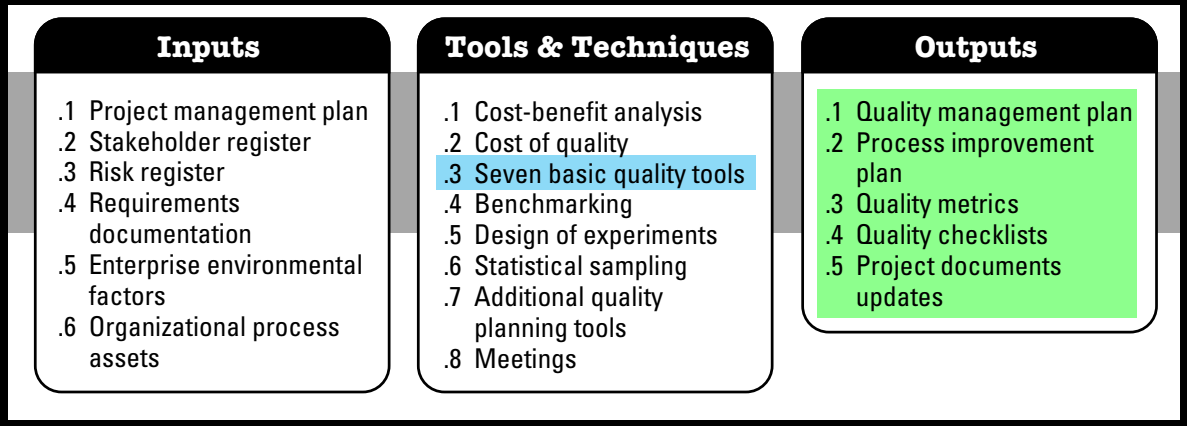


Figure 8-5. Cost of Quality

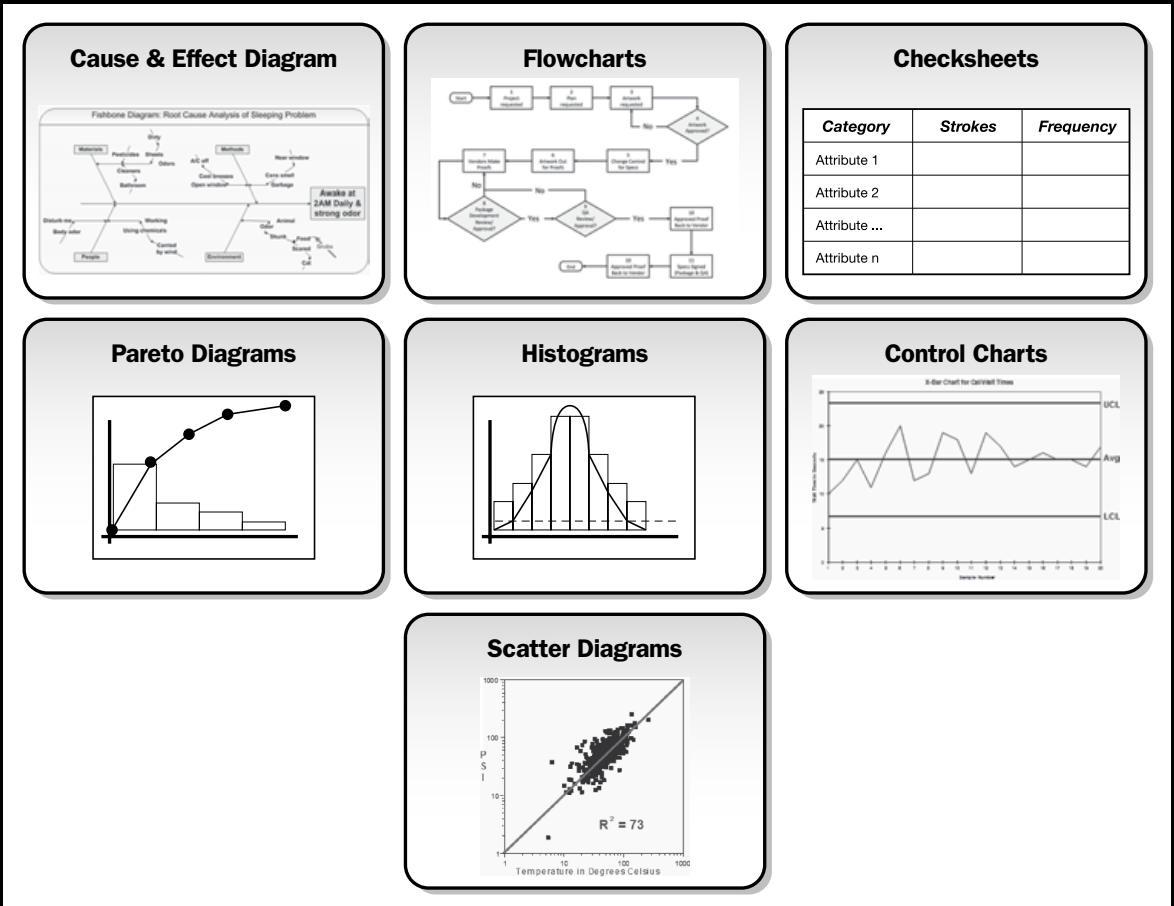
(PMBOK p.235)

8.1 Plan Quality Management



7 basic quality tools (7QC Tools): used within the context of the PDCA Cycle (Plan, Do, Check, Act) to solve quality related problems...

7 basic quality tools (7QC Tools)



Cause & effect Diagram

Checksheet

Control chart

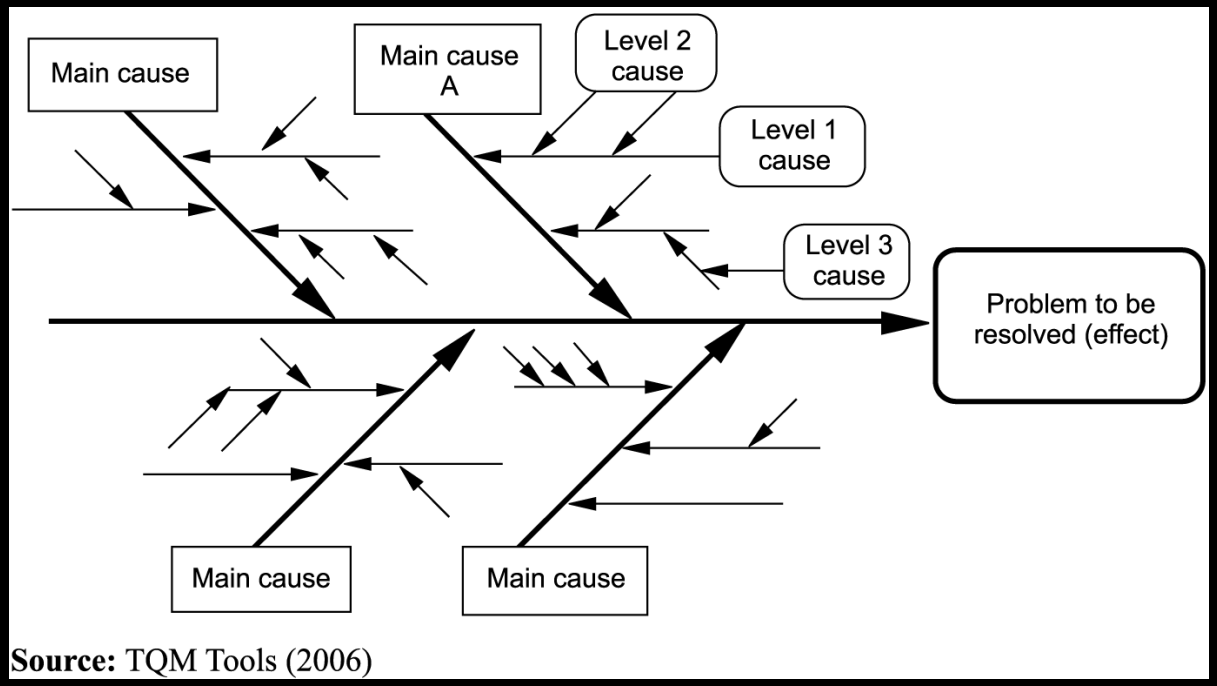
Flowchart

Pareto Diagram

Scatter diagram

Histogram

Cause & Effect Diagram (Fishbone Diagram, Ishikawa Diagram)

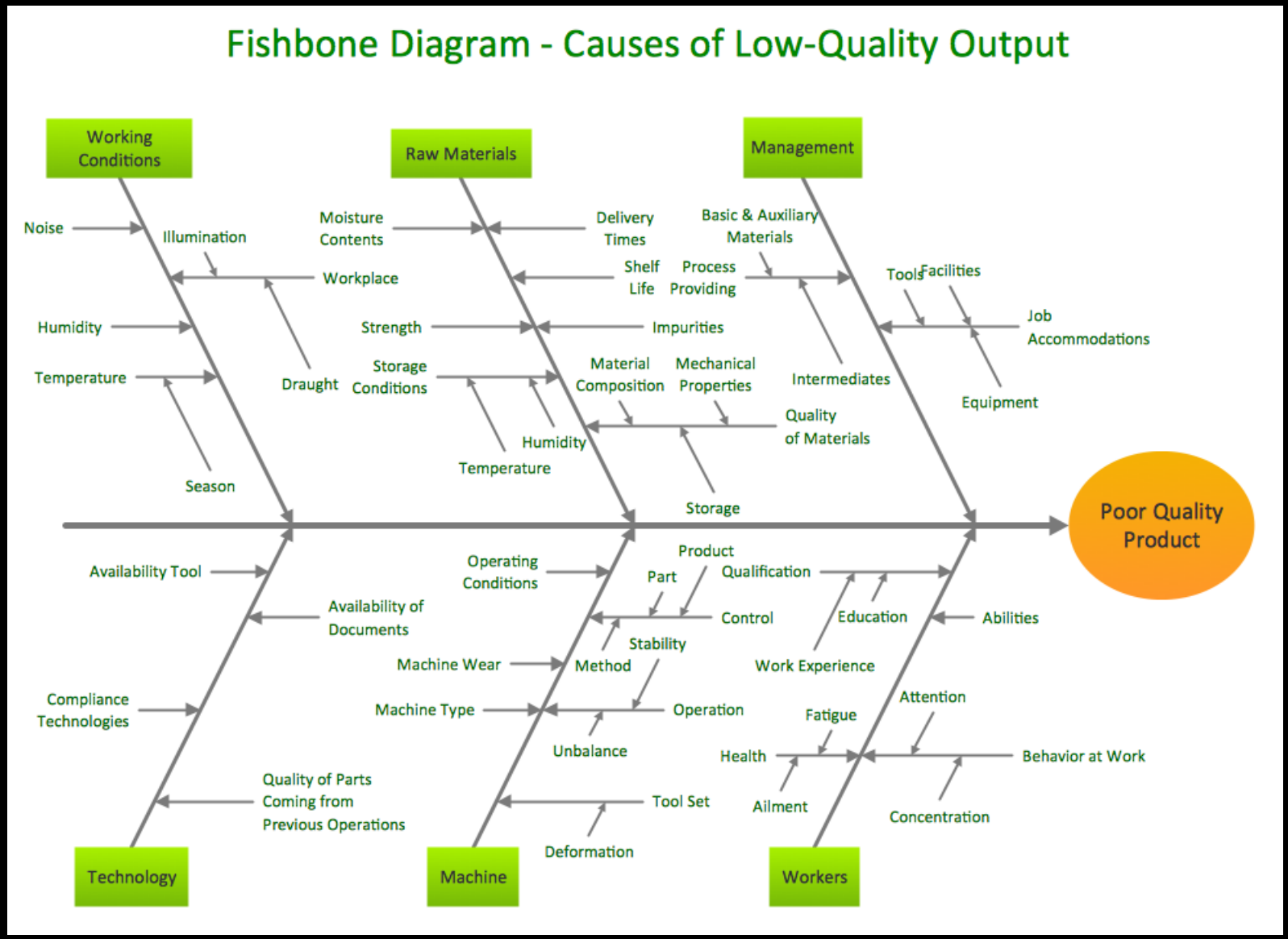


Source: TQM Tools (2006)

Problem Statement: describes the problem as a gap to be closed or as an objective to be achieved

Causes are found by looking at the problem statement and asking "why" until the root cause has been identified or until all possibilities on each fishbone have been exhausted

Cause & Effect Diagram (Fishbone Diagram, Ishikawa Diagram)



Cause & Effect Diagram (Fishbone Diagram, Ishikawa Diagram)

Exam:

Look for the following types of phrases to describe cause & effect diagrams:

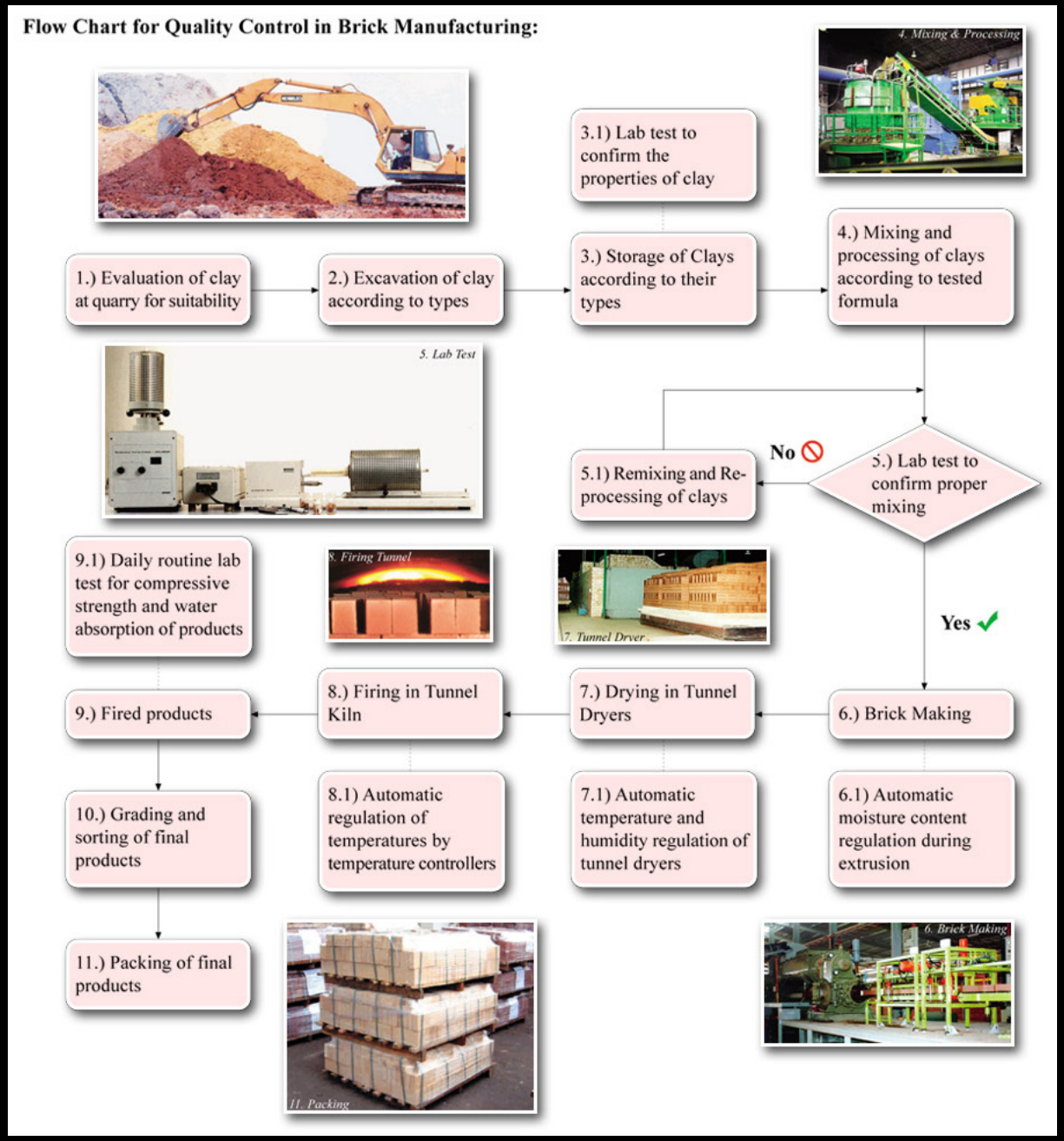
"A creative way to look at the causes of a problem or to identify the best way to...

"Helps stimulate thinking, organize thought and generate discussion

"Can be used to explore the factors that will result in a desired affect

Flowchart (Process Map)

Display the sequence of steps and the branching possibilities that exist for a process



Checksheet (Tally Sheet)

Used as a checklist when gathering data

Motor Assembly Check Sheet

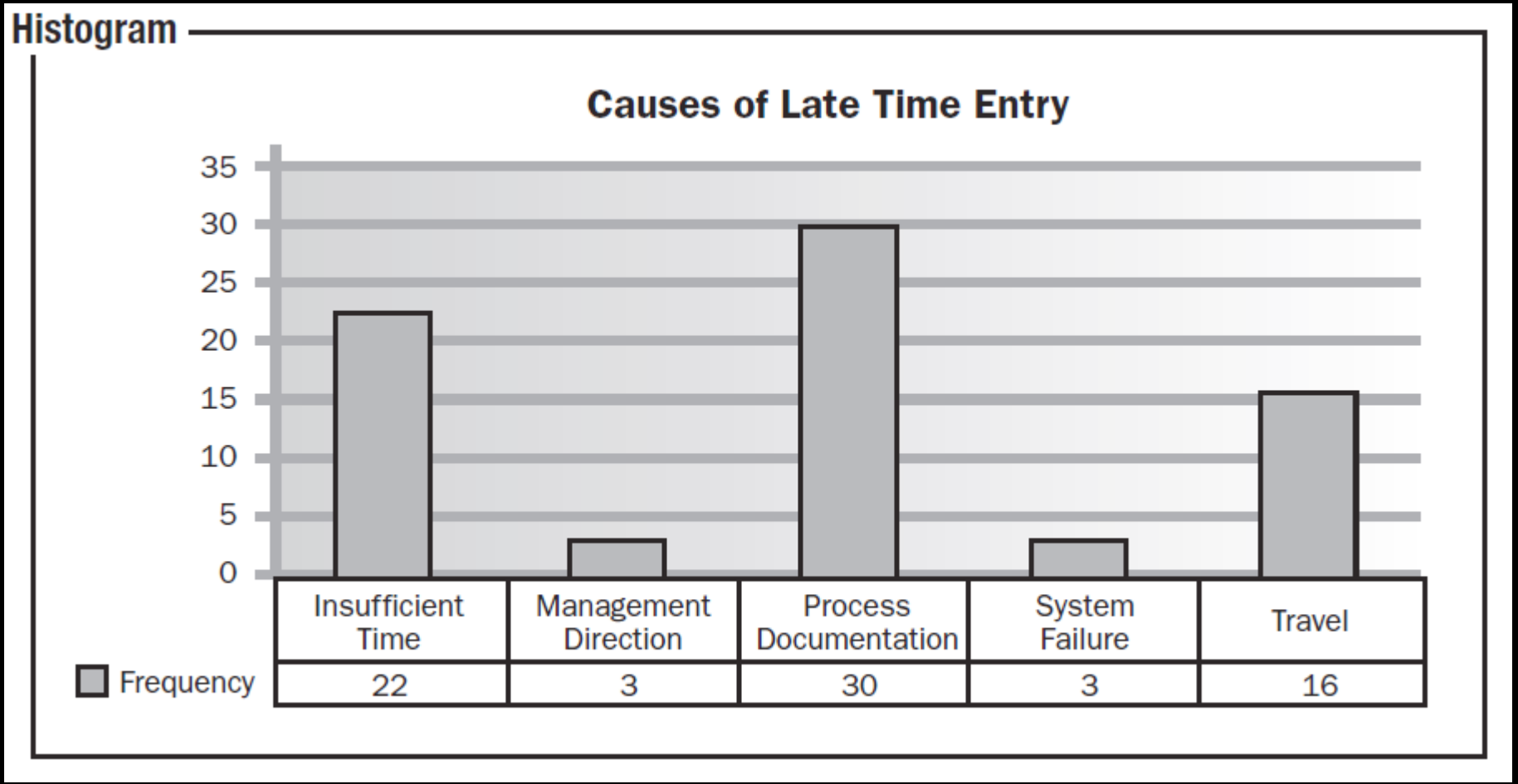
Name of Data Recorder: Lester B. Rapp

Location: Rochester, New York

Data Collection Dates: 1/17 - 1/23

Defect Types/ Event Occurrence	Dates							TOTAL
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Supplied parts rusted		||||||||	|||||	||||	||			20
Misaligned weld			|||			||		5
Improper test procedure								0
Wrong part issued		|		||				3
Film on parts								0
Voids in casting				||||	||			6
Incorrect dimensions						||		2
Adhesive failure								0
Masking insufficient					|			1
Spray failure			|||||					5
TOTAL		10	13	10	5	4		

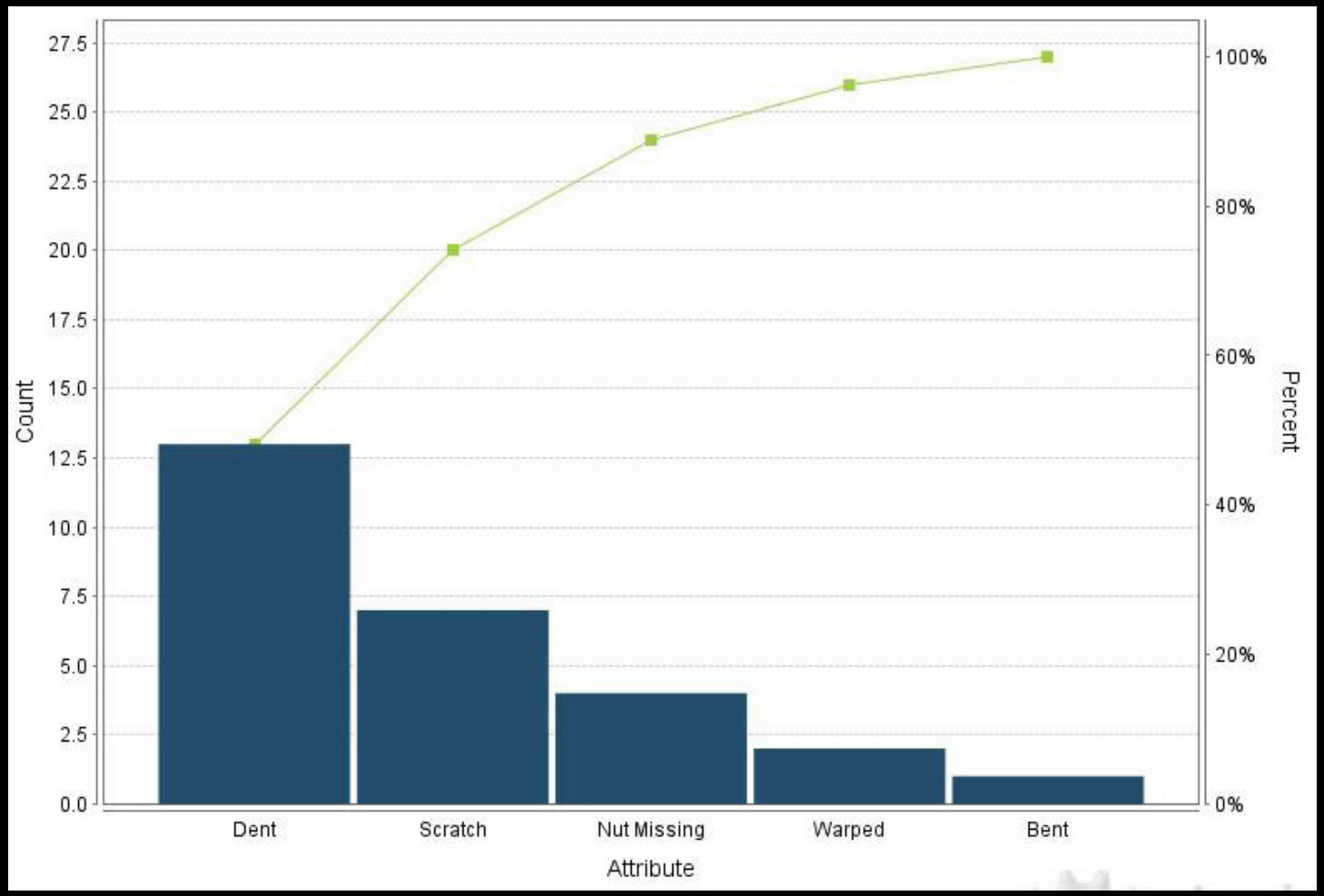
Histogram



A bar chart used to show a statistical distribution

The frequency of events are listed in no particular order (no rank)

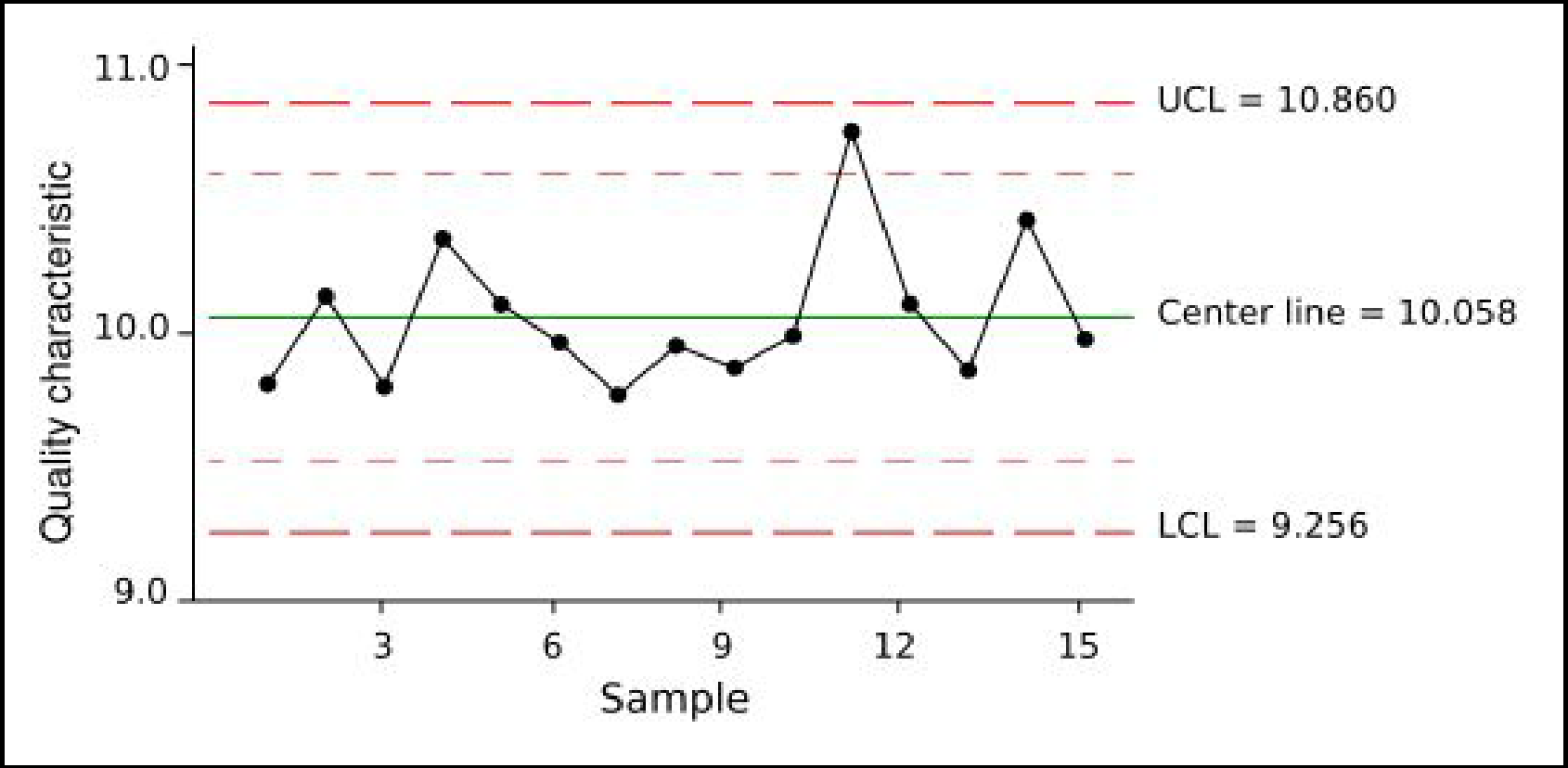
Pareto Diagram



Used to identify the vital few sources that are responsible for causing most of a problem's effects (80/20 principle)

The frequency of events are listed in order (ranked)

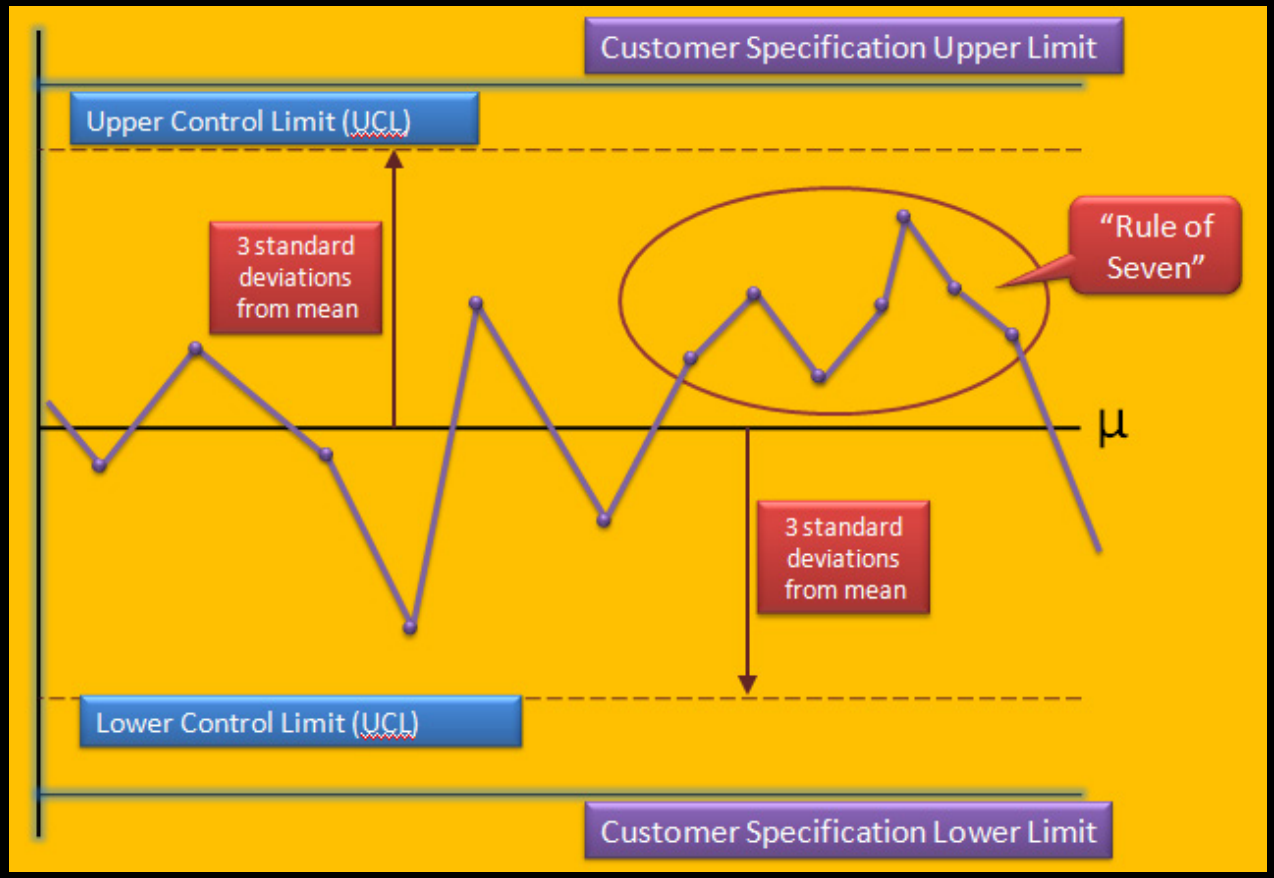
Control Chart



Used to determine whether or not a process is stable or has predictable performance

Control Chart

Upper & lower limits are set as points at which corrective action should be taken. These limits are generally set at ±3 standard deviations (sigma) around a process mean.



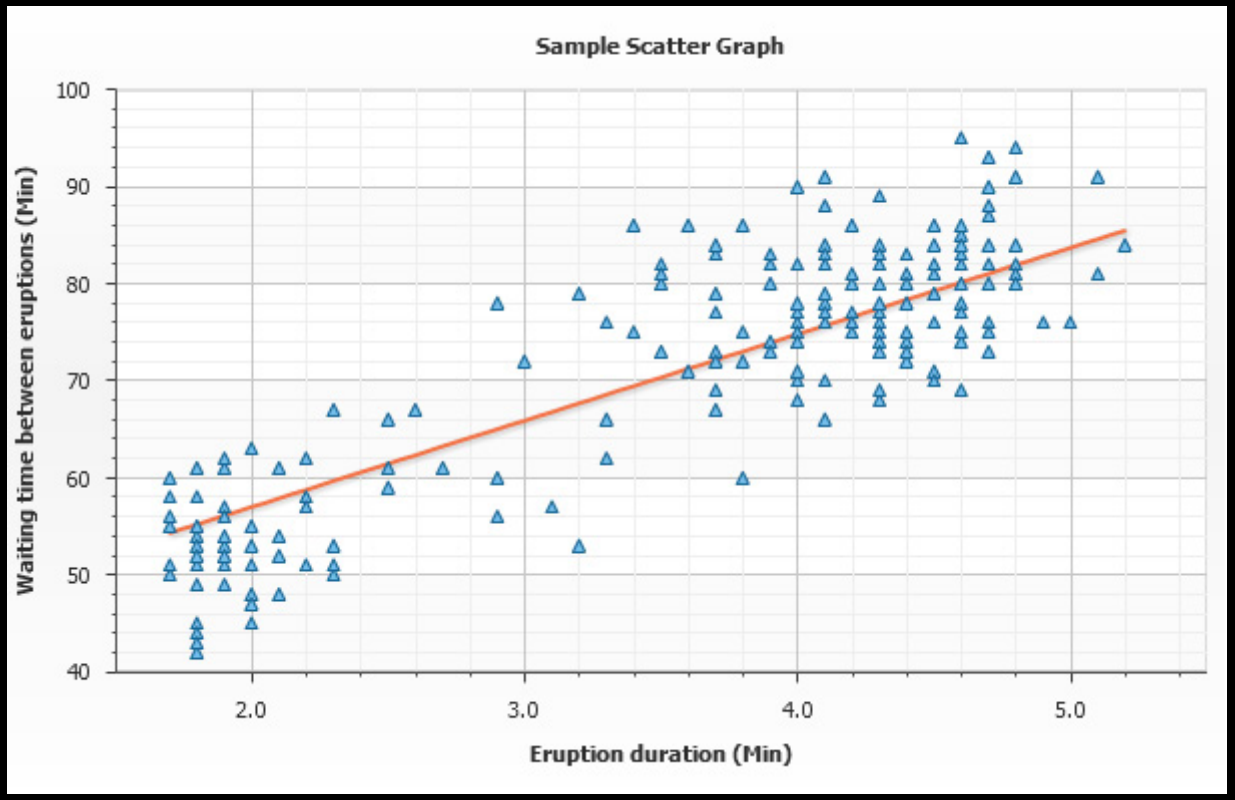
A process is considered out of control when:

1) a data point exceeds a control limit;
2) seven consecutive plot points are above or below the mean

Assignable / special cause may be identified:

operator absent, machine malfunction, computer crashes, poor batch of raw material, power surges & etc.

Scatter Diagram (Correlation Chart)

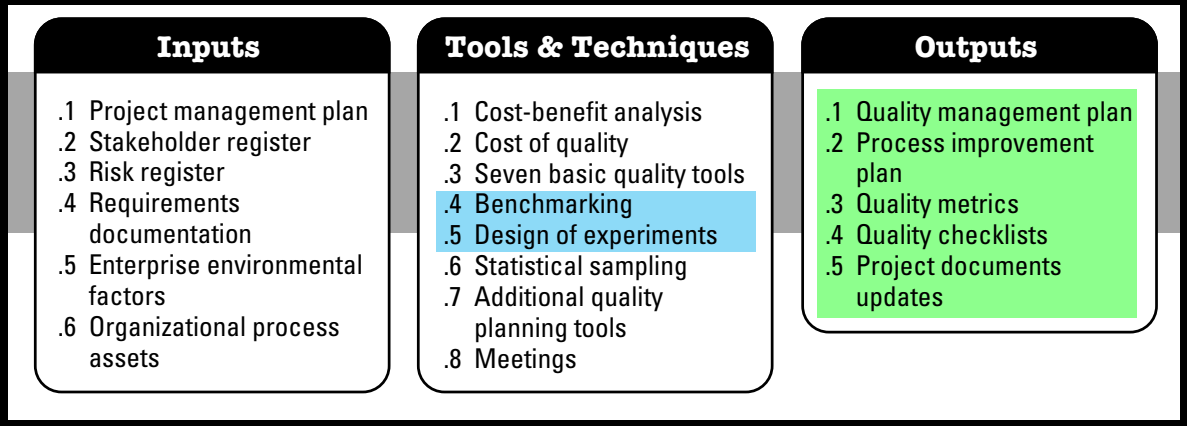


Shows the pattern of relationships between two variables that are thought to be related

From this information a trend line is calculated and can be used for estimation & forecasting.

Called a Correlation Chart because it can be used to determine the relationship between 2 variables

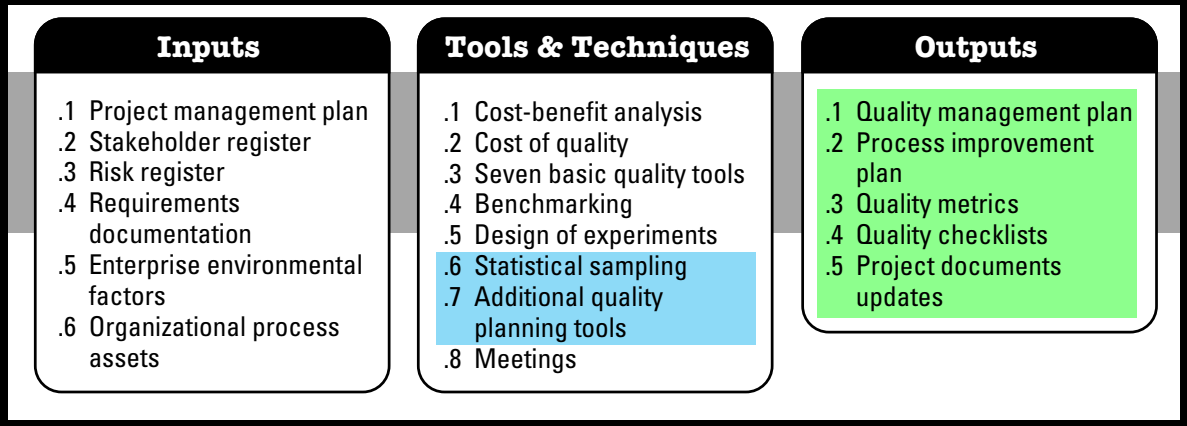
8.1 Plan Quality Management



Benchmarking: Looking at other project to get ideas for improvement on the current

Design of experiments: Look at all of the factors in a process and experiment to see which combination has the most impact on a deliverable

8.1 Plan Quality Management



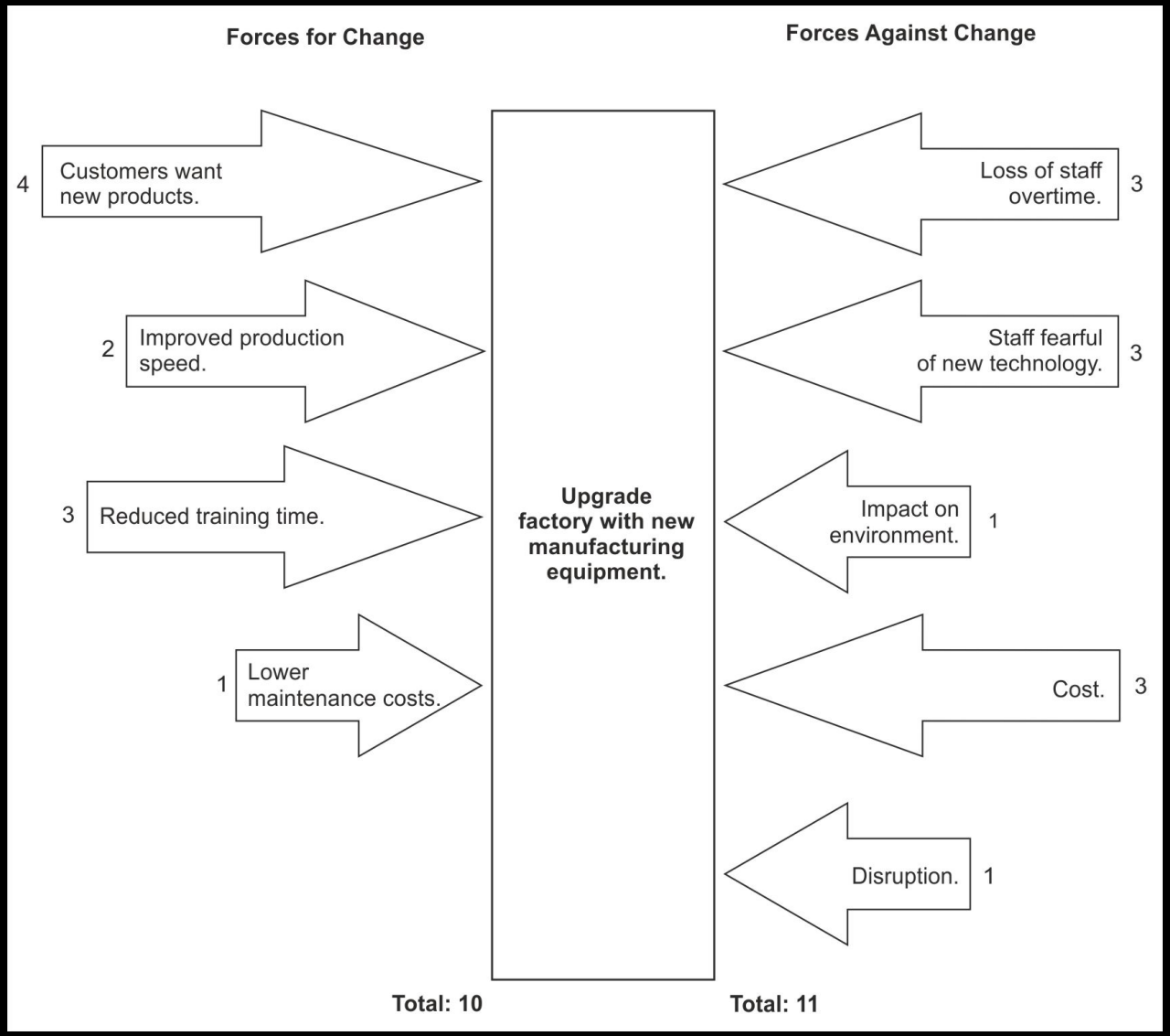
Statistical sampling: Inspecting a part/percentage of a larger set (a "sample size")

(e.g. selecting ten engineering drawings at random from a set of seventy-five)

The sample frequency and size should be determined in this process

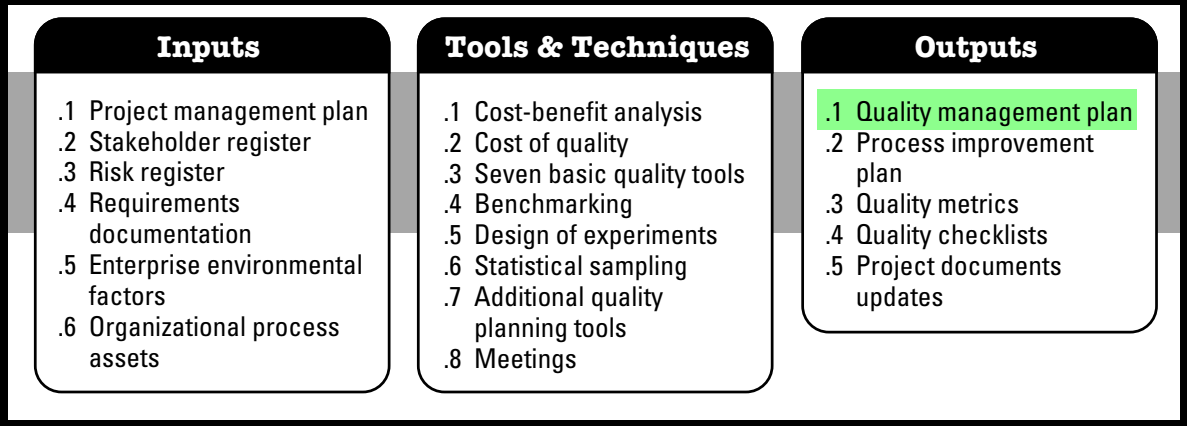
Additional quality planning tools: Brainstorming, Nominal group technique, Force field analysis...

Force Field Analysis



Make a decision by analyzing the forces for and against it. This diagram also helps communicate the reasons behind a decision.

8.1 Plan Quality Management



Quality Management Plan: Determines what quality is and puts a plan in place to manage it. It could include:

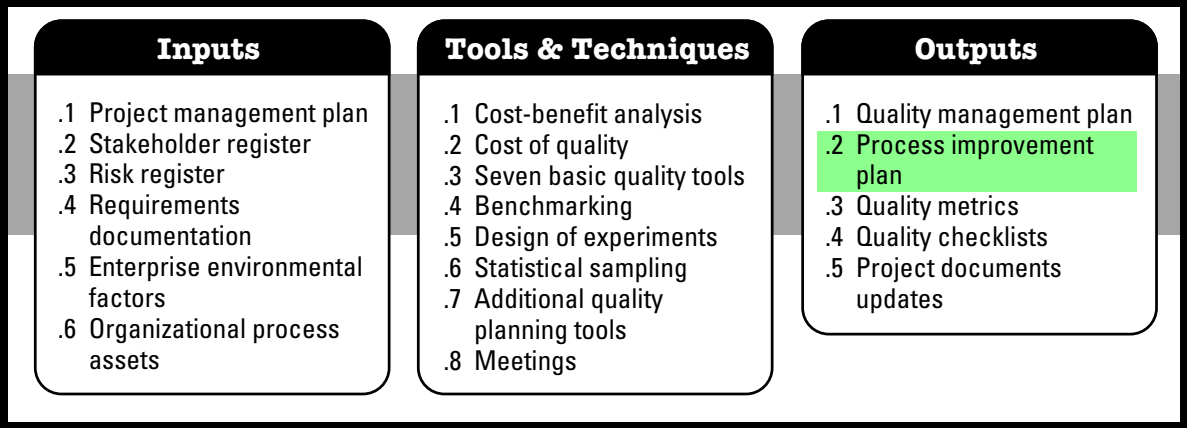
Quality practices & standards

Who is involved in managing quality

What processes will be followed

What reports are required

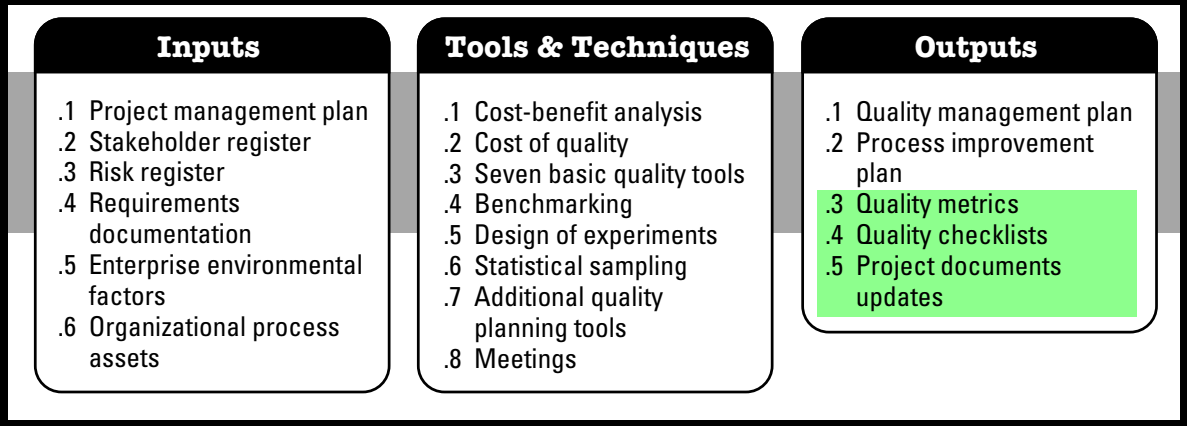
8.1 Plan Quality Management



Process Improvement Plan: The plan to improve the plan which may include:

- Process boundaries: Describe the purpose of the process, the start and end of the process, its inputs and outputs, the process owner and the stakeholders of the process
- Process configuration: a chart of the process
- Process metrics
- Targets for improved performance

8.1 Plan Quality Management



Quality metrics: Describes a project or product attribute and how the control quality process will measure it

- number of bugs in a piece of software
- number of items that fail inspection

Quality checklists: A list of items: to inspect, steps to perform, a picture of what is to be inspected...

Project Quality Management

Initiating Process Group

Planning Process Group

8.1 Plan Quality Management - define quality

Executing Process Group

8.2 Perform Quality Assurance - confirm quality

Monitoring & Controlling Process Group

8.3 Control Quality - assess quality

Closing Process Group

Q&A

Question

2. A dependency requiring that design be completed before manufacturing can start is an example of a(n):

   A. Discretionary dependency.
   B. External dependency.
   C. Mandatory dependency.
   D. Scope dependency.

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Answer

2. **Answer** C

Explanation No mention is made that the dependency comes from a source outside the project, so this is not an external dependency. Scope dependency is not a defined term. The key word in the question is "requiring." Since the dependency is required, it could not be discretionary and therefore must be mandatory. The question defines a mandatory dependency.

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Question

3. Which of the following are GENERALLY illustrated BETTER by bar charts than network diagrams?

   A. Logical relationships
   B. Critical paths
   C. Resource trade-offs
   D. Progress or status

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Answer

3. **Answer** D
Explanation The bar chart (or Gantt chart) is designed to show a relationship to time. This is best used when demonstrating progress or status as a factor of time.

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Question

4. If the optimistic estimate for an activity is 12 days, and the pessimistic estimate is 18 days, what is the standard deviation of this activity?

   A. 1
   B. 1.3
   C. 6
   D. 3

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Answer

4. **Answer** A
Explanation The beta standard deviation is computed by (P – O)/6. Therefore, the answer is (18 – 12)/6 = 6/6 = 1.

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Question

5. A heuristic is BEST described as a:

A. Control tool.
B. Scheduling method.
C. Planning tool.
D. Generally accepted rule.

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Answer

5. **Answer** D
Explanation A heuristic is a generally accepted rule. Examples are cost per line of code, cost per square foot of floor space, etc.

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Question

6. Lag means:

A. The amount of time an activity can be delayed without delaying the project finish date.
B. The amount of time an activity can be delayed without delaying the early start date of its successor.
C. Waiting time.
D. The product of a forward and backward pass.

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Answer

6. **Answer** C
Explanation Total float and free float are the time an activity can be delayed without impacting the entire project or the next activity. A forward or backward pass refers to a network analysis technique, not waiting time. Waiting time is the correct definition of lag.

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Question

7. Which of the following is the BEST project management tool to use to determine the longest time the project will take?

   A. Work breakdown structure
   B. Network diagram
   C. Bar chart
   D. Project charter

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Answer

7. **Answer** B
Explanation The bar chart may show an end date, but it is not used to determine dates. The project charter also may include a required end date, but not a logical determination of how long the project will take. The network diagram takes the activities from the activity list and adds dependencies. The dependencies allow us to look at the various paths through the diagram to determine the longest duration (critical) path. The network diagram is the best answer.

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Question

8. Which of the following is CORRECT?

A. The critical path helps prove how long the project will take.
B. There can be only one critical path.
C. The network diagram will change every time the end date changes.
D. A project can never have negative float.

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Answer

8. **Answer** A

Explanation This question tests your knowledge about a number of topics. There can often be more than one critical path, but you might adjust the plan in order to decrease risk and have only one critical path. The network diagram may or may not change when the end date changes, depending on the amount of schedule reserve and the reason for the change to the schedule. You can have negative float if you are behind schedule. The critical path helps prove how long the project will take. This is the only correct statement of the choices given.

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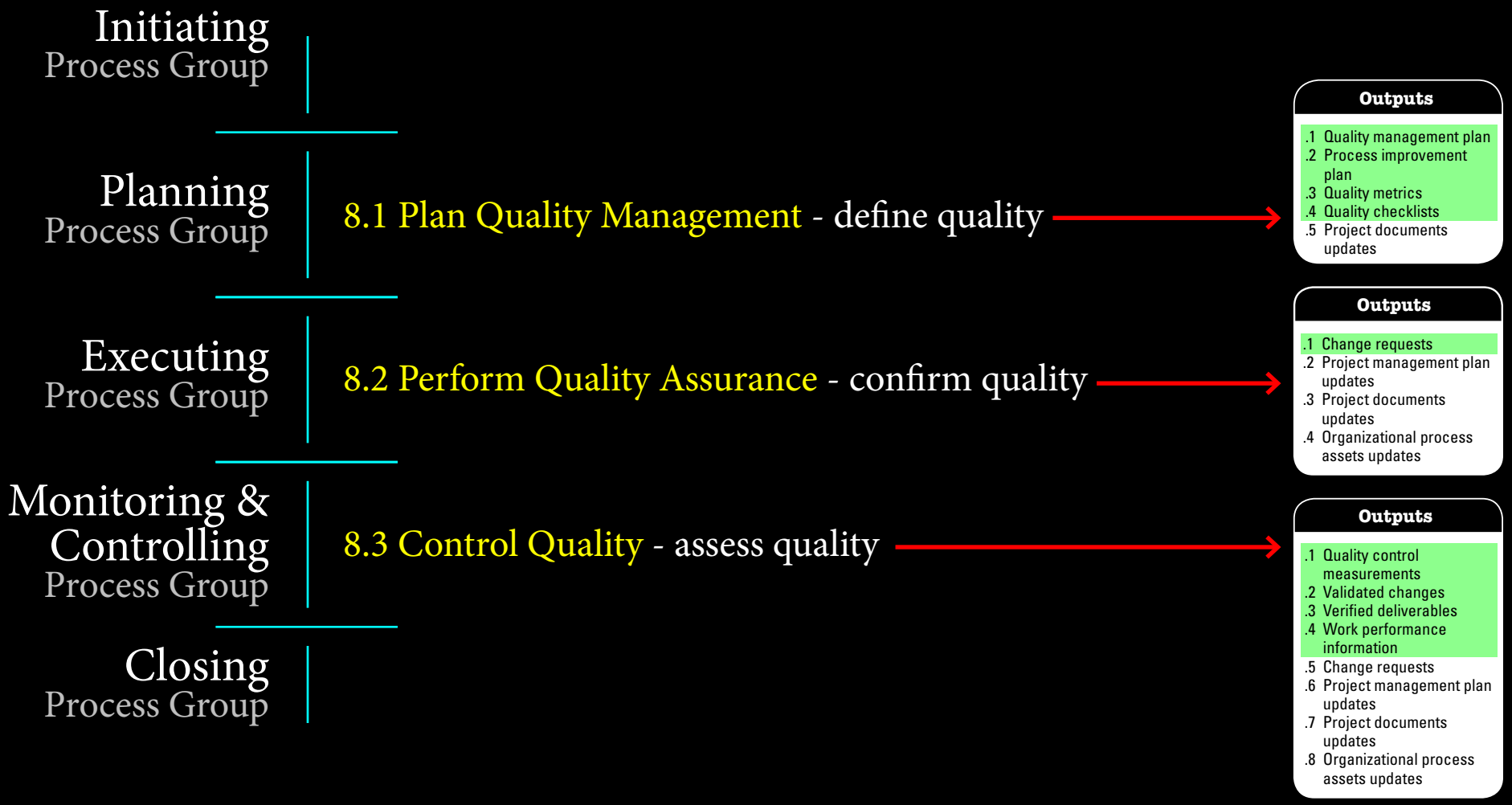
Selamat jalan

“Safe Trip”
Malay (Rumi, Roman script)

Project Quality Management