Eco-Ways
LIMITED

Project Quality Management

Project Quality Management

MODULE OBJECTIVES

At the end of this session, participants will be able to:

- **Identify** the 3 Project Quality Management Processes.
- **Understand** the need and importance of meeting quality requirements for any project.
- **Explain** the Inputs, Tools & Techniques that are required for the 3 Project Quality Management Processes.

Project Quality Management

Project Quality Management processes include **all the activities** of the performing organization that determines **quality policies**, **objectives**, and **responsibilities** so that the project will satisfy the needs for which it was undertaken. It simply means creating and following policies and procedures to ensure that the project meets the requirement for which it was set out for with regards to **Quality**.

It implements the quality management system through the policy, procedures, and processes of **Plan Quality**, **Manage Quality**, and **Control Quality**, with **continuous process improvement** activities conducted throughout, as appropriate.

Project Quality Management addresses the management of the **project** and the **Deliverable** (**product, service & result)** of the project. And the basic approach to project quality management is compatible with **(ISO) quality standards.**

International Organization for Standardization

Project Quality Management

What do we mean by Quality & Grade?

Quality

- It means the degree to which something is excellent.
- Standard of Goodness.
- Is the degree to which a set of inherent characteristics fulfill requirements (PMI, 2012).

The stated and implied needs, wants and expectations of the stakeholders are the inputs to developing project quality requirements.

Grade

Grade is a category assigned to products or services having the same functional use but different technical characteristics.

For example, a Nokia phone can be of high quality (no obvious defects, etc) and low grade (a limited number of functions- calls & text messages), or of low quality (many defects, poorly organized user documentation) and high grade (numerous functions- calls, text messages, camera, mp3, bluetooth, etc).

Low quality is always a problem, but Low grade may not be! The project manager and the project management team are responsible for determining and delivering the required levels of both quality and grade.

Project Quality Management

Plan Quality

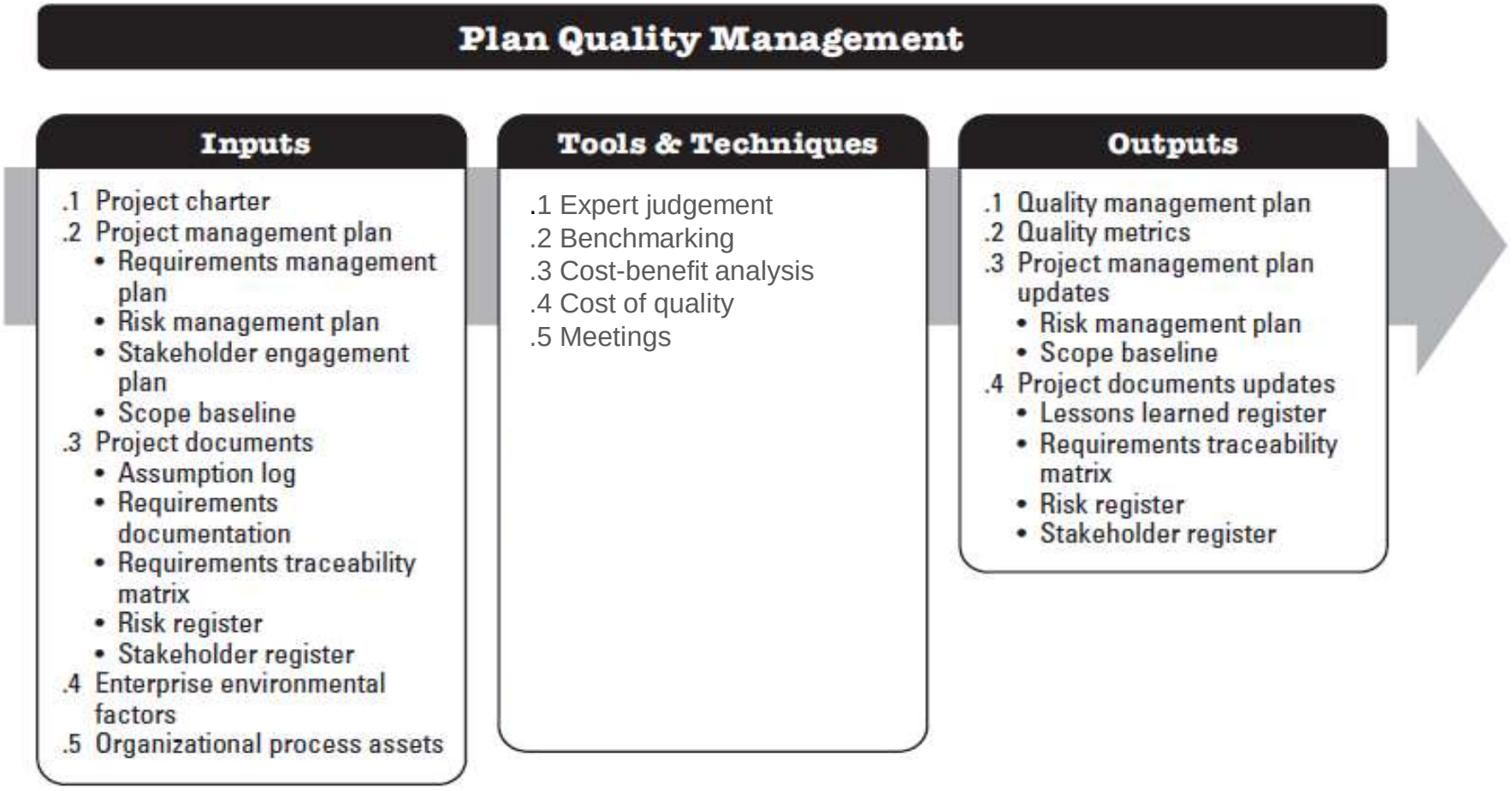
Plan Quality involves **identifying** which quality standards are relevant to the project and its deliverables and **documenting** how the project will demonstrate compliance with relevant quality requirements.

In other words, the *Plan Quality* process is concerned with targeting quality standards that are relevant to the project and product at hand and devising a plan to meet and satisfy those standards.

It is one of the **key processes** when engaging the **Planning Process Group** and during development of the **project management plan**, and should be **performed in parallel** with the other project planning processes.

To avoid "**reinventing the wheels",** the Project Manager should identify standards from existing ones such as the ISO 9000, National Building Code, etc.

Project Quality Management



Project Quality Management

Plan Quality

INPUTS

Project Charter

- Project charter provides the high-level project description, product characteristics, related success criteria that will influence the Quality Management Plan

Project Management Plan

- This document is used to develop the quality management plan with information from the followings Scope Baseline, Requirements Management Plan, Stakeholder Engagement Plan, etc

Project Documents

- Project documents are used to support the inputs for this process. Examples of these are: Assumption Log, Requirements Documentation, Stakeholders Register, Requirements Traceability Matrix, etc..

Enterprise Environmental Factors (EEF)

- The EEF that can influence this process are: Government regulations, rules, guidelines on specific application area, operating conditions, etc.

Organizational Process Assets (OPA)

- Organizational quality policies, procedures, guidelines, historical databases, lesson learned from previous projects are some of the OPA that influence this process

Project Quality Management

Plan Quality

TOOLS & TECHNIQUES

1. Expert Judgement

Expertise should be considered from individuals or groups with specialized knowledge or training in the following areas: Quality Assurance, Quality Control, Quality Systems, etc.

2. Benchmarking:

This is a process of comparing actual or planned project practices to those of comparable projects to identify **best practices, generate ideas for improvement** and provide a basis for measuring performance.

Project Quality Management

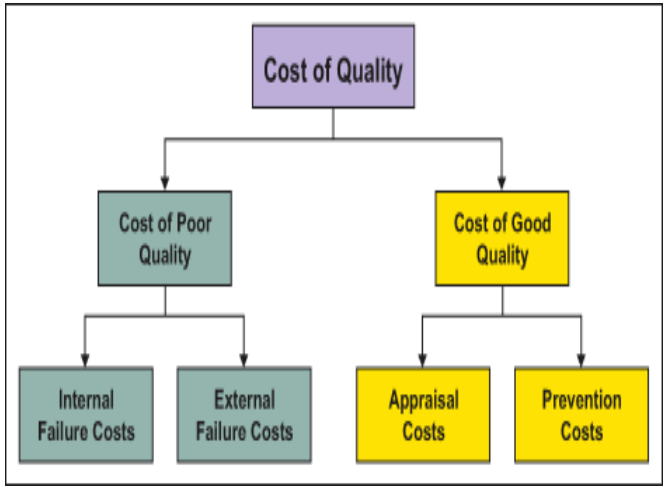
Plan Quality

TOOLS&TECHNIQUES

3. Cost-Benefit Analysis

Quality planning must consider **cost-benefits tradeoffs**. The **COST** of having quality steps or processes in place compared to the **BENEFIT** that you will derive from getting quality product from these processes is what Cost-benefit is all about.

4. Cost of Quality (COQ)



The Cost of Quality (COQ) is the total cost to produce the product or service of the project according to the quality standards.

These total cost include all the work necessary to meet the product requirements whether the work was planned or unplanned. It also includes the costs of work performed because of nonconforming quality requirements.

Project Quality Management

Plan Quality

TOOLS&TECHNIQUES

4. Cost of Quality (COQ)

Three costs are associated with the **Cost of Quality**:

A. **Prevention Costs:** Prevention means keeping defects out of the hands of customers. *Prevention costs* are the costs associated with satisfying customer requirements by producing a product without defects. Such cost could include training the personnel, proper equipment, etc

B. **Appraisal Costs:** *Appraisal costs* are the costs expended to examine the **product** or **process** and make certain the requirements are being met. Appraisal costs might include costs associated with aspects such as **inspections** and **testing**.

C. **Failure Costs:** *Failure costs* are what it costs when things don't go according to plan. Failure costs are also known as **cost of poor quality**. Two types of failure costs exist:

Internal failure costs: These result when customer requirements are not satisfied while the product is still in the control of the performing organization. Internal failure costs might include **corrective action**, **rework**, **scrapping**.

External failure costs: These occur when the product has reached the customer who determines that the requirements have not been met. Costs associated with external failure costs might include **inspections at the customer site**, **returns**, **warranties**.

5.Meetings Project teams may hold meetings to develop the Quality Management Plan.

Project Quality Management

Plan Quality

OUTPUTS

Quality Management Plan

- The quality management plan describes how the project management team will implement the performing organization's quality policy. The quality management plan is a component of the project management plan. It describes how the project management team plans to meet the quality requirements set for the project. It includes-Quality standard, that will be used for the project, Quality roles & responsibilities, Quality tools that will be used, etc.

Quality Metrics

- A quality metric, is a system of measurement (Kg, M, etc). It describes a project or product attribute and how the control quality process will measure it. A measurement is an actual value and it is used by the perform quality assurance and control quality process.

Project Management Plan & Documents (Artifacts) Updates

In an Agile approach with iterations, approved change request can trigger a change in some component of the Project Management Plan, such as the Risk management Plan, Scope Baseline. Others are Stakeholder register, Lesson learned register, etc.

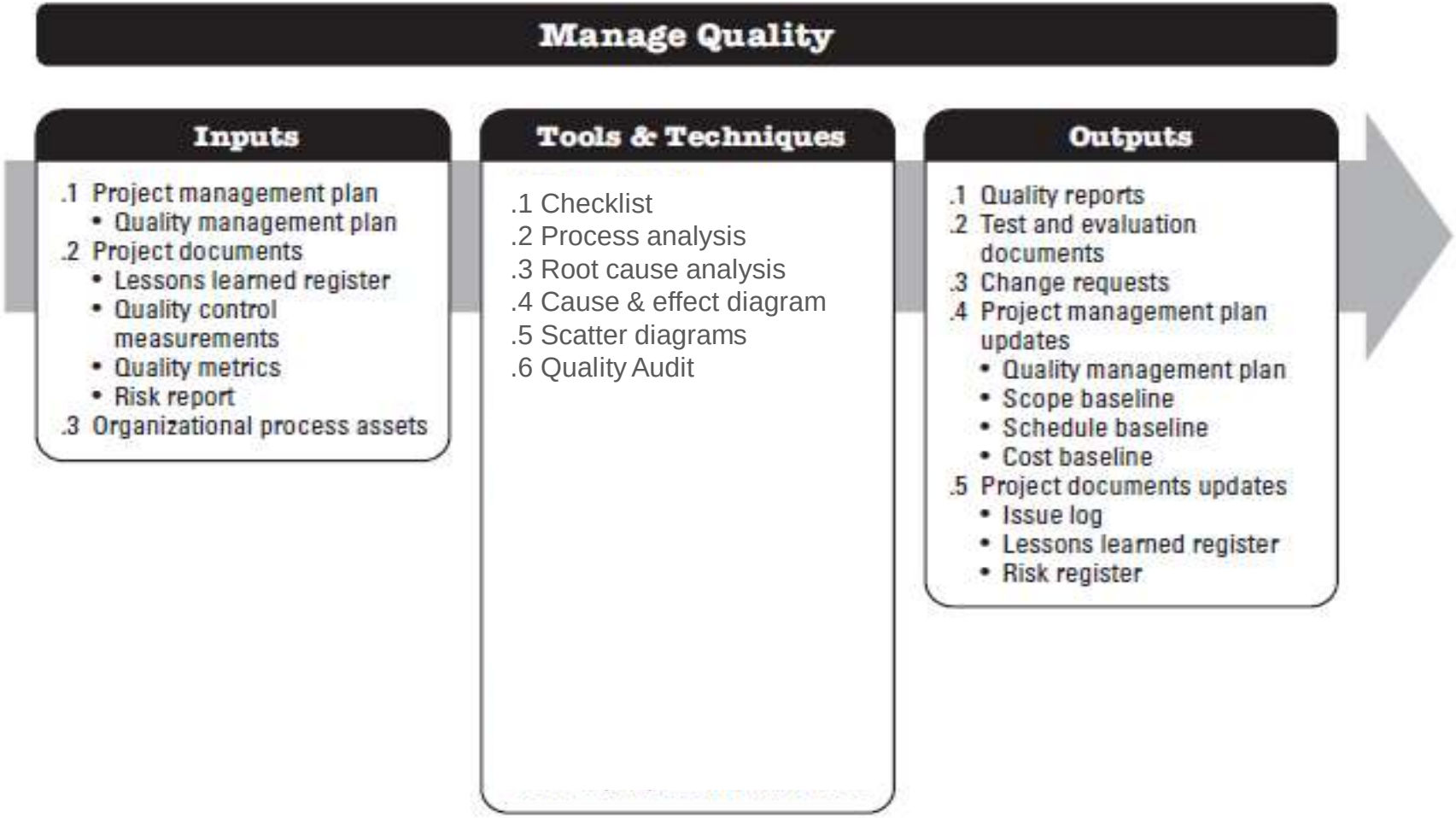
Project Quality Management

Manage Quality

The ***Manage Quality*** process involves translating the quality management plan into executable quality activities during the course of executing the project . Manage Quality will use the data and results from the Control Quality process to reflect the overall quality status of the project to the stakeholders

Manage quality is sometimes called **quality assurance** of the project. It could be that a quality assurance department or organization is assigned to the project to oversee these processes. In that case, quality assurance might be provided to (rather than by) the project team. However, Manage Quality has a broader definition as it is concerned with both quality assurance and also with the product design aspect and process environment

Project Quality Management



Project Quality Management

Manage Quality

INPUTS

Project Management Plan

- The Quality Management Plan which is a component of the Project Management Plan is used during this process. It describes how quality assurance and continuous process improvement will be performed within the project.

Project Documents

- The Project Documents that may be considered during this process include Lesson learned register, Quality control measurements, Quality metrics, etc.

Organizational Process Assets (OPA)

- The OPA that can influence this process are: Organizational quality management systems that includes policies, procedure and guidelines, Quality templates, lesson learned repository, etc.

Project Quality Management

Manage Quality

TOOLS & TECHNIQUES

1. Checklist: This is a structured tool used to verify that a set of required steps has been performed or to check if a list of requirements has been satisfied.

2. Process Analysis: Process analysis is a part of continuous improvement effort on a project and focuses on identifying improvements that might be needed in processes

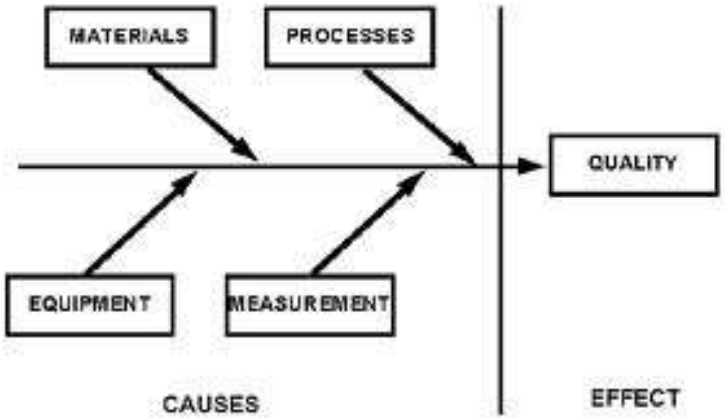
Project Quality Management

Manage Quality

TOOLS&TECHNIQUES

3. Root Cause Analysis (RCA): They are analytical techniques to determine the basic underlying reason that causes variance, defect or risk. When all root causes for a problem are removed, the problem does not recur.

4. Cause-and-Effect Diagram: They are also called **Fishbone** or **Ishikawa**s or Why-Why diagrams. They are used to figure out what caused a defect. RCA diagrams help you **see all of the possible causes** in one place so you can think of how you might prevent the defect in the future.

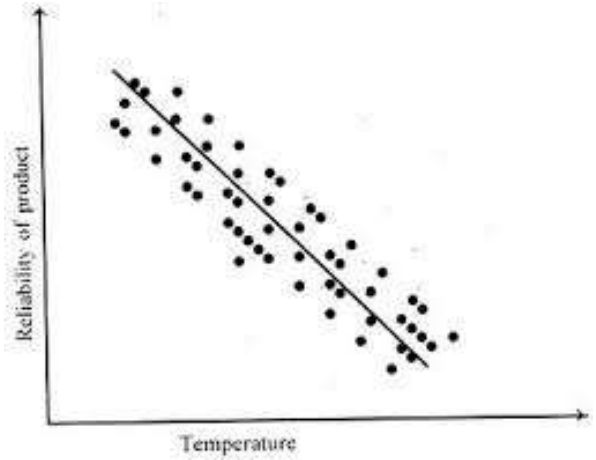


Project Quality Management

Manage Quality

TOOLS & TECHNIQUES

6. Scatter Diagrams: A scatter diagram is a graph that shows the relationships between two variables. One variable is plotted on the horizontal axis and the other is plotted on the vertical axis. The pattern of their intersecting points can graphically show relationship patterns.



7. Quality Audit

Audit is a structured independent process used to determine if project activities comply with organizational and project policies, processes and procedures. Quality audit is usually conducted by a team that is external to the project.

Project Quality Management

Manage Quality

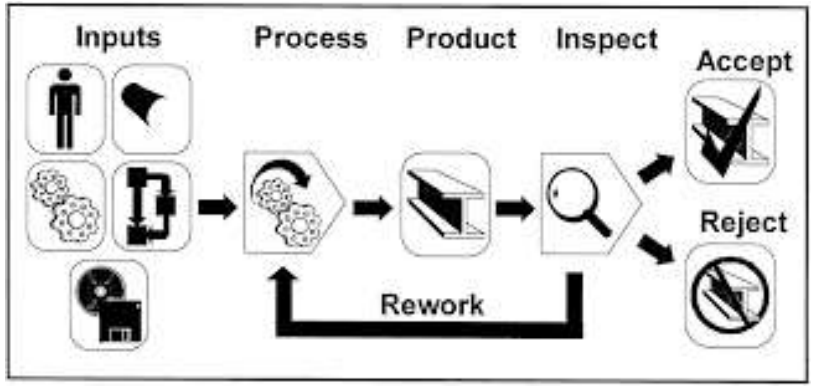
OUTPUTS

Quality Reports	• The information provided in a quality report may include all quality management issues escalated by the team, the recommendations for process, product and product improvement, etc.
Change Request	• Change request are used to take corrective actions, preventive actions or perform defect repairs.
Project Management Plan & Document (Artifacts) Updates	• Components of the Project Artifacts that may be updated are: Quality management plan, scope, schedule, & cost management baselines, Issue logs, Lesson learned register, risk register
Test and Evaluation Documents	• These can be created based on industry needs and organization's templates. They are used to evaluate the achievement of quality objectives

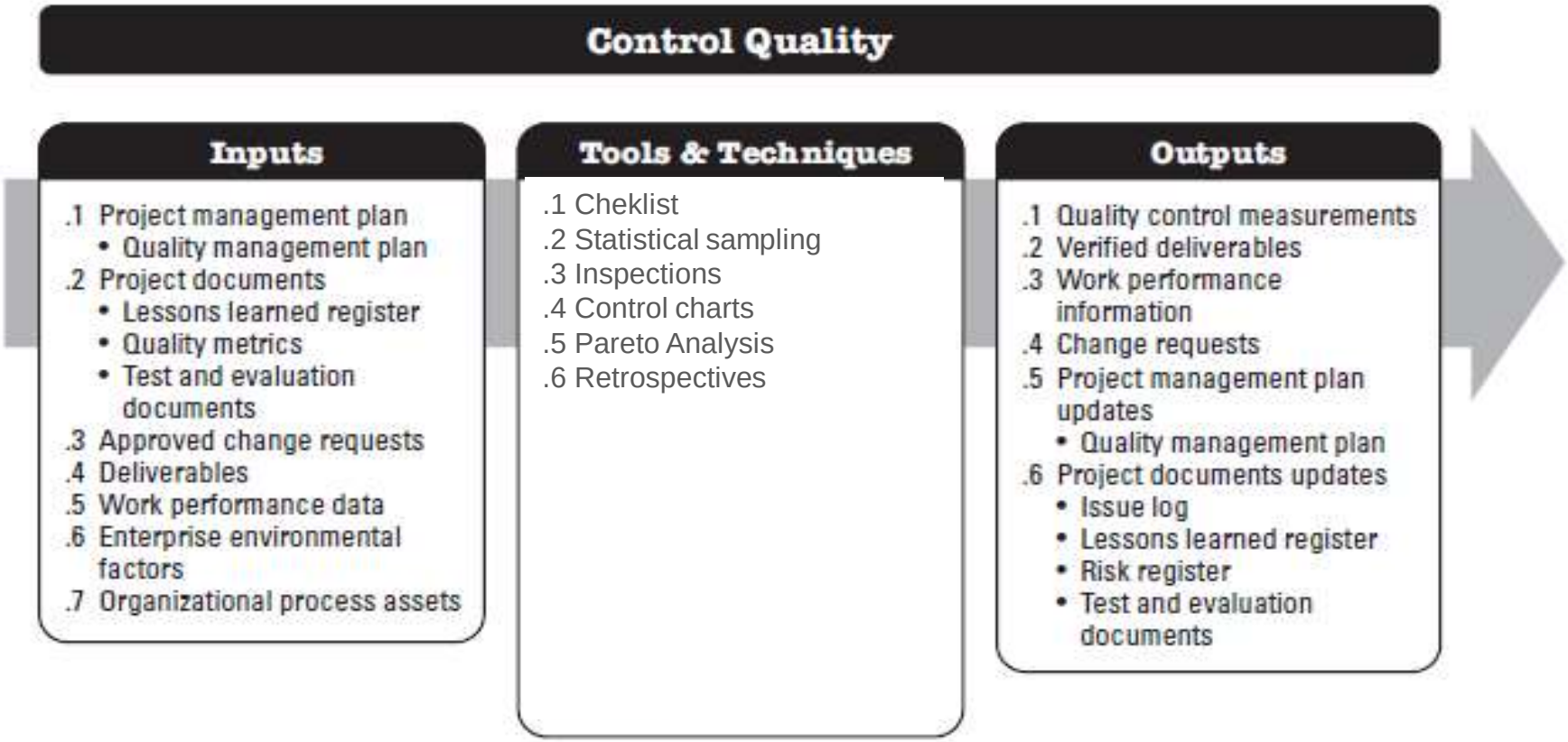
Project Quality Management

Control Quality is the process of monitoring and recording **specific project results-** (DELIVRERABLE) in order to assess performance and ensure the project outputs are complete, correct and meet customer expectations. To also determine whether they comply with relevant **quality standards** (*for both the process and the product*) set out in the **Plan Quality Process** and **identifying** ways to **eliminate** causes of **unsatisfactory results.**

In other words, the **end product** should conform to the requirements and product description defined during the Planning processes. *It should be performed throughout the project.*



Project Quality Management



Project Quality Management

Control Quality

INPUTS

Project Management Plan & Project Document (Artifacts)

- The project artifacts contains the quality management plan which is needed to control quality because it describes how quality control will be performed within the project. While others are Lesson learned register, etc

Deliverables

- Any unique and verifiable product, service, result, etc from the project will have to be tested by this process.

Approved Change Request

- As part of the Perform Integrated Change Control process, some request may be approved, while some rejected or place on hold. Approved change request may be for defect repair, revised work methods, etc. these will be needed as input to this process

Enterprise Environmental Factors & Organizational Process Assets

- Quality management software, rules, standards, government or industry standards are part of the EEF that can influence this process. While the OPA are organization's quality standards and policies, work guidelines, issue and defect reporting procedure, etc.

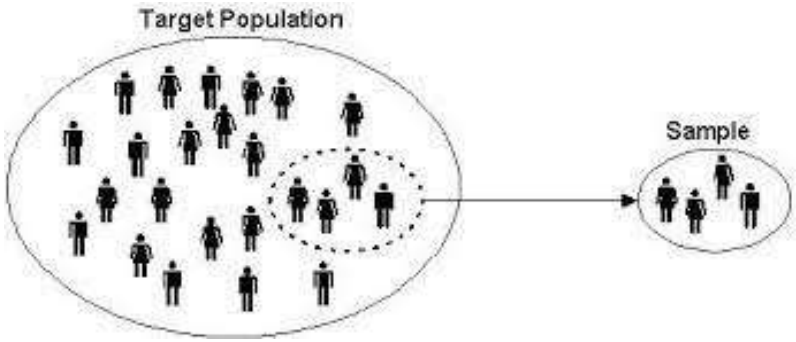
Project Quality Management

Control Quality

TOOLS & TECHNIQUES

1. Checklist: This is a structured tool used to verify that a set of required steps has been performed or to check if a list of requirements has been satisfied.

2. Statistical Sampling: Involves choosing part of a **population of interest** for **inspection.** It involves taking a sample number of parts from the whole population and examining them to determine whether they fall within acceptable variances.



Project Quality Management

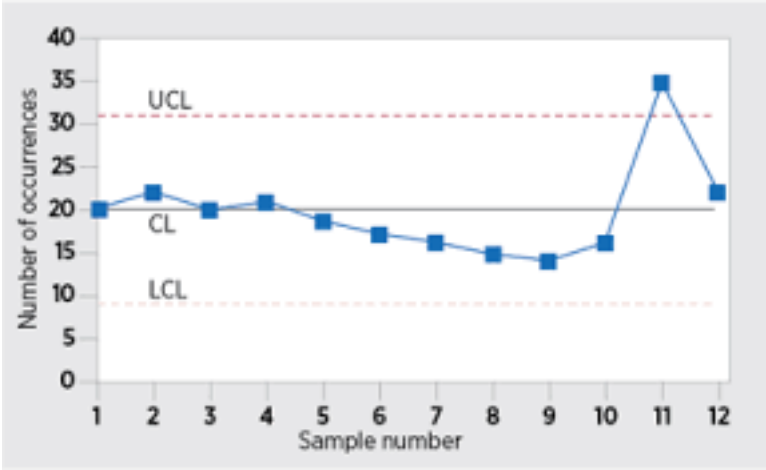
Control Quality

TOOLS & TECHNIQUES

3. Inspection

Inspection includes activities such as *measuring, examining, and validating* to determine whether work and deliverables meet requirements and product acceptance criteria. Inspections are variously called ***reviews, product reviews, audits, and walkthroughs***.

4. Control Charts A control chart's purpose is to determine whether or not a process is **stable** or has **predictable performance**. Control charts may serve as a data gathering tool to show when a process is subject to special cause variation, which creates an out-of-control condition.



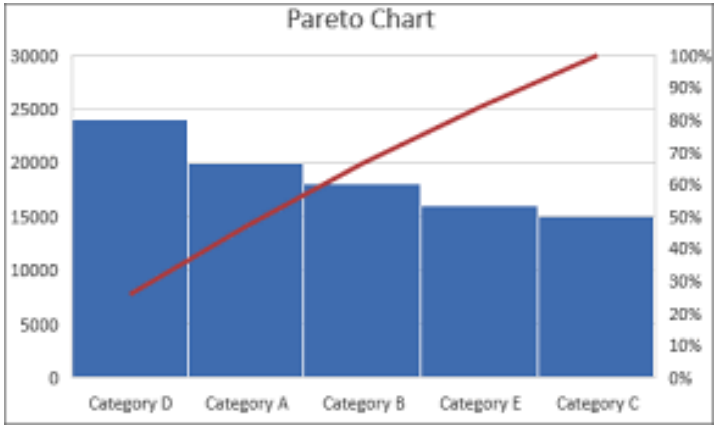
Project Quality Management

Control Quality

TOOLS & TECHNIQUES

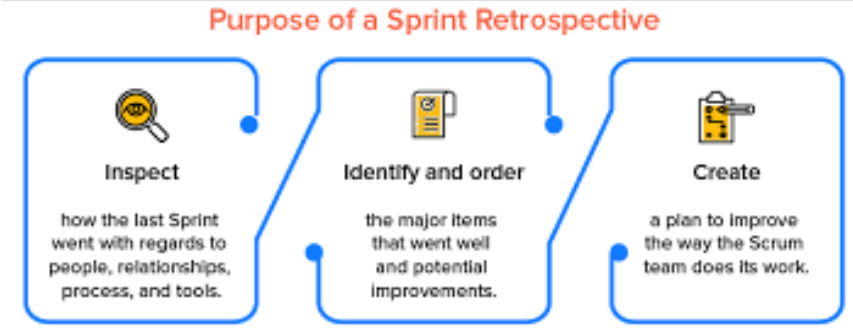
5. Pareto Chart

The Pareto principle is very helpful in project management. A Pareto chart is a histogram that divides discrete observations into several categories to identify the "vital few." The phrase "vital few" is used to describe the elements that have the maximum impact on the solution.



6. Retrospectives

An Agile retrospective is a meeting that's held at the end of an iteration or sprint or phase. During the retrospective, the team reflects on what happened in the iteration and identifies actions for improvement going forward.



Project Quality Management

Control Quality

OUTPUTS

Quality Control Measurements	• These are the documented results of the control quality activities (tests carried out on the deliverables).
Verified Deliverables	• The ultimate goal of this process is to determine the correctness of DELIVERABLES. Verified deliverables are those deliverables that met requirements and are accepted by the PM. These verified deliverables become the input to the Validate Scope process
Work Performance Information	• These are the performance data collected from various controlling processes that have been analyzed.
Change Request	Change request are used to take corrective actions, preventive actions or perform defect repairs. And they could sometimes trigger changes to the project management plan.
Project Management Plan & Documents (Artifacts) Updates	Components of the project management plan that may be updated are: Quality Management Plan, etc, while Issue log, Lesson learned register, test and evaluation documents etc are part of this project documents that may be updated.

Project Quality Management