

# PROJECT MANAGEMENT

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## Topic: Understanding Risk in Project Management

### ◆ What is Risk?

- In project management, **risk = uncertainty**.
- It refers to **events that may or may not happen in the future**.

### ◆ Types of Risks

- **Negative Risks (Threats)**: Bad events that could harm the project.  
 Example: bad weather, product becoming obsolete.
- **Positive Risks (Opportunities)**: Good events that could benefit the project.  
 Example: new market opening, unexpected opportunity.

### ◆ Why Risk Matters

- Project managers **always plan ahead** — especially in **traditional/predictive models**.
- Since risks are uncertain, **planning helps reduce surprises** and prepares for both good and bad outcomes.

### ◆ How to Handle Risks

- **Predict Risks**: Identify what could happen.
- **Quantify Risks**: Measure how likely and how severe each risk is.
- **Mitigate Risks**: Take steps to minimize negative effects or maximize positive ones.

### ◆ Key Takeaway

Risk is not always bad — it simply means *uncertainty*.

Good project managers plan for both threats **and** opportunities.  


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Here's a **concise, beginner-friendly note** from your transcript on **Project Risk Management** 

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## Project Risk Management Overview

### ◆ Purpose

- Identify and manage risks that can impact the **overall project plan**.
- Helps in **planning, mitigating, and monitoring uncertainty**.

### ◆ Types of Risks

1. **Individual Project Risk**: Event affecting **specific objectives** (can be positive or negative).

## 2. Overall Project Risk: Effect of uncertainty on the entire project.

- Both need to be **managed throughout the project**.
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### ◆ Risk Management Process

- Risk management is part of **project management knowledge areas**.
- There are **7 processes** across:
  - **Planning**
  - **Executing**
  - **Monitoring & Controlling**

## 1 Plan Risk Management

- Create a **Risk Management Plan**:
  - Defines **how risk activities occur**.
  - Identifies **key stakeholders** and their roles.
  - Describes **how to identify, analyze, respond to, and monitor risks**.
- Companies have different **risk tolerances**:
  - High risk → high reward
  - Conservative → low risk

## 2 Identify Risks

- Use the **Risk Register** to document each risk.
- **Team involvement** is crucial — they know the processes and potential risks best.

## 3 Analyze Risks

- **Qualitative Analysis**: Prioritize risks based on **probability & impact**.
- **Quantitative Analysis**: Use **data and simulations** to evaluate overall impact, especially in **large projects**.

## 4 Plan Risk Responses

- Develop **strategies** for individual and overall project risks.
- Include **specific actions** and **cost estimates**.
- Contingencies from **budget management** are applied here.

## 5 Execute Risk Responses

- Implement planned actions as risks occur.
- Aim to **reduce exposure**.

## 6 Monitor & Control Risks

- Continuously **evaluate effectiveness** of responses.
  - New risks/opportunities may arise — **ongoing process**.
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### ◆ Key Takeaways

- Risk = **uncertainty**; can be **positive or negative**.
  - Risk management is **planned, proactive, and continuous**.
  - Proper risk management ensures **project objectives are protected** while leveraging opportunities.
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Here's a **concise note** on **Risk Management Plan** from your transcript 

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## Risk Management Plan (RMP)

### ◆ Purpose

- Documents **how the project team will identify, analyze, prioritize, and respond to potential risks or opportunities**.

### ◆ Key Sections of RMP

1. **Strategy for managing risks** – overall approach.
2. **Methodology for identifying risks** – how risks will be found.
3. **Stakeholder roles & responsibilities** – who does what.
4. **Risk categories** – grouping similar risks.
5. **Risk tolerance summary** – company's appetite for risk.
6. **Risk probabilities** – likelihood of each risk.
7. **Risk impacts** – effect on project objectives.
8. **Resources needed** – people, tools, budget.
9. **Tracking & monitoring** – how progress and responses will be checked.

### ◆ Key Takeaway

The Risk Management Plan is a **living document** that guides the team in proactively handling uncertainty throughout the project.

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## ❖ Identifying Project Risks

### ◆ Purpose

- Identify **potential risks or opportunities** with the **entire project team and stakeholders**.
- Collaboration creates **ownership** and ensures everyone who may respond to risks is involved.
- Risks can be **negative (threats)** or **positive (opportunities)**.

### ◆ Outputs

- **Risk Register:** Detailed list of identified risks.
  - **Risk Report:** Summary of overall risk exposure.
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### ◆ Methods to Identify Risks

#### 1. Review Project Documents

- Look for uncertainties in **contracts, scope, schedule, budget**.
- Analyze assumptions and past similar projects.

#### 2. Brainstorming

- Gather team to generate **all possible risks** (no criticism).
- Ground rules:
  - State objectives clearly.
  - Generate ideas (round-robin or anonymous notes).
  - Encourage **out-of-the-box thinking**.

#### 3. SWOT Analysis

- Examine **Strengths, Weaknesses, Opportunities, Threats**.
- Helps identify risks from a **high-level perspective**.

#### 4. Interviews

- Ask **experienced PMs, stakeholders, subject matter experts**.
- Open questions: "*What could go wrong?*", "*What opportunities might arise?*"

#### 5. Delphi Technique

- Collect **anonymous expert opinions** individually to avoid **group bias**.
- Steps:
  1. Identify experts.
  2. Send **questionnaire #1** to list risks/opportunities.
  3. Summarize responses → send **questionnaire #2** for ranking & feedback.

4. Repeat until **consensus** is reached.
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◆ **Key Takeaways**

- Risk identification is **team-driven and iterative**.
  - Use **multiple techniques** to ensure comprehensive coverage.
  - Document in **Risk Register & Risk Report** for further analysis and response planning.
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❖ **After Risk Identification**

Once risks (and opportunities) are identified, two key documents are created:

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**1 Risk Register**

- **Purpose:** Collects and tracks all identified risks.
  - **Content:**
    - Log of potential risks
    - Prioritized list based on **impact & probability**
  - **Use:** Serves as input for **risk analysis** and response planning.
  - **Example Resource:** "*What is a Risk Register: A Project Manager's Guide*"
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**2 Risk Report**

- **Purpose:** Summarizes the **company's overall exposure** to risks.
  - **Content:**
    - Key threats and opportunities
    - High-level summary for **corporate management**
  - **Use:** Communicates risk **clearly and succinctly** at a management level.
  - **Example Resource:** "*Risk Reporting*"
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### Question 1

Which of the following is the document used to identify risks, analyze their impact, determine their likelihood and define a response to the risk? (Select best answer)

- Cost Management Plan
- **Risk Management Plan**
- Schedule Management Plan

### Question 2

During risk analysis, we have identified the risk of potential reduction of staff that could affect our project. This situation best describes: (Select best answer)

- **Organizational Risk**
- External Risks
- Technical Risk

### Question 3

What are some methods used in identifying risks?: (Select all that apply)

- **Delphi Technique**
- **Brainstorming**
- **SWOT Analysis**
- Monte Carlo Simulation

### Question 4

“No idea is a bad idea” is a common theme of which of the following risk identification methods? (Select best answer)

- **Brainstorming**
- SWOT Analysis
- Delphi Technique

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## Qualitative Risk Analysis – Simplified

### Purpose:

- To quickly assess the importance of each identified risk.
- Helps decide which risks need further, detailed quantitative analysis.
- Low-probability or low-impact risks might just be logged in the **risk register**.

### How It Works:

1. **Prioritize Risks:**
  - Evaluate each risk based on **probability** (chance of occurring) and **impact** (effect on project).
  - Consider factors like:

- **Urgency:** How soon might the risk occur?
- **Proximity:** How long until it affects the project?
- **Dormancy:** How long after occurrence will it impact the project?
- **Manageability:** How easily can we manage it?
- **Controllability:** Can we control it?
- **Detectability:** Can we detect warning signs?
- **Connectivity:** Does it trigger other risks?
- **Strategic Impact:** How does it affect company goals?
- **Propinquity:** How is it perceived by stakeholders?

## 2. Use a Probability-Impact Matrix:

- A grid that visually plots **likelihood vs. impact** for each risk.
- Helps determine **risk levels:** low, moderate, or high.

## 3. Examples of Risk Levels:

- **Data security breach:** Moderate probability, high impact → **High risk**
- **Email server downtime:** Low probability, low impact → **Low risk**
- **Supply chain delay:** High probability, low impact → **Moderate risk**
- **Material theft:** Low probability, moderate impact → **Low risk**

### Outcome:

- **High-risk items** → Require quantitative analysis and detailed response planning.
- **Low-risk items** → Logged and monitored in the **risk register**.

### Key Point:

Qualitative analysis is **fast, subjective, and focused on decision-making** about which risks warrant deeper investigation.

Project Risk	Probability	Impact to Project	Risk Level
Data Security	Moderate	High	High
Email Server Failure	Low	Low	Low
Delayed Supplier	High	Low	Moderate
Material Theft	Low	Moderate	Low

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## Quantitative Risk Analysis – Simplified

### Purpose:

- After performing **qualitative analysis**, we focus on **high-priority risks** to understand their potential **impact on the project** in numerical terms.
  - Helps project managers **make better decisions** about mitigation, avoidance, and contingency planning.
  - Provides an estimate for **Contingency Reserves** (extra time or budget set aside for risks).
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## Common Tools for Quantitative Risk Analysis

### 1. Expected Monetary Value (EMV)

- Calculates the **average impact of risks in monetary terms**.
- Formula:  
[  
     $EMV = \text{Probability} \times \text{Impact}$   
]
- Helps estimate **overall project risk exposure**.
- Example: A 20% chance of a \$50,000 loss →  $EMV = 0.2 \times 50,000 = \$10,000$

### 2. Decision Tree Analysis

- A **visual tool** to map out decisions, risks, and their probabilities.
- Helps **compare options** and make informed decisions under uncertainty.
- Each branch represents:
  - A possible decision
  - Its associated risk
  - Probability of occurrence
  - Impact if the risk occurs

### 3. Monte Carlo Simulation

- A **computer-based simulation** that runs thousands of scenarios to predict outcomes.
  - Useful for **large projects with multiple risks**.
  - Provides a **range of possible project results** rather than a single number, helping better plan for uncertainty.
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### Key Points:

- Quantitative risk analysis is **data-driven and numerical**.
  - It's especially useful for **budgeting, scheduling, and contingency planning**.
  - Focuses on **high-priority risks** identified from qualitative analysis.
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## Risk Response Strategies

When a project team identifies and analyzes risks, they develop strategies to **respond** to those risks. These strategies help **minimize negative impacts** (threats) and **maximize positive impacts** (opportunities).

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### 1. Escalation

- **Negative risk (threat)**: Escalate to the project sponsor if the team cannot handle it or if it affects the company significantly.
- **Positive risk (opportunity)**: Escalate if it's a breakthrough or major opportunity.

### 2. Avoidance (Negative risk) / Exploit (Positive risk)

- **Avoidance**: Take action to eliminate or protect against the threat.
- **Exploit**: Take action to ensure the opportunity happens and capture its benefits.

### 3. Transference / Sharing

- **Transference (Negative risk)**: Shift the risk to a third party (e.g., insurance for material theft).
- **Sharing (Positive risk)**: Share potential benefits with another organization or partner.

### 4. Mitigation / Enhancement

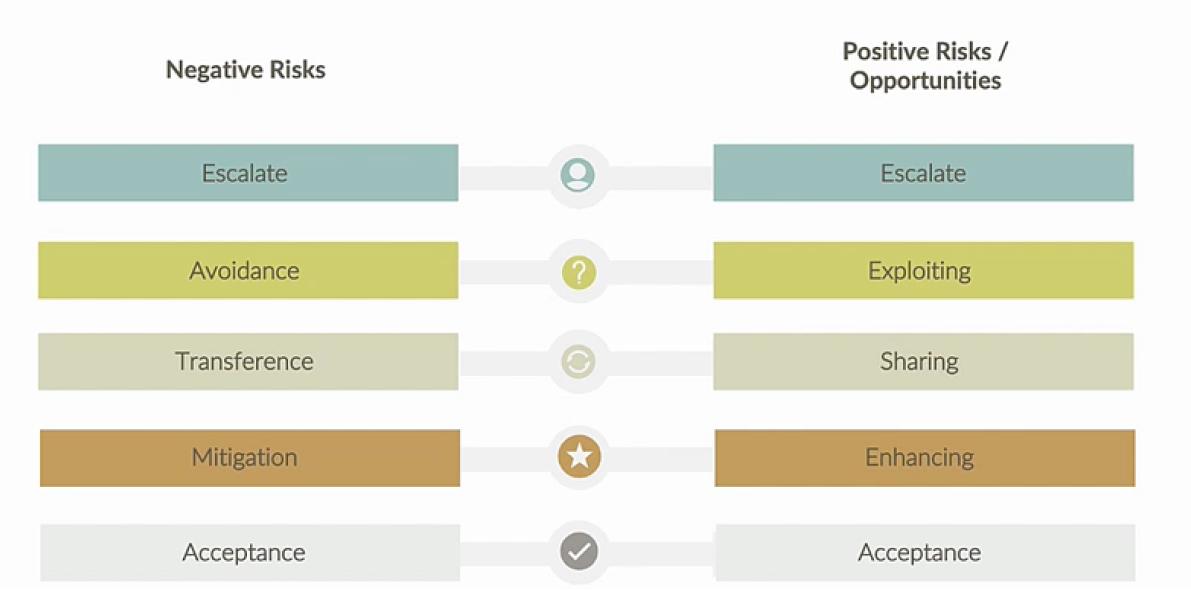
- **Mitigation (Negative risk)**: Reduce the **probability** or **impact** of a threat.
- **Enhancement (Positive risk)**: Increase the chance that the opportunity occurs.

### 5. Acceptance (Both negative and positive risks)

- Accept the risk or opportunity **without active intervention**.
  - Suitable when the impact is minor, the probability is low, or it's not cost-effective to act.
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## Key Points

- Strategies should be **developed by the project team** and documented in the **risk response plan**.
- A well-prepared plan allows **quick action** if risks or opportunities occur.
- Negative risks = threats → reduce, transfer, avoid, or accept.
- Positive risks = opportunities → exploit, enhance, share, or accept.



## Monitoring Risks during Execution

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### Steps to Monitor Risks

Once risk responses are planned and the project is underway, the team must **continuously monitor** and manage risks to ensure the project stays on track. The four main steps are:

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#### 1. Monitor for Identified Risks

- Check if any known risks have occurred or are about to occur.
- Examples: Missed milestones, supplier delays, resource shortages.

#### 2. Implement Risk Responses

- Activate the pre-defined risk response plans.
- Ensure that the **risk owner** or responsible person is actively managing the risk.

#### 3. Evaluate the Response

- Assess whether the response is effective.
- Ask: Is it working as intended? Has it caused new problems or risks?

#### 4. Continuously Analyze for New Risks

- Risks can emerge at **any time** during the project.
  - Regularly perform risk identification and analysis for new threats or opportunities.
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### Key Points

- Monitoring is **continuous** and not just a one-time activity.
  - Effective risk monitoring ensures **quick action** and **minimizes project disruptions**.
  - Both **negative risks (threats)** and **positive risks (opportunities)** should be tracked.
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## Question 1

When evaluating risks, the project team follows an order for analysis. Which of the following is the correct order for risk analysis? (Select best answer)

- Identify Risks, Quantitative Risk Analysis, Qualitative Risk Analysis,
- Document Review, Brainstorming, Delphi Technique
- **Identify Risks, Qualitative Risk Analysis, Quantitative Risk Analysis**

 **Correct Answer:**

**Identify Risks, Qualitative Risk Analysis, Quantitative Risk Analysis**

**Explanation:**

When evaluating project risks, the **standard order** followed in the **Project Risk Management process (as per PMBOK)** is:

1. **Identify Risks** – List all potential risks that could affect the project.
2. **Qualitative Risk Analysis** – Prioritize and assess the probability and impact of each identified risk using qualitative methods (like risk matrix).
3. **Quantitative Risk Analysis** – Numerically analyze the effect of prioritized risks on overall project objectives (e.g., using Monte Carlo simulation or decision tree analysis).

Hence, the correct sequence is:

 **Identify Risks → Qualitative Risk Analysis → Quantitative Risk Analysis**

## Question 2

Which analysis technique do project managers use to make relatively quick decisions on whether a potential risk will be impactful enough to warrant further analysis? (Select best answer)

- Risk Identification
- Quantitative Risk Analysis
- Risk to Data Security
- **Qualitative Risk Analysis**

### Question 3

When conducting qualitative risk analysis you should prioritize risks based on probability of occurrence and the \_\_\_\_\_. (Select best answer)

- Impact to the Project
- Detectability of risk
- Cost

### Question 4

Which quantitative analysis tool allows project managers to visually compare different courses of action against each other through the use of decision nodes and branches? (Select best answer)

- Qualitative Risk Analysis
- Monte Carlo Simulations
- Decision Tree
- Expected Monetary Value Table

### Question 5

What is another name for a risk that has a positive project impact? (Select best answer)

- Opportunity
- Problem
- Weakness
- Threat

### Question 6

Which is NOT a risk response strategy? (Select best answer)

- Transference
- Deletion
- Mitigation
- Avoidance
- Escalate

### Question 7

When our projects are in the execution phase we need to continuously monitor risks.

Which of the following below are steps in monitoring risks? (Select all that apply)

- Monitor for identified risks
- Evaluate the risk response.
- Continuously analyze for new risks.
- Implement risk responses

# Project Quality Management – Overview

## ◆ What is Quality Management?

- It's about **meeting stakeholder expectations** and ensuring project deliverables meet required standards.
  - It's **not a one-time task** — it's an **ongoing process** throughout the project.
  - Focuses on **preventing or correcting errors** and **improving performance**.
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## Three Key Processes in Project Quality Management

### 1. Plan Quality Management (Planning Phase)

- The **first step** — always start with a plan.
  - The project manager creates a **Quality Management Plan** document.
  - This involves:
    - Identifying **quality requirements** for the project and its deliverables.
    - Defining the **standards or level of quality** required for success.
  - Purpose: To ensure the project complies with the required **quality expectations**.
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### 2. Manage Quality (Execution Phase)

(Also called *Quality Assurance*)

- Ensures **quality is built into the process** from the start.
- Uses various **quality management tools** to check if processes lead to quality outcomes.
- Focus question:

“How do we ensure we’re producing outputs that meet defined quality standards?”

- It’s about **process improvement** and **proactive prevention** of defects.
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### 3. Control Quality (Monitoring & Controlling Phase)

- Involves **measuring, monitoring, and controlling** quality throughout the project.
- Ensures the **final product is complete and correct**.
- A **data-driven process** — involves collecting and analyzing quality data.

- Demonstrates whether **customer expectations** are being met.
  - Helps identify if new **risks or problems** have emerged from quality responses.
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## Key Takeaways

- Quality management spans **planning → execution → control**.
  - It helps meet **client and industry standards**.
  - It's a **continuous process** from project start to completion.
  - Goal: Deliver **error-free, high-quality outcomes** that satisfy stakeholders.
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## Project Quality Management (According to PMBOK)

### ◆ Definition

- **Project Quality Management** is the process of applying the organization's **quality policy** to:
    1. **Plan** quality standards
    2. **Manage** how quality will be achieved
    3. **Control** project and product quality
  - The goal: to **meet stakeholders' objectives** and ensure deliverables are up to the required standards.
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## Key Idea

- **Quality management is continuous** — it happens **throughout the project**, not just at the end.
  - It's not just inspection of deliverables; it's about **preventing defects** before they happen.
  - Focuses on:
    - Using **standards, methods, and tools**
    - Helping the **team clearly understand** what quality means for the project
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## Tools and Techniques

- Quality management uses specific **tools and techniques** to:
  - **Plan quality** (define requirements and standards)
  - **Assure quality** (ensure processes are effective)
  - **Control quality** (check outputs and correct issues)

 *Example reference:* The Global Knowledge white paper  
→ Explains practical **tools and techniques** for **Quality Planning, Assurance, and Control** — useful for applying what you'll learn in this module.

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### In Short

- Project Quality Management = **Plan + Manage + Control** quality
  - Focus on **prevention over inspection**
  - Ensures **stakeholder satisfaction** through consistent standards and continuous improvement
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## Measuring and Ensuring Quality Standards

### ◆ Purpose

To **check if the project meets quality standards** and follows the organization's **quality policy** by measuring specific **quality characteristics**.

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### 1. Quality Characteristics

- These are **attributes, measures, and process methods** that define **product** and **process** quality.
  - They **vary from project to project** based on deliverables and company policy.
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### 2. Product Quality Characteristics

Characteristic	Meaning
<b>Reliability</b>	Does the product perform as expected every time?
<b>Suitability</b>	Is it appropriate for its intended use or application?
<b>Functionality</b>	Does it meet the customer's or client's requirements?
<b>Technological / Physical Attributes</b>	Are the dimensions, color, size, and weight correct and within tolerance?

 *Example:* A machine that consistently produces the same output shows high reliability.

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### 3. Process Quality Characteristics

Characteristic	Meaning
<b>Completeness</b>	Have all project deliverables been fully completed per scope?

Characteristic	Meaning
<b>Contractual</b>	Did we meet safety, warranty, and contract requirements?
<b>Timeliness</b>	Was the project or deliverable completed on schedule?
<b>Integrity / Ethics</b>	Were processes followed honestly and ethically?

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## 4. Key Takeaway

- Quality isn't the same for every project — it **depends on the company's or client's quality policy**.
  - Both **product quality** and **process quality** must be checked to ensure the final outcome meets stakeholder expectations.
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## Quality Policy / Quality Management System (QMS)

### ◆ Definition

- A **Quality Policy** (also called a **Quality Management System – QMS**) is a **formal statement or framework** that defines how a company ensures **consistent quality** in its products or services.
  - It aligns with the organization's **mission, vision, and strategic goals**.
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### ◆ Purpose

- Guides employees on **how quality should be maintained** across all operations.
  - Ensures that **products, services, and processes** meet customer and regulatory requirements.
  - Acts as a **foundation for setting measurable quality objectives**.
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### ◆ Industry Influence

- Quality policies may vary based on the **industry standards** the company follows.
    -  *Example:* Automotive companies may follow **ISO/TS 16949**.
    -  *Example:* Pharmaceutical companies must comply with **Good Manufacturing Practices (GMP)**.
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## Key Takeaway

A **quality policy** expresses an organization's **commitment to quality**, ensuring that all team members work toward **consistent performance, customer satisfaction, and continuous improvement**.

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## Cost of Quality (CoQ)

### ◆ Definition

- **Quality isn't free** — it has a cost.
  - In project management, **Cost of Quality** means the **total cost** of ensuring a product or service meets quality standards **plus** the cost of fixing issues when it doesn't.
  - It includes both:
    - **Cost of conformance** → doing things right.
    - **Cost of non-conformance** → fixing what went wrong.
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### ◆ Three Categories of Quality Costs

#### 1. Prevention Costs (Avoiding errors)

- Costs to **prevent defects** before they occur.
  - Part of **Quality Assurance**.
  -  *Examples:*
    - Training the team.
    - Using higher-quality materials or suppliers.
    - Improved design for easier, error-free production.
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#### 2. Appraisal Costs (Checking for errors)

- Costs of **inspecting, testing, and monitoring** to ensure quality.
  - Part of **Quality Control**.
  -  *Examples:*
    - Inspecting incoming materials.
    - Testing finished products.
    - Calibrating machines or equipment.
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#### 3. Failure Costs (Fixing errors)

- Costs when a **defect occurs** — non-conformance to requirements.
- Divided into two types:

##### a. Internal Failure:

- Found **before delivery**.
  -  Examples: Rework, scrap, waste.

#### b. External Failure:

- Found **after delivery** to the customer.
    -  Examples: Product returns, warranty repairs, service calls.
  -  Most expensive — hurts customer trust.
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#### Key Takeaway

Investing in **prevention and appraisal** reduces the far higher **costs of failure** later. A well-managed quality process saves time, money, and reputation.

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## Quality Assurance (QA) Overview

- **Definition:**  
Quality Assurance is the part of quality management focused on **preventing defects** by ensuring quality is **built into every stage** of the process — from design to delivery.
  - **Goal:**  
To make sure processes are effective so that products and services meet quality standards the first time.
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## Quality Assurance vs Quality Control

Aspect	Quality Assurance (QA)	Quality Control (QC)
Focus	Prevention of defects	Detection of defects
Approach	Process-oriented	Product-oriented
Objective	Build quality into the process	Identify and fix defects in finished output
Example	Training workers, improving workflow	
	Inspecting or testing finished items	

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## Key QA Concepts

### 1. TQM – Total Quality Management

- A management philosophy involving **all employees** in improving quality.
- Based on the belief that **everyone** — from top management to frontline workers — is responsible for quality.
- Encourages collaboration, communication, and shared responsibility.

## 2. Continuous Improvement

- Based on the idea that **no process is ever perfect**.
- Encourages **small, ongoing improvements** to enhance efficiency, reduce waste, and increase customer satisfaction.

## 3. PDCA Cycle – Plan, Do, Check, Act

- A **structured model for continuous improvement**:
  1. **Plan**: Identify a problem or opportunity and plan for change.
  2. **Do**: Implement the change on a small scale.
  3. **Check**: Evaluate the results and collect data.
  4. **Act**: If successful, implement on a larger scale; if not, refine and try again.

## 4. Kaizen

- A Japanese term meaning **“change for the better”** or **continuous improvement**.
  - Focuses on **team-based, incremental improvements** in everyday work processes.
  - Encourages employees at all levels to suggest and implement small improvements.
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### Main Takeaway

Quality Assurance ensures that **defects are prevented before they occur**, while Quality Control ensures that **defects are detected and corrected**.

Through principles like **TQM**, **PDCA**, and **Kaizen**, organizations can create a culture of **continuous improvement**, higher efficiency, and customer satisfaction.

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### PDCA Cycle – Plan, Do, Check, Act

#### **Definition:**

The **PDCA Cycle**, also known as the **Deming Cycle** or **Shewhart Cycle**, is a **four-step iterative process** used for **continuous improvement** of processes, products, or services.

It helps teams solve problems systematically and improve performance over time.

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#### 1. Plan

- Identify a **problem or opportunity** for improvement.
- Analyze the current situation and set **clear objectives**.
- Develop a **plan of action** — what needs to be changed and how success will be measured.  
 **Key question:** What are we trying to accomplish and how will we do it?

### **Example:**

A manufacturing team identifies that production defects are high and plans a new quality inspection method.

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### **2. Do**

- **Implement** the plan on a **small scale** first (pilot test).
- Collect data and observe the results.
- Ensure everyone involved understands their role and responsibilities.

 *Key question:* What happens when we implement the plan?

### **Example:**

The team introduces the new inspection method on one production line for a month.

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### **3. Check**

- **Review and analyze** the results of the change.
- Compare outcomes with the original objectives.
- Identify what worked, what didn't, and why.

 *Key question:* Did our change lead to the improvement we expected?

### **Example:**

After one month, defect rates are reduced by 15%, confirming partial success.

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### **4. Act**

- **Standardize** successful improvements or **adjust** the plan based on what was learned.
- Apply the improved process on a larger scale.
- Begin the **next PDCA cycle** to seek further improvements.

 *Key question:* How can we sustain and build on these improvements?

### **Example:**

The new inspection process is adopted across all production lines, and the team starts planning the next improvement (like automating inspections).

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### **Benefits of PDCA**

- Encourages **continuous improvement** rather than one-time fixes.
- Promotes **team involvement** and learning.
- Reduces waste and inefficiency.
- Supports **data-driven decisions**.

- Helps organizations stay **innovative and adaptive**.
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## In Summary

The **PDCA cycle** is a simple yet powerful framework that helps organizations:

“Plan carefully, test changes, evaluate outcomes, and act to continuously improve.”

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## Quality Control in Project Management

### ◆ Definition

**Quality Control (QC)** is the process of **detecting and correcting errors** in deliverables. It ensures that the project's outputs meet the defined quality standards.

While **Quality Assurance (QA)** focuses on **prevention**,  
**Quality Control (QC)** focuses on **inspection and correction**.

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## Purpose of Quality Control

- Verify that project deliverables are complete and correct.
  - Identify defects or variances early.
  - Take corrective actions before issues grow.
  - Maintain stakeholder confidence by ensuring quality standards are met.
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## Common Quality Control Tools & Techniques

### 1. Histogram

- A **bar chart** showing the **frequency** of data points or measurements.
  - Helps visualize patterns or variations in data.  
 *Use it to find which outcomes occur most often.*
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### 2. Statistical Sampling

- Testing a **representative portion** of a population instead of the whole.
  - Saves time and cost while maintaining accuracy.  
 *Example: Checking 10 out of 1000 produced items for quality.*
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### 3. Control Chart

- A **graphical tool** used to monitor **process performance over time**.

- Identifies trends, variations, or potential errors.  
 *Used in repetitive processes to keep them "in control."*
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#### 4. Scatter Diagram

- A **graph** that shows the **relationship between two variables**.
  - Helps identify correlations between factors (e.g., hours worked vs. defects).  
 *If points form a pattern → variables are related.*
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#### 5. Run Chart

- A **line chart** showing data over time to detect **trends or cycles**.
  - Helps identify changes or improvements in a process.  
 *Used for tracking performance metrics over time.*
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#### 6. Cause and Effect Diagram (Ishikawa / Fishbone Diagram)

- Shows **possible causes** of a problem and their **relationships**.
  - Used to identify **root causes** of quality issues.  
 *Categories often include: Man, Machine, Method, Material, Measurement, Environment.*
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#### 7. Pareto Chart

- A **bar and line chart** showing **which causes contribute most** to problems.
- Based on the **80/20 Rule**:

80% of problems come from 20% of causes.

 *Focus on the "vital few" causes that have the biggest impact.*

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#### In Summary

Concept	Focus	Purpose
Quality Assurance (QA)	Prevention	Build quality into the process
Quality Control (QC)	Detection & Correction	Find and fix errors in deliverables

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### Question 1

Which of the following statements below about quality assurance is correct? (Select best answer)

- Quality assurance is focused on designing the product to the quality standard that is set by the customer.
- Quality assurance is the inspection of each deliverable before releasing it to the client.
- **Quality assurance is the process we follow to assure we deliver the products to the quality standards per the design.**

### Question 2

The process of sampling and inspecting outputs for errors is: (Select best answer)

- **Quality Control**
- PCDA
- Kaizen
- Quality Assurance

### Question 3

In a company that follows TQM, who is in charge of product quality? (Select best answer)

- Project Team
- Project Manager
- **Everyone in the company**
- Director of Quality and Compliance

### Question 4

The cost of reworking scrap material is categorized as: (Select best answer)

- Prevention cost
- External failure cost
- Appraisal cost
- **Internal failure cost**

# ✳️ Integrated Change Control — Summary Notes

## ✳️ What It Is

- **Integrated Change Control** is the process of **reviewing, evaluating, approving, and managing** all changes to a project.
  - It ensures that any proposed change is analyzed for its **impact on scope, budget, schedule, quality, and risk**.
- 

## ⌚ Why It's Needed

- Changes are **inevitable** — customer requests, supplier issues, quality errors, or new technology.
  - Proper control prevents chaos and ensures that only **beneficial changes** are approved.
- 

## ⚙️ Change Control Process (Predictive Project Management)

### 1. Initiate the Change

- The **Project Manager** identifies the change and prepares documentation.
- Includes an analysis of how the change will affect **scope, cost, time, and risks**.

### 2. Review and Approval

- The request goes to the **Change Control Board (CCB)** — a team that reviews changes.
- The CCB decides whether to **approve or reject** the change.

### 3. Update Project Baselines

- If approved, the Project Manager updates:
  - **Scope Baseline**
  - **Schedule Baseline**
  - **Cost Baseline**
- These updates ensure all plans reflect the new reality.

### 4. Implement the Change

- The Project Manager and team carry out the approved change.

### 5. Communicate and Document

- Communicate changes to all **stakeholders**.
  - Update all affected documents (like **project plan, issue logs**, etc.).
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## Agile vs Predictive

- In **Predictive (Traditional)** projects → Change is **controlled** to avoid disruption.
  - In **Agile** → Change is **welcomed** as part of continuous improvement and flexibility.
- 

## Key Takeaway

Effective change management = **Identify** → **Evaluate** → **Approve** → **Implement** → **Communicate**. Communication is the **core of Project Management** — everyone must know what has changed and why.

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## Issue Log — Summary Notes

### What Is an Issue?

- An **issue** is anything **unexpected** that occurs during a project.
  - Examples:
    - Staff shortage
    - Storage or supply problems
    - Equipment breakdown
    - Miscommunication between teams
- 

### Purpose of an Issue Log

- The **Issue Log** is a document used to:
    1. **Record and track** every issue that arises.
    2. **Assign responsibility** for resolving each issue.
    3. **Monitor progress** and ensure issues are addressed.
    4. **Document lessons learned** for future projects.
- 

### Why It's Important

- Not every issue leads to a **change request** — some just need to be tracked and managed.
  - The Issue Log helps **future project managers** anticipate and prevent similar problems.
  - It improves **communication** and **accountability** within the team.
- 

## Typical Issue Log Entry Includes

Field	Description
<b>Issue ID</b>	Unique identifier for tracking
<b>Description</b>	What exactly went wrong
<b>Date Identified</b>	When the issue was discovered
<b>Owner/Responsible Person</b>	Who will fix it
<b>Priority</b>	Level of importance (High, Medium, Low)
<b>Status</b>	Open, In Progress, Resolved
<b>Resolution/Action Taken</b>	How the issue was handled

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### Key Takeaway

Every issue should be **recorded, assigned, and tracked** until resolved.

The Issue Log is both a **current tracking tool** and a **future learning resource**.

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### Project Closing Phase — Summary Notes

#### What It Is

The **Project Closing Phase** is the **final step** in the project management process.

It ensures the project is **officially completed, accepted, and documented** for future learning.

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### Steps to Close a Project

1. **Confirm Deliverables Are Complete**
  - Verify all **requirements and scope** are met.
  - Ensure the project is finished as per the **original plan**.
2. **Gain Formal Acceptance**
  - Get **client approval** that deliverables meet expectations.
  - Use a **written document or email** as proof of acceptance.
3. **Close Procurement**
  - Finalize all **contracts and supplier payments**.
  - Communicate with vendors that the work is complete.
4. **Finalize Performance Reports**
  - Update and document:

- **Final budget** (any over/under variance)
- **Schedule performance**
- **Quality metrics and results**

## 5. Document Lessons Learned

- Hold a **postmortem meeting** with the team.
- Discuss:
  - What went right 
  - What went wrong 
  - What can be improved next time 
- Record everything for **future reference**.

## 6. Release Resources and Celebrate

- Release **team members and equipment** for other projects.
- **Celebrate success** — it motivates the team and ends the project positively.

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### Key Takeaway

Closing a project is **not just ending work** — it's about **documenting success, learning lessons, and finishing strong** to improve future projects.

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Here's a clear, structured summary of your topic "**Project Post-Mortem & Knowledge Management**"



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### Project Post-Mortem & Knowledge Management

#### What Is a Project Post-Mortem?

A **Project Post-Mortem** (also called a **Lessons Learned meeting**) is conducted **after a project is completed**.

It helps the team **reflect on what worked well, what didn't, and how future projects can be improved**.

This process contributes directly to **organizational knowledge management** by capturing valuable insights.

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### 6 Steps for a Successful Project Post-Mortem

#### 1. Prepare for the Meeting

- Schedule the meeting soon after project completion.

- Gather key documents (plans, reports, metrics).
- Ask team members to reflect on successes and challenges.

## 2. Review Project Objectives

- Restate the project's **original goals, scope, and deliverables**.
- Evaluate whether those goals were **met, exceeded, or missed**.

## 3. Discuss Successes

- Identify what went **well** — strategies, communication, teamwork, or planning that helped achieve success.

## 4. Identify Challenges & Failures

- Analyze what **went wrong or could have been better** (delays, unclear scope, communication issues, etc.).
- Encourage **honest and blame-free discussion**.

## 5. Gather Lessons Learned

- Document insights about **best practices** and **avoidance strategies** for future projects.
- Assign owners to follow up on actionable improvements.

## 6. Create and Share the Report

- Summarize meeting notes in a **Post-Mortem Report Template**.
- Include:
  - Project summary
  - Successes
  - Challenges
  - Lessons learned
  - Recommendations
- Store the document in a **knowledge repository** (for use by future teams).

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### Templates You Can Use

- **Project Postmortem Report Example** – shows real sample content and formatting.
  - **Post-Mortem Meeting Guidelines** – explains how to structure and run the meeting effectively.
  - **MS Word Post-Mortem Template** – provides an editable document to fill in project-specific details.
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## Knowledge Management Connection

The insights gathered in post-mortems feed into the organization's **knowledge base**, helping future project teams to:

- Avoid repeating past mistakes
  - Apply proven best practices
  - Improve overall **project performance and efficiency**
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## Key Takeaway

A well-run **Project Post-Mortem** transforms project experiences into **organizational wisdom**, ensuring **continuous learning and improvement** across all future projects.

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Here's a **concise and beginner-friendly summary** of your transcript on **Knowledge Management in Projects**, written so anyone can easily understand it 

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## Knowledge Management in Project Management

### What Is Knowledge Management (KM)?

Knowledge Management (KM) is the process of **collecting, organizing, sharing, and reusing knowledge** within a company — especially from completed projects. It helps teams **learn from past experiences, avoid repeating mistakes, and improve future projects**.

In project management, KM ensures that valuable information (like lessons learned, data, and insights) is **preserved and shared** among team members, stakeholders, and other departments.

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### Key Elements of Project Knowledge Management

1. **People** – Team members and stakeholders who create, use, and share knowledge.
  2. **Process** – A structured way to gather, document, and apply lessons learned.
  3. **Tools** – Technologies (like Wikis, shared drives, or databases) that help store and retrieve information easily.
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### Main Benefits of Knowledge Management

1. **Improved Decision-Making**
  - Helps managers learn from past mistakes and successes.
  - Enables smarter, data-based project decisions.
2. **Better Risk Management**

- Lessons from previous projects help predict and handle potential risks.
- Creates templates and strategies for uncertainty.

### 3. Higher Employee Productivity

- Centralized knowledge keeps everyone on the same page.
  - Reduces time wasted on searching for past data or reinventing solutions.
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## 5 Ways to Use Knowledge Management in Projects

### 1. Focus on Communication

- Encourage open discussions and collaboration among teams.
- Mix people from different departments to share diverse insights.
- Promote transparency about what everyone is working on.

### 2. Take Risks into Account

- Use past project data to identify and manage potential risks early.
- Create templates and checklists for risk management.

### 3. Transfer Knowledge Across Projects

- Reuse valuable practices, templates, and lessons from earlier projects.
- Keep everything in a **centralized knowledge base** for easy access.
- Helps new employees learn faster.

### 4. Use the Right Tools

- Tools like **project management software, Wikis, or workshops** help record and share knowledge.
- Encourage informal discussions (like team chats or social media) to break communication barriers.

### 5. Encourage Individual Learning & Sharing

- Motivate project managers and team members to share what they learned.
  - Hold **post-project reviews** to capture and store key documents like WBS, risk logs, and communication plans.
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## Final Thoughts

Knowledge is one of the most valuable assets in an organization.

By managing it properly, project managers can:

- Improve **communication and decisions**

- Encourage **continuous improvement**
- Boost **employee efficiency**
- Reduce **project risks**

In short: **Knowledge Management turns project experience into organizational wisdom** — ensuring every new project starts smarter than the last one.

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#### Question 1

The process of reviewing and evaluating proposed project changes for impacts on risk, budget, schedule, and quality is known as what? (Select best answer)

- **Integrated Change Control**
- Quality Management
- Project Post Mortem

#### Question 2

In project management, what is the difference between a risk and an issue? (Select best answer)

- A risk is a potential event that could impact a project while an issue is something that has happened and needs to be resolved.
- A risk and an issue mean the same thing.
- A risk has potential to impact the project while an issue does not have an effect on the project results.
- An issue is a potential event that could impact a project while a risk is something that has happened and needs to be resolved.

#### Question 3

When closing the project, in what step do we conduct a Project Post Mortem? (Select best answer)

- Confirm project deliverables are complete
- **Document lessons learned**
- Handoff and gain acceptance
- Final reporting of performance
- Release resources
- Close procurements

#### Question 4

The purpose of a project Post Mortem meeting is what? (Select all that apply)

- **Document information for Project Knowledge Management**
- **Improve communication skills**
- **Learn from your experiences.**