



## The 9 knowledge Areas and the 42 Processes Based on the PMBoK® 4th

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# Integration Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Develop Project Charter</b>	Project Statement of Work	Project Charter	Experts Judgment
	Business Case		
	Contracts		
	Enterprise Environmental Factors		
<b>Develop Project Management Plan</b>	Organizational Process Assets		
	Project Charter	Project Management Plan	Experts Judgment
	Outputs From Planning Processes		
	Enterprise Environmental Factors		
<b>Direct and Manage Project Execution</b>	Organizational Process Assets		
	Project Management Plan	Deliverables	Experts Judgment
	Approved Change Requests	Work Performance Information	Project Management Information System
	Enterprise Environmental Factors	Change Requests	
	Organizational Process Assets	Project Management Plan Updates	
<b>Monitor and Control Project Work</b>		Project Document Updates	
	Project Management Plan	Change Requests	Experts Judgment
	Performance Reports	Project Management Plan Updates	
	Enterprise Environmental Factors	Project Document Updates	
<b>Perform Integrated Change Control</b>	Organizational Process Assets		
	Project Management Plan	Change Requests Status Updates	Experts Judgment
	Work Performance Information	Project Management Plan Updates	Change Control Meetings
	Change Requests	Project Document Updates	
	Enterprise Environmental Factors		
<b>Close Project or Phase</b>	Organizational Process Assets		
	Project Management Plan	Final Product, Service, or Result Transition	Experts Judgment
	Accepted Deliverables	Organizational Process Assets Updates	

**Project Integration Management** – Unification, consolidation, articulation and interactive actions that are crucial to project completion. Integration is about making choices, about where to concentrate resources and effort. It also involves making tradeoffs among competing objectives and alternatives. Integration is primarily concerned with effectively integrating the processes among the Project Management Process Groups.

### **1. The project Charter**

- Authorizes Project Manager.
- Created based on a business need, a customer request, market demand
- Signed by the performing organization's senior management.
- Officially confirms the start of the project
- Includes high level project requirements, acceptance criteria, Project objectives, Product requirements, key milestone dates.

### **2. Develop Project management Plan**

- The plan guides your work on the project.
- It is iterative and progressively elaborated.
- PMBOK does not offer Project Management Methodology.

*“A formal, approved document that defines how the project is managed, executed, and controlled. It may be summary or detailed and may be composed of one or more subsidiary management plans and other planning documents”.*

#### **- It also includes:**

- o Scope, Schedule, Cost, quality, Risk, Communication, Procurement and Process improvement Plan.
- o Staffing
- o Contract
- o Risk Response
- o Change Control
- o Milestone list
- o Resource Calendar
- o Schedule Baseline
- o Cost baseline
- o Quality Baseline
- o Risk Register

### **3. Direct and Manage Project Execution**

- Main Outputs of the process:
  - o Deliverables
  - o Work performance Information

### **4. Monitor and Control Work**

- Takes a look at all the work being done to ensure that the deliverables and the way they are being done are in line with the plan.

### **5. Integrated Change Control**

- When a change occurs, it is evaluated across the project.

### **6. Close Project**

- Close the project or each phases of the project.
- Main risk here is resources tend to leave even before closing the project properly.
- Evaluating Project Success/Failure ,Formal Acceptance, Project records, Lessons Learned

# Scope Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Collect Requirements</b>	Project Charter	Requirements Documentation	Interviews
	Stakeholder Register	Requirements Management Plan	Focus Groups
		Requirements Traceability Matrix	Facilitated Workshops
			Group Creativity Techniques
			Group Decision Making Techniques
			Questionnaires and Surveys
			Observations
<b>Define Scope</b>	Project Charter	Project Scope Statement	Experts Judgment
	Requirements Documentation	Project Document Updates	Product Analysis
	Organizational Process Assets		Alternatives Identification
			Facilitated Workshops
<b>Create WBS</b>	Project Scope Statement	WBS	Decomposition
	Requirements Documentation	WBS Dictionary	
	Organizational Process Assets	Scope Baseline	
		Project Document Updates	
<b>Verify Scope</b>	Project Management Plan	Accepted Deliverables	Inspection
	Requirements Documentation	Change Requests	
	Requirements Traceability Matrix	Project Document Updates	
	Validated Deliverables		
<b>Control Scope</b>	Project Management Plan	Work Performance Measurements	Variance Analysis
	Work Performance Information	Organizational Process Assets Updates	
	Requirements Documentation	Change Request	
	Requirements Traceability Matrix	Project Management Plan Updates	
	Organizational Process Assets	Project Document Updates	

**Project Scope Management** - includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

**1. Collect Requirements**

- The process of defining and documenting stakeholders' needs to meet the project objectives.

**2. Define Scope**

- The process of developing a detailed description of the project and product.

**3. Create WBS**

- The process of subdividing project deliverables and project work into smaller, more manageable components.

**4. Verify Scope**

- The process of formalizing acceptance of the completed project deliverables.

**5. Control Scope**

- The process of monitoring the status of the project and product scope and managing changes to the scope baseline.

# Time Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Define Activities</b>	Scope Baseline	Activity List	Decomposition
	Enterprise Environmental Factors	Activity Attributes	Rolling Wave Planning
	Organizational Process Assets	Milestone List	Templates
			Experts Judgment
<b>Sequence Activities</b>	Activity List	Project Schedule Network Diagrams	Precedence Diagramming Method(PDM)
	Activity Attributes	Project Document Updates	Dependency Determination
	Milestone List		Applying Leads And Lags
	Project Scope Statement		Schedule Network Templates
	Organizational Process Assets		
<b>Estimate Activity Resources</b>	Activity List	Activity Resource Requirements	Experts Judgement
	Activity Attributes	Resource Breakdown Structure	Alternatives Estimating Data
	Resource Calendars	Project Document Updates	Published Estimating Data
	Enterprise Environmental Factors		Bottom-up Estimating
	Organizational Process Assets		Project Management Software
<b>Estimate Activity Durations</b>	Activity List	Activity Duration Estimates	Experts Judgement
	Activity Attributes	Project Document Updates	Analogous Estimating
	Activity Resource Requirements		Parametric Estimating
	Resource Calendars		Three-point estimates
	Project Scope Statement		Reserve Analysis
	Enterprise Environmental Factors		
	Organizational Process Assets		
<b>Develop Schedule</b>	Activity List	Project Schedule	Schedule Network Analysis
	Activity Attributes	Schedule Baseline	Critical Path Method
	Project Schedule Network Diagrams	Schedule Data	Critical Chain Method
	Activity Resource Requirements	Project Document Updates	Resource Leveling
	Resource Calendars		What-if Scenario Analysis
	Activity Duration Estimates		Applying Leads And Lags
	Project Scope Statement		Schedule Compression
	Enterprise Environmental Factors		Scheduling Tool
Organizational Process Assets			
<b>Control Schedule</b>	Project Management Plan	Work Performance Measurements	Performance Reviews
	Project Schedule	Organizational Process Assets Updates	Variance Analysis
	Work Performance Information		Project Management Software
	Organizational Process Assets		Resource Leveling
			What-if Scenario Analysis
			Adjusting Leads And Lags
			Schedule Compression
			Scheduling Tool

**PROJECT TIME MANAGEMENT** - Project Time Management includes the processes required to manage timely completion of the project.

**1. Define Activities**

- The process of identifying the specific actions to be performed to produce the project deliverables.

**2. Sequence Activities**

- The process of identifying and documenting relationships among the project activities.

**3. Estimate Activity Resources**

- The process of estimating the type and quantities of material, people, equipment, or supplies required to perform each activity.

**4. Estimate Activity Durations**

- The process of approximating the number of work periods needed to complete individual activities with estimated resources.

**5. Develop Schedule**

- The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule.

**6. Control Schedule**

- The process of monitoring the status of the project to update project progress and managing changes to the schedule baseline.

*“The project time management processes and their associated tools and techniques are documented in the schedule management plan. The schedule management plan is contained in, or is a subsidiary plan of, the project management plan.”*

# Cost Management

Process Name	Inputs	Outputs	Tools and Techniques
Estimate Costs	Scope Baseline	Activity Cost Estimates	Experts Judgment
	Project Schedule	Basis of Estimates	Analogous Estimating
	Human Resource Plan	Project Document Updates	Parametric Estimating
	Risk Register		Bottom-up Estimating
	Enterprise Environmental Factors		Three-point estimates
	Organizational Process Assets		Reserve Analysis
			Cost of Quality
			Project Management Estimating Software
		Vendor Bid Analysis	
Determine Budget	Activity Cost Estimates	Cost Performance Baseline	Cost Aggregation
	Basis of Estimates	Project Funding Requirements	Reserve Analysis
	Scope Baseline	Project Document Updates	Experts Judgment
	Project Schedule		Historical Relationships
	Resource Calendars		Funding Limit Reconciliation
	Contracts		
	Organizational Process Assets		
Control Costs	Project Management Plan	Work Performance Measurements	Earned Value Management
	Project Funding Requirements	Budget Forecasts	Forecasting
	Work Performance Information	Organizational Process Assets Updates	To-complete Performance Index (TCPI)
	Organizational Process Assets	Change Requests	Performance Reviews
		Project Management Plan Updates	Variance Analysis
		Project Document Updates	Project Management Software

**Project Cost Management** - involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget.

## 1. Estimate Costs

- The process of developing an approximation of the monetary resources needed to complete project activities.

## 2. Determine Budget

- The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

## 3. Control Costs

- The process of monitoring the status of the project to update the project budget and managing changes to the cost baseline.

# Quality Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Plan Quality</b>	Scope Baseline	Quality Management Plan	Cost-benefit Analysis
	Stakeholder Register	Quality Metrics	Cost of Quality
	Cost Performance Baseline	Quality Checklists	Control Charts
	Schedule Baseline	Process Improvement Plan	Benchmarking
	Risk Register	Project Document Updates	Design of Experiments
	Enterprise Environmental Factors		Statistical Sampling
	Organizational Process Assets		Flowcharting
			Proprietary Quality Management Methodologies
		Additional Quality Planning Tools	
<b>Perform Quality Assurance</b>	Project Management Plan	Organizational Process Assets Updates	Plan Quality and Perform Quality Control Tools and Techniques
	Quality Metrics	Change Requests	Quality Audits
	Work Performance Information	Project Management Plan Updates	Process Analysis
	Quality Control Measurements	Project Document Updates	
<b>Perform Quality Control</b>	Project Management Plan	Quality Control Measurements	Cause and Effect Diagrams
	Quality Metrics	Validated Changes	Control Charts
	Quality Checklist	Validated Deliverables	Flowcharting
	Work Performance Measurements	Organizational Process Assets Updates	Histogram
	Approved Change Requests	Change Requests	Pareto Chart
	Deliverables	Project Management Plan Updates	Run Chart
	Organizational Process Assets	Project Document Updates	Scatter Diagram
			Statistical Sampling
		Inspection	
		Approved Change Requests Review	

**Project Quality Management** - includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It implements the quality management system through policy and procedures with continuous process improvement activities conducted throughout, as appropriate.

## 1. Plan Quality

- The process of identifying quality requirements and/or standards for the project and product, and documenting how the project will demonstrate compliance.

## 2. Perform Quality Assurance

- The process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.

## 3. Perform Quality Control

- The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

# HR Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Develop Human Resource Plan</b>	Activity Resource Requirements	Human Resource Plan	Organization Charts and Position Descriptions
	Enterprise Environmental Factors		Networking
	Organizational Process Assets		Organizational Theory
<b>Acquire Project Team</b>	Project Management Plan	Project Staff Assignments	Pre-assignment
	Enterprise Environmental Factors	Resource Calendars	Negotiation
	Organizational Process Assets	Project Management Plan Updates	Acquisition
			Virtual Teams
<b>Develop Project Team</b>	Project Staff Assignments	Team Performance Assessments	Interpersonal Skills
	Project Management Plan	Enterprise Environmental Factors Updates	Training
	Resource Calendars		Team-Building Activities
			Ground Rules
			Co-Location
<b>Manage Project Team</b>	Project Staff Assignments	Enterprise Environmental Factors Updates	Observation and Conversation
	Project Management Plan	Organizational Process Assets Updates	Project Performance Appraisals
	Team Performance Assessments	Change Request	Conflict Management
	Performance Reports	Project Management Plan Updates	Issue Log
	Organizational Process Assets		Interpersonal Skills

**Project Human Resource Management** - includes the processes that organize, manage, and lead the project team.

**Develop Human Resource Plan** - The process of identifying and documenting project roles, responsibilities, and required skills, reporting relationships, and creating a staffing management plan.

**1. Acquire Project Team**

- The process of confirming human resource availability and obtaining the team necessary to complete project assignments.

**2. Develop Project Team**

- The process of improving the competencies, team interaction, and the overall team environment to enhance project performance.

**3. Manage Project Team**

- The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.

*“The project management team is a subset of the project team and is responsible for the project management and leadership activities such as initiating, planning, executing, monitoring, controlling, and closing the various project phases. This group can also be referred to as the core, executive, or leadership team.”*

Communication Management			
Process Name	Inputs	Outputs	Tools and Techniques
<b>Identify Stakeholders</b>	Project Charter	Stakeholder Register	Stakeholder Analysis
	Procurement Documents	Stakeholder Management Strategy	Experts Judgement
	Enterprise Environmental Factors		
	Organizational Process Assets		
<b>Plan Communications</b>	Stakeholder Register	Communications Management Plan	Communication Requirements Analysis
	Stakeholder Management Strategy	Project Document Updates	Communication Technology
	Enterprise Environmental Factors		Communication Models
	Organizational Process Assets		Communication Methods
<b>Distribute Information</b>	Project Management Plan	Organizational Process Assets Updates	Communication Methods
	Performance Reports		Information Distribution Tools
	Organizational Process Assets		
<b>Manage Stakeholder Expectations</b>	Stakeholder Register	Organizational Process Assets Updates	Communication Methods
	Stakeholder Management Strategy	Change Request	Interpersonal Skills
	Project Management Plan	Project Management Plan Updates	Management Skills
	Issue Log	Project Document Updates	
	Change Log		
	Organizational Process Assets		
<b>Report Performance</b>	Project Management Plan	Performance Reports	Variance Analysis
	Work Performance Information	Organizational Process Assets Updates	Forecasting Methods
	Work Performance Measurements	Change Requests	Communication Methods
	Budget Forecasts		Reporting Systems
	Organizational Process Assets		

**Project Communications Management** - includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Project managers spend the majority of their time communicating with team members and other project stakeholders.

- 1. Identify Stakeholders**
  - The process of identifying all people or organizations impacted by the project, and documenting relevant information regarding their interests, involvement, and impact on project success.
- 2. Plan Communications**
  - The process of determining the project stakeholder information needs and defining a communication approach.
- 3. Distribute Information**
  - The process of making relevant information available to project stakeholders as planned.
- 4. Manage Stakeholder Expectations**
  - The process of communicating and working with stakeholders to meet their needs and addressing issues as they occur.
- 5. Report Performance**
  - The process of collecting and distributing performance information, including status reports, progress measurements, and forecasts.

# Risk Management

Process Name	Inputs	Tools and Techniques	Outputs
<b>Plan Risk Management</b>	Project Scope Statement	Planning Meetings and Analysis	Risk Management Plan
	Cost Management Plan		
	Schedule Management Plan		
	Enterprise Environmental Factors		
	Organizational Process Assets		
<b>Identify Risks</b>	Risk Management Plan	Documentation Reviews	Risk Register
	Activity Cost Estimates	Information Gathering Techniques	
	Activity Duration Estimates	Checklist Analysis	
	Scope Baseline	Assumptions Analysis	
	Stakeholder Register	Diagramming Techniques	
	Cost Management Plan	SWOT Analysis	
	Schedule Management Plan	Expert Judgment	
	Quality Management Plan		
	Project Documents		
	Enterprise Environmental Factors		
	Organizational Process Assets		
	<b>Perform Qualitative Risk Analysis</b>	Risk Register	Risk Probability and Impact Assessment
Risk Management Plan		Probability and Impact Matrix	
Project Scope Statement		Risk Data Quality Assessment	
Organizational Process Assets		Risk Categorization	
		Risk Urgency Assessment	
		Expert Judgment	
<b>Perform Quantitative Risk Analysis</b>	Risk Register	Data Gathering and Representation Techniques	Risk Register Updates
	Risk Management Plan	Quantitative Risk Analysis and Modeling Techniques	
	Cost Management Plan	Expert Judgment	
	Schedule Management Plan		
	Organizational Process Assets		
<b>Plan Risk Responses</b>	Risk Register	Strategies For Negative Risks or Threats	Risk Register Updates
	Risk Management Plan	Strategies For Positive Risks Or Opportunities	Risk-related Contract Decisions
		Contingent Response Strategies	Project Management Plan Updates
		Expert Judgment	Project Document Updates
<b>Monitor &amp; Control Risks</b>	Risk Register	Risk Reassessment	Risk Register Updates
	Project Management Plan	Risk Audits	Organizational Process Assets Updates
	Work Performance Information	Variance and Trend Analysis	Change Requests
	Performance Reports	Technical Performance Measurement	Project Management Plan Updates
		Reserve Analysis	Project Document Updates
		Status Meetings	

**Project Risk Management** - The processes of conducting risk management planning, identification, analysis, response planning, and monitoring and control on a project. The objectives of Project Risk Management are to increase the probability and impact of positive events, and decrease the probability and impact of negative events in the project.

**1. Plan Risk Management**

- The process of defining how to conduct risk management activities for a project.

**2. Identify Risks**

- The process of determining which risks may affect the project and documenting their characteristics.

**3. Perform Qualitative Risk Analysis**

- The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.

**4. Perform Quantitative Risk Analysis**

- The process of numerically analyzing the effect of identified risks on overall project objectives.

**5. Plan Risk Responses**

- The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.

**6. Monitor and Control Risks**

- The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

*“Project risk is always in the future. Risk is an uncertain event or condition that, if it occurs, has an effect on at least one project objective. Objectives can include scope, schedule, cost, and quality.”*

# Procurement Management

Process Name	Inputs	Outputs	Tools and Techniques
<b>Plan Procurement</b>	Scope Baseline	Procurement Management Plan	Make-or-Buy Analysis
	Requirements Documentation	Procurement Statements of Work	Expert Judgement
	Teaming Agreements	Make-or-Buy Decisions	Contract Types
	Risk Register	Procurement Documents	
	Risk-related Contract Decisions	Source Selection Criteria	
	Activity Resource Requirements	Change Request	
	Project Schedule		
	Activity Cost Estimates		
	Cost Performance Baseline		
	Enterprise Environmental Factors		
Organizational Process Assets			
<b>Conduct Procurement</b>	Project Management Plan	Selected Sellers	Bidder Conferences
	Procurement Documents	Procurement Contract Award	Proposal Evaluation Techniques
	Source Selection Criteria	Resource Calendars	Independent Estimates
	Qualified Seller List	Change Requests	Expert Judgement
	Seller Proposals	Project Management Plan Updates	Advertising
	Project Documents	Project Document Updates	Internet Search
	Make-or-Buy Decisions		Procurement Negotiations
	Teaming Agreements		
Organizational Process Assets			
<b>Administer Procurement</b>	Procurement Documents	Procurement Documentation	Contract Change Control System
	Project Management Plan	Organizational Process Assets Updates	Procurement Performance Reviews
	Contracts	Change Requests	Inspections And Audits
	Performance Reports	Project Management Plan Updates	Performance Reporting
	Approved Change Requests		Payment Systems
	Worked Performance Information		Claims Administration
			Records Management System
<b>Close Procurement</b>	Project Management Plan	Closed Procurement	Procurement Audits
	Procurement Documentation	Organizational Process Assets Updates	Negotiated Settlements
			Record Management System

**Project Procurement Management** - Includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. The organization can be either the buyer or seller of the products, services, or results of a project.

## 1. Plan Procurements

- The process of documenting project purchasing decisions, specifying the approach, and identifying potential sellers.

## 2. Conduct Procurements

- The process of obtaining seller responses, selecting a seller, and awarding a contract.

## 3. Administer Procurements

- The process of managing procurement relationships, monitoring contract performance, and making changes and corrections as needed.

## 4. Close Procurements

- The process of completing each project procurement.

**References:**

- ✓ PMBOK® Guide 4<sup>th</sup> edition.
- ✓ [www.PMHub.net](http://www.PMHub.net)