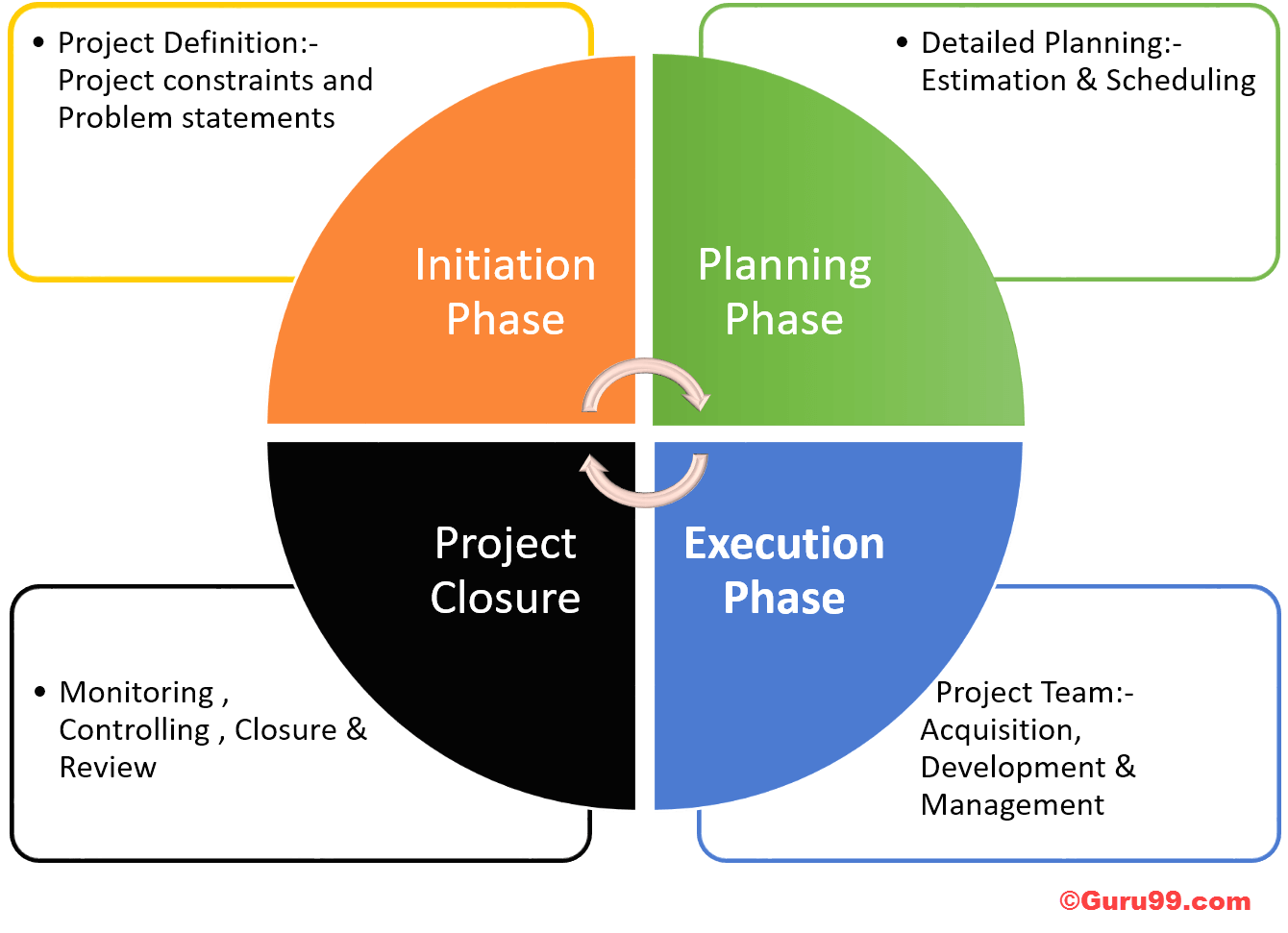
**Project Management Life Cycle:**



## The Project Life Cycle is a series of activities which are essential for accomplishing project objectives or targets.

This life cycle for the project includes four phases-

1)Inition Phase.

2)Planning Phase.

3)Execution Phase

4)Monitoring , Controlling & Closing Phase.

## 1)Project Initiation Phase

Initiation phase defines those processes that are required to start a new project. The purpose of the project initiation phase is to determine what the project should accomplish.

This phase mainly composed of two main activities

* Develop a Project Charter and
* Identify Stakeholders

All the information related to the project are entered in the Project Charter and Stakeholder Register. When the project charter is approved, the project becomes officially authorized.

### Project Charter

The Project Charter defines the project's main elements

* Project goals
* Project constraints and Problem statements
* Assign project manager
* Stakeholder list
* High-level schedule and budget
* Milestones
* Approvals

This document allows a project manager to utilize organizational resources for the sake of the project. To create a project charter, the inputs required will be enterprise environment factor, business case, agreements, a project statement of work and organizational process assets.

### Identifying Stakeholders

A Stackholder can influence the success and failure of the project. To note down the information about the stakeholder, a Stakeholder Register is used.

The stakeholder register will have information like

* Type of stakeholder
* Expectation of stakeholder
* Role in Project ( Business Analyst, Tech architect, Client PM)
* Designation (Director, Business Lead, etc.)
* Type Communication ( Weekly/Monthly)
* Influence on the project ( Partial/Supportive/Influensive)

The other activities involved in initiating process group are:

* Assigning the project manager
* Determining the stakeholder needs, expectations and high-level requirements
* Define the project success criteria
* Identify particular budget for particular stage
* Make sure that the project is aligned with the organizations strategic goal

The stakeholder register and project charter are used as inputs to the other process groups such as planning process group.

## 2)Project Planning Phase

Project Planning phase covers about 50% of the whole process. Planning phase determines the scope of the project as well as the objective of the project. It begins with the outputs of initiation phase (charter, preliminary scope statement, and project manager). The output of the planning phase serves as the input for the execution phase.

The important aspects of planning process are

* Planning phase should not be executed before your initial planning is finished
* Until the execution process does not start, you should not stop revising plans

### Create WBS

For any successful project WBS (Work Breakdown Structure) is important. Following steps are to create WBS.

* Conduct a brainstorm to list all the tasks
* Involve your whole team for brainstorming
* Write down the structure tree of the task also known as WBS (work breakdown structure)
* Further breakdown your top WBS into a hierarchical set of activities, for instance, categories, sub-categories, etc. For example hardware, software, trainee, management teams, etc.
* Define how to record the items into your WBS
* Ask other people - it can be an expert, experienced personnel, etc.
* Granularity- how detailed your task should you have? Estimating cost and time for higher granularity is hard while for lower granularity it will be bogged down with too detailed information
* Granularity should be of right level not too high or not too low

### Planning Schedule Management

Plan Scheduling is the process of establishing the procedure, policies and documentation for planning, managing, executing and controlling the project schedule. The inputs in these activities include

* Project management plan
* Project Charter
* Enterprise environmental factors
* Organizational process assets

The output of the Planning Schedule Management includes

* Schedule management plan

### Defining Activities

Defining Activities is the procedure for documenting and identifying specific actions to be performed to produce the project deliverables.

In define activities, each work packages is broken down into individual work schedule activities. The inputs of the defining activities include

* Schedule management plan
* Scope baseline
* Enterprise environmental factors
* Organizational process assets

While the outputs of these activities are

* Activity list
* Activity attributes
* Milestone list

### Sequence Activities

Sequence activities is nothing but logically organizing the output of "define activities". It determines the order in which the activities needs to be performed.

The main output from the sequence activity process is "Network Diagram".

**Network diagram**is nothing but posting the task on a board in a logical order.

For example, you want to start a business in foreign country what will be your list of activities and what will be the order it should be done?

You will perform activities in these order

1. Choose a country
2. Get business permit
3. Hiring a manager
4. Buying a property
5. Buying the furniture etc.
6. Opening the business

### Estimating Activity Resources

This stage describes the process of estimating the work effort and resources required to complete the task. The other factor that has to be considered at this stage is the availability of the resources.

While estimating resources, the focus should be on the longest path of the plan (Critical Path), which going to consume more time and money.

You have to estimate resources for two tasks

* **Critical tasks**
* **Floating tasks**

Make sure that your critical tasks are accurately estimated (completion time).

There are five inputs used to estimate activity resources

* Schedule Management Plan
* Activity list
* Resource Calendar
* Enterprise environmental factors
* Organizational process assets

The output of this stage is

* Activity resource requirements
* Resource breakdown structure
* Project documents updates

**NOTE**: All the activity that is done so far (define activities + sequence activities + Estimate activity resources) is going to help in "Develop Schedule."

### Estimating Activity Durations

Estimating Activity Duration is the process of estimating the number of work periods (weeks/months) required to complete the individual task with estimated resources. This step defines how much time an individual task will take to complete.

You cannot calculate activity duration without calculating the work effort and resources required to complete the task. Estimating process should be done in this order

* Estimate work effort first
* Followed by estimating the resources
* Followed by Estimating the duration of task

To estimate activity durations, you need inputs

* Activity list
* Activity attributes
* Resource calendars
* Project scope statement
* Organizational process assets
* Enterprise environmental factors

While there are two main outputs

* Estimate activity durations
* Estimate activity durations-project document updates

This technique is also referred as PERT (Project Evaluation and Review Techniques) estimates.

### Develop Schedule

Develop Schedule is the process of analyzing activity sequences, resource requirements, durations and schedule constraints to create the project schedule model. For scheduling each task, three main factors are taken into consideration.

* Duration
* Task dependencies
* Constraints

Using these factors project calculates the start date and finish date for each task.

A scheduling tool can be used to create a schedule. It generates a schedule model with planned dates for completing project activities.

The input of this tool includes

* Schedule management plan
* Activity list
* Activity attributes
* Project schedule –network diagrams
* Activity resource requirements
* Resource calendars
* Activity duration estimates
* Project scope statement
* Risk register
* Project staff assignments
* Resource breakdown structure
* Enterprise environmental factors
* Organizational process assets

The output from this would be

* Project Schedule
* Project network diagram
* Gantt charts or Bar charts
* Milestone chart
* Schedule baseline
* Scheduled data
* Project document updates

### Control Schedule

The last stage of the planning phase is Control Schedule. It is the process of monitoring the status of project activities to update project process and manage changes to the schedule baseline.

If changes are required to the schedule, they must go through the change control process. The schedule should be managed or controlled by manager proactively.

There are four main outputs of control schedule process

* Project management plan
* Schedule baseline
* Schedule management plan
* Project schedule
* Work performance information
* Organizational process assets

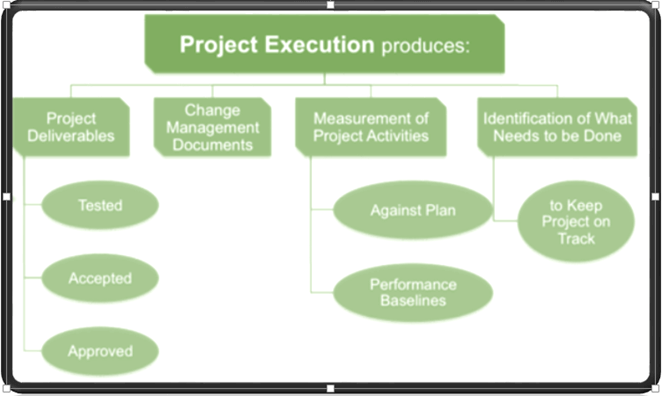
There are five outputs of control schedule

* Work performance management
* Organizational process assets updates
* Change request
* Project management plan updates
* Project document updates

## 3)Project Execution Phase

The executing phase consists of those activities that are defined in project management plan. This process involves managing stakeholder expectations, coordinating with people and resources, as well as performing other activities related to project deliverables.

During the execution phase, the result may require re-baselining and updates to existing project requirements. Action taken in execution phase may affect the project management plan or documents.



### Direct and Manage Project Execution

This stage consumes most of the project cost, time, and resources as this is the process that produce project deliverables.

There are four inputs to Direct and Manage Project Execution

* Project Management Plan
* Approved change request
* EEFs (Enterprise Environmental Factors)
* OPAs (Organizational Process Assets)

While there are five outputs

* Deliverables
* Work performance data
* Change request
* Project Management plan updates
* Project documents updates

During this stage, expert's judgments, meetings, and reporting KPI (Key Performance Indicators) are of prime importance.

### Performing Quality Assurance

Performing   Quality Assurance is the process of auditing the quality requirements and the results from quality control measurements. It is the process of recording and monitoring results of the quality activities to assess performance. Various tools like control charts, cost-benefit analysis, flowcharting, run charts, scatter diagrams, inspection & reviews, etc., can be used for this process.

The main input to this is

* Project management plan
* Quality metrics
* Quality control measurements
* Work performance information

While, the output of this is

* Change request
* Project management plan updates
* Project document updates
* Organizational process assets updates

### Acquiring Project Team

During the execution phase, project team acquiring takes place, this is because it is more likely that individuals with different skill set will be required during the process.

There are three main inputs to acquire project team

* Roles and responsibilities
* Project organization chart
* Staffing management plan

While there are three outputs

* Project staff assignments
* Resource calendars
* Project management plan updates

### Develop Project Team

The majority of human resource processes involves in executing process, developing project team is also a part of it. The main purpose of developing project team is to improve the overall performance of team members. This stage must start early on in the project.

The inputs in project development team include

* Human resource management plan
* Project staff assignments
* Resource calendars

Output of this process include

* Team performance assessments
* EEFs Updates

### Manage project team

Managing project team is one of the important parts of project management. It is the most complex area of project management because many times managers would not be in direct contact with team members, in such situation to analyze their performance and deciding their remuneration becomes difficult.

There are five inputs to manage project team process

* Project staff assignments
* Team performance assessments
* Performance reports
* Project management plan
* Organizational process assets

There are four main outputs

* Organizational process assets updates
* Enterprise environmental factors updates
* Change request
* Project management plan updates

### Manage Communications

Out of three communication attributes, one falls in the execution process. In communication management program, there are three main communication aspects that need to monitor.

1. Project team members to the project manager
2. Project managers to the program manager
3. Program manager to stakeholders or other sponsors

The input of managing communications include

* Communications management plan
* Work performance reports
* EEFs
* OPAs

The output of this stage would be

* Project communications
* Project management plan updates
* Project documents updates
* OPAs updates

### Conduct Procurements

In this stage, there are two main roles involved the buyer and the seller. During the procurement process the activities involved are

1. Issue the bid package to potential sellers
2. Hold bidder conferences
3. Evaluate potential seller proposals
4. Select the winning seller proposals

The output of the procurement process include

* Project management plan
* Conduct procurement documents
* Source selection criteria
* Qualified seller list
* Seller proposals
* Project documents
* Make or buy decisions
* Partnership agreement (teaming agreement)
* Organizational process assets

While, you will have six outputs

* Selected sellers
* Procurement contract award
* Resource calendars
* Change requests
* Project management plan updates

### Manage Stakeholder Engagement

This stage includes actively managing stakeholders throughout the project. To avoid unexpected project delay or abandoning the project in between, stakeholder expectation is identified and quickly resolved.

There are five inputs to manage stakeholder process

* Stakeholder register
* Stakeholder management strategy
* Project management plan
* Issue log
* Change log
* Organizational process assets

The output of this process include

* Organizational process assets updates
* Change request
* Project management plan updates
* Project documentation updates

**Project Phase Review**

At the end of execution phase, project phase review is done. It helps you to document in following activities

* Document the result of your project management review
* Inform the sponsor about the progress of the project
* Identifying any risk or issues that impacted the project
* Shows deliverable to stakeholder produced during the project
* Seek approval to proceed to the next phase

## Monitoring and Controlling & Closing Phase in Project

After execution phase, to check the project is on right track, monitoring and controlling phase becomes active. During this phase various changes and reviews to enhance the project performance is done.

### Monitor and Control Project Work

This stage involves tracking, reviewing and regulating the progress in order to meet the objective of the project. It also ensures that the deliverables are according to the project management plan. The main focus of this step is to identify any changes made from the point of project management plan to determine appropriate preventive action.

The inputs for this stage include

* Project management plan
* Performance reports
* Cost forecasts
* Schedule forecasts
* Validate changes
* Enterprise environmental factors
* Organizational process assets

While the output includes

* Change requests
* Project management plan updates
* Project document updates

### Perform Integrated Change Control

It is one of the most important process of project management. It is in this stage where the impact of any change is assessed against the project. If a change in this stage occurs at any one part of a project, the whole project will be assessed. It is better to implement changes at an early stage of the project, because as the project progresses, the cost of implementing changes also increases.

The input of this stage includes

* Project management plan
* Work performance reports
* Change requests
* EEFs
* OPAs

While the outputs are

* Approved change requests
* Change log
* Project management plan updates
* Project document updates

### Validate Scope

Validating scope involves verifying whether the deliverables meet the customer acceptance criteria. The external checking with the customer or stakeholders are part of Validating Scope Management.

The inputs for validating scope includes

* Project management plan
* Requirements
* Documentation
* Requirements traceability matrix
* Verified deliverables
* Work performance data

While the output of the scope validation includes

* Accepted deliverables
* Change requests
* Work performance information
* Project document updates

### Control Scope

Control scope ensures that it is the only work identified as being in scope that is delivered. The actual result is compared against the scope baseline and ensures that all of the approved scope is in fact being delivered.

The inputs to control scope process includes

* Project management plan
* Work performance information
* Requirement documentation
* Requirements traceability matrix
* Organizational process assets

While the output includes

* Work performance measurements
* Organizational process assets updates
* Change requests
* Project management plan updates
* Project document updates

### Control Schedule

Control Schedule process helps you in many ways. It helps you to capture current schedule status, determine the variance from the schedule baseline, understand the nature of the variance and respond by taking appropriate action.

If changes are needed to the schedule then they must go through the change control process, the change should be re-evaluated and only then it should be used to update the schedule baseline.

There are four main inputs to the control schedule

* Project management plan
* Schedule baseline
* Schedule management plan
* Project schedule
* Work performance information
* Organizational process assets

The output includes

* Work performance measurements
* Organizational process assets updates
* Change requests
* Project management plan updates
* Project document updates

### Control Cost

Control cost is comparing baseline cost for each deliverable against the actual cost. The cost baseline should change only in response to a change request that has gone through the Perform Integrated Change Control process. Control cost ensures that your project stay within funding limitations.

The inputs for the Control Cost include

* Project management plan
* Project funding requirements
* Work performance information
* Control Cost Organizational process assets

The output for this include

* Earned value work performance measurements
* Earned value budget forecasts in control costs
* Change requests
* Project management plan updates
* Project document updates
* Organizational process assets updates

### Control Quality

The control quality ensures that the project and product are delivered with the quality management plan. It ensures that whether the work is performed correctly. The major output of the control quality is Quality management plan. While the other information that will be helpful are

* Existing flowchart
* Upper and lower control and specification limits contained within the control charts
* Information is referenced such as sample criteria, sampling numbers, measurements and variable sampling
* Quality metrics- it is a standard measurement to meet the quality requirements
* It ensures that the proper steps are being followed in order to comply with aspects such as process, policies or regulations

There are four main outputs from the perform quality control process:

* Integrated change control
* Approved change requests
* Approved change requests review
* Validated changes

### Control Communications

Control communication ensures that the right information reaches to the stakeholder. Control communication information includes inputs, tools and techniques and output that belong to this process.

Control communication can be in any format, it can be

* Trending data
* Tabulated information
* S-curve
* Dashboard formats
* Use histogram

In control communication process, work information is taken from various other processes, and the performance report is used as an input for various monitoring and managing processes. The main deliverables from the control communication process is the performance record.

### Control Risks

Throughout the project cycle, risk analysis is a continuous process. It is important that you continuously analyze, identify and respond to risks. The activities include in control risk are

* Tracking existing risks
* Monitoring residual risks
* Identifying new risks
* Implementing risk response plans
* Continuously evaluating risk process

The input for control risk are

* Risk register
* Work performance information
* Performance reports
* Reserve analysis
* Risk Audits

The output for the control risk are

* Updating risk register
* Risk management plan

### Control Procurements

Out of four procurement plan, the third process of procurement falls in Monitoring & Executing process group. This stage involves monitoring the vendor's performance and ensuring that all contract requirements are being met.

The control procurement process involves verifying

* Whether goods or service being delivered
* Whether it is delivered on time
* Whether invoice charged is for correct quantity
* Whether all conditions of the contract being met
* Whether the relationship between buyer or seller are managed properly

The major input for procurement process are

* Project management plan
* Procurement documents
* Agreements
* Approved change requests
* Work performance reports
* Work performance data

The output for procurements are

* Work performance information
* Change requests
* Project management plan updates
* Project document updates
* OPAs updates

### Control Stakeholder Management

Many project stumble due to inadequate management of stakeholders. If the stakeholders are managed properly, there are more chances for project success. In this process, we monitor the current engagement level of stakeholders and take actions accordingly.

The input and output for all these activities include

### Closing- Phase

Closing phase is the process that performs a controlled shut down of the project at the end. In a project, there are three closure activities that are going on

* Closure of the product- Getting the customer to accept the final deliverables, if the project is external
* Closure of the project- This include formally closing of administrative procedures, updating project documents and archiving those databases & documents
* Closure of the resource behind the project- The financial closure of the project, resources assigned to the project should be returned

The inputs for this process include

* Project Management Plan
* Accepted Deliverables
* OPAs

The output of this process include

* Final output, service or result transition
* OPAs updates

### Close Procurements

For each project life cycle- planning, executing, monitoring and controlling & closing there is one procurement process. The final closing procurement is done as per the contract between the seller and buyer.

The closing activities and deliverables include:

* Project performance reviews including management of risks and issues
* Updated project management plan to reflect actual results
* Final reports distributed to appropriate stakeholders

The input for closing procurement include

* Project management plan
* Procurement documents

While the output include

* Closed procurement
* OPAs updates

**Project Management Ethic of code and conduct**

In the end, you will come across project management ethic of code and conduct which deals various human behavioral aspects such as

* Responsibility
* Respect
* Fairness
* Honesty
* Cultural Competence

This code is practiced to induce the confidence and bring a common frame of behavior in the project manager.

### Summary:

Initiation phase defines those processes that are required to start a new project. It defines what project should accomplish in due course of time.

The initiation phase mainly composed of two main activities

* Develop a Project Charter
* Identify Stakeholders

The stakeholder register and project charter are also useful in other process groups of project management like planning process.

Planning phase determines the scope as well as the objective of the project. It involves creating a set of plans that guides you through the execution and closure phases of the project.

The executing phase consists of those activities that are defined in project management plan. It is the longest phase of the project life cycle and consumes maximum energy and resources. Action taken in execution phase may affect the project management plan or documents.

Key task in execution phase are

* Execute Project Management Plans
* Direct and Manage Project Execution
* Execute Task Assignments
* Conduct Progress Status Meetings, etc.

During the execution phase, the result may require re-baselining and updates to existing project requirements.

Monitoring and controlling stage ensures that the deliverables are according to the project management plan before closing phase.

The main focus of this phase is to identify any changes made from the point of project management plan to determine preventive action against any unexpected result.

Closing phase is the process that performs a controlled shut down of the project at the end.

# Project Cost Management & Estimation Guide

# Creating a project budget is an extremely crucial part of any project management. Various things are taken in consideration while calculating budget for project like labor costs, necessary equipment acquisition, material costs, etc.

## Project Cost Management

Project Cost Management is the process of planning and controlling the project cost effectively. It defines what costs are required for each deliverable. The cost of the project can be estimated from various process sources like

* Creating WBS
* Develop Schedule
* Plan human resources
* Identifying risks

The inputs of cost management include,

* Project management plan
* Project charter
* Enterprise environmental factors
* Organizational process assets

While, the output of this is

* Cost Management Plan.

## Project Cost Estimation

The Project Cost Estimation is the process of approximating the total expenditure of the project.

The accuracy of the cost estimation depends on the accuracy and details of the project scope, which is the scope baseline. The scope will also define any constraints like date, resources or budget.

The risk register will help to estimate types of costs, the expenses made behind the contingent action and the expenses made to cope with risks.

To estimate the cost of project you have to categorize various cost types into categories like

* Labor cost
* Equipment cost
* Cost of supplies
* Travel cost
* Training cost
* Overhead cost, etc.

**Techniques used to estimate project cost**

To estimate project cost formally there are few techniques used

* **Analogous Estimating**

This estimating technique is based on expert judgments and information based on similar previous projects. Where previously done similar project cost is considered with plus or minus of 20% for existing project.

* **Parametric estimating**

Past data or record is used to estimate cost for the current project.

* **Bottom-up estimating**

Once you have defined the scope of the project, it is the most reliable form of technique. In this technique, based on WBS, you estimate the cost for each resource or deliverables.

Likewise, there are other techniques which could be useful for estimating cost like PERT estimating, vendor bid analysis, etc.

## Project Budget Planning

The main purpose of this activity is to allocate and authorize the monetary resources required to complete the project. The main output for determining the budget includes cost performance baseline. It not only specifies what cost will be incurred but also when costs will be incurred. The inputs for determining budget includes

* Activity cost estimates
* Basis for estimates
* Scope baseline
* Project Schedule
* Resource calendars
* Contracts
* Organizational process assets

The output of this process is

* Cost performance baseline
* Project funding requirements
* Project document updates

The project budgeting is performed in parallel with the project scheduling process. It is highly dependent on three component -

* Cost estimation
* Task durations
* Allocated resources

During project budgeting, project manager communicates with different people responsible for managing the work efforts as well as estimating project costs.

He will use various project prospects like work breakdown structure of the project, the cost estimates, historical data and records, resource information, and policies.

Without risk assessment, the budgeting process is not completed. Risk assessing process considers factors like time shortage, availability of resources, development team experience, the technology used, etc. The risk assessment can be an amount between 25 and 30 percent of the overall project cost.

## Project Quality Management Plan

The quality management process group consists of three processes,

1. **Plan Quality**

Plan Quality process involves identifying which standard quality are relevant to the project and how to fulfill them. It also includes identifying quality metrics and standard measures for project processes, regulatory compliance requirements, product functionality, documentation, etc.

The inputs of the plan quality management includes

* Project management plan
* Stakeholder register
* Risk register
* Requirements documentation
* Enterprise environmental factors
* Organizational process assets

The output for the quality management is

* Quality management plan
* Process improvement plan
* Quality metrics
* Quality checklists
* Project documents updates

1. **Quality Assurance**

This stage includes mainly two activity, first analyzing project quality and improve project quality. It is a process of auditing the quality requirements and the results from quality control measurement to ensure that quality standard is maintained throughout the process. The input for this will be same as the output of plan quality management while the

The output of this process will be

* Change request
* Project management plan
* Project documents updates
* Organization process assets updates

1. **Quality Control**

This will be conducted to control quality throughout the project life cycle. It defines how the quality standard can comply with the defined quality standards. The output ofQuality Assurancewill be the input for Quality Control. While the output will

* Quality control measurements
* Validate changes
* Verified deliverables
* Work performance information
* Change request
* Project management plan
* Project documents updates
* Organizational process assets updates

## Project Human Resource Management

HR management includes the process of organizing, managing and leading the project team. It is comprised of the people with allocated roles and responsibilities for completing the project. The HR management will deal with four processes.

1. **Develop human resource plan**: This stage defines the project roles and responsibilities, project organization charts and staff management plan

The input for this will

* + Project management plan
  + Activity resource requirements
  + Enterprise environmental factors
  + Organizational process assets

The output for this will be

* Human resource management plan

1. **Acquire project team**:

This stage confirms the availability of the human resource and obtaining the team necessary to complete project activities. The input for this stage would be the output from the previous step. While the output of this stage would be

* + Project staff assignments
  + Resource calendars
  + Project management plan updates

1. **Develop project team**:

In this stage, the focus is improving the team efficiency, team member interaction and enhancing overall team and project performance. The input for this stage would be the output from the previous step. While the output for this stage would be

* + Team performance assessments
  + Enterprise environmental factors updates

1. **Manage project team**:

This process includes tracking team member performance, resolving issues, providing feedback and managing a team to optimize project performance. The input for this stage would be the output from the previous step. While the output for this stage would be

* + Change request
  + Project management plan updates
  + Project document updates
  + Enterprise environmental factors updates
  + Organizational process assets updates

## Project Communication Management

Here, Project Communication does not mean interacting verbally with each other, but transmitting project related information effectively with the project team, stakeholder, project managers, etc. It should address risk actions and assessments, project plans, meeting management and actions, reviews and walk-throughs, etc.

This segment cover mainly five areas

1. **Communicating with Stakeholders**

It is the process of developing an approach to communicate with stakeholders efficiently and understanding their requirements. The input for this would be

* Project management plan
* Stakeholder register
* Enterprise environmental factors
* Organizational process assets

While the output for this will be

* Communication management plan
* Project documents updates

1. **Manage Communications**

It is the process of storing, distributing, collecting, and retrieving of project information in accordance with a communication plan. The input of this stage would be

* Enterprise environmental factors
* Organizational process assets
* Work performance reports
* Communication management plan

While the output would be

* Project communications
* Project management plan updates
* Project documents updates
* Organizational process assets updates

1. **Control Communications**

It is the process of controlling and monitoring communication throughout the entire project lifecycle. The input for this stage would be

* Project management plan
* Project communications
* Issue log
* Work performance data
* Organizational process assets

While the output of this stage would be

* Work performance information
* Change requests
* Project management plan updates
* Project document updates
* Organizational process updates

# Project Risk Analysis & Management

Proper risk management is control of possible future events that may have a negative effect on the overall project. It is more of pro-active then reactive process.

## What is Risk Analysis in Project Management?

Risk Analysis is the sequence of processes of risk management planning, analysis of risks, identification and controlling risk on a project.

Risk Management Process primarily involves following activities

1. **Plan risk management**

It is the procedure of defining how to perform risk management activities for a project.

1. **Identify risk**

It is the procedure of determining which risk may affect the project most. This process involves documentation of existing risks.

The input for identifying risk will be

* Risk management plan
* Project scope statement
* Cost management plan
* Schedule management plan
* Human resource management plan
* Scope baseline
* Activity cost estimates
* Activity duration estimates
* Stakeholder register
* Project documents
* Procurement documents
* Communication management plan
* Enterprise environmental factor
* Organizational process assets
* Perform qualitative risk analysis
* Perform quantitative risk analysis
* Plan risk responses
* Monitor and control risks

The output of the process will be a

* Risk register

1. **Perform qualitative risk analysis**

It is the process of prioritizing risks for further analysis or action by combining and assessing their probability of occurrence and impact. It helps managers to lessen the uncertainty level and concentrate on high priority risks.

Plan risk management should take place early in the project, it can impact on various aspects like cost, time, scope, quality and procurement.

The inputs for qualitative risk analysis includes

* Risk management plan
* Scope baseline
* Risk register
* Enterprise environmental factors
* Organizational process assets

The output of this stage would be

* Project documents updates

1. **Quantitative risk analysis**

It is the procedure of numerically analyzing the effect of identified risks on overall project objectives. In order to minimize the project uncertainty, this kind of analysis are quite helpful for decision making.

The input of this stage is

* Risk management plan
* Cost management plan
* Schedule management plan
* Risk register
* Enterprise environmental factors
* Organizational process assets

While the output will be

* Project documents updates

1. **Plan risk responses**

To enhance opportunities and to minimize threats to project objectives plan risk response is helpful. It addresses the risks by their priority, activities into the budget, schedule, and project management plan.

The inputs for plan risk responses are

* Risk management plan
* Risk register

While the output are

* Project management plan updates
* Project documents updates

1. **Control Risks**

Control risk is the procedure of tracking identified risks, identifying new risks, monitoring residual risks and evaluating risk.

The inputs for this stage includes

* Project management plan
* Risk register
* Work performance data
* Work performance reports

The output of this stage would be

* Work performance information
* Change requests
* Project management plan updates
* Project documents updates
* Organizational process assets updates

## Project Procurement Management

Project Procurement Management includes the processes of purchasing or acquiring products needed to run a business. The organization can be a seller, buyer or service provider.

Project Procurement Management also includes controlling any contract issued by an outside organization and get work done outside the project team.

Plan Procurement Management includes four stages like

* Plan Procurement Management
* Conduct Procurements
* Control Procurements
* Close Procurements

The input in the plan procurement management are

* Requirements documentation
* Teaming agreements
* Risk register
* Scope baseline
* Project schedule
* Activity cost estimates
* Cost performance baseline
* Risk related contract decisions
* Enterprise environmental factors
* Organizational process assets

**Conduct Procurement process**

Conduct Procurement process involves activities like

* Selecting a seller
* Receiving seller responses
* Awarding a contract

The benefit of conducting procurement process is that it provides alignment of external and internal stakeholder expectations through established agreements.

The input of the conduct procurement process includes

* Project management plan
* Documents for procurement
* Source selection criteria
* Qualified seller list
* Seller proposals
* Project documents
* Make or buy decisions
* Teaming agreements
* Organizational process assets

**Control Procurements**

It is the process of monitoring contract performance and correction to the contract as per the guidelines. It will ensure that buyers and sellers both meet the procurement requirement according to the terms of the legal agreement.

The input of the Control Procurements include

* Project management plan
* Procurement documents
* Agreements
* Approved change requests
* Work performance reports
* Work performance data

The output includes

* Work performance information
* Change requests
* Project management plan updates
* Project documents updates
* Organizational process assets updates

**Close procurements**

This step involves documenting agreements and other documents for future reference.

The input of this tool includes

* Project management plan
* Procurement documents

The output of this tool includes

* Closed procurements
* Organizational process assets updates

## Manage Stakeholder Engagement

A[stakeholder](https://www.guru99.com/stakeholder-needs-analysis.html) is an integral part of any project; their decision can leave a deep impact on project deliverables. In this process, the first part is to identify people, groups or organizations that could impact on the project while the second part is to analyze stakeholder expectations.

It also focusses on continuous communication with stakeholders to understand their needs and expectations.

**Identifying Stakeholders**

It is the process of identifying the groups, people or organization that can influence project outcomes. It allows the project manager to identify appropriate stakeholders.

**Plan Stakeholder Management**

It is the process of preparing a strategy to involve stakeholders throughout the project life cycle. It defines clear, actionable plan to interact with project Stakeholders.

The input for Plan Stakeholder Management includes

* Project management plan
* Stakeholder register
* Enterprise environmental factors
* Organizational process assets

The output of this

* Stakeholder management plan
* Project documents updates

**Manage Stakeholder Engagement**

In this stage, stakeholder are communicated to understand their expectations, address issues and foster appropriate stakeholder engagement in project activities. It allows the project manager to achieve project success without conflicting with stakeholder's decision.

The input of this stage is

* Stakeholder management plan
* Communication management plan
* Change log
* Organization process assets

While the output of this stage is

* Issue log
* Change request
* Project management plan updates
* Project documents updates
* Organizational process assets updates

**Control Stakeholder Engagement**

It is the process of monitoring stakeholder engagement in the project and adjusting strategies as per requirements. It will increase the stakeholder engagement activities as the project evolves and progresses.

The input for this stage include

* Project management plan
* Issue log
* Work performance data
* Project documents

The output of this stage include

* Work performance information
* Change requests
* Project management plan updates
* Project documents updates
* Organizational process assets updates

**Summary**

Risk Management includes the processes of conducting risk management planning, analysis of risks, identification and controlling risk on a project.

These steps can be used to manage risk in an organization

* Risk identification
* Risk Qualification
* Risk Response
* Risk Monitoring and Controlling

Procurement Management, includes the processes of purchasing or acquiring products needed to run a business. It is the process of monitoring contract performance and correction to the contract as per the guidelines

Stakeholder engagement focusses on continuous communication throughout the project lifecycle. The decision of stakeholder can leave a deep impact on project deliverables.

# Project Management Methodologies Tutorial

Standardization of a project is not possible as the different project has different requirements and processes. However, the process of project management can be standardized by using some of the pre-defined project methodologies.

There are several project management methodology that are prevalent for managing projects like

* **Waterfall Model:**

Waterfall model is based on the incremental model. In this method, the project is planned from top to bottom at once. The whole project will be divided into seven consecutive phases. In this method, all the features are delivered at once at the end of the cycle

Learn more about Waterfall model

* **Agile:**

In this method the process design is broken into individual models. The development process is iterative, and the end of each iteration, shippable features of the product are delivered to the customer Learn more about Agile Model

* **RAD:**

Rapid application development is a project management methodology used for software development, where the main purpose of developing application faster with high quality. The whole development process is defined into four phase

* **SDLC:**

SDLC (System Development Life Cycle) is a generic approach to project management which cover basic project management concepts like needs analysis, design, training, delivery, and support