

Chapter 5

Project Execution & Monitoring

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What is project execution?

- The execution phase involves carrying out the details of your **project charter** in order to deliver your products or services to your clients or internal stakeholders.
- Project execution typically involves three primary components:
 1. following processes,
 2. managing people, and
 3. distributing information.

Following processes

- During the planning phase of project management, you should have outlined systems and procedures to help finish your project within your organization's requirements.
- Sticking to your processes can help ensure your project proceeds efficiently.
- **Stubbornly sticking to a plan** when a change is warranted can jeopardize your entire project.

Managing people

- Making sure your personnel are following the project plan is essential, but keeping people on task is not your only job.
- It's important that you also motivate, encourage, and cheer the team.
- Pausing to celebrate each incremental victory is one way to show the team how much you value them, and it will inspire them to keep up the hard work.
- If one of your workers spots a fatal flaw in your project, you want them to feel comfortable coming forward to explain their concerns.

Distributing information to stakeholders and clients

- Involve your clients and stakeholders throughout the execution phase of the project.
- When you **keep stakeholders in the loop**, you can prevent costly misunderstandings and delays.
- One way to **increase visibility during the execution phase** of project management is to schedule regular check-ins to discuss progress.

Tips for successful project execution

- In addition to the above suggestions regarding processes, personnel management, and communication, these additional tips will ensure your project execution phase is a success.
 1. Assign clear responsibilities and accountabilities to your team members.
 2. Explain the rationale and motivation behind your decisions to get buy-in from your team.
 3. When you experience a setback, own your mistakes, and implement course corrections as needed.

Project Monitoring and Control

- According to the Project Management Body of Knowledge (PMBOK), *“the Monitoring and Control Process Group consists of those processes performed to observe project execution so that potential problems can be identified in a timely manner and corrective action can be taken, when necessary, to control the execution of the project.”*
- Project Monitoring and Control activities take place in **parallel with Project Execution Process Group activities** so that, while the project work is being executed, the project is being monitored and controlled by implementing the appropriate level of oversight and corrective action.
- The project is **observed and measured regularly** against the project plan to ensure that the project is **within acceptable variances of cost, schedule and scope**, and that risks and issues are continually monitored and corrected as needed.
- The main purpose of monitoring and controlling activities is to be proactive in finding issues ahead of time and taking corrective action.
- Corrective action is for bringing the project back in line with project objectives and constraints and improving future execution to avoid repeating the same issues.

Monitoring and Control Processes

Monitoring and Control processes include:

1. **Monitoring and Controlling Project Work**
2. **Integrated Change Control**
3. **Scope Verification**
4. **Scope Control**
5. **Schedule Control**
6. **Cost Control**
7. **Performing Quality Control**
8. **Managing the Project Team**
9. **Performance Reporting**
10. **Managing Stakeholders**

Monitoring and Controlling Project Work

- The Monitoring and Controlling Project Work process collects, measures and disseminates performance information, and assesses measures and trends to forecast potential items requiring corrective action.
- This includes monitoring project risks and ensuring that they are being managed according to the project's risk plans.
- Outputs include:
 1. Recommended corrective actions
 2. Recommended preventive actions
 3. Forecasts
 4. Recommended defect repair
 5. Requested changes

Integrated Change Control

- The Integrated Change Control process ensures that changes as a result of project corrective actions and other controlling factors are managed across the project knowledge areas.
- *Integrated change control takes place throughout the project, from project initiation through project closure.*
- Outputs include:
 1. Approved change requests
 2. Rejected change requests
 3. Updates to the Project Management Plan
 4. Updates to the Project Scope Statement (and requirements)
 5. Approved corrective and preventive actions
 6. Approved defect repair
 7. Validated defect repair
 8. Deliverables

Scope Verification

- The scope verification process ensures that project deliverables are formally accepted.
- Outputs include:
 1. Accepted deliverables
 2. Requested changes
 3. Recommended corrective actions

Scope Control

- The Scope Control process ensures that changes to project scope are controlled.
- Outputs include:
 1. Updates to the Project Scope Statement and Scope baseline (this includes requirements)
 2. Updates to the Work Breakdown Structure (WBS) and the WBS Dictionary
 3. Requested changes
 4. Recommended corrective actions
 5. Updates to organizational process assets
 6. Updates to the Project Management Plan

Schedule Control

- The Schedule Control process monitors and controls changes to the project schedule.
- Outputs include:
 1. Updates to the schedule model data and baseline
 2. Performance measurements
 3. Requested changes
 4. Recommended corrective actions
 5. Updates to organizational process assets
 6. Activity list and activity attribute updates
 7. Updates to the Project Management Plan

Cost Control

- The Cost Control process monitors and controls costs and changes to the project budget.
- Outputs include:
 1. Cost estimate updates
 2. Cost baseline updates
 3. Performance measurements
 4. Forecasted completion
 5. Requested changes
 6. Recommended corrective actions
 7. Updates to organizational process assets
 8. Updates to the Project Management Plan

Performing Quality Control

- The quality control performance process measures specific project results to determine whether the project is meeting quality standards.
- Outputs include:
 1. Quality control measurements
 2. Validated defect repair
 3. Updates to the quality baseline
 4. Recommended corrective and preventive actions
 5. Requested changes
 6. Recommended defect repair
 7. Updates to organizational process assets
 8. Validated deliverables
 9. Updates to the Project Management Plan

Managing the Project Team

- This process tracks team member performance, provides feedback, resolves issues and coordinates changes to maintain and improve project performance.
- Outputs include:
 1. Requested changes
 2. Recommended corrective and preventive actions
 3. Updates to organizational process assets
 4. Updates to the Project Management Plan

Performance Reporting

- The Performance Reporting process collects and distributes performance information — including status reports, progress reports and forecasts.
- Outputs include:
 1. Performance reports
 2. Forecasts
 3. Requested changes
 4. Recommended corrective actions
 5. Updates to organizational process assets

Managing Stakeholders

- This process manages stakeholder communications and works with stakeholders to ensure that requirements are satisfied and issues are proactively resolved.
- Outputs include:
 1. Resolved issues
 2. Approved change requests
 3. Approved corrective actions
 4. Updates to organizational process assets
 5. Updates to the Project Management Plan

What is project reporting?

- Reporting in project management simply refers to providing a high-level overview that offers the critical data the project generates in a simple, easy-to-use format.
- Project reporting is essential to project management success since it provides a window into what's happening and what to do about it for the entire team.
- Overall, project management reports are important because it:
 1. Shows the project management team what's working, so they can explain why it's working and focus more on it.
 2. Uncovers what's not working so the team can investigate and determine on an appropriate course of action i.e. what to do about it.
 3. Gives the team a 360° overview of how the project is doing so they can determine what steps to take next.

Project status report

- The project status report is a critical report that shows stakeholders a general snapshot of how well the project is advancing toward its targets.
- The project status report can be thought of as a general update that's designed to keep stakeholders or progress, emerging issues, and key points to note, all at a glance.

Project health report

- Project health reports are designed to update stakeholders on the overall health of the project, derived from whether the project is either advancing as projected, in danger of stagnating, or completely stagnated.
- The project health report answers the following questions:
 1. Are we on track to deliver this project on target? Have we stagnated?
 2. How far off are we from the target?
 3. What needs the most attention to get us back on track?

Team availability reports

- The team availability report functions like a team calendar that shows every team member's schedule so it's easy to see who's occupied and when they are busy.
- This way, stakeholders planning for a project or requiring input anywhere can see which team members can be assigned, those who can safely take on more work, as well as those who are at full capacity and might need assistance.

Risk reports

- A risk report identifies the blockers hindering a project's successful completion and presents it for the stakeholders' analysis.
- The risk report is designed to not only display existing or potential obstacles but to offer a sense of the danger they pose to the project so the project's stakeholders can take adequate steps to eliminate or adapt the project.

Variance report

- It's quite common for teams to deviate from the project's key targets without even knowing.
- In the end, this results in project failure after time and resources have been expended.
- A variance report helps the project management team and stakeholders to ensure that doesn't happen.
- You can track the target project milestones and objectives of the project along with the work that's getting done.

Time tracking report

- Time tracking helps the project management team & stakeholders see how much time is getting spent by team members at every stage of the project management process.
- A time tracking report helps the team to see how much time overall is spent on specific tasks and how much individual team members spend on tasks.

Stakeholder Engagement Plan

- The stakeholder engagement plan is "a component of the project management plan that identifies the strategies and actions required to promote productive involvement of stakeholders in project or program decision making and execution (*PMBOK® Guide – Sixth Edition, Page 723*).“
- Stakeholder engagement includes ways to attract and involve individuals, groups, and organizations who may be affected by a project or may affect the project.

Ways to Engage Project Stakeholder

You can also create your personal stakeholder engagement plan by covering the following:

- Make a stakeholder list (including contact names, project phases, influence, engagement approach, etc.)
- Classify stakeholders and develop a power/interest grid Define the type of power and interest (e.g. If the top management is the stakeholder they are powerful enough to stop the project, and their interest in the project stems from monetary incentives)
- Develop the stakeholder engagement tactics (communication type, frequency, etc.)

Team Management and Communication

- The team management is the responsibility of the project manager.
- Methods to manage the project team:
 1. By observing and conversing
 2. By conducting project performance appraisals
 3. By resolving conflicts
- Communication is an important aspect of effective team management.
- Can take place in the following forms:
 1. Synchronous Communication
 2. Asynchronous Communication

Project Meetings

- A **Project Meeting** is a regular event that involves everyone, who shares or is interested in the project, in communicating with other participants and stakeholders by discussing issues, making proposals, approving or rejecting offers, for the purpose of generating group decisions that contribute to quicker project delivery, according to the planned goals and expected results.
- Project meetings refer to an effective method to distribute information and communicate with the team and stakeholders.

Types of Meetings

- **Regular Team Meetings** are the most frequent meetings that can be organized and conducted many times during the course of the project implementation process. Regular (daily, weekly, monthly) meetings are scheduled and itemized in the communication management plan.
- **Change Control Meetings** are organized by a change control board and intended for reviewing change requests. The board makes decisions about approving all the changes occurred and communicating with stakeholders for information and follow-up actions.
- **Status Review Meetings** are organized on a regular basis to exchange and analyze information on current progress of the project and its performance. During such a meeting, the project manager distributes performance reports among the participants to allow the team and stakeholders to gain visibility into current performance levels and task progress. Status review meetings are also known as performance reviews.

Guidelines to Conducting Effective Meetings

1. **Selecting Participants:** The decision about who is to attend depends on what you want to accomplish in the meeting.
2. **Developing Agendas:** In the agenda, state the overall outcome that you want from the meeting. Design the agenda so that participants get involved early by having something for them to do right away and so they come on time.
3. **Opening the Meeting:** Always start on time; this respects those who showed up on time and reminds late-comers that the scheduling is serious.
4. **Establishing Ground Rules:** ground rules cultivate the basic ingredients needed for a successful meeting. Four powerful ground rules are: participate, get focus, maintain momentum and reach closure.
5. **Time Management in Meetings:** If the planned time on the agenda is getting out of hand, present it to the group and ask for their input as to a resolution.
6. **Evaluating the Meeting Process:** Get people feedback during the meeting when you can improve the meeting process right away.
7. **Evaluating the Overall Meeting:** Leave 5-10 minutes at the end of the meeting to evaluate the meeting; don't skip this portion of the meeting.
8. **Closing the Meeting:** Always end meetings on time and attempt to end on a positive note.

Earned value analysis

- Earned value analysis is the project management tool that is used to measure project progress.
- It compares the actual work completed at any time to the original budget and schedule.
- It forecasts the final budget and schedule and analyzes the path to get there.
- It gives you the essential early warning signal that things are going awry.
- There are two variables which the earned value method focuses on.
 1. Schedule (time)
 2. Cost

Steps to perform earned value analysis

There are 8 steps to perform earned value analysis effectively.

1. Determine the percent complete of each task.
2. Determine Planned Value (PV).
3. Determine Earned Value (EV).
4. Obtain Actual Cost (AC).
5. Calculate Schedule Variance (SV).
6. Calculate Cost Variance (CV).
7. Calculate Other Status Indicators (SPI, CPI, EAC, ETC, and TCPI)
8. Compile Results

Determine Percent Complete

- To start the process, the percentage complete of each task needs to be determined.

Determine Planned Value (PV)

- ***Planned Value***, also known as ***Budgeted Cost of Work Scheduled (BCWS)***, is defined as the amount of the task that is supposed to have been completed.
- It is in monetary terms as a portion of the task budget.
- For **example** let's say that:
- The task budget is \$5,000,
- The task start date is January 1, and
- The task finish date is January 10.
- If it's January 6 today, the task is supposed to be 60% complete.
Therefore, $PV = \$5,000 \times 60\% = \$3,000$.

Determine Earned Value (EV)

- ***Earned Value***, also known as ***Budgeted Cost of Work Performed (BCWP)***, is the amount of the task that is actually complete.
- It is, again, in monetary terms as a portion of the task budget.
- For **example**, let's use the same example task.
- The task budget is \$5,000, (same as above)
- The task start date is January 1, and (same as above)
- The task finish date is January 10. (same as above)
- Let's say the actual percent complete of the task (step 1) is 40%.
Therefore, $EV = \$5,000 \times 40\% = \$2,000$.

Obtain Actual Cost (AC)

- The **Actual Cost**, also known as **Actual Cost of Work Performed (ACWP)**, is the actual cost of the work.
- Generally employee hours need to be converted into a cost, and all project costs need to be added up, such as the following items:
 - Labor
 - Materials
 - Equipment
 - Fixed cost items, like subcontractors

Calculate Schedule Variance (SV)

- The **Schedule Variance** represents the schedule status of the project.
- $SV = EV - PV$
- In our above example the schedule variance is:
$$SV = \$2,000 - \$3,000 = -\$1,000.$$
- A negative schedule variance means the task is behind schedule.
- A positive schedule variance means it is ahead of schedule.

Calculate Cost Variance (CV)

- The **Cost Variance** represents the cost status of the project.
- $CV = EV - AC$
- In our above **example** the cost variance is:
$$CV = \$2,000 - \$1,500 = \$500.$$
- A negative cost variance means the task is over budget.
- A positive cost variance means it is under budget.

Calculate Other Status Indicators

- **Schedule Performance Index (SPI):** The schedule variance expressed in percentage terms, for example, $SPI = 0.8$ means the project 20% behind schedule.

$$SPI = EV / PV$$

- **Cost Performance Index (CPI):** The cost variance expressed in percentage terms, for example, $CPI = 0.9$ means the project is 10% over budget.

$$CPI = EV / AC$$

- **Estimate at Completion (EAC):** The expected budget at the end of the project given the variances that have already taken place. There are various ways to extrapolate this value but assuming that the past variances are likely to persist:

$$EAC = AC + BAC - EV$$

- **Estimate to Complete (ETC):** The expected cost to finish the rest of the project.

$$ETC = EAC - AC$$

- **To Complete Performance Index (TCPI):** The required CPI necessary to finish the project right on budget. For example, $TCPI = 1.25$ means you need to find 25% efficiencies to finish on budget.

$$TCPI = (BAC - EV) / (BAC - AC)$$

Interpreting the Results

- The first two calculations (SV and CV) give you the basic indicator of project progress. A negative value indicates an undesirable situation.
- *If the schedule variance (SV) is negative, you are behind schedule.*
- *If the cost variance (CV) is negative, you are over budget.*

Formulae

- ACWP (AC), BCWS (PV), BCWP (EV)
- Schedule Variance $SV = EV - PV$
- Cost Variance $CV = EV - AC$
- Schedule Performance Index $SPI = EV / PV$
- Cost Performance Index $CPI = EV / AC$
- Cost Schedule Index $CSI = EV^2 / (AC) (PV)$
- Time Variance: A time variance is the difference between the standard hours and actual hours assigned to a job.

$$\text{Time Variance} = ST - AT = AT (CSI - 1)$$

AT is the day given to carry Earned Value Analysis.

Example 1: A consulting project has an actual cost of Rs. 45000, scheduled cost of Rs. 35000, and value of completed work Rs. 40000. Find the schedule and cost variance. Also find SPI and CPI.

Solution:

$AC = \text{Rs. } 45000$, $PV = \text{Rs. } 35000$, $EV = \text{Rs. } 40000$

Schedule Variance $SV = EV - PV = 40000 - 35000 = \text{Rs. } 5000$

Cost Variance $CV = EV - AC = 40000 - 45000 = \text{Rs. } -5000$

Schedule Performance Index $SPI = EV / PV = 40000 / 35000 = 1.14$

Cost Performance Index $CPI = EV / AC = 40000 / 45000 = 0.88$

Example 2: A software development project at day 70 exhibits an actual of Rs. 78000 and a scheduled cost of Rs. 84000. The software manager estimates a value completed of Rs. 81000. What are the cost and schedule variances and CSI? Estimate the time variance.

Solution:

AC = Rs. 78000, PV = Rs. 84000, EV = Rs. 81000, AT = 70 days

Schedule Variance SV = EV – PV = 81000 – 84000 = Rs. -3000

Cost Variance CV = EV – AC = 81000 – 78000 = Rs. 3000

SPI = EV / PV = 81000 / 84000 = 0.96

CPI = EV / AC = 81000 / 78000 = 1.03

CSI = EV² / (AC) (PV) = 81000² / (78000)(84000) = 1.001

Time Variance = ST – AT = AT (CSI – 1) = 70 (1.001 - 1) = 0.07 days

Example 3: A consulting project has an actual cost of Rs. 35000, scheduled cost of Rs. 27000, and value of completed work of Rs. 31000. Find the schedule variance and cost variance. Also find SPI and CPI.

Solution:

$AC = \text{Rs. } 35000$, $PV = \text{Rs. } 27000$, $EV = \text{Rs. } 31000$

Schedule Variance $SV = EV - PV = 31000 - 27000 = \text{Rs. } 4000$

Cost Variance $CV = EV - AC = 31000 - 35000 = \text{Rs. } -4000$

Schedule Performance Index $SPI = EV / PV = 31000 / 27000 = 1.14$

Cost Performance Index $CPI = EV / AC = 31000 / 35000 = 0.88$

Example 4: A project to develop a county park has an actual cost in month 17 of \$350000, a planned cost of \$475000 and a value completed of \$300000. Find the cost and schedule variances and the three indices.

Solution:

AC = \$350000, PV = \$475000, EV = \$300000, AT = 17 months

Cost Variance CV = EV – AC = 300000 – 350000 = Rs. -50000

Schedule Variance SV = EV – PV = 300000 – 475000 = Rs. -175000

CPI = EV / AC = 300000 / 350000 = 0.857

SPI = EV / PV = 300000 / 475000 = 0.632

CSI = EV² / (AC) (PV) = 300000² / (350000)(475000) = 0.541

Change Request

- A change request is a proposal to alter a product or system, often brought up by the client or another team member.
- During a project, this can happen when a client wants to change or alter the agreed upon deliverables.
- There are two types of change requests: those that are **inside** the scope and those that are **outside** the scope of the project.
- Change requests that are **inside the scope** involve small corrections to an existing requirement. They usually have minimal impact on the budget or the rest of the team.
- On the other hand, change requests that are **outside the scope** take a considerable amount of time to implement and have a more sizeable impact on the budget.

Scope Creep

- A definition provided by the PMBOK® Guide (5th edition) states that *scope creep is the uncontrolled expansion to product or project scope without adjustments to time, cost, and resources.*
- **Causes of scope creep**
 1. Project scope is not defined clearly enough.
 2. Changed client's priorities or needs.
 3. Poorly identified stakeholder needs and interests.
 4. Poor initial analysis of what's necessary and reasonable.
 5. Inability to say no.
- **How to Avoid Scope Creep?**
 1. Identify all stakeholders and understand their goals.
 2. Clearly define project scope.
 3. Plan room for changes in advance.
 4. Take action as early as possible.
 5. Know when to say no.

Project Audit

- Project auditing can be defined as the process of detailed inspection of the management of a project, its methodology, its techniques, its procedures, its documents, its properties, its budgets, its expenses and its level of completion.
- A project audit is a key step in the process of closing a project. This audit evaluates the total project processes and outcomes.
- The life cycle of an audit contains six phases:
 1. Planning of the Audit
 2. Execution of the Audit
 3. Summarization of the Audit
 4. Presentation of Results
 5. Identification of the Action Plan
 6. Scheduling of Follow-up

Types of Project Audit

There are various audits conducted throughout Project lifecycle.

- **Quality Audit:** A quality audit is a structured, independent process to determine if project activities comply with organizational and project policies, processes, and procedures.
- **Risk audit:** Risk audits examine and document the effectiveness of risk responses in dealing with identified risks and their root causes, as well as the effectiveness of the risk management process. The project manager is responsible for ensuring that risk audits are performed at an appropriate frequency, as defined in the project's risk management plan.
- **Procurement Audit:** A procurement audit is a structured review of the procurement process originating from the Plan Procurement Management process through Control Procurements. The objective of a procurement audit is to identify successes and failures that warrant recognition in the preparation or administration of other procurement contracts on the project, or on other projects within the performing organization.

Project Procurement Management

- According to *PMBOK® Guide – Sixth Edition*, “Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team”.
- Project procurement management is one of the ten Knowledge Areas that acts as a supporting pillar for the Project Management Framework.
- Its main purpose is to establish and maintain a healthy relationship with the vendors providing goods and services throughout the project lifecycle.
- The relationships with vendors are generally established and legalized through **contracts**.
- It ensures that the required goods and services are received at the right time and qualify the project quality standards as stated by the purchasing organization.

Procurement Management Benefits

- It helps in identifying the goods and services needed to be procured for the successful project completion.
- Provides a complete list of Purchase Orders and related issue to the suppliers.
- It gives agreed timeframes and methods regarding delivery.
- Helps in reviewing and procuring goods and services from suppliers.
- It validates the supplier contract milestones and approves their payment.
- It acts as a reference that helps in reviewing the supplier performance against the contract.
- It helps in identifying and resolving supplier performance issues.
- It acts as a communication channel, that updates the project status to the upper management.

Project Procurement Management Processes



Plan Procurement Management

- Plan procurement management is the initial process of project procurement management knowledge area.
- In this process, you need to document various procurement decisions, specify the procurement approach and identify the potential and quality sellers.
- This process is executed once in a while at the predefined points in the project lifecycle and helps in deciding whether there is a need for acquiring goods and services from the outside or not.
- In case there is a need, it also helps in identifying which resources are to be acquired and when.
- Required goods and services can be procured either from internally (other parts of your project organization) or from externally (outside sources).

Conduct Procurements

- The second process of project procurement management is *Conduct Procurements*.
- In this process responses from various sellers are collected, an efficient seller is selected among them and finally, a contract is curated.
- This process is performed throughout the project after certain time intervals and helps in identifying a qualified vendor and then proceed with the establishment of the legal agreements for the delivery process.

Control Procurements

- Third and the final process of this knowledge area is *Control Procurement*.
- In this process the procured relations are managed, their contract performance is thoroughly monitored, appropriate adjustments and changes are made and finally, the contracts are closed.
- This process can be performed at any point of the project lifecycle as per need.
- It helps in ensuring that the performance of both the involved parties (buyers & seller's) is up to the project requirement as stated in the legal agreements.

Contracts

- 'Contract' as the term specifies is an agreement between two parties in general.
- In project management, it's a formal agreement between a buyer and a seller (more often referred to as supplier).
- The agreement is made to procure goods and services required for the agreed project.
- This document needs to be prepared by the Project Manager (or the contract project manager if assigned).
- It is in coordination with Procurement Manager during the project planning stage.
- It has to be documented as a Procurement Management plan, which is a part of the primary Project Management Plan.
- Contract Management, a part of the Project management, deals with the vendor/seller/supplier (as termed in the contract).
- It also manages the procurements according to the terms and conditions set in the 'Contract.'
- The terms and conditions are agreed mutually between the buyer and seller.

Types of contract

- Most of the contractual relationships are broadly categorized as either:
 1. Fixed-Price contract
 2. Cost reimbursable
 3. Time & Materials Contract

Fixed Price Contracts

- In this category, the contract involves a fixed price for a defined product or service or the result to be supplied/provided.
- These types of contracts are recommended when the scope of service is completely defined and final.
- **Here are the different types of Fixed Price contracts used in managing projects:**
 - 1. Firm Fixed Price (FFP)**
 - 2. Fixed Price Incentive Fee (FPIF)**
 - 3. Fixed Price with Economic Price Adjustments (FPEPA)**

Firm Fixed Price (FFP)

- The prices of the goods and services are set and are never subjected to change unless the scope is changed and agreed mutually.
- This type is favorable mostly to the buying organizations because the extent of buying the goods remains unchanged and recurring buying happens.

Fixed Price Incentive Fee (FPIF)

- The price ceiling is set, and the seller needs to perform and fulfill the contract requirements within that price.
- All the costs above the price ceiling are the responsibility of the seller.
- This type gives both the buyer and the seller some flexibility for performance with technical incentives.
- The incentives are tied to achieving agreed upon metrics such as cost, schedule and technical expertise of the seller.

Fixed Price with Economic Price Adjustments (FPEPA)

- It is suitable when the contracts are executed in different countries and payments are made in a different currency.
- Also, if the seller's work lasts for a few years (3-5 years generally) this contract is fitting.
- This contract gives an option to make adjustments in the predefined final payment as agreed to in the contract.
- It can be due to changed conditions such as inflating rates (may increase or decrease) on specific commodities.

Cost reimbursable contracts

- This type of contract involves cost reimbursement (payments to the work done) for the costs incurred during completion of the contractual job.
- It is along with a pre-defined fee representing seller profit.
- It is recommended if the scope of the work is expected to change during the contract period.
- **This type of contract includes:**
 - 1. Cost Plus Fixed Fee (CPFF)**
 - 2. Cost Plus Incentive Fee (CPIF)**
 - 3. Cost Plus Award Fee (CPAF)**

Cost Plus Fixed Fee (CPFF)

- The seller gets all the allowable costs agreed in the contract.
- The seller also receives a fixed fee payment, which is calculated as a percentage of initial estimated project costs.
- Unless the project scope changes, this fee remains unchanged.

Cost Plus Incentive Fee (CPIF)

- The seller gets the reimbursements for all the costs incurred on performing the work agreed in the contract.
- Based on the final costs incurred (greater or lesser than the initial planned cost), both the buyer and the seller share their expenses.
- The sharing is based upon a pre-negotiated cost-sharing formula.
- Generally, it is an 80/20 split over the target costs based on the actual performance of the seller.

Cost Plus Award Fee (CPAF)

- In this type, the seller gets his/her legitimate reimbursements.
- But a majority of the fee is received upon meeting some technical/subjective performance that is pre-set in the contract.
- This solely depends on the buyer's determination and the seller's performance.

Time & Material Contracts (T&M)

- This a hybrid type of contract combining the features of Fixed as well as Cost Reimbursable contracts.
- This is often used when contractual requirements (scope) is not known/ prescribed.
- Also, this type of contract is suitable for acquisition/hiring of experts, project staff required for a particular period.

Project Outsourcing

- In recent years there has been a steady growth in the frequency of outsourcing parts of projects.
- External suppliers, increasingly, are delivering parts of projects, including tangible products and services as well as intangible knowledge and skills.
- There are many reasons beyond avoidance of litigation that firms enter partnering arrangements with each other, for example, diversification of technical risk, avoidance of capital investment, reducing political risk on multinational projects, shortening the duration of the project, and pooling of complementary knowledge etc.
- The parent organization's objective is to get the deliverable at the lowest possible cost, as soon as possible.
- The subcontractor's objective is to produce the deliverable at the highest possible profit with the least effort.
- These conflicting interests tend to lead both parties to work in an atmosphere of mutual suspicion and antagonism.
- The concept of "partnering" has been developed to replace this atmosphere with one of cooperation and mutual helpfulness,

Partnering

- Project partnering is a method of transforming contractual relationships into a cohesive, cooperative project team with a single set of goals and established procedures for resolving disputes in a timely and effective manner.
- There is a multistep process for building partnered projects.
- First, the parent firm must make a commitment to partnering, select subcontractors who will also make such a commitment, engage in joint team-building exercises, and develop a “charter” for the project.
- Second, both parties must implement the partnering process with a four-part agreement on: (1) “joint evaluation” of the project’s progress; (2) a method for resolving any problems or disagreements; (3) acceptance of a goal for continuous improvement (also known as TQM) for the joint project; and (4) continuous support for the process of partnering from senior management of both parties.
- Finally, the parties commit to a joint review of “project execution” when the project is completed.