COMPLETE PMP CERTIFICATION GUIDE

Based on PMBOK 5th Ed.

 examspm.com
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Introduction

Project Management Professional (PMP) is the most prestigious project management certification that is recognized worldwide. By having this certification, you demonstrate that you understand the standard framework and terminologies for managing projects. By having access to the PMI network, you will increase your network and job opportunities.

Are you ready to get certified?

Committing to obtaining your PMP certification is a big commitment. It takes roughly 100-150 hours of studying and thousands dollar to obtain this certification (cost breakdown in chart below). It is both a big financial and time commitment, so before you begin, ask yourself - “are you ready?”

How this guide is organized

You can find a summary of all 10 knowledge areas and 47 processes in this study guide.

Each chapter corresponds with a different Knowledge Area in the PMBOK. Every chapter starts off with a Knowledge Area description and a list all the key terms for that Knowledge Area. The processes associated with the Knowledge Area are outlined. Each process contains a description as well as its inputs, tools & techniques, and outputs.

This guide also contains important terms, concepts, formulas, processes, and knowledge areas that will be on the PMP exam. It is important to ensure you are familiar with all the material in this guide before you take the exam.

Note: This guide does not provide any PDU hours. To obtain your PMP, you still need to obtain 35 contact hours, please visit our website at www.ExamsPM.com. We offer affordable training that fits in your schedule.
The ExamsPM Approach

When you become a student at ExamsPM, you will be getting the best of both worlds: the cost of online training combine with the personal touch of in-person training. Thus, you will be getting the most value for your money.

When you buy a traditional online PMP training course, you will just get a DIY course and some practice questions, but no one to check in on you to see how you are doing. The problem with this approach is that many of you will not end up completing the course, and you have no one to turn to when you have questions?

ExamsPM's PMP training combines live training with online training at a fraction of the cost. You will get a live coach who checks in with you weekly to hold you accountable. S/he will make sure that are staying on track to reach your goals.

You will also be able to attend live webinars weekly where you can not only network with our students in the course, but also ask questions to PMP certified instructors.

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Project Integration Management

Project Integration Management includes the processes and activities to identify, define, and coordinate the various processes and project management activities within the Project Management Process Groups. Project Integration Management includes making choices about resource allocation, making trade-offs among competing objectives and alternatives, and managing the interdependencies among the project management Knowledge Areas.

Key Terms

Business Case – documentations to justify the project investment

Project SOW (statement of work) – Description of the products or services being supplied along with the business need, product scope description, and strategic plan.

Enterprise Environmental Factors (EEFs) – EEFs include factors such as culture, organizational structure, resource availability, stakeholder risk tolerance, and marketplace conditions

Organizational Process Assets (OPAs) – OPAs include lessons learned from previous projects, corporate knowledge base, financial information, and processes and procedures.

Management Plans – Management plans are the strategy for managing the project and the processes in each knowledge area. A management plan covers how you will define, plan, manage, and control a project.

Performance Measurement Baseline – The performance measurement baselines consists of the scope, schedule, and cost baselines. These baselines are created during planning. Project managers will report performance against these baselines.

Change Control Board – a panel of stakeholders who are responsible for reviewing and deciding which changes should be made to a project.

Project Integration Processes

Develop Project Charter

❖ The Charter recognizes and authorizes the existence of the project
❖ It defines high level requirements and objectives
❖ It provides the PM with the authority to apply organizational resources
❖ Project cannot start without the charter
❖ It is not a substitute for a project management plan
Develop Project Management Plan

- A method of linking all individual management plans together
- Provides strategic direction for the project
- The project manager’s main focus is executing the project management plan successfully
- This plan must be concise and unambiguous

Direct and Manage Project Work

- Integrates all executing processes together to produce project deliverables
- Often, the project management plan needs changes. Direct and manage project work must also incorporate the changes made to the project.
Monitor and Control Project Work

- The goal of this process is to keep the project on time and on budget.
- The project manager spends the most amount of time on this process because things often go wrong and it is the project manager’s responsibility to fix it.

Perform Integrated Change Control

- The Perform Integrated Change Control process looks at:
  - Which changes to make in a project
  - The impact of changes across all knowledge areas
Process Inputs, Tools & Techniques, Outputs

Inputs
1. Project management plan
2. Work performance reports
3. Change requests
4. EEF & OPA

T&T
1. Expert judgment
2. Meetings
3. Change control tools

Outputs
1. Approved change requests
2. Change logs
3. Project document updates
4. Project management plan updates

Close Project or Phase

❖ Process that finalizes all activities across all process groups
❖ Process that formally closes the project or project phase

Process Inputs, Tools & Techniques, Outputs

Inputs
1. Project management plan
2. Accepted deliverables
3. OPA

T&T
1. Expert judgment
2. Meetings
3. Analytical techniques

Outputs
1. Final product, service, or result transition
2. OPA updates
Project Scope Management

Project Scope Management includes the processes required to ensure that the project includes all the work required to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project.

Key Terms

**Product Scope** - Product scope is another way to say “requirements that relate to the product of the project.”

**Project Scope** – The work required to achieve the deliverables. The work can include planning, coordination, and management activities.

**Focus Groups** - Getting stakeholders’ and subject matter experts’ requirements for the project.

**Facilitated Workshops** - Facilitated workshops bring stakeholders together to arrive at consensus regarding the requirements.

**Group Creativity Techniques** – Some examples include brainstorming, nominal group techniques, Delphi, idea/mind mapping, and affinity diagram.

**Group Decision Making Techniques** – The four options are: unanimity (everyone agrees), majority (more than 50% of the people agrees), plurality (the largest group agrees), and dictatorship (1 person agrees).

**Requirements Documentation** - This documentation is an output of the Collect Requirements process and helps make sure the requirements are clear and unambiguous.

**Requirements Traceability Matrix** - The requirements traceability matrix helps track requirements over the life of the project to ensure they are accomplished. The matrix usually takes the form of a table with information like numbers, source of each requirements, and status.

**Product Analysis** – Product analysis help determine product requirements and methods of accomplishing those objectives. Product analysis techniques includes product breakdown, systems analysis, systems engineering, value engineering, value analysis and functional analysis.

**WBS (work breakdown structure)** – WBS helps define a baseline for performance measurement and facilitate clear responsibility assignments.
**WBS Dictionary** - The WBS dictionary provides a description of the work to be done for each WBS work package and helps make sure the resulting work better matches what is needed.

**Decomposition** - Sub-divides major deliverables into smaller, more manageable components until all can be defined with adequate costs and duration estimates.

**Scope Management Processes**

**Plan Scope Management**

- Process of creating a scope management plan, a document of how the project will be defined, controlled, and verified.

**Process Inputs, Tools & Techniques, Outputs**

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**Collect Requirements**

- Collect requirements is the process of determining, documenting, and managing stakeholder needs/requirements to meet project objectives.
- All requirements should be gathered at the start because it is costly to make changes as the project progresses.
- Gathering requirements from all stakeholders will also ensure that their opinions are taken into consideration, which will lead to higher rates of project acceptance.
Define Scope

- Define Scope process develops a detailed description of the project.
- Highly iterative process because the project team may need several rounds before they agree on the scope.

Create WBS

- Create WBS is the process of dividing project deliverables into smaller pieces using a top-down approach.
- The three components to scope baseline are: project scope statement, WBS, and WBS dictionary.
Process Inputs, Tools & Techniques, Outputs

**Inputs**
1. Scope management plan
2. Project scope statement
3. Requirements documentation
4. EEF
5. OPA

**T&T**
1. Expert judgment
2. Decomposition

**Outputs**
1. Decomposition
2. Project document updates

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**Validate Scope**

- Validate Scope is the process that gets your customer to formally accept the project.
- The goal is to bring objectivity to the acceptance process and increase the chances of a final acceptance.

---

**Process Inputs, Tools & Techniques, Outputs**

**Inputs**
1. Project management plan
2. Requirements documentation
3. Requirements traceability matrix
4. Verified deliverables
5. Work performance data

**T&T**
1. Inspection
2. Group decision-making techniques

**Outputs**
1. Accepted deliverables
2. Change requests
3. Work performance information
4. Project documents updates

---

**Control Scope**

- The Control Scope process monitors the project scope and the scope baseline.
- It also ensures all requested changes go through Perform Integrated Change Control.
- Activities in this process help identify variances early and find root cause.
Process Inputs, Tools & Techniques, Outputs

**Inputs**
1. Project management plan
2. Requirements documentation
3. Requirements traceability matrix
4. Work performance data
5. OPA

**T&T**
1. Variance analysis

**Outputs**
1. Work performance information
2. Change requests
3. Project management plan updates
4. Project documents updates
5. OPA updates
Project Time Management

Project Time Management includes the processes required to manage the timely completion of the project. Project Time Management processes and their associated tools and techniques are documented in the schedule management plan. Project schedule development uses the outputs from the processes to define activities, sequence activities, estimate activity resources, and estimate activity duration in combination with the scheduling tool to produce the schedule model.

Key Terms

**Decomposition** - The major differences between decompositions and create WBS is that the final outputs here are described as activities (action steps) rather than as deliverables (tangible items). Sometimes WBS and activity lists are developed at the same time.

**Rolling Wave Planning** - short term work is planned in detail while further out work is planned at a high level; also known as Progressive Elaboration.

**Activity List** - All activities to be performed. Discrete components of the schedule not of the WBS.

**Activity Attributes** - Identifier, codes, description, relationships, leads and lags, constraints, and assumptions

**Milestone list** – Dates when key deliverables of the project has to be completed

**Precedence Diagramming Method (PDM) or Activity-on-Node (AON)** - In this method, nodes/boxes are used to represent activities, and arrows are used to show activity dependencies. Finish to start is the most common relationship. Start to finish is rarely used.

**Mandatory dependency (hard logic)** - the dependency is inherent in the nature of the work being done or required by the contract

**Discretionary dependency (preferred, preferential, or soft logic)** – Discretionary dependencies are dependencies determined by the project team. Discretionary dependencies can be changed if needed, while the other types of dependencies cannot easily be changed.

**External Dependency** - this dependency is based on the needs or desires of a party outside the project.

**Leads** - a sump of the successor activity – decrease to the schedule

**Lags** - waiting time between activities in a network – add to the schedule
Analogous estimating - Analogous estimating uses expert judgment and historical information to predict the future

Parametric estimating - Parametric estimating calculates projected time for an activity based on historical records from previous projects and other information

Reserve analysis – An analysis of how much contingency funds you should put aside for emergencies. Proper planning and risk management will reduce the need for reserves.

Three point estimates - With three-point technique, estimators give an optimistic (O), pessimistic (P), and most likely (M) estimate for each activity

Critical chain method - Modifies schedule to allow for limited resources

Resource levelling - Allocate scarce resources to critical path first

Monte Carlo analysis – Using computer software to simulate the outcomes of a project

Schedule compression - look for ways to shorten the schedule without affecting the scope. The two methods of schedule compression are crashing and fast tracking.

Crashing – compress schedule by adding additional resources

Fast Tracking – compress schedule by doing activities in parallel instead of sequentially

Variance analysis - Compares target dates with actuals to detect deviations and take corrective action as required. Includes float changes.

Re-estimating - It is standard practice to re-estimate the entire remaining part of the project at least once over the life of the project to make sure you can still meet the end date, budget, or other project objectives and to adjust the project.

Project Time Management Processes

Plan Schedule Management

❖ Plan Schedule Management ensures the project is progressing in a timely fashion
❖ The output of this process, the schedule management plan, is used to identify risks and rank risks.
Define Activities

- Define Activities determines the specific actions that need to be completed to produce the project deliverables
- This process breaks the work packages into activities

Sequence Activities

- Sequence Activities process documents relationships between the activities and milestones, and sequence them logically
- It takes leads and lags between activities into consideration
- This process results in the project schedule network diagram
Process Inputs, Tools & Techniques, Outputs

**Estimate Activity Resources**

- The Estimate Activity Resource process estimates the type and quantities of supplies for all the activities.
- The project manager must plan to avoid 1) lack of resources or 2) resources being pulled off the project.
- This process is closely linked with Estimate Activity Duration and Estimate Activity Cost.

**Process Inputs, Tools & Techniques, Outputs**

**Estimate Activity Durations**

- The Estimate Activity Durations process estimates the amount of time required to complete each activity.
- Estimators take key pieces of info (e.g. resource calendar, activity resource requirements) and elaborate upon it to refine activity durations.
- Note: Project managers must never pad estimates – this is highly unprofessional and sometimes even unethical.
### Develop Schedule

- The Develop Schedule process analyzes activity sequences, durations, resources, and schedule constraints to create the project schedule model.

### Control Schedule

- The Control Schedule process monitors the status of project activities and project progress.
- It uses the schedule baseline and variance analysis to monitor changes, and take corrective action when necessary.
Process Inputs, Tools & Techniques, Outputs

**Inputs**
1. Project management plan
2. Project schedule
3. Work performance data
4. Project calendars
5. Schedule data
6. OPA

**T&T**
1. Performance reviews
2. Project management software
3. Resource optimization techniques
4. Modelling techniques
5. Leads and lags
6. Schedule compression
7. Scheduling tool

**Outputs**
1. Work performance info
2. Schedule forecasts
3. Change requests
4. Project management plan updates
5. Project document updates
6. OPA updates
Project Cost Management

Cost Management involves planning, estimating, budgeting, funding, and managing costs. Although estimating cost and determining budgets can be one process on small projects, PMI separates them into two processes because the exam assumes the PM is managing a large project. Many financial management techniques, such as ROI, payback, and discounted cash flow, are used during this process.

Key Terms

**Life cycle costing** - This is the concept of life cycle costing – looking at the cost of the whole life of the product, not just the costs of the project

**Value analysis** – Value analysis requires the systematic use of techniques to identify the required project functions, assign values to these functions, and provide functions at the lowest overall cost without loss of performance

**Rough Order of Magnitude (ROM) Estimates** - A typical range from ROM estimate is a +/- 50% from actual, but this range can vary depending on how much is known about the project when creating the estimates

**Budget estimate** - This type of estimate is usually made during the planning phase and is in the range of -10% to +25% from actual

**Definitive estimate** - Later during the project, the estimate will become more refined. Some project managers use the range of +/- 10% from actual, while others use -5% to +10% from actual

**Cost of quality** - The total cost of all efforts related to quality

**Cost Aggregation** - Activity cost estimates are aggregated by work packages, then higher levels of the WBS components such as the control accounts and finally for the entire project.

**Contingency Reserves** – “known-unknown” risks included in the baseline

**Management Reserves** – “unknown-unknown” risks not included in the project baseline

Project Time Management Processes

**Plan Cost Management**

- The Plan Cost Management process establishes the policies, procedures, and documentations for planning, managing and expending costs.
- This process also provides guidance and direction on how costs are managed.
**Process Inputs, Tools & Techniques, Outputs**

**Inputs**
1. Project management plan
2. Project charter
3. EEF
4. OPA

**T&T**
1. Expert judgment
2. Meetings
3. Analytical techniques

**Outputs**
1. Cost management plan

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**Estimate Costs**

- The Estimate Costs process approximates the cost for each activity.
- To develop the cost estimate, the project manager considers cost alternatives, trade-offs, and risk.
- Project managers should also remember to add contingencies.

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**Determine Budget**

- The Determine Budgets process aggregates the estimated costs of activities to determine cost baseline.
- The baseline is used for monitoring and controlling costs. Meeting the approved budget, or “cost performance baseline” is a measure of project success.
The Control Costs process monitors project status in respect to the project costs and managing changes to the cost baseline. During this process, variances are tracked and identified. When necessary, corrective actions are taken.
Project Quality Management

Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project requirements are met. Project Quality Management uses policies and procedures to implement the organization’s quality management system, and it supports continuous process improvement activities.

Key Terms

Quality - Quality is defined as the degree to which the project fulfils requirements.

Quality Management - Quality management includes creating and following policies and procedures to ensure that a project meets the defined needs it was intended to meet from the customer’s perspective.

Gold Plating - Gold plating refers to giving the customer extras (i.e. extra functionality and extra scope).

Marginal Analysis - Marginal analysis refers to looking for the point where the benefits or revenue to be received from improving quality equals the incremental costs to achieve the quality.

Kaizen - Kaizen involves continuously looking for improvements in quality. Responsibility for Quality - The project manager has ultimate responsibility for the quality of the project, but each team member should be involved as well.

Cost Benefit Analysis - In this technique, the project manager weighs the benefits vs. the costs of meeting quality requirements.

Control Charts - Control charts are set up in plan quality process as part of the effort to determine what will be quality on the project. They are utilized in perform quality control, where they help determine if a process is within acceptable limits.

Upper & lower control limits - These limits are the acceptable range of variation of a process. They are often shown as two dashed lines on a control chart.

Specification limits - Specification limits represent the customer’s experience or contractual requirements for performance and quality on the project. Specification limits are characteristics of the measured process and not inherent.

Rule of Seven - If 7 consecutive points on the control chart is on one side of the mean, but not out of the specification limits, the process may still be out of control.
**Benchmarking** - This technique involves looking at other projects to get ideas for improvement on the current project and to provide a basis to use in measuring quality performance.

**Design of Experiment** - DOE is a statistical method that allows you to systematically change all of the important factors in a process and see which combination has a lower impact on the project. This technique is faster and more accurate than changing the variables one at a time.

**Statistical Sampling** – Objective is to reduce the cost of quality control by sampling a portion of the deliverables. Inspecting all the deliverables is very expensive and time consuming – and may not lead to zero defects anyways.

**Flowcharting** - Graphically represent processes and help identify quality problems and deal with them

**Quality audits** – Quality audits include Identify lessons learned, audit processes, and confirm approved changes to improve performance

**Process analysis** – Traces a process from beginning to end to identify root causes. Part of the process improvement plan.

**Mutual exclusivity** - Two events are said to be mutually exclusive if they cannot both occur in a single trial.

**Probability** - The likelihood that something will occur

**Normal distribution** – A normal distribution is a function that tells the probability that an observation in some context will fall between two real numbers; most common type of probability density distribution chart.

**Statistical independence** - The probability of one event occurring does not affect the probability of another event occurring (i.e. the probability of rolling a six on a die is statistically independent from the probability of getting a five on the next roll).

**Standard deviation** - A measure of how far you are from the mean – not the median

**Cause and effect diagram** - Cause and effect diagrams referred to Ishikawa or fishbone – illustrates how various causes and sub-causes relate to create potential problems or effects.

**Histogram** - A histogram displays data in the form of bars and columns. This tool shows what problems are worth dealing with. A typical histogram arranges data in no particular order.

**Pareto chart** - A Pareto chart or diagram is a type of histogram, but it arranges the results from most frequent to least frequent to help identify which root causes are resulting in the most problems.
Run chart - Displays the history and pattern of variation

Scatter diagram - Used to investigate the possible relationship between two variables that both relate to the same “event”

Project Quality Management Processes

Plan Quality Management

❖ The Plan Quality Management process identifies quality requirements for the project and the work that must be done to ensure compliance.
❖ It also provides direction on how quality will be managed and validated.
❖ This process can be done in parallel with other planning processes.

Process Inputs, Tools & Techniques, Outputs

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Perform Quality Assurance

❖ The Perform Quality Assurance process audits the quality requirements and the results from quality control measures to ensure quality standards are used.
❖ It implements processes define in the quality management plan, and facilitates the improvement of quality processes (continuous improvement).

Process Inputs, Tools & Techniques, Outputs

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<td>5. Project documents</td>
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Control Quality

- The Control Quality process ensures a certain level of quality in a product or service. It identifies poor processes or quality, and looks for root cause of poor quality.

Process Inputs, Tools & Techniques, Outputs

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Project Human Resource Management

Project Human Resource Management includes the processes that organize, manage, and lead the project team. All team members should be involved in the planning process even though their skill sets and responsibilities vary. Participation increases acceptance and commitment to the project.

Key Terms

RAM – Responsibility Assignment Matrix is a matrix that outlines the people’s roles on all the activities.

RACI – Responsibility, Accountability, Consult, Inform Project organization charts — graphic display of team members detailed as required

Pre-assignment – Assigning resources to different activities in advance

Staffing management plan – describes when and how resources will be allocated.

Halo effect - There can be tendency to rate team members high or low on all factors due to the impression of a high or low rating on some specific factor

Recognition and rewards - To promote and reinforce desired behavior while on the project

Training - Any training needed by the team members in order to perform on the project or to enhance their performance in a project and should be paid by the project as well as documented in the HR plan

Virtual teams - Teams that do not meet face to face are called virtual teams

Ground rules - Ground rules provide the structure for the team that is followed during the project

Co-location or war room - A project manager might try to arrange for the entire team in each city to have offices together in one place or one room. A war room is a central location for project coordination, usually with the WBS, network diagram, schedule, etc. posted on the walls

Team performance assessment - These assessments are meant to evaluate and enhance the effectiveness of the team. This may include an analysis of how much team members’ skills have improved; how well the team is performing, interacting, and dealing with conflict; and the turnover rate
Issue log - Such logs team people that their needs will be considered, even if they are not considered at the time the issues arise

Project HR Management Processes

Plan Human Resource Management

❖ The Plan Human Resource Management process identifies and documents project roles, responsibilities, required skills, and reporting relationships.

Process Inputs, Tools & Techniques, Outputs

**Acquire Project Team**

❖ The Acquire Project Team process confirms human resource availability and obtains the team necessary to complete project activities.
❖ If the required skills cannot be acquired, the project management team needs to have a contingency plan (E.g. hire contractors (outsourcing) or new employees).
❖ The project manager should always manage the risk of resources becoming unavailable, and have a plan to deal with such a situation.

Process Inputs, Tools & Techniques, Outputs
**Develop Project Team**

- The Develop Project Team process of improving competencies, team member interaction, and overall team environment to enhance project performance.

**Process Inputs, Tools & Techniques, Outputs**

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<td>3. Resource calendars</td>
<td>3. Team-building activities</td>
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<td>6. Recognition and rewards</td>
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<td>7. Personnel assessment tools</td>
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**Manage Project Team**

- The Manage Project Team process tracks team member performance, provides feedback, resolves issues, and manages team changes to optimize project performance.

**Process Inputs, Tools & Techniques, Outputs**

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<tr>
<th>Inputs</th>
<th>T&amp;T</th>
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<td>1. Observation and conversation</td>
<td>1. Change requests</td>
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<td>2. Project staff assignments</td>
<td>2. Project performance appraisals</td>
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<td>4. Issue log</td>
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<td>5. Work performance reports</td>
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Project Communications Management

Project Communications Management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, and disposition of project information. This is the area that project managers spend most of their time doing. Effective communication can bridge the gap between cultural or organizational diversity.

Key Terms

**Communication models** - Communication models are framed around three parts: Sender, Messenger, and Receiver

**Interactive communications** - The method is reciprocal and can involve just two people or many people (e.g. meetings, conversations, and conference calls)

**Push Communications** - The sender provides the information to the people who need it but does not expect feedback on the communication (e.g. status reports and email updates)

**Pull Communications** - The project manager places the information in a central location. The recipients are then responsible for retrieving or “pulling” the information from the location.

**Communication Channels** = [n*(n-1)]/2, where n = number of people

Communications Management Processes

**Plan Communications Management**

- The Plan Communications Management process develops an appropriate approach and plan for project communications based on stakeholder’s information needs, requirements, and available organizational assets.

Process Inputs, Tools & Techniques, Outputs

<table>
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<tr>
<th><strong>Inputs</strong></th>
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<td>1. Communication requirements analysis</td>
<td>1. Communications management plan</td>
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<td>2. Stakeholder register</td>
<td>2. Communication technology</td>
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<td>3. EEF</td>
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<td>4. OPA</td>
<td>4. Communication methods</td>
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<td>5. Meetings</td>
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Manage Communications

❖ The Manage Communications process creates, collects, distributes, retrieves, and disposes project information according to the communications management plan.
❖ Its goal is to enable efficient and effective communications flow between project stakeholders.

Process Inputs, Tools & Techniques, Outputs

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<th>Inputs</th>
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<tbody>
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<td>1. Communication technology</td>
<td>1. Project communications</td>
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<td>2. Work performance reports</td>
<td>2. Communication model</td>
<td>2. Project management plan updates</td>
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<tr>
<td>4. OPA</td>
<td>4. Information management systems</td>
<td>4. OPA updates</td>
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Control Communications

❖ The Control Communications process monitors and controls communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.

Process Inputs, Tools & Techniques, Outputs

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<td>1. Information management systems</td>
<td>1. Work performance info</td>
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<tr>
<td>2. Project communications</td>
<td>2. Expert judgment</td>
<td>2. Change requests</td>
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<td>5. OPA</td>
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<td>5. OPA updates</td>
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Project Risk Management

Project Risk Management includes the process of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. The objective is to increase the likelihood of positive risks (opportunities) and decrease the likelihood of negative risks (threats).

Key Terms

Risk management - Risk management includes risk management planning; the identification, qualitative analysis, and quantitative analysis or risk; risk response planning, and monitoring and controlling the risk response.

Uncertainty - Uncertainty is a lack of knowledge about an event that reduces confidence in conclusions drawn from the data.

Risk averse - Someone who does not want to take risks.

Risk tolerance - Tolerances are the areas of risk that are acceptable or unacceptable; how much risk someone can tolerate.

Risk threshold - A threshold is the point at which a risk becomes unacceptable.

Checklist analysis - The checklist is used to help identify specific risks within each category.

Assumption analysis - Analyzing what assumptions have been made on the project and if they are valid may lead to the identification of more risks.

Workarounds - Whereas contingency responses are developed in advance, workarounds are unplanned responses developed to deal with the occurrence of unanticipated risk events.

Reserve analysis - Reserve analysis while the work is being done is simply a matter of checking to see how much reserve remains and how much might be needed.

Status meeting - Risk should be a major topic at status meetings to keep focus on risk, to continue to identify new risk, and to make sure plans remain appropriate.
Risk Management Processes

Plan Risk Management

❖ The Plan Risk Management process defines how to conduct risk management activities for a project.
❖ It answers questions such as 1) how much time should be spent on risk management, 2) who will be involved in risk management, and 3) how a PM will perform risk management.
❖ The risk management plan, the output of the process, is used to obtain agreement on risk management from stakeholders.

Process Inputs, Tools & Techniques, Outputs

Inputs
1. Project management plan
2. Project charter
3. Stakeholder register
4. EEF
5. OPA

T&T
1. Analytical techniques
2. Expert judgment
3. Meetings

Outputs
1. Risk management plan

Identify Risks

❖ The Identify Risks process determines which risks may affect the project and document their characteristics.
❖ It helps the team prepare for anticipated events.
❖ This process is iterative because new risks are constantly being discovered.

Process Inputs, Tools & Techniques, Outputs

Inputs
1. Risk, cost, schedule, HR, and quality management plan
2. Scope baseline
3. Activity cost estimates
4. Activity duration estimates
5. Stakeholder register
6. Project documents
7. Procurement documents
8. EEF & OPA

T&T
1. Documentation reviews
2. Information gathering techniques
3. Checklist analysis
4. Assumptions analysis
5. Diagramming techniques
6. SWOT analysis
7. Expert judgment

Outputs
1. Risk register
Perform Qualitative Risk Analysis

❖ The Perform Qualitative Risk Analysis process prioritizes risks for further analysis by combining probability of occurrence and impact.
❖ This process helps reduce level of uncertainty, and allows the PM to focus on high-priority risks.

Process Inputs, Tools & Techniques, Outputs

Perform Quantitative Risk Analysis

❖ The Perform Quantitative Risk Analysis process numerically analyzes the effect of identified risk on overall project objectives.
❖ The quantitative risk information to aid decision making by 1) determining cost and schedule reserves, 2) determining probability of meeting project objectives, and 3) determining which risks warrant a response.
❖ Quantitative risk analysis is performed on identified high rated risks from the qualitative risk analysis process.
❖ Whereas qualitative risk analysis is a subjective evaluation, quantitative risk analysis is more objective – it rates each risk based on known probabilities (%) and amount at stake ($).

Process Inputs, Tools & Techniques, Outputs
Plan Risk Responses

- The Plan Risk Responses process develops options and actions to enhance opportunities and reduce threats.
- Risk responses should be realistic, cost effective and appropriate. As well, responses must also be agreed upon by all parties.

Process Inputs, Tools & Techniques, Outputs

Inputs
1. Risk management plan
2. Risk register

T&T
1. Strategies for negative risks or threats
2. Strategies for positive risks or opportunities
3. Contingent response strategies
4. Expert judgment

Outputs
1. Project management plan updates
2. Project documents updates

Control Risks

- The Control Risks process implements risk response plans, tracking identified risks, monitors residual risks, identifies new risks, and evaluating risk processes.
- Control risks ensure the appropriate policies are followed, and monitor and adjust the contingency reserves.

Process Inputs, Tools & Techniques, Outputs

Inputs
1. Project management plan
2. Risk register
3. Work performance data
4. Work performance reports

T&T
1. Risk assessments
2. Risk audits
3. Variance and trend analysis
4. Technical performance measurements
5. Reserve analysis
6. Meetings

Outputs
1. Work performance info
2. Change requests
3. Project management plan updates
4. Project documents updates
5. OPA updates
Project Procurement Management

Project Procurement Management is the process of purchasing products and services for the project. Procurement management includes contract management and change control processes required to develop and administer contracts.

Project managers should create a procurement management plan and a procurement statement of work (including the terms and conditions), and send these documents to prospective sellers.

Key Terms

Make or Buy Analysis - The organization needs to make a decision about whether to do the project work themselves or outsource some or all of the work.

Procurement SOW - The project manager needs to determine the scope of work to be done on procurements. The work to be done on procurements is called the “procurement statement of work.” It must be as clear, complete, and concise as possible, and must describe all the work and activities the seller is required to complete.

Fixed price contract - A fixed price contract is used for acquiring goods or services with well-defined specifications or requirements and when there is enough competition to determine a fair and reasonable fixed price before the work begins. This is the most common type of contract.

Fixed price incentive fee (FPIF) - In a FPIF contract, profits (or financial incentives) can be adjusted based on the seller meeting specific performance criteria such as getting work done faster, cheaper, or better. The final price is calculated by the formula based on the relationship or final negotiated costs to the total target cost.

Fixed price award fee (FPAF) - In a FPAF contract, the buyer pays a fixed price (which includes fee) plus an award amount (a bonus) based on performance. This is very similar to the FPIF contract, except the total possible award amount is determined in advance and appropriate out based on performance.

Fixed price economic price adjustment (FPEPA) - If there are questions about future economic conditions (future price) for contracts that exists for a multi-year period, a buyer might chose a fixed price contract with economic price adjustment.

Purchase order - A purchase order is the simplest type of fixed price contract. This type of contract is normally unilateral (signed by one party) instead of bilateral (signed by both parties).
**Time and material or unit price** - In this type of contract, the buyer pays on a per-hour or per-item basis. It is frequently used to service efforts in which the level of the effort cannot be defined at the time the contract is awarded.

**Cost reimbursable** - A cost reimbursable contract is used when the exact scope of the work is uncertain and, therefore, costs cannot be estimated accurately enough to effectively use a fixed price contract. This type of contract provides for the buyer to pay the seller allowable incurred costs to the extend prescribed in the contract.

**NDA** - This is an agreement between the buyer and prospective sellers identifying the information or documents they will hold confidential and control, and who in the organization will gain access to the confidential information.

**Terms and conditions** - Terms and conditions (either standard or special) in a contract differ based on what you are buying. If you are buying work that includes equipment, you will need terms that describe when ownership of the equipment will be transferred to the buyer and terms that require insurance for damages in transit.

**Qualified sellers list** – prequalified seller list - Another option, especially if a buyer purchases the same type of service often, is to find, investigate, and check the credentials of prospective sellers in advance. This will speed up the purchase and help make sure the seller’s qualifications are well researched before they are awarded procurements.

**Bidders conferences** - A bidder conference can be the key to making sure the pricing in the seller’s response matches the work that needs to be done and is, therefore, the lowest price.

**Seller proposal or price quote or bid** - This is a seller’s response to the procurement documents. A proposal is usually the response to a request for a quote, and a bid is usually the response to an invitation for bid. The proposal (or price quote or bid) represents an official offer from the seller.

**Proposal review** - After reviewing the proposals, the buyer uses the source selection criteria identified in the Plan Procurement process to assess the potential sellers’ ability and willingness to provide the requested products or services. The criteria are measurable; therefore, they provide a basis to quantitatively evaluate proposals and minimize the influence of personal prejudices.

**Contract Change Control System** - This system includes change procedures, forms, dispute resolution processes, and taking systems and is specified in the contract.

**Procurement performance review** - During the administer procurement process, the project manager should analyze all available data to verify that the seller is performing as they should. This is called a procurement performance review.
**Claims administration** - One of the occurring activities during the administer procurement process is the handling of claims. A claim is an assertion that the buyer did something that has hurt the seller and the seller is asking for compensation.

**Records management system** - A contract is a formal, legal document, so thorough records relating to the contract must be kept. Record keeping can be critical if actions taken or situations that occurred during a procurement are ever in question after the work is completed, such as in the case of unresolved claims or legal actions. Records may also be necessary to satisfy insurance requirements.

**Contract interpretation** - Contract interpretation is based on an analysis of the intent of the parties to the contract and a few guidelines. One such guideline is that the contract supersedes any memos, conversations, or discussions that may have occurred prior to the contract signing.

**Procurement Management Processes**

**Plan Procurement Management**

- The Plan Procurement Management process documents project’s procurement decisions, specifies the approach, and identifies potential sellers.
- Plan procurement identifies project needs that can best be met by acquiring products or services from third parties.

**Process Inputs, Tools & Techniques, Outputs**

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<td>1. Procurement management plan</td>
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<td>2. Requirements documentation</td>
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<tr>
<td>7. Stakeholder register</td>
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<td>7. Project document updates</td>
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<td>8. EEF &amp; OPA</td>
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**Conduct Procurements**

- The Conduct Procurement process obtains seller responses, selects a seller, and awards a contract.
- The PM team will review proposals and select a seller based on the selection criteria.
Process Inputs, Tools & Techniques, Outputs

**Control Procurements**

- The Conduct Procurements process manages procurement relationships, monitors contract performance, and makes changes and corrections to contracts as appropriate.
- Control procurements involve:
  - Ensuring the outputs are integrated with the project
  - Monitoring payments to the seller
  - Manage contractual relationships
  - Review contractor’s performance and if corrective actions are needed

Process Inputs, Tools & Techniques, Outputs

**Close Procurements**

- The Close Procurements process completes or closes the procurement, such as finalizing open claims and archiving information for the future.
- Lessons learned documents are made
- Unresolved claims may be subject to litigation after closure.
Project Stakeholder Management

Project Stakeholder Management includes the processes required to identify the people or organizations that could impact or be impacted by the project, to analyze stakeholder expectations, and to develop appropriate stakeholder management strategies.

Key Terms

Stakeholder - The project manager need to be the expert in project management, and the stakeholders are the technical experts in what needs to be done and how it need to be done. The project manager is the orchestra leader, and the work cannot be done well without stakeholder involvement

Stakeholder analysis - Stakeholder analysis involves identifying all the stakeholders. The PM then needs to analyze each stakeholder’s potential impact or influence and identify ways to manage those impacts effectively.

Stakeholder management strategy - Strategy to increase the support and minimize the resistance stakeholders (e.g. through use of stakeholder analysis matrix)

Stakeholder register - Stakeholder register may contain the following: Name, Title, Project role, Contact info, Influence, Impact, and Attitude about the project

Stakeholder Management Processes

Identify Stakeholders

- The Identify Stakeholders process identifies people or groups that can impact or be impacted by the project.
- The process monitors their interests will help ensure project success.
Plan Stakeholder Management

- The Plan Stakeholder Management process develops appropriate management strategies to effectively engage stakeholders throughout project life cycle.
- The goal of this process is to achieve project objectives by minimizing resisters and increasing supporters.

Manage Stakeholder Engagement

- The Manage Stakeholder Engagement process communicates with stakeholders to:
  - Meet their needs
  - Meet project deliverables
  - Foster engagement and working relationship
  - Increase support
  - Address potential concerns before they become an issue
  - Resolve issues
Control Stakeholder Engagement

- The Control Stakeholder Engagement process monitors overall project stakeholder relationships and adjusts strategies and plans for engaging stakeholders.

Process Inputs, Tools & Techniques, Outputs
PMP Exam Formula Guide

Roughly 10% of the questions on the PMP exam are regarding formulas. No need to panic - PMI allows you to use a calculator during the exam. To help you remember all the formulas, we compiled all of them into one place.

Here's a list of all the formulas you will need to know for the PMP Exam:

**Variance Analysis**

PV = Planned Value  
AC = Actual Cost  
BAC = Budget at Completion  
EV = Earned Value = % complete * PV = CPI * AC  
CPI = Cost Performance Index = EV/AC  
SPI = Schedule Performance Index = EV/PV  
CV = Cost Variance = EV - AC  
SV = Schedule Variance = EV - PV  
ETC = Estimate To Complete = EAC - AC = (BAC-EV)/CPI  
EAC = Estimate At Completion = ETC + AC = EV/CPI  
TCPI = Total Cost Performance Index = (BAC - EV)/(BAC - AC)

**Other Formulas**

PERT = (P + 4M + O)/6  
Standard Deviation = (P - O)/6  
Variance = SD^2  
Communication Channels = n*(n-1)/2  
EMV (Estimated Monetary Value) = Probability * Impact (this is for qualitative risk analysis)
Thank You for Downloading this Guide! We hope it helped you in your exam preparations. For more info, visit us at www.examspm.com