Summation according to the PMBOK® edition 6

Note: Throughout the document we shall use the following synonyms for the two most common inputs:

EEF - Enterprise environmental factors

OPA - Organizational process assets

Section 4 – Integration

Definition: Project Integration Management Includes the processes & activities to identify, combine, unify, and coordinate the various processes and activities within the project management process groups. Includes characteristics of unification, consolidation, communication, & integrative actions that are crucial to controlled project execution through completion, successfully managing stakeholder expectations and meeting requirements.

4.1 - Develop Project Charter Process		
Definition	The process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities	
Key benefit	It provides a direct link between the project and the strategic objectives of the organization, creates a formal record of the project, and shows the organizational commitment to the project	
When	Once or at predefined points in the project	
Inputs	**T&T**	**Outputs**
1. Business documents: • Business case • Benefits management plan	1. Expert judgment	1. Project charter
2. Agreements	2. Data gathering • Brainstorming • Focus groups • Interviews	2. Assumption log
3. EEF	3. Interpersonal and team skills • Conflict management • Facilitation • Meeting management	
4. OPA	4. Meetings	

4.2 – Develop Project Management Plan Process	
Definition	The process of defining, preparing, and coordinating all plan components and consolidating them into an integrated project management plan
Key benefit	The production of a comprehensive document that defines the basis of all project work and how the work will be performed
When	Once or at predefined points in the project

Inputs	T&T	Outputs
1. Project charter	1. Expert Judgment	1. Project management plan
2. Outputs from other processes	2. Data gathering • Brainstorming • Checklists • Focus groups • Interviews	
3. EEF	3. Interpersonal and team skills • Conflict management • Facilitation • Meeting management	
4. OPA	4. Meetings	

4.3 – Direct & Manage Project Work Process	
Definition	The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives
Key benefit	It provides overall management of the project work and deliverables, thus improving the probability of project success
When	Throughout the project

Inputs	T&T	Outputs
1. Project management plan • Any component	1. Expert Judgment	1. Deliverables
2. Project documents • Change log • Lessons learned register • Milestone list • Project communications • Project schedule • Requirements traceability matrix • Risk register • Risk report	2. PMIS – Project Management Information System	2. Work performance data 3. Issue log
3. Approved change requests	3. Meetings	4. Change requests
4. EEF		5. Project management plan updates • Any component
5. OPA		6. Project documents updates • Activity list • Assumption log • Lessons learned register • Requirements documentation • Risk register • Stakeholder register
		7. OPA updates

4.4 – Manage Project Knowledge	
Definition	The process of using existing knowledge and creating new knowledge to achieve the project's objectives and contribute to organizational learning
Key benefit	Prior organizational knowledge is leveraged to produce or improve the project outcomes, and knowledge created by the project is available to support organizational operations and future projects or phases
When	Throughout the project

Inputs	T&T	Outputs
1. Project management plan • All components	1. Expert judgment	1. Lessons learned register
2. Project documents • Lessons learned register • Project team assignments • RBS - Resource breakdown structure • Source selection criteria • Stakeholder register	2. Knowledge management 3. Information management	2. Project management plan updates • Any component
3. Deliverables		3. OPA updates
4. EEF	4. Interpersonal and team skills • Active listening • Facilitation • Leadership • Networking • Political awareness	
5. OPA		

4.5 – Monitor & Control Project Work Process			
Definition	The process of tracking, reviewing, and reporting overall progress to meet the performance objectives defined in the project management plan		
Key benefit	It allows stakeholders to understand the current state of the project, to recognize the actions taken to address any performance issues, and to have visibility into the future project status with cost and schedule forecasts		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Any component		1. Expert judgment	1. Work performance reports
2. Project documents • Assumption log • Basis of estimates • Cost forecasts • Issue log • Lessons learned register • Milestone list • Quality reports • Risk register • Risk report • Schedule forecasts		2. Data analysis • Alternatives analysis • Cost-benefit analysis • Earned value analysis • Root cause analysis • Trend analysis • Variance analysis	2. Change requests
3. Work performance information		3. Decision making	3. Project management plan updates • Any component
4. Agreements		4. Meetings	4. Project documents updates • Cost forecasts • Issue log • Lessons learned register • Risk register • Schedule forecasts
5. EEF			
6. OPA			

4.6 – Perform Integration Change Control Process			
Definition	The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating the decisions		
Key benefit	It allows for documented changes within the project to be considered in an integrated manner while addressing overall project risk, which often arises from changes made without consideration of the overall project objectives or plans		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Change management plan • Configuration management plan • Scope baseline • Schedule baseline • Cost baseline		1. Expert judgment	1.Approved change requests
2. Project documents • Basis of estimates • Requirements traceability matrix • Risk report		2. Change control tools	2. Project management plan updates • Any component
3. Work performance reports		3. Data analysis • Alternatives analysis • Cost-benefit analysis	3. Project documents updates • Change log
4. Change requests		4. Decision making • Voting • Autocratic decision making • Multicriteria decision analysis	
5. EEF		5. Meetings	
6. OPA			

4.7 – Close Project or Phase Process	
Definition	The process of finalizing all activities for the project, phase, or contract
Key benefit	The project or phase information is archived, the planned work is completed, and organizational team resources are released to pursue new endeavors
When	Once or at predefined points in the project

Inputs	T&T	Outputs
1. Project charter	1. Expert judgment	1. Project documents updates • Lessons learned register
2. Project management plan • All components	2. Data analysis • Document analysis • Regression analysis • Trend analysis • Variance analysis	2. Final product, service, or result transition
3. Project documents • Assumption log • Basis of estimates • Change log • Issue log • Lessons learned register • Milestone list • Project communications • Quality control measurements • Quality reports • Requirements documentation • Risk register • Risk report	3. Meetings	3. Final report
4. Accepted deliverables		4. OPA updates
5. documents • Business case • Benefits management plan		
6. Agreements		
7. Procurement documentation		
8. OPA		

Section 5 – Scope

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

5.1 – Plan Scope Management Process			
Definition	The process of creating a scope management plan that documents how the project and product scope will be defined, validated, and controlled		
Key benefit	It provides guidance and direction on how scope will be managed throughout the project		
When	Once or at predefined points in the project		
Inputs		**T&T**	**Outputs**
1. Project charter		1. Expert judgment	1. Scope management plan
2. Project management plan • Quality management plan • Project life cycle description • Development approach		2. Data analysis • Alternatives analysis	2. Requirements management plan
3. EEF		3. Meetings	
4. OPA			

5.2 – Collect Requirements Process			
Definition	The process of determining, documenting, and managing stakeholder needs and requirements to meet objectives		
Key benefit	It provides the basis for defining the product scope and project scope		
When	Once or at predefined points in the project		
Inputs		**T&T**	**Outputs**
1. Project charter		1. Expert judgment	1. Requirements documentation
2. Project management plan • Scope management plan • Requirements management plan • Stakeholder engagement plan		2. Data gathering • Questionnaires and surveys • Brainstorming • Interviews • Focus groups • Benchmarking	2. Requirements traceability matrix
3. Project documents • Assumption log • Lessons learned register • Stakeholder register		3. Data analysis • Document analysis 4. Decision making • Voting • Multicriteria decision analysis	
4. Business documents • Business case		5. Data representation • Affinity diagrams • Mind mapping	
5. Agreements		6. Interpersonal and team skills • Nominal group technique • Observation/conversation • Facilitation	
6. EEF		7. Context diagram	
7. OPA		8. Prototypes	

5.3 – Define Scope Process			
Definition	The process of developing a detailed description of the project and product		
Key benefit	It describes the product, service, or result boundaries and acceptance criteria		
When	Once		
Inputs		**T&T**	**Outputs**
1. Project charter		1. Expert judgment	1. Project scope statement
2. Project management plan • Scope management plan		2. Data analysis • Alternatives analysis	2. Project documents updates • Assumption log • Requirements documentation • Requirements traceability matrix • Stakeholder register
3. Project documents • Assumption log • Requirements documentation • Risk register		3. Decision making • Multicriteria decision analysis	
4. EEF		4. Interpersonal and team skills • Facilitation	
5. OPA		5. Product analysis	

5.4 – Create WBS Process			
Definition	The process of subdividing project deliverables and project work into smaller, more manageable components		
Key benefit	It provides a framework of what has to be delivered		
When	Once or at predefined points in the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Scope management plan		1. Expert judgment	1. Scope baseline • Project Scope Statement • WBS – Work Breakdown Structure • WBS dictionary
2. Project documents • Project scope statement • Requirements documentation		2. Decomposition	2. Project documents updates • Assumption log • Requirements documentation
3. EEF			
4. OPA			

5.5 – Validate Scope Process			
Definition	The process of formalizing acceptance of the completed project deliverables		
Key benefit	It brings objectivity to the acceptance process and increases the probability of final product, service, or result acceptance by validating each deliverable		
When	Periodically throughout the project as needed		
Inputs		**T&T**	**Outputs**
1. Project management plan • Scope management plan • Requirements management plan • Scope baseline		1. Inspection	1. Accepted deliverables*
2. Project documents • Lessons learned register • Quality reports • Requirements documentation • Requirements traceability matrix		2. Decision making • Voting	2. Work performance information**
3. Verified deliverables*			3. Change requests
4. Work performance data**			4. Project document updates • Lessons learned register • Requirements documentation • Requirements traceability matrix

5.6 – Control Scope Process			
Definition	The process of monitoring the status of the project and product scope and managing changes to the scope baseline		
Key benefit	The scope baseline is maintained throughout the project		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Scope management plan • Requirements mgt. plan • Change management plan • Configuration mgt. plan • Scope baseline • Performance measurement baseline		1. Data analysis • Variance analysis • Trend analysis	1. Work performance information*
			2. Change requests
2. Project documents • Lessons learned register • Requirements documentation • Requirements traceability matrix			3. Project management plan updates • Scope management plan • Scope baseline • Schedule baseline • Cost baseline • Performance measurement baseline
3. Work performance data*			
4. OPA			4. Project documents updates • Lessons learned register • Requirements documentation • Requirements traceability matrix

Section 6 – Schedule

Definition: Project Schedule Management includes the processes required to manage the timely completion of the project.

6.1 – Plan Schedule Management Process		
Definition	The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule	
Key benefit	It provides guidance and direction on how the project schedule will be managed throughout the project	
When	Once or at predefined points in the project	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Schedule management plan
2. Project management plan • Scope management plan • Development approach	2. Data analysis	
3. EEF	3. Meetings	
4. OPA		

6.2 – Define Activities Process		
Definition	The process of identifying and documenting the specific actions to be performed to produce the project deliverables	
Key benefit	It decomposes work packages into schedule activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work	
When	Throughout the project	
Inputs	**T&T**	**Outputs**
1. Project management plan • Schedule management plan • Scope baseline	1. Expert judgment	1. Activity list 2. Activity attributes
2. EEF	2. Decomposition	3. Milestone list
3. OPA	3. Rolling wave planning	4. Change requests
	4. Meetings	5. Project management plan updates • Schedule baseline • Cost baseline

6.3 – Sequence Activities Process			
Definition	The process of identifying and documenting relationships among the project activities		
Key benefit	It defines the logical sequence of work to obtain the greatest efficiency given all project constraints		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Schedule management plan • Scope baseline		1. PDM - Precedence diagramming method	1. Project schedule network diagrams
2. Project documents • Activity attributes • Activity list • Assumption log • Milestone list		2. Dependency determination and integration	2. Project documents updates • Activity attributes • Activity list • Assumption log • Milestone list
3. EEF		3. Leads and lags	
4. OPA		4. PMIS - Project management information system	

6.4 – Estimate Activity Durations Process		
Definition	The process of estimating the number of work periods needed to complete individual activities with estimated resources	
Key benefit	It provides the amount of time each activity will take to complete	
When	Throughout the project	
Inputs	**T&T**	**Outputs**
Project management plan • Schedule management plan • Scope baseline	1. Expert judgment	1. Duration estimates 2. Basis of estimates
Project documents • Activity attributes • Activity list • Assumption log • Lessons learned register • Milestone list • Project team assignments • RBS - Resource breakdown structure • Resource calendars • Resource requirements • Risk register	2. Analogous estimating 3. Parametric estimating 4. Three-point estimating 5. Bottom-up estimating 6. Data analysis • Alternatives analysis • Reserve analysis 7. Decision making 8. Meetings	3. Project documents updates • Activity attributes • Assumption log • Lessons learned register
EEF		
OPA		

6.5 – Develop Schedule Process			
Definition	the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create a schedule model for project execution and monitoring and controlling		
Key benefit	it generates a schedule model with planned dates for completing project activities		
When	throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Schedule management plan • Scope baseline		1. Schedule network analysis	1. Schedule baseline
Project documents • Activity attributes • Activity list • Assumption log • Basis of estimates • Duration estimates • Lessons learned register • Milestone list • Project schedule network diagrams • Project team assignments • Resource calendars • Resource requirements • Risk register		2. CPM - Critical path method 3. Resource optimization	2. Project schedule
3. Agreements		4. Data analysis • What-if scenario analysis • Simulation	3. Schedule data
4. EEF		5. Leads and lags	4. Project calendars
5. OPA		6. Schedule compression	5. Change requests
		7. PMIS- Project management information system	6. Project management plan updates • Schedule management plan • Cost baseline
		8. Agile release planning	7. Project documents updates • Activity attributes • Assumption log • Duration estimates • Lessons learned register • Resource requirements • Risk register

6.6 – Control Schedule Process			
Definition	The process of monitoring the status of the project to update the project schedule and managing changes to the schedule baseline		
Key benefit	The schedule baseline is maintained throughout the project		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Schedule management plan • Schedule baseline • Scope baseline • Performance measurement baseline		1. Data analysis • Earned value analysis • Iteration burndown chart • Performance reviews • Trend analysis • Variance analysis • What-if scenario analysis	1. Work performance information*
2. Project documents • Lessons learned register • Project calendars • Project schedule • Resource calendars • Schedule data		2. Critical path method	2. Schedule forecasts
3. Work performance data*		3. PMIS	3. Change requests
4. OPA		4. Resource optimization	4. Project management plan updates • Schedule management plan • Schedule baseline • Cost baseline • Performance measurement baseline
		5. Leads and lags	5. Project documents updates • Assumption log • Basis of estimates • Lessons learned register • Project schedule • Resource calendars • Risk register • Schedule data
		6. Schedule compression	

Section 7 – Cost

Definition: Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.

7.1 – Plan Cost Management Process		
Definition	The process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled	
Key benefit	It provides guidance and direction on how the project costs will be managed throughout the project	
When	once or at predefined points in the project	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Cost management plan
2. Project management plan • Schedule management plan • Risk management plan	2. Data analysis	
3. EEF	3. Meetings	
4. OPA		

7.2 – Estimate Cost Process		
Definition	The process of developing an approximation of the cost of resources needed to complete project work	
Key benefit	It determines the monetary resources required for the project	
When	Periodically throughout the project as needed	
Inputs	**T&T**	**Outputs**
1. Project management plan • Cost management plan • Quality management plan • Scope baseline	1. Expert judgment	1. Cost estimates 2. Basis of estimates
2. Project documents • Lessons learned register • Project schedule • Resources requirements • Risk register	2. Analogous estimating	3. Project documents updates • Assumption log • Lessons learned register • Risk register
3. EEF	3. Parametric estimating	
4. OPA	4. Bottom-up estimating	
	5. Three-point estimating	
	6. Data analysis • Alternatives analysis • Reserve analysis • Cost of quality	
	7. PMIS	
	8. Decision making • Voting	

7.3 – Determine Budget Process			
Definition	The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline		
Key benefit	It determines the cost baseline against which project performance can be monitored and controlled		
When	Once or at predefined points in the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Cost management plan • Resource management plan • Scope baseline		1. Expert judgment	1. Cost baseline
2. Project documents • Basis of estimates • Cost estimates • Project schedule • Risk register		2. Cost aggregation	2. Project funding requirements
3. Business documents • Business case • Benefits management plan		3. Data analysis • Reserve analysis	3. Project documents updates • Cost estimates • Project schedule • Risk register
4. Agreements		4. Historical information review	
5. EEF		5. Funding limit reconciliation	
6. OPA		6. Financing	

7.4 – Control Costs Process			
Definition	The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline		
Key benefit	The cost baseline is maintained throughout the project		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Cost management plan • Cost baseline • Performance measurement baseline		1. Expert judgment	1. Work performance information* 2. Cost forecasts
2. Project documents • Lessons learned register		2. Data analysis • Earned value analysis • Variance analysis • Trend analysis • Reserve analysis	3. Change requests
3. Project funding requirements			4. Project management plan updates • Cost management plan • Cost baseline • Performance measurement baseline
4. Work performance data*		3. TCPI - To-complete performance index	5. Project documents updates • Assumption log • Basis of estimates • Cost estimates • Lessons learned register • Risk register
5. OPA		4. PMIS	

Section 8 – Quality

Definition: Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing and controlling project and product quality requirements in order to meet stakeholders' objectives. Project Quality Management also supports continuous process improvement activities as undertaken on behalf of the performing organization.

8.1 – Plan Quality Management Process			
Definition	The process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/or standards		
Key benefit	It provides guidance and direction on how quality will be managed and verified throughout the project		
When	Once or at predefined points in the project		
Inputs		**T&T**	**Outputs**
1. Project charter		1. Expert judgment	1. Quality management plan
2. Project management plan • Requirements management plan • Risk management plan • Stakeholder engagement plan • Scope baseline		2. Data gathering • Benchmarking • Brainstorming • Interviews	2. Quality metrics
3. Project documents • Assumption log • Requirements Documentation • Requirements traceability matrix • Risk register • Stakeholder register		3. Data analysis • Cost-benefit analysis • Cost of quality 4. Decision making • Multicriteria decision analysis	3. Project management plan updates • Risk management plan • Scope baseline
4. EEF		5. Data representation • Flowcharts • Logical data model • Matrix diagrams • Mind mapping	4. Project documents updates • Lessons learned register • Requirements traceability matrix • Risk register • Stakeholder register
5. OPA		6. Test and inspection planning	
		7. Meetings	

8.2 – Manage Quality Process			
Definition	The process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project. Manage Quality uses the data and results from the control quality process to reflect the overall quality status of the project to the stakeholders		
Key benefit	It increases the probability of meeting the quality objectives as well as identifying ineffective processes and causes of poor quality		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Quality management plan		1. Data gathering • Checklists	1. Quality reports
2. Project documents • Lessons learned register • Quality control measurements • Quality metrics • Risk report		2. Data analysis • Alternatives analysis • Document analysis • Process analysis • Root cause analysis	2. Test and evaluation documents
3. OPA		3. Decision making • Multicriteria decision analysis	3. Change requests
		4. Data representation • Affinity diagrams • Cause-and-effect diagrams • Flowcharts • Histograms • Matrix diagrams • Scatter diagrams	4. Project management plan updates • Quality management plan • Scope baseline • Schedule baseline • Cost baseline
		5. Audits	5. Project documents updates • Issue log • Lessons learned register • Risk register
		6. Design for X	
		7. Problem solving	
		8. Quality improvement methods	

8.3 – Control Quality Process			
Definition	The process of monitoring and recording results of executing the quality management activities in order to assess performance and ensure the project outputs are complete, correct, and meet customer expectations. The Control Quality process determines if the project outputs do what they were intended to do. Those outputs need to comply with all applicable standards, requirements, regulations, and specifications		
Key benefit	Verifying that project deliverables and work meet the requirements specified by key stakeholders for final acceptance		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Quality management plan		1. Data gathering • Checklists • Check sheets • Statistical sampling • Questionnaires and surveys	1. Quality control measurements
2. Project documents • Lessons learned register • Quality metrics • Test and evaluation documents		2. Data analysis • Performance reviews • Root cause analysis	2. Verified deliverables*
3. Approved change requests		3. Inspection	3. Work performance information**
4. Deliverables*		4. Testing/product evaluations	4. Change requests
5. Work performance data**		5. Data representation • Cause-and-effect diagrams • Control charts • Histogram • Scatter diagrams	5. Project management plan updates • Quality management plan
6. EEF		6. Meetings	6. Project documents updates • Issue log • Lessons learned register • Risk register • Test and evaluation documents
7. OPA			

Section 9 – Resource

Definition: Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project. These processes help ensure that the right resources will be available to the project manager and project team at the right time and place.

9.1 – Plan Resource Management Process		
Definition	The process of defining how to estimate, acquire, manage, and use team and physical resources	
Key benefit	It establishes the approach and level of management effort needed for managing project resources based on the type and complexity of the project	
When	Once or at predefined points in the project	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Resource management plan
2. Project management plan • Quality management plan • Scope baseline	2. Data representation • Hierarchical charts • Responsibility assignment matrix • Text-oriented formats	2. Team charter
3. Project documents • Project schedule • Requirements documentation • Risk register • Stakeholder register	3. Organizational theory	3. Project documents updates • Assumption log • Risk register
4. EEF	4. Meetings	
5. OPA		

9.2 – Estimate Activity Resources Process		
Definition	The process of estimating team resources and the type and quantities of materials, equipment, and supplies necessary to perform project work.	
Key benefit	It identifies the type, quantity, and characteristics of resources required to complete the project	
When	Periodically throughout the project as needed	
Inputs	**T&T**	**Outputs**
1. Project management plan • Resource management plan • Scope baseline	1. Expert judgment	1. Resource requirements 2. Basis of estimates
2. Project documents • Activity attributes • Activity list • Assumption log • Cost estimates • Resource calendars • Risk register	2. Bottom-up estimating	3. RBS - Resource breakdown structure
	3. Analogous estimating	
	4. Parametric estimating	4. Project documents updates • Activity attributes • Assumption log • Lessons learned register
	5. Data analysis • Alternatives analysis	
3. EEF	6. PMIS	
4. OPA	7. Meetings	

9.3 – Acquire Resources Process			
Definition	The process of obtaining team members, facilities, equipment, materials, supplies, and other resources necessary to complete project work		
Key benefit	It outlines and guides the selection of resources and assigns them to their respective activities		
When	Periodically throughout the project as needed		
Inputs		**T&T**	**Outputs**
1. Project management plan • Resource management plan • Procurement management plan • Cost baseline		1. Decision making • Multicriteria decision analysis	1. Physical resource assignments
2. Project documents • Project schedule • Resource calendars • Resource requirements • Stakeholder register		2. Interpersonal and team skills • Negotiation	2. Project team assignments
3. EEF		3. Pre-assignment	3. Resource calendars
4. OPA		4. Virtual teams	4. Change requests
			5. Project management plan updates • Resource management plan • Cost baseline
			6. Project documents updates • Lessons learned register • Project schedule • Resource breakdown structure • Resource requirements • Risk register • Stakeholder register
			7. EEF updates
			8. OPA updates

9.4 – Develop Team Process			
Definition	The process of improving competencies, team member interaction, and the overall team environment to enhance project performance		
Key benefit	It results in improved teamwork, enhanced interpersonal skills and competencies, motivated employees, reduced attrition, and improved overall project performance		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Resource management plan		1. Colocation	1. Team performance assessments
2. Project documents • Lessons learned register • Project schedule • Project team assignments • Resource calendars • Team charter		2. Virtual teams	2. Change requests
3. EEF		3. Communication technology	3. Project management plan updates • Resource management plan
4. OPA		4. Interpersonal and team skills • Conflict management • Influencing • Motivation • Negotiation • Team building	4. Project documents updates • Lessons learned register • Project schedule • Project team assignments • Resource calendars • Team charter
		5. Recognition and rewards	5. EEF updates
		6. Training	6. OPA updates
		7. Individual and team assessments	
		8. Meetings	

<table>
<tr><th colspan="3">9.5 – Manage Team Process</th></tr>
<tr><td>Definition</td><td colspan="2">The process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance</td></tr>
<tr><td>Key benefit</td><td colspan="2">It influences team behavior, manages conflict, and resolves issues</td></tr>
<tr><td>When</td><td colspan="2">Throughout the project</td></tr>
<tr><th>Inputs</th><th>T&T</th><th>Outputs</th></tr>
<tr><td>1. Project management plan
• Resource management plan</td><td rowspan="2">1. Interpersonal and team skills
• Conflict management
• Decision making
• Emotional intelligence
• Influencing
• Leadership</td><td rowspan="2">1. Change requests</td></tr>
<tr><td>2. Project documents
• Issue log
• Lessons learned register
• Project team assignments
• Team charter</td></tr>
<tr><td>3. Work performance reports</td><td rowspan="2">2. PMIS</td><td rowspan="2">2. Project management plan updates
• Resource management plan
• Schedule baseline
• Cost baseline</td></tr>
<tr><td>4. Team performance assessments</td></tr>
<tr><td>5. EEF</td><td></td><td>3. Project documents updates
• Issue log
• Lessons learned register
• Project team assignments</td></tr>
<tr><td>6. OPA</td><td></td><td>4. EEF updates</td></tr>
</table>

9.6 – Control Resources Process	
Definition	The process of ensuring that the physical resources assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual utilization of resources and taking corrective action as necessary
Key benefit	The assigned resources are available to the project at the right time and in the right place and are released when no longer needed
When	Throughout the project

Inputs	T&T	Outputs
1. Project management plan • Resource management plan	1. Data analysis • Alternatives analysis • Cost-benefit analysis • Performance reviews • Trend analysis	1. Work performance information*
2. Project documents • Issue log • Lessons learned register • Physical resource assignments • Project schedule • RBS - Resource breakdown structure • Resource requirements • Risk register	2. Problem solving	2. Change requests
3. Work performance data*	3. Interpersonal and team skills • Negotiation • Influencing	3. Project management plan updates • Resource management plan • Schedule baseline • Cost baseline
4. Agreements	4. PMIS	4. Project documents updates • Assumption log • Issue log • Lessons learned register • Physical resource assignments • RBS - Resource breakdown structure • Risk register
5. OPA		

Section 10 – Communications

Definition: Project Communications Management includes the processes necessary to ensure that the information needs of the project and its stakeholders are met through development of artifacts and implementation of activities designed to achieve effective information exchange. Project Communications Management consists of two parts. The first part is developing a strategy to ensure communication is effective for stakeholders. The second part is carrying out the activities necessary to implement the communication strategy.

10.1 – Plan Communications Management Process		
Definition	The process of developing an appropriate approach and plan for project communications activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project	
Key benefit	A documented approach to effectively and efficiently engage stakeholders by presenting relevant information in a timely manner	
When	Periodically throughout the project as needed	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Communications management plan
2. Project management plan • Resource management plan • Stakeholder engagement plan	2. Communication requirements analysis	2. Project management plan updates • Stakeholder engagement plan
3. Project documents • Requirements documentation • Stakeholder register	3. Communication technology	3. Project documents updates • Project schedule • Stakeholder register
4. EEF	4. Communication models	
5. OPA	5. Communication methods	
	6. Interpersonal and team skills • Communication styles assessment • Political awareness • Cultural awareness	
	7. Data representation • Stakeholder engagement assessment matrix	
	8. Meetings	

10.2 – Manage Communications Process			
Definition	The process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information		
Key benefit	It enables an efficient and effective information flow between the project team and the stakeholders		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Resource management plan • Communications management plan • Stakeholder engagement plan		1. Communication technology	1. Project communications
		2. Communication methods	2. Project management plan updates • Communications management plan • Stakeholder engagement plan
		3. Communication skills • Communication competence • Feedback • Nonverbal • Presentations	3. Project documents updates • Issue log • Lessons learned register • Project schedule • Risk register • Stakeholder register
2. Project documents • Change log • Issue log • Lessons learned register • Quality report • Risk report • Stakeholder register		4. PMIS	4. OPA updates
3. Work performance reports		5. Project reporting	
4. EEF		6. Interpersonal and team skills • Active listening • Conflict management • Cultural awareness • Meeting management • Networking • Political awareness	
5. OPA		7. Meetings	

10.3 – Monitor Communications Process			
Definition	The process of ensuring the information needs of the project and its stakeholders are met		
Key benefit	The optimal information flow as defined in the communications management plan and the stakeholder engagement plan		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Resource management plan • Communications management plan • Stakeholder engagement plan		1. Expert judgment	1. Work performance information*
2. Project documents • Issue log • Lessons learned register • Project communications		2. PMIS	2. Change requests
3. Work performance data*		3. Data analysis • Stakeholder engagement assessment matrix	3. Project management plan updates • Communications management plan • Stakeholder engagement plan
4. EEF		4. Interpersonal and team skills • Observation/conversation	4. Project documents updates • Issue log • Lessons learned register • Stakeholder register
5. OPA		5. Meetings	

Section 11 – Risk

Definition: Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of project risk management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success.

11.1 – Plan Risk Management Process		
Definition	The process of defining how to conduct risk management activities for a project	
Key benefit	It ensures that the degree, type, and visibility of risk management are proportionate to both risks and the importance of the project to the organization and other stakeholders	
When	Once or at predefined points in the project	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Risk management plan
2. Project management plan • All components	2. Data analysis • Stakeholder analysis	
3. Project documents • Stakeholder register	3. Meetings	
4. EEF		
5. OPA		

11.2 – Identify Risks Process	
Definition	The process of identifying individual project risks as well as sources of overall project risk, and documenting their characteristics
Key benefit	It provides the documentation of existing individual project risks and the sources of overall project risk. It also brings together information so the project team can respond appropriately to identified risks.
When	Throughout the project

Inputs	T&T	Outputs
1. Project management plan • Requirements management plan • Schedule management plan • Cost management plan • Quality management plan • Resource management plan • Risk management plan • Scope baseline • Schedule baseline • Cost baseline	1. Expert judgment	1. Risk register
2. Project documents • Assumption log • Cost estimates • Duration estimates • Issue log • Lessons learned register • Requirements documentation • Resource requirements • Stakeholder register	2. Data gathering • Brainstorming • Checklists • Interviews	2. Risk report
3. Agreements	3. Data analysis • Root cause analysis • Assumption and constraint analysis • SWOT analysis • Document analysis	3. Project documents updates • Assumption log • Issue log • Lessons learned register
4. Procurement documentation	Interpersonal and team skills • Facilitation	
5. EEF	5. Prompt lists	
6. OPA	6. Meetings	

11.3 – Perform Qualitative Risk Analysis Process			
Definition	The process of prioritizing individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics		
Key benefit	It focuses efforts on high-priority risks		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Risk management plan		1. Expert judgment	1. Project documents updates • Assumption log • Issue log • Risk register • Risk report
2. Project documents • Assumption log • Risk register • Stakeholder register		2. Data gathering • Interviews	
3. EEF		3. Data analysis • Risk data quality assessment • Risk probability and impact assessment • Assessment of other risk parameters	
4. OPA		4. Interpersonal and team skills • Facilitation	
		5. Risk categorization	
		6. Data representation • Probability and impact matrix • Hierarchical charts	
		7. Meetings	

11.4 – Perform Quantitative Risk Analysis Process	
Definition	The process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives
Key benefit	It quantifies overall project risk exposure, and it can also provide additional quantitative risk information to support risk response planning
When	Not required for every project, but where it is used, it is performed throughout the project

Inputs	T&T	Outputs
1. Project management plan • Risk management plan • Scope baseline • Schedule baseline • Cost baseline	1. Expert judgment	1. Project documents updates • Risk report
2. Project documents • Assumption log • Basis of estimates • Cost estimates • Cost forecasts • Duration estimates • Milestone list • Resource requirements • Risk register • Risk report • Schedule forecasts	2. Data gathering • Interviews 3. Interpersonal and team skills • Facilitation	
3. EEF	4. Representations of uncertainty	
4. OPA	5. Data analysis • Simulations • Sensitivity analysis • Decision tree analysis • Influence diagrams	

11.5 – Plan Risk Responses Process	
Definition	The process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks
Key benefit	It identifies appropriate ways to address overall project risk and individual project risks. It also allocates resources and inserts activities into project documents and the project management plan as needed
When	Throughout the project

Inputs	T&T	Outputs
1. Project management plan • Resource management plan • Risk management plan • Cost baseline	1. Expert judgment 2. Data gathering • Interviews 3. Interpersonal and team skills • Facilitation 4. **Strategies for threats** (negative risks) – escalate, avoid, transfer, mitigate, accept	1. Change requests
2. Project documents • Lessons learned register • Project schedule • Project team assignments • Resource calendars • Risk register • Risk report • Stakeholder register	5. **Strategies for opportunities** (positive risks) – escalate, exploit, share, enhance, accept 6. Contingent response strategies 7. Strategies for overall project risk – avoid, exploit, transfer/share, mitigate/enhance, accept	2. Project management plan updates • Schedule management plan • Cost management plan • Quality management plan • Resource management plan • Procurement management plan • Scope baseline • Schedule baseline • Cost baseline
3. EEF	8. Data analysis • Alternatives analysis • Cost-benefit analysis	3. Project documents updates • Assumption log • Cost forecasts • Lessons learned register • Project schedule • Project team assignments • Risk register • Risk report
4. OPA	9. Decision making • Multicriteria decision analysis	

11.6 – Implement Risks Process		
Definition	The process of implementing agreed-upon risk response plans	
Key benefit	It ensures that agreed-upon risk responses are executed as planned in order to address overall project risk exposure, minimize individual project threats, and maximize individual project opportunities	
When	Throughout the project	
Inputs	**T&T**	**Outputs**
1. Project management plan • Risk management plan	1. Expert judgment	1. Change requests
2. Project documents • Lessons learned register • Risk register • Risk report	2. Interpersonal and team skills • Influencing	2. Project documents updates • Issue log • Lessons learned register • Project team assignments • Risk register • Risk report
3. OPA	3. PMIS	

11.7 – Monitor Risks Process		
Definition	The process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project	
Key benefit	It enables project decisions to be based on current information about overall project risk exposure and individual project risks.	
When	Throughout the project	
Inputs	**T&T**	**Outputs**
1. Project management plan • Risk management plan	1. Data analysis • Technical performance analysis • Reserve analysis	1. Work performance information*
2. Project documents • Issue log • Lessons learned register • Risk register • Risk report	2. Audits	2. Change requests
3. Work performance data*	3. Meetings	3. Project management plan updates • Any component
4. Work performance reports		4. Project documents updates • Assumption log • Issue log • Lessons learned register • Risk register • Risk report
		5. OPA updates

Section 12 – Procurement

Definition: Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Project Procurement Management includes the management and control processes required to develop and administer agreements such as contracts, purchase orders, memoranda of agreements (MOAs), or internal service level agreements (SLAs). The personnel authorized to procure the goods and/or services required for the project may be members of the project team, management, or part of the organization's purchasing department if applicable.

<table>
<tr><th colspan="3">12.1 – Plan Procurement Management Process</th></tr>
<tr><td>Definition</td><td colspan="2">The process of documenting project procurement decisions, specifying the approach and identifying potential sellers</td></tr>
<tr><td>Key benefit</td><td colspan="2">It determines whether to acquire goods and services from outside the project and, if so, what to acquire as well as how and when to acquire it. Goods and services may be procured from other parts of the performing organization or from external sources</td></tr>
<tr><td>When</td><td colspan="2">Once or at predefined points in the project</td></tr>
<tr><th>Inputs</th><th>T&T</th><th>Outputs</th></tr>
<tr><td rowspan="2">1. Project charter</td><td>1. Expert judgment</td><td>1. Procurement management plan</td></tr>
<tr><td>2. Data gathering
• Market research</td><td>2. Procurement strategy</td></tr>
<tr><td>2. Business documents
• Business case
• Benefits management plan</td><td>3. Data analysis
• Make-or-buy analysis</td><td>3. Bid documents</td></tr>
<tr><td rowspan="2">3. Project management plan
• Scope management plan
• Quality management plan
• Resource management plan
• Scope baseline</td><td rowspan="2">4. Source selection analysis</td><td>4. Procurement statement of work</td></tr>
<tr><td>5. Source selection criteria</td></tr>
<tr><td rowspan="2">4. Project documents
• Milestone list
• Project team assignments
• Requirements documentation
• Requirements traceability matrix
• Resource requirements
• Risk register
• Stakeholder register</td><td rowspan="4">5. Meetings</td><td>6. Make-or-buy decisions</td></tr>
<tr><td>7. Independent cost estimates</td></tr>
<tr><td rowspan="2">5. EEF</td><td>8. Change requests</td></tr>
<tr><td>9. Project documents updates
• Lessons learned register
• Milestone list
• Requirements documentation
• Requirements traceability matrix
• Risk register
• Stakeholder register</td></tr>
<tr><td>6. OPA</td><td></td><td>10. OPA updates</td></tr>
</table>

12.2 – Conduct Procurements Process			
Definition	The process of obtaining seller responses, selecting a seller, and awarding a contract		
Key benefit	It selects a qualified seller and implements the legal agreement for delivery. The end results of the process are the established agreements including formal contracts.		
When	Periodically throughout the project as needed		
Inputs		**T&T**	**Outputs**
1. Project management plan • Scope management plan • Requirements management plan • Communications management plan • Risk management plan • Procurement management plan • Configuration management plan • Cost baseline		1. Expert judgment	1. Selected sellers
2. Project documents • Lessons learned register • Project schedule • Requirements documentation • Risk register • Stakeholder register		2. Advertising	2. Agreements
3. Procurement documentation		3. Bidder conferences	3. Change requests
4. Seller proposals		4. Data analysis • Proposal evaluation	4. Project management plan updates • Requirements management plan • Quality management plan • Communications management plan • Risk management plan • Procurement management plan • Scope baseline • Schedule baseline • Cost baseline
5. EEF		5. Interpersonal and team skills • Negotiation	5. Project documents updates • Lessons learned register • Requirements documentation • Requirements traceability matrix • Resource calendars • Risk register • Stakeholder register
6. OPA			6. OPA updates

12.3 – Control Procurements Process			
Definition	The process of managing procurement relationships; monitoring contract performance, and making changes and corrections as appropriate; and closing out contracts		
Key benefit	It ensures that both the seller's and buyer's performance meet the project's requirements according to the terms of the legal agreement		
When	Throughout the project as needed		
Inputs		**T&T**	**Outputs**
1. Project management plan • Requirements management plan • Risk management plan • Procurement management plan • Change management plan • Schedule baseline		1. Expert judgment	1. Closed procurements
2. Project documents • Assumption log • Lessons learned register • Milestone list • Quality reports • Requirements documentation • Requirements traceability matrix • Risk register • Stakeholder register		2. Claims administration	2. Work performance information*
3. Agreements		3. Data analysis • Performance reviews • Earned value analysis • Trend analysis	3. Procurement documentation updates
4. Procurement documentation		4. Inspection	4. Change requests
5. Approved change requests		5. Audits	5. Project management plan updates • Risk management plan • Procurement management plan • Schedule baseline • Cost baseline
6. Work performance data*			6. Project documents updates • Lessons learned register • Resource requirements • Requirements traceability matrix • Risk register • Stakeholder register
7. EEF			7. OPA updates
8. OPA			

Section 13 – Stakeholder

Definition: Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution. The processes support the work of the project team to analyze stakeholder expectations, assess the degree to which they impact or are impacted by the project, and develop strategies to effectively engage stakeholders in support of project decisions and the planning and execution of the work of the project.

13.1 – Identify Stakeholders Process		
Definition	The process of identifying project stakeholders regularly and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success	
Key benefit	It enables the project team to identify the appropriate focus for engagement of each stakeholder or group of stakeholders	
When	Periodically throughout the project as needed	
Inputs	**T&T**	**Outputs**
1. Project charter	1. Expert judgment	1. Stakeholder register
2. Business documents • Business case • Benefits management plan	2. Data gathering • Questionnaires and surveys • Brainstorming	2. Change requests
3. Project management plan • Communications management plan • Stakeholder engagement plan	3. Data analysis • Stakeholder analysis • Document analysis	3. Project management plan updates • Requirements management plan • Communications management plan • Risk management plan • Stakeholder engagement plan
4. Project documents • Change log • Issue log • Requirements documentation	4. Data representation • Stakeholder mapping/ representation	4. Project documents updates • Assumption log • Issue log • Risk register
5. Agreements	5. Meetings	
6. EEF		
7. OPA		

13.2 – Plan Stakeholder Engagement Process			
Definition	The process of developing approaches to involve project stakeholders based on their needs, expectations, interests, and potential impact on the project		
Key benefit	It provides an actionable plan to interact effectively with stakeholders		
When	Periodically throughout the project as needed		
Inputs		**T&T**	**Outputs**
1. Project charter		1. Expert judgment	1. Stakeholder engagement plan
2. Project management plan • Resource management plan • Communications management plan • Risk management plan		2. Data gathering • Benchmarking	
3. Project documents • Assumption log • Change log • Issue log • Project schedule • Risk register • Stakeholder register		3. Data analysis • Assumption and constraint analysis • Root cause analysis	
4. Agreements		4. Decision making • Prioritization/ranking	
5. EEF		5. Data representation • Mind mapping • Stakeholder engagement assessment matrix	
6. OPA		6. Meetings	

13.3 – Manage Stakeholder Engagement Process			
Definition	The process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder involvement		
Key benefit	It allows the project manager to increase support and minimize resistance from stakeholders		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Communications management plan • Risk management plan • Stakeholder engagement plan • Change management plan		1. Expert judgment	1. Change requests
		2. Communication skills • Feedback	2. Project management plan updates • Communications management plan • Stakeholder engagement plan
2. Project documents • Change log • Issue log • Lessons learned register • Stakeholder register		3. Interpersonal and team skills • Conflict management • Cultural awareness • Negotiation • Observation/conversation • Political awareness	3. Project documents updates • Change log • Issue log • Lessons learned register • Stakeholder register
3. EEF		4. Ground rules	
4. OPA		5. Meetings	

13.4 – Monitor Stakeholder Engagement Process			
Definition	The process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through modification of engagement strategies and plans		
Key benefit	It maintains or increases the efficiency and effectiveness of stakeholder engagement activities as the project evolves and its environment changes		
When	Throughout the project		
Inputs		**T&T**	**Outputs**
1. Project management plan • Resource management plan • Communications management plan • Stakeholder engagement plan		1. Data analysis • Alternatives analysis • Root cause analysis • Stakeholder analysis	1. Work performance information*
2. Project documents • Issue log • Lessons learned register • Project communications • Risk register • Stakeholder register		2. Decision making • Multicriteria decision analysis • Voting	2. Change requests
3. Work performance data*		3. Data representation • Stakeholder engagement assessment matrix	3. Project management plan updates • Resource management plan • Communications management plan • Stakeholder engagement plan
4. EEF		4. Communication skills • Feedback • Presentations	4. Project documents updates • Issue log • Lessons learned register • Risk register • Stakeholder register
5. OPA		5. Interpersonal and team skills • Active listening • Cultural awareness • Leadership • Networking • Political awareness	
		6. Meetings	