

Exploring the Project Management Processes

Every process in project management includes three things:

- Inputs: things you need for the process
- Tools and techniques: how you'll do the process
- Outputs: things the process creates

Although you don't need to memorize these inputs, tools and techniques, and outputs (ITTOs), it's a good idea to be familiar with the mechanics of each process. This document has all the ITTOs listed for each process.

Objective	Initiating	Planning	Executing	Monitoring and Controlling	Closing
Project Integration Management	Develop Project Charter	Develop Project Management Plan	Direct and Manage Project Work Manage Project Knowledge	Monitor and Control Project Work Perform Integrated Change Control	Close Project or Phase
Project Scope Management		Plan Scope Management Collect Requirements Define Scope Create WBS		Validate Scope Control Scope	
Project Schedule Management		Plan Schedule Management Define Activities Sequence Activities Estimate Activity Durations Develop Schedule		Control Schedule	

Objective	Initiating	Planning	Executing	Monitoring and Controlling	Closing
Project Cost Management		Plan Cost Management Estimate Costs Determine Budget		Control Costs	
Project Quality Management		Plan Quality Management	Manage Quality	Control Quality	
Project Resource Management		Plan Resource Management Estimate Activity Resources	Acquire Resources Develop Team Manage Team	Control Resources	
Project Communications Management		Plan Communications Management	Manage Communications	Monitor Communications	
Project Risk Management		Plan Risk Management Identify Risks Perform Qualitative Analysis Perform Quantitative Analysis Plan Risk Responses	Implement Risk Responses	Monitor Risks	
Project Procurement Management		Plan Procurement Management	Conduct Procurements	Control Procurements	
Project Stakeholder Management	Identify Stakeholders	Plan Stakeholder Engagement	Manage Stakeholder Engagements	Monitor Stakeholder Engagement	

4.1 Develop Project Charter

Inputs	Tools & Techniques	Outputs
Business documents	Expert judgment	Project charter
Agreements	Data gathering	Assumption log
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets	Meetings	

4.2 Develop Project Management Plan

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Project management plan
Outputs from other processes	Data gathering	
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets	Meetings	

4.3 Direct and Manage Project Work

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Deliverables
Project documents	Project management information system	Work performance data
Approved change requests	Meetings	Issue log
Enterprise environmental factors		Change requests
Organizational process assets		Project management plan updates
		Project documents updates
		Organizational process assets updates

4.4 Manage Project Knowledge

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Lessons learned register
Project documents	Knowledge management	Project management plan updates
Deliverables	Information management	Organizational process assets updates
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets		

4.5 Monitor and Control Project Work

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Work performance reports
Project documents	Data analysis	Change requests
Work performance information	Decision-making	Project management plan updates
Agreements	Meetings	Project documents updates
Enterprise environmental factors		
Organizational process assets		

4.6 Perform Integrated Change Control

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Approved change requests
Project documents	Change control tools	Project management plan updates
Work performance reports	Data analysis	Project documents updates
Change requests	Decision-making	
Enterprise environmental factors	Meetings	
Organizational process assets		

4.7 Close Project or Phase

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Project documents updates
Project management plan	Data analysis	Final product, service, or result transition
Project documents	Meetings	Final report
Accepted deliverables		Organizational process assets updates
Business documents		
Agreements		
Procurement documentation		
Organizational process assets		

5.1 Plan Scope Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Scope management plan
Project management plan	Data analysis	Requirements management plan
Enterprise environmental factors	Meetings	
Organizational process assets		

5.2 Collect Requirements

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Requirements documentation
Project management plan	Data gathering	Requirements traceability matrix
Project documents	Data analysis	
Business documents	Decision-making	
Agreements	Data representation	
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets	Context diagram	
	Prototypes	

5.3 Define Scope

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Project scope statement
Project management plan	Data analysis	Project documents updates
Project documents	Decision-making	
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets	Product analysis	

5.4 Create WBS

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Scope baseline
Project documents	Decomposition	Project documents updates
Enterprise environmental factors		
Organizational process assets		

5.5 Validate Scope

Inputs	Tools & Techniques	Outputs
Project management plan	Inspection	Accepted deliverables
Project documents	Decision-making	Work performance information
Verified deliverables		Change requests
Work performance data		Project documents updates

5.6 Control Scope

Inputs	Tools & Techniques	Outputs
Project management plan	Data analysis	Work performance information
Project documents		Change requests
Work performance data		Project management plan updates
Organizational process assets		Project documents updates

6.1 Plan Schedule Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Schedule management plan
Project management plan	Data analysis	
Enterprise environmental factors	Meetings	
Organizational process assets		

6.2 Define Activities

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Activity list
Enterprise environmental factors	Decomposition	Activity attributes
Organizational process assets	Rolling wave planning	Milestone list
	Meetings	Change requests
		Project management plan updates

6.3 Sequence Activities

Inputs	Tools & Techniques	Outputs
Project management plan	Precedence diagramming method	Project schedule network diagrams
Project documents	Dependency determination and integration	Project documents updates
Enterprise environmental factors	Leads and lags	
Organizational process assets	Project management information system	

6.4 Estimate Activity Durations

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Duration estimates
Project documents	Analogous estimating	Basis of estimates
Enterprise environmental factors	Parametric estimating	Project documents updates
Organizational process assets	Three-point estimating	
	Bottom-up estimating	
	Data analysis	
	Decision-making	
	Meetings	

6.5 Develop Schedule

Inputs	Tools & Techniques	Outputs
Project management plan	Schedule network analysis	Schedule baseline
Project documents	Critical path method	Project schedule
Agreements	Resource optimization	Schedule data
Enterprise environmental factors	Data analysis	Project calendars
Organizational process assets	Leads and lags	Change requests
	Schedule compression	Project management plan updates
	Project management information system	Project documents updates
	Agile release planning	

6.6 Control Schedule

Inputs	Tools & Techniques	Outputs
Project management plan	Data analysis	Work performance information
Project documents	Critical path method	Schedule forecasts
Work performance data	Project management information system	Change requests
Organizational process assets	Resource optimization	Project management plan updates
	Leads and lags	Project documents updates
	Schedule compression	

7.1 Plan Cost Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Cost management plan
Project management plan	Data analysis	
Enterprise environmental factors	Meetings	
Organizational process assets		

7.2 Estimate Costs

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Cost estimates
Project documents	Analogous estimating	Basis of estimates
Enterprise environmental factors	Parametric estimating	Project documents updates
Organizational process assets	Bottom-up estimating	
	Three-point estimating	
	Data analysis	
	Project management information system	
	Decision-making	

7.3 Determine Budget

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Cost baseline
Project documents	Cost aggregation	Project funding requirements
Business documents	Data analysis	Project documents updates
Agreements	Historical information review	
Enterprise environmental factors	Funding limit reconciliation	
Organizational process assets	Financing	

7.4 Control Costs

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Work performance information
Project documents	Data analysis	Cost forecasts
Project funding requirements	To-complete performance index	Change requests
Work performance data	Project management information system	Project management plan updates
Organizational process assets		Project documents updates

8.1 Plan Quality Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Quality management plan
Project management plan	Data gathering	Quality metrics
Project documents	Data analysis	Project management plan updates
Enterprise environmental factors	Decision-making	Project documents updates
Organizational process assets	Data representation	
	Test and inspection planning	
	Meetings	

8.2 Manage Quality

Inputs	Tools & Techniques	Outputs
Project management plan	Data gathering	Quality reports
Project documents	Data analysis	Test and evaluation documents
Organizational process assets	Decision-making	Change requests
	Data representation	Project management plan updates
	Audits	Project documents updates
	Design for X	
	Problem-solving	
	Quality improvement methods	

8.3 Control Quality			
Inputs		Tools & Techniques	Outputs
Project management plan		Data gathering	Quality control measurements
Project documents		Data analysis	Verified deliverables
Approved change requests		Inspection	Work performance information
Deliverables		Testing/product evaluations	Change requests
Work performance data		Data representation	Project management plan updates
Enterprise environmental factors		Meetings	Project documents updates
Organizational process assets			
9.1 Plan Resource Management			
Inputs		Tools & Techniques	Outputs
Project charter		Expert judgment	Resource management plan
Project management plan		Data representation	Team charter
Project documents		Organizational theory	Project documents updates
Enterprise environmental factors		Meetings	
Organizational process assets			
9.2 Estimate Activity Resources			
Inputs		Tools & Techniques	Outputs
Project management plan		Expert judgment	Resource requirements
Project documents		Bottom-up estimating	Basis of estimates
Enterprise environmental factors		Analogous estimating	Resource breakdown structure
Organizational process assets		Parametric estimating	Project documents updates
		Data analysis	
		Project management information system	
		Meetings	

9.3 Acquire Resources

Inputs	Tools & Techniques	Outputs
Project management plan	Decision-making	Physical resource assignments
Project documents	Interpersonal and team skills	Project team assignments
Enterprise environmental factors	Preassignment	Resource calendars
Organizational process assets	Virtual teams	Change requests
		Project management plan updates
		Project documents updates
		Enterprise environmental factors updates
		Organizational process assets updates

9.4 Develop Team

Inputs	Tools & Techniques	Outputs
Project management plan	Colocation	Team performance assessments
Project documents	Virtual teams	Change requests
Enterprise environmental factors	Communication technology	Project management plan updates
Organizational process assets	Interpersonal and team skills	Project documents updates
	Recognition and rewards	Enterprise environmental factors updates
	Training	Organizational process assets updates
	Individual and team assessments	
	Meetings	

9.5 Manage Team

Inputs	Tools & Techniques	Outputs
Project management plan	Interpersonal and team skills	Change requests
Project documents	Project management information system	Project management plan updates
Work performance reports		Project documents updates
Team performance assessments		Enterprise environmental factors updates
Enterprise environmental factors		
Organizational process assets		

9.6 Control Resources

Inputs	Tools & Techniques	Outputs
Project management plan	Data analysis	Work performance information
Project documents	Problem-solving	Change requests
Work performance data	Interpersonal and team skills	Project management plan updates
Agreements	Project management information system	Project documents updates
Organizational process assets		

10.1 Plan Communications Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Communications management plan
Project management plan	Communication requirements analysis	Project management plan updates
Project documents	Communication technology	Project documents update
Enterprise environmental factors	Communication models	
Organizational process assets	Communication methods	
	Interpersonal and team skills	
	Data representation	
	Meetings	

10.2 Manage Communications

Inputs	Tools & Techniques	Outputs
Project management plan	Communication technology	Project communications
Project documents	Communication methods	Project management plan updates
Work performance reports	Communication skills	Project documents updates
Enterprise environmental factors	Project management information system	Organizational process assets updates
Organizational process assets	Interpersonal and team skills	
Meetings		

10.3 Monitor Communications

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Work performance information
Project documents	Project management information system	Change requests
Work performance data	Data representation	Project management plan updates
Enterprise environmental factors	Interpersonal and team skills	Project documents updates
Organizational process assets	Meetings	

11.1 Plan Risk Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Risk management plan
Project management plan	Data analysis	
Project documents	Meetings	
Enterprise environmental factors		
Organizational process assets		

11.2 Identify Risks

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Risk register
Project documents	Data gathering	Risk report
Agreements	Data analysis	Project documents updates
Procurement documentation	Interpersonal and team skills	
Enterprise environmental factors	Prompt lists	
Organizational process assets	Meetings	

11.3 Perform Qualitative Risk Analysis

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Project documents updates
Project documents	Data gathering	
Enterprise environmental factors	Data analysis	
Organizational process assets	Interpersonal and team skills	
	Risk categorization	
	Data representation	
	Meetings	

11.4 Perform Qualitative Risk Analysis

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Project documents updates
Project documents	Data gathering	
Enterprise environmental factors	Interpersonal and team skills	
Organizational process assets	Representations of uncertainty	
	Data analysis	

11.5 Plan Risk Responses

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Change requests
Project documents	Data gathering	Project management plan updates
Enterprise environmental factors	Interpersonal and team skills	Project documents updates
Organizational process assets	Strategies for threats	
	Strategies for opportunities	
	Contingent response strategies	
	Strategies for overall project risk	
	Data analysis	
	Decision-making	

11.6 Implement Risk Responses

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Change requests
Project documents	Interpersonal and team skills	Project documents updates
Organizational process assets	Project management information system	

11.7 Monitor Risks

Inputs	Tools & Techniques	Outputs
Project management plan	Data analysis	Work performance information
Project documents	Audits	Change requests
Work performance data	Meetings	Project management plan updates
Work performance reports		Project documents updates
		Organizational process assets updates

12.1 Plan Procurement Management

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Procurements management plan
Business documents	Data gathering	Procurement strategy
Project management plan	Data analysis	Bid documents
Project documents	Source selection analysis	Procurement statement of work
Enterprise environmental factors	Meetings	Source selection criteria
Organizational process assets		Make-or-buy decisions
		Independent cost estimates
		Change requests
		Project documents updates
		Organizational process assets updates

12.2 Conduct Procurements

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Selected sellers
Project documents	Advertising	Agreements
Procurement documentation	Bidder conferences	Change requests
Seller proposals	Data analysis	Project management plan updates
Enterprise environmental factors	Interpersonal and team skills	Project documents updates
Organizational process assets		Organizational process assets updates

12.3 Control Procurements

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Closed procurements
Project documents	Claims administration	Work performance information
Agreements	Data analysis	Procurement documentation updates
Procurement documentation	Inspection	Change requests
Approved change requests	Audits	Project management plan updates
Work performance data		Project documents updates
Enterprise environmental factors		Organizational process assets updates
Organizational process assets		

13.1 Identify Stakeholders

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Stakeholder register
Business documents	Data gathering	Change requests
Project management plan	Data analysis	Project management plan updates
Project documents	Data representation	Project documents updates
Agreements	Meetings	
Enterprise environmental factors		
Organizational process assets		

13.2 Plan Stakeholder Engagement

Inputs	Tools & Techniques	Outputs
Project charter	Expert judgment	Stakeholder engagement plan
Project management plan	Data gathering	
Project documents	Data analysis	
Agreements	Decision-making	
Enterprise environmental factors	Data representation	
Organizational process assets	Meetings	

13.3 Manage Stakeholder Engagement

Inputs	Tools & Techniques	Outputs
Project management plan	Expert judgment	Change requests
Project documents	Communication skills	Project management plan updates
Enterprise environmental factors	Interpersonal and team skills	Project documents updates
Organizational process assets	Ground rules	
	Meetings	

13.4 Monitor Stakeholder Engagement

Inputs	Tools & Techniques	Outputs
Project management plan	Data analysis	Work performance information
Project documents	Decision-making	Change requests
Work performance data	Data representation	Project management plan updates
Enterprise environmental factors	Communication skills	Project documents updates
Organizational process assets	Interpersonal and team skills	
	Meetings	