

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Process	Inputs	Tools and Techniques	Closing
Initiation	Develop Project Charter (Integration Management)	<ul style="list-style-type: none"> • Project statement of work • Business case • Contract • Enterprise environmental factors • Organizational process assets 	<ul style="list-style-type: none"> • Expert judgment 	<ul style="list-style-type: none"> • Project charter
	Identify Stakeholders (Integration Management)	<ul style="list-style-type: none"> • Project charter • Procurement documents • Enterprise environmental factors • Organizational process assets 	<ul style="list-style-type: none"> • Stakeholder analysis • Expert judgment 	<ul style="list-style-type: none"> • Stakeholder register • Stakeholder management strategy

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Process	Inputs	Tools and Techniques	Closing
Planning	Develop Project Management Plan (Integration Management)	<ul style="list-style-type: none"> Project charter Outputs from planning processes Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment 	<ul style="list-style-type: none"> Project management plan
	Collect Requirements (Scope Management)	<ul style="list-style-type: none"> Project charter Stakeholder register 	<ul style="list-style-type: none"> Interviews Focus groups Facilitated workshops Group creativity techniques Group decision making techniques Questionnaires and surveys Observations Prototypes 	<ul style="list-style-type: none"> Requirements documentation Requirements management plan Requirements traceability matrix
	Define Scope (Scope Management)	<ul style="list-style-type: none"> Project charter Requirements documentation Organizational process assets 	<ul style="list-style-type: none"> Expert judgment Product analysis Alternatives identification Facilitated workshops 	<ul style="list-style-type: none"> Project scope statement Project documentation updates
	Create WBS (Scope Management)	<ul style="list-style-type: none"> Project scope statement Requirements documentation Organizational process assets 	<ul style="list-style-type: none"> Decomposition 	<ul style="list-style-type: none"> WBS WBS dictionary Scope baseline Project document updates
	Define Activities (Time Management)	<ul style="list-style-type: none"> Scope baseline Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Decomposition Rolling wave planning Templates Expert judgment 	<ul style="list-style-type: none"> Activity list Activity attributes Milestone list
	Define Activities (Time Management)	<ul style="list-style-type: none"> Scope baseline Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Decomposition Rolling wave planning Templates Expert judgment 	<ul style="list-style-type: none"> Activity list Activity attributes Milestone list
	Sequence Activities (Time Management)	<ul style="list-style-type: none"> Activity list Activity attributes Milestone list Project scope statement Organizational process assets 	<ul style="list-style-type: none"> Precedence diagramming method (PDM) Dependency determination Applying leads and lags Schedule network templates 	<ul style="list-style-type: none"> Project schedule network diagrams Project document updates
	Estimate Activity Resources (Time Management)	<ul style="list-style-type: none"> Activity list Activity attributes Resource calendars Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment Alternatives analysis Published estimating data Bottom-up estimating Project management software 	<ul style="list-style-type: none"> Activity resource requirements Resource breakdown structure Project document updates

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Process	Inputs	Tools and Techniques	Closing
Planning	Estimate Activity Durations (Time Management)	<ul style="list-style-type: none"> Activity list Activity attributes Activity resource requirements Resource calendars Project scope statement Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Experts judgment Analogous estimating Parametric estimating Three-point estimates Reserve analysis 	<ul style="list-style-type: none"> Activity duration estimates Project document updates
	Develop Schedule (Time Management)	<ul style="list-style-type: none"> Activity list Activity attributes Project schedule network diagrams Activity resource requirements Resource calendars Activity duration estimates Project scope statement Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Schedule network analysis Critical path method Critical chain method Resource leveling What-if scenario analysis Applying leads and lags Schedule compression Scheduling tool 	<ul style="list-style-type: none"> Project schedule Schedule baseline Schedule data Project document updates
	Estimate Costs (Cost Management)	<ul style="list-style-type: none"> Scope baseline Project schedule Human resource plan Risk register Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment Analogous estimating Parametric estimating Bottom-up estimating Three-point estimates Reserve analysis Cost quality Project management estimating software Vendor bid analysis 	<ul style="list-style-type: none"> Activity cost estimates Basis of estimates Project document updates
	Determine Budget (Cost Management)	<ul style="list-style-type: none"> Activity cost estimates Basis of estimates Scope baseline Project schedule Resource calendars Contracts Organizational process assets 	<ul style="list-style-type: none"> Cost aggregation Reserve analysis Expert judgment Historical relationships Funding limit reconciliation 	<ul style="list-style-type: none"> Cost performance baseline Project funding requirements Project documents updates
	Plan Quality (Quality Management)	<ul style="list-style-type: none"> Scope baseline Stakeholder register Cost performance baseline Schedule baseline Risk register Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Cost-benefit analysis Cost of quality Control charts Benchmarking Design of experiments Statistical sampling Flow charting Proprietary quality management methodologies Additional quality planning tools 	<ul style="list-style-type: none"> Quality management plan Quality metrics Quality checklists Process improvement plan Project document updates
	Develop Human Resource Plan (Human Resource Management)	<ul style="list-style-type: none"> Activity resource requirements Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Organizational charts and position descriptions Networking Organizational theory 	<ul style="list-style-type: none"> Human resource plan

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Process	Inputs	Tools and Techniques	Closing
Planning	Plan Communications (Communications Management)	<ul style="list-style-type: none"> Stakeholder register Stakeholder management strategy Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Communication requirements analysis Communication technology Communication models Communication methods 	<ul style="list-style-type: none"> Communications management plan Project document updates
	Plan Risk Management (Risk Management)	<ul style="list-style-type: none"> Project scope statement Cost management plan Schedule management plan Communication management plan Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Planning meetings and analysis 	<ul style="list-style-type: none"> Risk management plan
	Identify Risks (Risk Management)	<ul style="list-style-type: none"> Risk management plan Activity cost estimates Activity duration estimates Scope baseline Stakeholder register Cost management plan Schedule management plan Quality management plan Project documents Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Document reviews Information gathering Checklist analysis Assumptions analysis Diagramming techniques SWOT analysis Expert judgment 	<ul style="list-style-type: none"> Risk register
	Perform Qualitative Risk Analysis (Risk Management)	<ul style="list-style-type: none"> Risk register Risk management plan Project scope statement Organizational process assets 	<ul style="list-style-type: none"> Risk probability and impact assessment Probability and impact matrix Risk data quality assessment Risk categorization Risk urgency assessment Expert judgment 	<ul style="list-style-type: none"> Risk register updates
	Perform Quantitative Risk Analysis (Risk Management)	<ul style="list-style-type: none"> Risk register Risk management plan Cost management plan Schedule management plan Schedule management plan Organizational process assets 	<ul style="list-style-type: none"> Data gathering and representation techniques Quantitative risk analysis and modeling techniques Expert judgment 	<ul style="list-style-type: none"> Risk register updates
	Plan Risk Responses (Risk Management)	<ul style="list-style-type: none"> Risk register Risk management plan 	<ul style="list-style-type: none"> Strategies for negative risks or threats Strategies for positive risks or opportunities Contingent response strategies Expert judgment 	<ul style="list-style-type: none"> Risk register updates Risk-related contract decisions Project management plan updates Project document updates

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Inputs	Tools and Techniques	Closing	Process
Planning	Procurement Plan (Procurement Planning)	<ul style="list-style-type: none"> • Scope baseline • Requirements documentation • Teaming agreements • Risk register • Risk-related contract decisions • Activity resource requirements • Project schedule • Activity cost estimates • Cost performance baseline • Enterprise environmental factors • Organizational process assets 	<ul style="list-style-type: none"> • Make-or-buy analysis • Expert judgment • Contract types 	<ul style="list-style-type: none"> • Procurement management plan • Procurement statements of work • Make-or-buy decisions • Source selection criteria • Change requests

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

Execution	Process	Inputs	Tools and Techniques	Closing
	Direct and Manage Project Execution (Integration Management)	<ul style="list-style-type: none"> Project management plan Approved change requests Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment Project management information system 	<ul style="list-style-type: none"> Deliverables Work performance information Change requests Project management plan updates Project document updates
	Perform Quality Assurance (Quality Management)	<ul style="list-style-type: none"> Project management plan Quality metrics Work performance information Quality control measurement 	<ul style="list-style-type: none"> Plan quality and perform Quality Control tools and techniques Quality audits Process analysis 	<ul style="list-style-type: none"> Organizational process assets updates Change requests Project management plan updates Project document updates
	Acquire Project Team (Human Resource Management)	<ul style="list-style-type: none"> Project management plan Enterprise environmental factors Organizational process charts 	<ul style="list-style-type: none"> Pre-assignment Negotiation Acquisition Virtual teams 	<ul style="list-style-type: none"> Project staff assignments Resource calendars Project management plan updates
	Develop Project Team (Human Resource Management)	<ul style="list-style-type: none"> Project staff assignments Project management plan Resource calendars 	<ul style="list-style-type: none"> Interpersonal skills Training Team-building activities Ground rules Co-location Recognition and rewards 	<ul style="list-style-type: none"> Team performance assessments Enterprise environmental factors updates
	Manage Project Team (Human Resource Management)	<ul style="list-style-type: none"> Project staff assignments Project management plan Team performance assessments Performance reports Organizational process assets 	<ul style="list-style-type: none"> Observation and conversation Project performance appraisals Conflict management Issue log Interpersonal skills 	<ul style="list-style-type: none"> Enterprise environmental factors updates Organizational process assets updates Change request Project management plan updates
	Distribute Information (Communications Management)	<ul style="list-style-type: none"> Project management plan Performance reports Organizational process assets 	<ul style="list-style-type: none"> Communication methods Information distribution tools 	<ul style="list-style-type: none"> Organizational process assets updates
	Manage Stakeholder Expectations (Communications Management)	<ul style="list-style-type: none"> Stakeholder register Stakeholder management strategy Project management plan Issue log Change log Organizational process assets 	<ul style="list-style-type: none"> Communication methods Interpersonal skills Management skills 	<ul style="list-style-type: none"> Organizational process assets updates Change request Project management plan updates Project document updates
	Conduct Procurement (Procurement Management)	<ul style="list-style-type: none"> Project management plan Procurement documents Source selection criteria Qualified seller list Seller proposals Project documents Make-or-buy decisions Teaming agreements Organizational process assets 	<ul style="list-style-type: none"> Bidder conferences Proposal evaluation techniques Independent estimates Advertising Internet search Procurement negotiations 	<ul style="list-style-type: none"> Selected sellers Procurement contract award Resource calendars Change requests Project management plan updates Project documents updates

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

Monitor and Control	Process	Inputs	Tools and Techniques	Closing
	Monitor and Control Project Work (Integration Management)	<ul style="list-style-type: none"> Project management plan Performance reports Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment 	<ul style="list-style-type: none"> Change requests Project management plan updates Project document updates
	Perform Integrated Change Control (Integration Management)	<ul style="list-style-type: none"> Project management plan Work performance information Change requests Enterprise environmental factors Organizational process assets 	<ul style="list-style-type: none"> Expert judgment Change control meetings 	<ul style="list-style-type: none"> Change request status updates Project management plan updates Project document updates
	Verify Scope (Scope Management)	<ul style="list-style-type: none"> Project management plan Requirements documentation Requirements traceability matrix Validated deliverables 	<ul style="list-style-type: none"> Inspection 	<ul style="list-style-type: none"> Accepted deliverables Change requests Project document updates
	Control Scope (Scope Management)	<ul style="list-style-type: none"> Project management plan Work performance information Requirements information Requirements traceability matrix Organizational process assets 	<ul style="list-style-type: none"> Variance analysis 	<ul style="list-style-type: none"> Work performance measurements Organizational process assets updates Change request Project management plan updates Project document updates
	Control Schedule (Time Management)	<ul style="list-style-type: none"> Project management plan Project schedule Work performance information Organizational process assets 	<ul style="list-style-type: none"> Performance reviews Variance analysis Project management software Resource leveling What-if scenario analysis Adjusting leads and lags Schedule compression Scheduling tool 	<ul style="list-style-type: none"> Work performance measurements Organizational process assets updates Change requests Project management plan updates Project document updates
	Control Costs (Cost Management)	<ul style="list-style-type: none"> Project management plan Project funding requirements Work performance information Organizational process assets 	<ul style="list-style-type: none"> Earned value management Forecasting To-complete performance index (TCP) Performance reviews Variance analysis Project management software 	<ul style="list-style-type: none"> Work performance measurements Budget forecasts Organizational process assets updates Change requests Project management plan updates Project document updates
	Perform Quality Control (Quality Management)	<ul style="list-style-type: none"> Project management plan Quality metrics Quality checklist Work performance measurements Approved change requests Deliverables Organizational process assets 	<ul style="list-style-type: none"> Cause and effect diagrams Control charts Flowcharting Histogram Pareto chart Run chart Scatter diagram Statistical sampling Inspection Approved change requests review 	<ul style="list-style-type: none"> Quality control measurements Validated changes Validated deliverables Organizational process assets updates Change requests Project management plan updates Project document updates
	Process	Inputs	Tools and Techniques	Closing

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	<p style="text-align: center;">Report Performance</p> <p style="text-align: center;">(Communications Management)</p>	<ul style="list-style-type: none"> • Project management plan • Work performance information • Work performance measurements • Budget forecasts • Organizational process assets 	<ul style="list-style-type: none"> • Variance analysis • Forecasting methods • Communication methods • Reporting systems 	<ul style="list-style-type: none"> • Performance reports • Organizational process assets updates • Change reports
	<p style="text-align: center;">Monitor & Control Risks</p> <p style="text-align: center;">(Risk Management)</p>	<ul style="list-style-type: none"> • Risk register • Project management plan • Work performance information • Performance reports 	<ul style="list-style-type: none"> • Risk reassessment • Risk audits • Variance and trend analysis • Technical performance measurement • Reserve analysis • Status meetings 	<ul style="list-style-type: none"> • Risk register updates • Organizational process assets updates • Change requests • Project management plan updates • Project documents updates
	<p style="text-align: center;">Administer Procurement</p> <p style="text-align: center;">(Procurement Management)</p>	<ul style="list-style-type: none"> • Procurement documents • Project management plan • Contracts • Performance reports • Approved change requests • Worked performance information 	<ul style="list-style-type: none"> • Contract change control system • Procurement performance reviews • Inspections and audits • Performance reporting • Payment systems • Claims administration • Records management system 	<ul style="list-style-type: none"> • Procurement documentation • Organizational process assets updates • Change requests • Project management plan updates

Project Management
Process Inputs, Tools and Techniques, and Outputs
Organized by Process Groups
Based on PMBOK V4

	Process	Inputs	Tools and Techniques	Closing
Closing	Close Project or Phase (Integration Management)	<ul style="list-style-type: none"> Project management plan Accepted deliverables Organizational process assets 	<ul style="list-style-type: none"> Expert judgment 	<ul style="list-style-type: none"> Final product, service, or result transition Organizational process assets updates
	Close Procurement (Procurement Management)	<ul style="list-style-type: none"> Project management plan Procurement documentation 	<ul style="list-style-type: none"> Procurement audits Negotiated settlements Record management system 	<ul style="list-style-type: none"> Closed procurements Organizations process assets updates