

## Inputs, Tools & Techniques, Outputs

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
<b>4. Project Integration Management</b>	<b>Initiating</b>	4.1 Develop Project Charter	4.1.1.1 Project statement of work 4.1.1.2 Business case 4.1.1.3 Contract 4.1.1.4 Enterprise environmental factors 4.1.1.5 Organizational process assets	4.1.2.1 Expert judgment	4.1.3.1 Project charter
	<b>Planning</b>	4.2 Develop Project Management Plan	4.2.1.1 Project charter 4.2.1.2 Outputs from planning processes 4.2.1.3 Enterprise environmental factors 4.2.1.4 Organizational process assets	4.2.2.1 Expert judgment	4.2.3.1 Project management plan
	<b>Executing</b>	4.3 Direct & Manage Project Execution	4.3.1.1 Project management plan 4.3.1.2 Approved change requests 4.3.1.3 Enterprise environmental factors 4.3.1.4 Organizational process assets	4.3.2.1 Expert judgment 4.3.2.2 Project management information system	4.3.3.1 Deliverables 4.3.3.2 Work performance information 4.3.3.3 Change requests 4.3.3.4 Project management plan updates 4.3.3.5 Project document updates
	<b>Monitoring &amp; Controlling</b>	4.4 Monitor & Control Project Work	4.4.1.1 Project management plan 4.4.1.2 Performance reports 4.4.1.3 Enterprise environmental factors 4.4.1.4 Organizational process assets	4.4.2.1 Expert judgment	4.4.3.1 Change requests 4.4.3.2 Project management plan updates 4.4.3.3 Project document updates
		4.5 Perform Integrate Change Control	4.5.1.1 Project management plan 4.5.1.2 Work performance information 4.5.1.3 Change requests 4.5.1.4 Enterprise environmental factors 4.5.1.5 Organizational process assets	4.5.2.1 Expert judgment 4.5.2.2 Change control meetings	4.5.3.1 Change request status updates 4.5.3.2 Project management plan updates 4.5.3.3 Project document updates
<b>Closing</b>	4.6 Close Project or Phase	4.6.1.1 Project management plan 4.6.1.2 Accepted deliverables 4.6.1.3 Organizational process assets	4.6.2.1 Expert judgment	4.6.3.1 Final product, service, or result transition 4.6.3.2 Organizational process assets updates	

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
5. Project Scope Management	Planning	5.1 Collect Requirements	5.1.3.1 Project charter 5.1.3.2 Stakeholder register	5.1.3.1 Interviews 5.1.3.2 Focus groups 5.1.3.3 Facilitated workshops 5.1.3.4 Group creativity techniques 5.1.3.5 Group decision making techniques 5.1.3.6 Questionnaires & surveys 5.1.3.7 Observations 5.1.3.8 Prototypes	5.1.3.1 Requirements documentation 5.1.3.2 Requirements management plan 5.1.3.3 Requirements traceability matrix
		5.2 Define Scope	5.2.1.1 Project charter 5.2.1.2 Requirements documentation 5.2.1.3 Organizational process assets	5.2.2.1 Expert judgment 5.2.2.2 Product analysis 5.2.2.3 Alternatives identification 5.2.2.4 Facilitated workshops	5.2.3.1 Project scope statement 5.2.3.2 Project document updates
		5.3 Create WBS	5.3.1.1 Project scope statement 5.3.1.2 Requirements documentation 5.3.1.3 Organizational process assets	5.3.2.1 Decomposition	5.3.3.1 WBS 5.3.3.2 WBS dictionary 5.3.3.3 Scope baseline 5.3.3.4 Project document updates
	Monitoring & Controlling	5.4 Verify Scope	5.4.1.1 Project management plan 5.4.1.2 Requirements documentation 5.4.1.3 Requirements traceability matrix 5.4.1.4 Validated deliverables	5.4.2.1 Inspection	5.4.3.1 Accepted deliverables 5.4.3.2 Change requests 5.4.3.3 Project document updates
		5.5 Control Scope	5.5.1.1 Project management plan 5.5.1.2 Work performance information 5.5.1.3 Requirements documentation 5.5.1.4 Requirements traceability matrix 5.5.1.5 Organizational process assets	5.5.2.1 Variance analysis	5.5.3.1 Work performance measurements 5.5.3.2 Organizational process assets updates 5.5.3.3 Change requests 5.5.3.4 Project management plan updates 5.5.3.5 Project document updates

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<b>6. Project Time Management</b>	<b>Planning</b>	6.1 Define Activities	6.1.1.1 Scope baseline 6.1.1.2 Enterprise environmental factors 6.1.1.3 Organizational process assets	6.1.2.1 Decomposition 6.1.2.2 Rolling wave planning 6.1.2.3 Templates 6.1.2.4 Expert judgment	6.1.3.1 Activity list 6.1.3.2 Activity attributes 6.1.3.3 Milestone list
		6.2 Sequence Activities	6.2.1.1 Activity list 6.2.1.2 Activity attributes 6.2.1.3 Milestone list 6.2.1.4 Project scope statement 6.2.1.5 Organizational process assets	6.2.2.1 Precedence diagramming method (PDM) 6.2.2.2 Dependency determination 6.2.2.3 Applying leads & lags 6.2.2.4 Schedule network templates	6.2.3.1 Project schedule network diagrams 6.2.3.2 Project document updates
		6.3 Estimate Activity Resources	6.3.1.1 Activity list 6.3.1.2 Activity attributes 6.3.1.3 Resource calendars 6.3.1.4 Enterprise environmental factors 6.3.1.5 Organizational process assets	6.3.2.1 Expert judgment 6.3.2.2 Alternatives analysis 6.3.2.3 Published estimating data 6.3.2.4 Bottom-up estimating 6.3.2.5 Project management software	6.3.3.1 Activity resource requirements 6.3.3.2 Resource breakdown structure 6.3.3.3 Project document updates
		6.4 Estimate Activity Durations	6.4.1.1 Activity list 6.4.1.2 Activity attributes 6.4.1.3 Activity resource requirements 6.4.1.4 Resource calendars 6.4.1.5 Project scope statement 6.4.1.6 Enterprise environmental factors 6.4.1.7 Organizational process assets	6.4.2.1 Expert judgment 6.4.2.2 Analogous estimating 6.4.2.3 Parametric estimating 6.4.2.4 Three-point estimates 6.4.2.5 Reserve analysis	6.4.3.1 Activity duration estimates 6.4.3.2 Project document updates
		6.5 Develop Schedule	6.5.1.1 Activity list 6.5.1.2 Activity attributes 6.5.1.3 Project schedule network diagrams 6.5.1.4 Activity resource requirements 6.5.1.5 Resource calendars 6.5.1.6 Activity duration estimates 6.5.1.7 Project scope statement 6.5.1.8 Enterprise environmental factors 6.5.1.9 Organizational process assets	6.5.2.1 Schedule network analysis 6.5.2.2 Critical path method 6.5.2.3 Critical chain method 6.5.2.4 Resource levelling 6.5.2.5 What-if scenario analysis 6.5.2.6 Applying leads & lags 6.5.2.7 Schedule compression 6.5.2.8 Scheduling tool	6.5.3.1 Project schedule 6.5.3.2 Schedule baseline 6.5.3.3 Schedule data 6.5.3.4 Project document updates
	<b>Monitoring &amp; Controlling</b>	6.6 Control Schedule	6.6.1.1 Project management plan 6.6.1.2 Project schedule 6.6.1.3 Work performance information 6.6.1.4 Organizational process assets	6.6.2.1 Performance reviews 6.6.2.2 Variance analysis 6.6.2.3 Project management software 6.6.2.4 Resource levelling 6.6.2.5 What-if scenario analysis 6.6.2.6 Adjusting leads & lags 6.6.2.7 Schedule compression 6.6.2.8 Scheduling tool	6.6.3.1 Work performance measurements 6.6.3.2 Organizational process assets updates 6.6.3.3 Change requests 6.6.3.4 Project management plan updates 6.6.3.5 Project document updates

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
7. Project Cost Management	Planning	7.1 Estimate Costs	7.1.1.1 Scope baseline 7.1.1.2 Project schedule 7.1.1.3 Human resource plan 7.1.1.4 Risk register 7.1.1.5 Enterprise environmental factors 7.1.1.6 Organizational process assets	7.1.2.1 Expert judgment 7.1.2.2 Analogous estimating 7.1.2.3 Parametric estimating 7.1.2.4 Bottom-up estimating 7.1.2.5 Three-point estimates 7.1.2.6 Reserve analysis 7.1.2.7 Cost of quality 7.1.2.8 Project management estimating software 7.1.2.9 Vendor bid analysis	7.1.3.1 Activity cost estimates 7.1.3.2 Basis of estimates 7.1.3.3 Project document updates
		7.2 Determine Budget	7.2.1.1 Activity cost estimates 7.2.1.2 Basis of estimates 7.2.1.3 Scope baseline 7.2.1.4 Project schedule 7.2.1.5 Resource calendars 7.2.1.6 Contracts 7.2.1.7 Organizational process assets	7.2.2.1 Cost aggregation 7.2.2.2 Reserve analysis 7.2.2.3 Expert judgment 7.2.2.4 Historical relationships 7.2.2.5 Funding limit reconciliation	7.2.3.1 Cost performance baseline 7.2.3.2 Project funding requirements 7.2.3.3 Project document updates
	Monitoring & Controlling	7.3 Control Costs	7.3.1.1 Project management plan 7.3.1.2 Project funding requirements 7.3.1.3 Work performance information 7.3.1.4 Organizational process assets	7.3.2.1 Earned value management 7.3.2.2 Forecasting 7.3.2.3 To-complete performance index (TCPI) 7.3.2.4 Performance reviews 7.3.2.5 Variance analysis 7.3.2.6 Project management software	7.3.3.1 Work performance measurements 7.3.3.2 Budget forecasts 7.3.3.3 Organizational process assets updates 7.3.3.4 Change requests 7.3.3.5 Project management plan updates 7.3.3.6 Project document updates

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
8. Project Quality Management	Planning	8.1 Plan Quality	8.1.1.1 Scope baseline 8.1.1.2 Stakeholder register 8.1.1.3 Cost performance baseline 8.1.1.4 Schedule baseline 8.1.1.5 Risk register 8.1.1.6 Enterprise environmental factors 8.1.1.7 Organizational process assets	8.1.2.1 Cost-benefit analysis 8.1.2.2 Cost of quality 8.1.2.3 Control charts 8.1.2.4 Benchmarking 8.1.2.5 Design of experiments 8.1.2.6 Statistical sampling 8.1.2.7 Flowcharting 8.1.2.8 Proprietary quality management methodologies 8.1.2.9 Additional quality planning tools	8.1.3.1 Quality management plan 8.1.3.2 Quality metrics 8.1.3.3 Quality checklists 8.1.3.4 Process improvement plan 8.1.3.5 Project document updates
	Executing	8.2 Perform Quality Assurance	8.2.1.1 Project management plan 8.2.1.2 Quality metrics 8.2.1.3 Work performance information 8.2.1.4 Quality control measurements	8.2.2.1 Plan Quality & Perform Quality Control tools & techniques 8.2.2.2 Quality audits 8.2.2.3 Process analysis	8.2.3.1 Organizational process asset updates 8.2.3.2 Change requests 8.2.3.3 Project management plan updates 8.2.3.4 Project document updates
	Monitoring & Controlling	8.3 Perform Quality Control	8.3.1.1 Project management plan 8.3.1.2 Quality metrics 8.3.1.3 Quality checklists 8.3.1.4 Work performance measurements 8.3.1.5 Approved change requests 8.3.1.6 Deliverables 8.3.1.7 Organizational process assets	8.3.2.1 Cause & effect diagrams 8.3.2.2 Control charts 8.3.2.3 Flowcharting 8.3.2.4 Histogram 8.3.2.5 Pareto chart 8.3.2.6 Run chart 8.3.2.7 Scatter diagram 8.3.2.8 Statistical sampling 8.3.2.9 Inspection 8.3.2.10 Approved change requests review	8.3.3.1 Quality control measurements 8.3.3.2 Validated changes 8.3.3.3 Validated deliverables 8.3.3.4 Organizational process assets updates 8.3.3.5 Change requests 8.3.3.6 Project management plan updates 8.3.3.7 Project document updates

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<b>9. Project Human Resource Management</b>	<b>Planning</b>	9.1 Develop Human Resource Plan	9.1.1.1 Activity resource requirements 9.1.1.2 Enterprise environmental factors 9.1.1.3 Organizational process assets	9.1.2.1 Organization charts & position descriptions 9.1.2.2 Networking 9.1.2.3 Organizational theory	9.1.3.1 Human resource plan
	<b>Executing</b>	9.2 Acquire Project Team	9.2.1.1 Project management plan 9.2.1.2 Enterprise environmental factors 9.2.1.3 Organizational process assets	9.2.2.1 Pre-assignment 9.2.2.2 Negotiation 9.2.2.3 Acquisition 9.2.2.4 Virtual teams	9.2.3.1 Project staff assignments 9.2.3.2 Resource calendars 9.2.3.3 Project management plan updates
		9.3 Develop Project Team	9.3.1.1 Project staff assignments 9.3.1.2 Project management plan 9.3.1.3 Resource calendars	9.3.2.1 Interpersonal skills 9.3.2.2 Training 9.3.2.3 Team-building activities 9.3.2.4 Ground rules 9.3.2.5 Co-location 9.3.2.6 Recognition & rewards	9.3.3.1 Team performance assessments 9.3.3.2 Enterprise environmental factors updates
		9.4 Manage Project Team	9.4.1.1 Project staff assignments 9.4.1.2 Project management plan 9.4.1.3 Team performance assessments 9.4.1.4 Performance reports 9.4.1.5 Organizational process assets	9.4.2.1 Observation & conversation 9.4.2.2 Project performance appraisals 9.4.2.3 Conflict management 9.4.2.4 Issue log 9.4.2.5 Interpersonal skills	9.4.3.1 Enterprise environmental factors updates 9.4.3.2 Organizational process assets updates 9.4.3.3 Change requests 9.4.3.4 Project management plan updates

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
<b>10. Project Communications Management</b>	<b>Initiating</b>	10.1 Identify Stakeholders	10.1.1.1 Project charter 10.1.1.2 Procurement documents 10.1.1.3 Enterprise environmental factors 10.1.1.4 Organizational process assets	10.1.2.1 Stakeholder analysis 10.1.2.2 Expert judgment	10.1.3.1 Stakeholder register 10.1.3.2 Stakeholder management strategy
	<b>Planning</b>	10.2 Plan Communications	10.2.1.1 Stakeholder register 10.2.1.2 Stakeholder management strategy 10.2.1.3 Enterprise environmental factors 10.2.1.4 Organizational process assets	10.2.2.1 Communication requirement analysis 10.2.2.2 Communication technology 10.2.2.3 Communication models 10.2.2.4 Communication methods	10.2.3.1 Communications management plan 10.2.3.2 Project document updates
	<b>Executing</b>	10.3 Distribute Information	10.3.1.1 Project management plan 10.3.1.2 Performance reports 10.3.1.3 Organizational process assets	10.3.2.1 Communication methods 10.3.2.2 Information distribution tools	10.3.3.1 Organizational process assets updates
		10.4 Manage Stakeholder Expectations	10.4.1.1 Stakeholder register 10.4.1.2 Stakeholder management strategy 10.4.1.3 Project management plan 10.4.1.4 Issue log 10.4.1.5 Change log 10.4.1.6 Organizational process assets	10.4.2.1 Communication methods 10.4.2.2 Interpersonal skills 10.4.2.3 Management skills	10.4.3.1 Organizational process assets updates 10.4.3.2 Change requests 10.4.3.3 Project management plan updates 10.4.3.4 Project document updates
	<b>Monitoring &amp; Controlling</b>	10.5 Report Performance	10.5.1.1 Project management plan 10.5.1.2 Work performance information 10.5.1.3 Work performance measurements 10.5.1.4 Budget forecasts 10.5.1.5 Organizational process assets	10.5.2.1 Variance analysis 10.5.2.2 Forecasting methods 10.5.2.3 Communication methods 10.5.2.4 Reporting systems	10.5.3.1 Performance reports 10.5.3.2 Organizational process assets updates 10.5.3.3 Change requests

Knowledge Area	Process Group	Processes	Inputs	Tools & Techniques	Outputs
<b>11. Project Risk Management</b>	<b>Planning</b>	11.1 Plan Risk Management	11.1.1.1 Project scope statement 11.1.1.2 Cost management plan 11.1.1.3 Schedule management plan 11.1.1.4 Communications management plan 11.1.1.5 Enterprise environmental factors 11.1.1.6 Organizational process assets	11.1.2.1 Planning meetings & analysis	11.1.3.1 Risk management plan
		11.2 Identify Risks	11.2.1.1 Risk management plan 11.2.1.2 Activity cost estimates 11.2.1.3 Activity duration estimates 11.2.1.4 Scope baseline 11.2.1.5 Stakeholder register 11.2.1.6 Cost management plan 11.2.1.7 Schedule management plan 11.2.1.8 Quality management plan 11.2.1.9 Project documents 11.2.1.10 Enterprise environmental factors 11.2.1.11 Organizational process assets	11.2.2.1 Documentation reviews 11.2.2.2 Information gathering techniques 11.2.2.3 Checklist analysis 11.2.2.4 Assumptions analysis 11.2.2.5 Diagramming techniques 11.2.2.6 SWOT analysis 11.2.2.7 Expert judgment	11.2.3.1 Risk register
		11.3 Perform Qualitative Risk Analysis	11.3.1.1 Risk register 11.3.1.2 Risk management plan 11.3.1.3 Project scope statement 11.3.1.4 Organizational process assets	11.3.2.1 Risk probability & impact assessment 11.3.2.2 Probability & impact matrix 11.3.2.3 Risk data quality assessment 11.3.2.4 Risk categorization 11.3.2.5 Risk urgency assessment 11.3.2.6 Expert judgment	11.3.3.1 Risk register updates
		11.4 Perform Quantitative Risk Analysis	11.4.1.1 Risk register 11.4.1.2 Risk management plan 11.4.1.3 Cost management plan 11.4.1.4 Schedule management plan 11.4.1.5 Organizational process assets	11.4.2.1 Data gathering & representation techniques 11.4.2.2 Quantitative risk analysis & modelling techniques 11.4.2.3 Expert judgment	11.4.3.1 Risk register updates
		11.5 Plan Risk Responses	11.5.1.1 Risk register 11.5.1.2 Risk management plan	11.5.2.1 Strategies for negative risks or threats 11.5.2.2 Strategies for positive risks opportunities 11.5.2.3 Contingent response strategies 11.5.2.4 Expert judgment	11.5.3.1 Risk register updates 11.5.3.2 Risk-related contract decisions 11.5.3.3 Project management plan updates 11.5.3.4 Project document updates
	<b>Monitoring &amp; Controlling</b>	11.6 Monitor & Control Risks	11.6.1.1 Risk register 11.6.1.2 Project management plan 11.6.1.3 Work performance information 11.6.1.4 Performance reports	11.6.2.1 Risk reassessment 11.6.2.2 Risk audits 11.6.2.3 Variance & trend analysis 11.6.2.4 Technical performance measurement 11.6.2.5 Reserve analysis 11.6.2.6 Status meetings	11.6.3.1 Risk register updates 11.6.3.2 Organizational process assets updates 11.6.3.3 Change requests 11.6.3.4 Project management plan updates 11.6.3.5 Project document updates



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12. Project Procurement Management	Planning	12.1 Plan Procurements	12.1.1.1 Scope baseline 12.1.1.2 Requirements documentation 12.1.1.3 Teaming agreements 12.1.1.4 Risk register 12.1.1.5 Risk-related contract decisions 12.1.1.6 Activity resource requirements 12.1.1.7 Project schedule 12.1.1.8 Activity cost estimates 12.1.1.9 Cost performance baseline 12.1.1.10 Enterprise environmental factors 12.1.1.11 Organizational process assets	12.1.2.1 Make-or-buy analysis 12.1.2.2 Expert judgment 12.1.2.3 Contract types	12.1.3.1 Procurement management plan 12.1.3.2 Procurement statements of work 12.1.3.3 Make-or-buy decisions 12.1.3.4 Procurement documents 12.1.3.5 Source selection criteria 12.1.3.6 Change requests
	Executing	12.2 Conduct Procurements	12.2.1.1 Project management plan 12.2.1.2 Procurement documents 12.2.1.3 Source selection criteria 12.2.1.4 Qualified seller list 12.2.1.5 Seller proposals 12.2.1.6 Project documents 12.2.1.7 Make-or-buy decisions 12.2.1.8 Teaming agreements 12.2.1.9 Organizational process assets	12.2.2.1 Bidder conferences 12.2.2.2 Proposal evaluation techniques 12.2.2.3 Independent estimates 12.2.2.4 Expert judgment 12.2.2.5 Advertising 12.2.2.6 Internet search 12.2.2.7 Procurement negotiations	12.2.3.1 Selected sellers 12.2.3.2 Procurement contract award 12.2.3.3 Resource calendars 12.2.3.4 Change requests 12.2.3.5 Project management plan updates 12.2.3.6 Project document updates
	Monitoring & Controlling	12.3 Administer Procurements	12.3.1.1 Procurement documents 12.3.1.2 Project management plan 12.3.1.3 Contract 12.3.1.4 Performance reports 12.3.1.5 Approved change requests 12.3.1.6 Work performance information	12.3.2.1 Contract change control system 12.3.2.2 Procurement performance reviews 12.3.2.3 Inspections & audits 12.3.2.4 Performance reporting 12.3.2.5 Payment systems 12.3.2.6 Claims administration 12.3.2.7 Records management system	12.3.3.1 Procurement documentation 12.3.3.2 Organizational process assets updates 12.3.3.3 Change requests 12.3.3.4 Project management plan updates
	Closing	12.4 Close Procurements	12.4.1.1 Project management plan 12.4.1.2 Procurement documentation	12.4.2.1 Procurement audits 12.4.2.2 Negotiated settlements 12.4.2.3 Records management system	12.4.3.1 Closed procurements 12.4.3.2 Organizational process assets updates