

*ITTO REFERENCE GUIDE*

# PREPARATION FOR PMP® EXAM 6

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LEGEND	
<b>IN</b>	Initiating
<b>PL</b>	Planning
<b>EX</b>	Executing
<b>MC</b>	Monitor & Control
<b>CL</b>	Closing
<b>O.P.A.</b>	Organizational Process Assets
<b>E.E.F.</b>	Enterprise Environmental Factors
<b>I.T.T.O.</b>	Inputs, Tools & Techniques, Outputs
<b>Strike</b>	Removal according to PMBOK 6 Errata
<b>*</b>	Addition according to PMBOK 6 Errata

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**Adaption:** Cheng-yi (Andrew) Shih, PMP

# PROJECT MANAGEMENT PROCESS GROUPS

KNOWLEDGE AREAS	INITIATING	PLANNING	EXECUTING	MONITORING & CONTROLLING	CLOSING
INTEGRATION MANAGEMENT	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct & Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
SCOPE MANAGEMENT		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
SCHEDULE MANAGEMENT		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
COST MANAGEMENT		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
QUALITY MANAGEMENT		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
RESOURCE MANAGEMENT		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control resources	
COMMUNICATION MANAGEMENT		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
RISK MANAGEMENT		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
PROCUREMENT MANAGEMENT		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
STAKEHOLDER MANAGEMENT	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

# PROJECT INTEGRATION MANAGEMENT

## 4.1 DEVELOP PROJECT CHARTER

### INPUTS

1. Business documents
  - Business case
  - Benefits management plan.
2. Agreements
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Brainstorming
  - Focus groups
  - Interviews
3. Interpersonal and team skills
  - Conflict management
  - Facilitation
  - Meeting management
4. Meetings

### OUTPUTS

1. Project charter
2. Assumption log

## 4.2 DEVELOP PROJECT MANAGEMENT PLAN

### INPUTS

1. Project charter
2. Outputs from other processes
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Brainstorming
  - Checklists
  - Focus groups
  - Interviews
3. Interpersonal and team skills
  - Conflict management
  - Facilitation
  - Meeting management
4. Meetings

### OUTPUTS

1. Project management plan

## 4.3 DIRECT & MANAGE PROJECT WORK

### INPUTS

1. Project management plan
  - Any component
2. Project documents
  - Change log
  - Lessons learned register
  - Milestone list
  - Project communications
  - Project schedule
  - Requirements traceability matrix
  - Risk register
  - Risk report
3. Approved change requests
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Project management information system
3. Meetings

### OUTPUTS

1. Deliverables
2. Work performance data
3. Issue log
4. Change requests
5. Project management plan updates
  - Any component
6. Project document updates
  - Activity list
  - Assumption log
  - Lessons learned register
  - Requirements documentation
  - Risk register
  - Stakeholder register
7. O.P.A. updates

## 4.4 MANAGE PROJECT KNOWLEDGE

### INPUTS

1. Project management plan
  - Any component
2. Project documents
  - Lessons learned register
  - Project team assignments
  - Resource breakdown structure
  - Resource selection criteria.
  - Stakeholder register
3. Deliverables
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Knowledge management
3. Information management
4. Interpersonal and team skills
  - Active listening
  - Facilitation
  - Leadership
  - Networking
  - Political awareness

### OUTPUTS

1. Lessons learned register
2. Project management plan update
  - Any component
3. O.P.A. updates

## 4.5 MONITOR & CONTROL PROJECT WORK

### INPUTS

1. Project management plan
  - Any component
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
3. Work performance information
4. Agreements
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Alternative analysis
  - Cost-benefit analysis
  - Earned value analysis
  - Root cause analysis
  - Trend analysis
  - Variance analysis
3. Decision making
  - Voting\*
4. Meetings

### Outputs

1. Work performance reports
2. Change requests
3. Project management plan updates
  - Any component
4. Project document updates
  - Cost forecasts
  - Issue log
  - Lessons learned register
  - Risk register
  - Schedule forecasts

## 4.6 PERFORM INTEGRATED CHANGE CONTROL

### INPUTS

1. Project management plan
  - Change management plan
  - Configuration management plan
  - Scope baseline
  - Schedule baseline
  - Cost baseline
2. Project documents
  - Basis of estimates
  - Requirements traceability matrix
  - Risk report
3. Work performance reports
4. Change requests
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Change control tools
3. Data analysis
  - Alternatives analysis
  - Cost-benefit analysis
4. Decision making
  - Voting
  - Autocratic decision making
  - Multicriteria decision analysis
5. Meetings

### Outputs

1. Approved change requests
2. Project management plan updates
  - Any component
3. Project documents updates
  - Change log

## 4.7 CLOSE PROJECT OR PHASE

### INPUTS

1. Project charter
2. Project management plan
  - Any component
3. Project documents
  - Assumption log
  - Basis of estimates
  - Change log
  - Issue log
  - Lessons learned register
  - Milestone list
  - Project communications
  - Quality control measurements
  - Quality reports
  - Requirement documentation
  - Risk register
  - Risk report
4. Accepted deliverables
5. Business documents
  - Business case
  - Benefits management plan
6. Agreements
7. Procurement documentation
8. O.P.A.

### TOOLS & TECHNIQUES

1. Expert Judgment
2. Data analysis
  - Document analysis
  - Regression analysis
  - Trend analysis
  - Variance analysis
3. Meetings

### OUTPUTS

1. Project documents updates
  - Lessons learned register
2. Final product, service, or result transition
3. Final report
4. O.P.A. updates

# PROJECT SCOPE MANAGEMENT

## 5.1 PLAN SCOPE MANAGEMENT

### INPUTS

1. Project charter
2. Project management plan
  - Quality management plan
  - Project life cycle description
  - Development approach
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Alternatives analysis
3. Meetings

### OUTPUTS

1. Scope management plan
2. Requirements management plan

## 5.5 VALIDATE SCOPE

### INPUTS

1. Project management plan
  - Scope management plan
  - Requirements management plan
  - Scope baseline
2. Project documents
  - Lesson learned register
  - Quality reports
  - Requirements documentation
  - Requirements traceability matrix
3. Verified deliverables
4. Work performance data

### TOOLS & TECHNIQUES

1. Inspection
2. Decision making
  - Voting

### Outputs

1. Accepted deliverables
2. Work performance information
3. Change requests
4. Project document updates
  - Lessons learned register
  - Requirements documentation
  - Requirements traceability matrix

## 5.2 COLLECT REQUIREMENTS

### INPUTS

1. Project charter
2. Project management plan
  - Scope management plan
  - Requirements management plan
  - Stakeholder engagement plan
3. Project documents
  - Assumption log
  - Lessons learned register
  - Stakeholder register
4. Business documents
  - Business case
5. Agreements
6. E.E.F.
7. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Brainstorming
  - Interviews
  - Focus groups
  - Questionnaires and surveys
  - Benchmarking
3. Data analysis
  - Document analysis
4. Decision making
  - Voting
  - Autocratic decision making\*
  - Multicriteria decision analysis
5. Data representation
  - Affinity diagrams
  - Mind mapping
6. Interpersonal and team skills
  - Nominal group technique
  - Observation/conversation
  - Facilitation
7. Context diagram
8. Prototypes

### OUTPUTS

1. Requirements documentation
2. Requirements traceability matrix

## 5.3 DEFINE SCOPE

### INPUTS

1. Project charter
2. Project management plan
  - Scope management plan
3. Project documents
  - Assumption log
  - Requirements documentation
  - Risk register
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Alternative analysis
3. Decision making
  - Multicriteria decision analysis
4. Interpersonal and team skills
  - Facilitation
5. Product analysis

### OUTPUTS

1. Project scope statement
2. Project documents updates
  - Assumption log
  - Requirements documentation
  - Requirements traceability matrix
  - Stakeholder register

## 5.4 CREATE WBS

### INPUTS

1. Project management plan
  - Scope management plan
2. Project documents
  - Project scope statement
  - Requirements documentation
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Decomposition

### OUTPUTS

1. Scope baseline
2. Project document updates
  - Assumption log
  - Requirements documentation

## 5.6 CONTROL SCOPE

### INPUTS

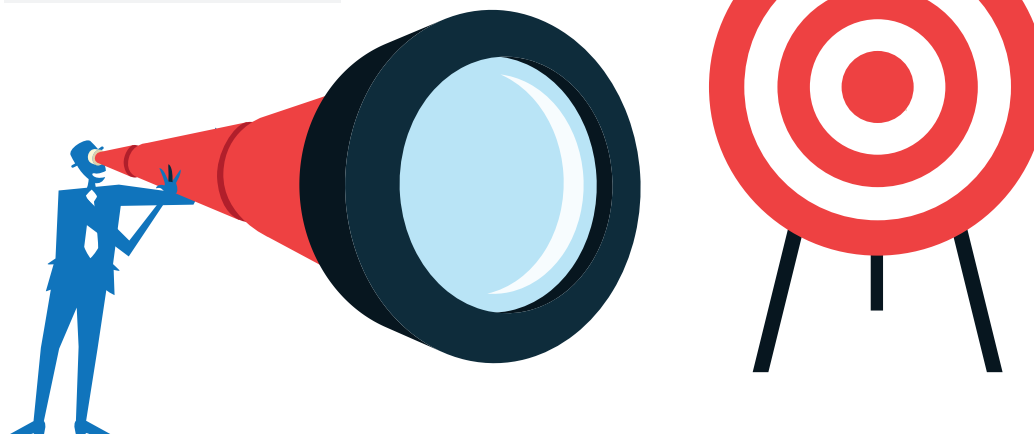
1. Project management plan
  - Scope management plan
  - Requirements management plan
  - Change management plan
  - Configuration management plan
  - Scope baseline
  - Performance measurement baseline
2. Project documents
  - Lesson learned register
  - Requirements documentation
  - Requirements traceability matrix
3. Work performance data
4. O.P.A.

### TOOLS & TECHNIQUES

1. Data analysis
  - Variance analysis
  - Trend analysis

### OUTPUTS

1. Work performance information
2. Change requests
3. Project management plan updates
  - Scope management plan
  - Scope baseline
  - Schedule baseline
  - Cost baseline
  - Performance measurement baseline
4. Project document updates
  - Lessons learned register
  - Requirements documentation
  - Requirements traceability matrix



# PROJECT SCHEDULE MANAGEMENT

## 6.1 PLAN SCHEDULE MANAGEMENT

### INPUTS

1. Project charter
2. Project management plan
  - Scope management plan
  - Development approach
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Alternative analysis\*
3. Meetings

### OUTPUTS

1. Schedule management plan

## 6.5 DEVELOP SCHEDULE

### INPUTS

1. Project management plan
  - Schedule management plan
  - Scope baseline
2. 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 calendar
  - Resource requirements
  - Risk register
3. Agreements
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Schedule network analysis
2. Critical path method
3. Resource optimization
4. Data analysis
  - What-if scenario analysis
  - Simulation
5. Leads and lags
6. Schedule compression
7. Project management information system
8. Agile release planning

### Outputs

1. Schedule baseline
2. Project schedule
3. Schedule data
4. Project calendars
5. Change requests
6. Project management plan updates
  - Schedule management plan
  - Cost baseline
7. Project document updates
  - Activity attributes
  - Assumption log
  - Duration estimates
  - Lessons learned register
  - Resource requirements
  - Risk register

## 6.2 DEFINED ACTIVITIES

### INPUTS

1. Project management plan
  - Schedule management plan
  - Scope baseline
2. E.E.F.
3. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Decomposition
3. Rolling wave plan
4. Meetings

### OUTPUTS

1. Activity list
2. Activity attribute
3. Milestone list
4. Change requests
5. Project management plan updates
  - Schedule baseline
  - Cost baseline

## 6.6 CONTROL SCHEDULE

### INPUTS

1. Project management plan
  - Schedule management plan
  - Schedule baseline
  - Scope baseline
  - Performance measurement baseline
2. Project documents
  - Lessons learned register
  - Project calendars
  - Project schedule
  - Resource calendars
  - Schedule data
3. Work performance data
4. O.P.A.

### TOOLS & TECHNIQUES

1. Data analysis
  - Earned value analysis
  - Iteration burndown chart
  - Performance reviews
  - Trend analysis
  - Variance analysis
  - What-if scenario analysis
2. Critical path method
3. Project management information system
4. Resource optimization
5. Leads & lags
6. Schedule compression

### OUTPUTS

1. Work performance information
2. Schedule forecasts
3. Change requests
4. Project management plan updates
  - Schedule management plan
- updates
  - Schedule baseline
  - Cost baseline
  - Performance measurement baseline
5. Project documents updates
  - Assumption log
  - Basis of estimates
  - Lessons learned register
  - Project schedule
  - Resource calendars
  - Risk register
  - Schedule data

## 6.3 SEQUENCE ACTIVITIES

### INPUTS

1. Project management plan
  - Schedule management plan
  - Scope baseline
2. Project documents
  - Activity attributes
  - Activity list
  - Assumption log
  - Milestone list
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Precedence diagramming method
2. Dependency determination & integration
3. Leads and lags
4. Project management information system

### OUTPUTS

1. Project schedule network diagrams
2. Project document update
  - Activity attributes
  - Activity list
  - Assumption log
  - Milestone list

## 6.4 ESTIMATE ACTIVITY DURATIONS

### INPUTS

1. Project management plan
  - Schedule management plan
  - Scope baseline
2. Project documents
  - Activity attributes
  - Activity list
  - Assumption log
  - Lessons learned register
  - Milestone list
  - Project team assignments
  - Resource breakdown structure
  - Resource calendar
  - Resource requirements
  - Risk register
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Analogous estimating
3. Parametric estimating
4. Three point estimating
5. Bottom-up estimating
6. Data analysis
  - Alternatives analysis
  - Reserve analysis
7. Decision making
  - Voting\*
8. Meetings

### OUTPUTS

1. Duration estimates
2. Basis of estimates
3. Project document updates
  - Activity attributes
  - Assumption log
  - Lessons learned register



# PROJECT COST MANAGEMENT

## 7.1 PLAN COST MANAGEMENT



### INPUTS

1. Project charter
2. Project management plan
  - Schedule management plan
  - Risk management plan
3. E.E.F.
4. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Alternatives analysis
3. Meetings



### OUTPUTS

1. Cost management plan



## 7.2 ESTIMATE COSTS



### INPUTS

1. Project management plan
  - Cost management plan
  - Quality management plan
  - Scope baseline
2. Project documents
  - Lessons learned register
  - Project schedule
  - Resources requirements
  - Risk register
3. E.E.F.
4. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Analogous estimating
3. Parametric estimating
4. Bottom-up estimating
5. Three-point estimating
6. Data analysis
  - Alternatives analysis
  - Reserve analysis
  - Cost of quality
7. Project management information system
8. Decision making
  - Voting



### OUTPUTS

1. Cost estimates
2. Basis of estimates
3. Project documents updates
  - Assumption log
  - Lessons learned register
  - Risk register



## 7.3 DETERMINE BUDGET



### INPUTS

1. Project management plan
  - Cost management plan
  - Resource management plan
  - Scope baseline
2. Project documents
  - Basis of estimates
  - Cost estimates
  - Project schedule
  - Risk register
3. Business documents
  - Business case
  - Benefits management plan
4. Agreements
5. E.E.F.
6. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Cost aggregation
3. Data Analysis
  - Reserve analysis
4. Historical information review
5. Funding limit reconciliation
6. Financing



### OUTPUTS

1. Cost baseline
2. Project funding requirements
3. Project document updates
  - Cost estimates
  - Project schedule
  - Risk register



## 7.4 CONTROL COSTS



### INPUTS

1. Project management plan
  - Cost management plan
  - Cost baseline
  - Performance measurement baseline
2. Project documents
  - Lessons learned register
3. Project funding requirements
4. Work performance data
5. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Earned value management
  - Variance analysis
  - Trend analysis
  - Reserve analysis
3. To-complete performance index
4. Project management information system



### OUTPUTS

1. Work performance information
2. Cost forecasts
3. Change requests
4. Project management plan updates
  - Cost management plan
  - Cost baseline
  - Performance measurement baseline
5. Project document updates
  - Assumption log
  - Basis of estimates
  - Cost estimates
  - Lessons learned register
  - Risk register



# PROJECT QUALITY MANAGEMENT

## 8.1 8.1 Plan Quality

### INPUTS

1. Project charter
2. Project management plan
  - Requirements management plan
  - Risk management plan
  - Stakeholder engagement plan
  - Scope baseline
3. Project documents
  - Assumption log
  - Requirements documentation
  - Requirements traceability matrix
  - Risk register
  - Stakeholder register
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Benchmarking
  - Brainstorming
  - Interview
3. Data analysis
  - Cost-benefit analysis
  - Cost of Quality
4. Decision making
  - Multicriteria decision analysis
5. Data representation
  - Flowcharts
  - Logical data model
  - Matrix diagrams
  - Mind mapping
6. Test and inspection planning
7. Meetings

### OUTPUTS

1. Quality management plan
2. Quality metrics
3. Project management plan updates
  - Risk management plan
  - Scope baseline
4. Project documents updates
  - Lesson learned register
  - Requirements traceability matrix
  - Risk register
  - Stakeholder register

## 8.2 MANAGE QUALITY

### INPUTS

1. Project management plan
  - Quality management plan
2. Project documents
  - Lessons learned register
  - Quality control measurements
  - Quality metrics
  - Risk report
3. O.P.A.

### TOOLS & TECHNIQUES

1. Data gathering
  - Checklists
2. Data analysis
  - Alternative analysis
  - Document analysis
  - Process analysis
  - Root cause analysis
3. Decision making
  - Multicriteria decision analysis
4. Data representation
  - Affinity diagrams
  - Cause-and-effect diagrams
  - Flowcharts
  - Histograms
  - Matrix diagrams
  - Scatter diagrams
5. Audits
6. Design for X
7. Problem solving
8. Quality Improvement methods

### OUTPUTS

1. Quality reports
2. Test and evaluation documents
3. Change requests
4. Project management plan updates
  - Quality management plan
  - Scope baseline
  - Schedule baseline
  - Cost baseline
5. Project documents updates
  - Issue log
  - Lesson learned register
  - Risk register

## 8.3 CONTROL QUALITY

### INPUTS

1. Project management plan
  - Quality management plan
2. Project documents
  - Lessons learned register
  - Quality metrics
  - Test and evaluation documents
3. Approved change requests
4. Deliverables
5. Work performance data
6. Enterprise environment factors
7. O.P.A.

### TOOLS & TECHNIQUES

1. Data gathering
  - Checklists
  - Check sheets
  - Statistical sampling
  - Questionnaires and surveys
2. Data analysis
  - Performance reviews
  - Root cause analysis
3. Inspection
4. Testing/product evaluation
5. Data representation
  - Cause-and-effect diagrams
  - Control charts
  - Histograms
  - Scatter diagrams
6. Meetings

### OUTPUTS

1. Quality control measurements
2. Validated changes
3. Work performance information
4. Change requests
5. Project management plan updates
  - Quality management plan
- 6 Project documents updates
  - Issue log
  - Lessons learned register
  - Risk register
  - Test and evaluation documents





# PROJECT RESOURCE MANAGEMENT

## 9.1 PLAN RESOURCE MANAGEMENT

### INPUTS

1. Project charter
2. Project management plan
  - Quality management plan
  - Scope management plan
3. Project documents
  - Project schedule
  - Requirements documentation
  - Risk register
  - Stakeholder register
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data representation
  - Hierarchical charts
  - Responsibility assignment matrix
  - Text-oriented formats
3. Organizational theory
4. Meetings

### OUTPUTS

1. Resource management plan
2. Team charter
3. Project documents updates
  - Assumption log
  - Risk register

## 9.5 MANAGE TEAM

### INPUTS

1. Project management plan
  - Resource management plan
2. Project documents
  - Issue log
  - Lesson learned register
  - Project team assignments
  - Team charter
3. Work performance reports
4. Team performance assessments
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Interpersonal and team skills
  - Conflict management
  - Decision making
  - Emotional intelligence
  - Influencing
  - Leadership
2. Project management information system

### Outputs

1. Change requests
2. Project management plan updates
  - Resource management plan
  - Schedule baseline
  - Cost baseline
3. Project documents updates
  - Issue log
  - Lessons learned register
  - Project team assignment
4. E.E.F. updates

## 9.2 ESTIMATE ACTIVITY RESOURCES

### INPUTS

1. Project management plan
  - Resource management plan
  - Scope baseline
2. Project documents
  - Activity attributes
  - Activity list
  - Assumption log
  - Cost estimates
  - Resource calendars
  - Risk register
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Bottom-up estimating
3. Analogous estimating
4. Parametric estimating
5. Data analysis
  - Alternatives analysis
6. Project management information system
7. Meetings

### OUTPUTS

1. Resource requirement
2. Basis of estimate
3. Resource breakdown structure
4. Project documents updates
  - Activity attributes
  - Assumption log
  - Lesson learned register

## 9.3 ACQUIRE PROJECT TEAM

### INPUTS

1. Project management plan
  - Resource management plan
  - Procurement management plan
  - Cost baseline
2. Project documents
  - Project schedule
  - Resource calendars
  - Resource requirements
  - Stakeholder register
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Decision making
  - Multicriteria decision analysis
2. Interpersonal and team skills
  - Negotiation
3. Pre-assignment
4. Virtual teams

### OUTPUTS

1. Physical resource assignments
2. Project team assignments
3. Resource calendars
4. Change requests
5. Project management plan updates
  - Resource management plan
  - Cost baseline
6. Project documents updates
  - Lesson learned register
  - Project schedule
  - Resource breakdown structure
  - Resource requirements
  - Risk register
  - Stakeholder register
7. E.E.F. updates
8. O.P.A. updates

## 9.6 CONTROL RESOURCE

### INPUTS

1. Project management plan
  - Resource management plan
2. Project documents
  - Issue log
  - Lesson learned register
  - Physical resource assignments
  - Project schedule
  - Resource breakdown structure
  - Resource requirements
  - Risk register
3. Work performance data
4. Agreements
5. O.P.A.

### TOOLS & TECHNIQUES

1. Data analysis
  - Alternatives analysis
  - Cost-benefit analysis
  - Performance reviews
  - Trend analysis
2. Problem solving
3. Interpersonal and team skills
  - Negotiation
  - Influencing
4. Project management information system

### OUTPUTS

1. Work performance information
2. Change requests
3. Project management plan updates
  - Resource management plan
  - Schedule baseline
  - Cost baseline
4. Project documents updates
  - Assumption log
  - Issue log
  - Lessons learned register
  - Physical resource assignments
  - Resource breakdown structure
  - Risk register

# PROJECT COMMUNICATION MANAGEMENT

## 10.1 PLAN COMMUNICATIONS MANAGEMENT

### INPUTS

1. Project charter
2. Project management plan
  - Resource management plan
  - Stakeholder engagement plan
3. Project documents
  - Requirements documentation
  - Stakeholder register
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Communication requirements analysis
3. Communication technology
4. Communication models
5. Communication methods
6. Interpersonal and team skills
  - Communication styles assessment
  - Political awareness
  - Cultural awareness
7. Data representation
  - Stakeholder engagement assessment matrix
8. Meetings

### OUTPUTS

1. Communications management plan
2. Project management plan updates
  - Stakeholder engagement plan
3. Project documents updates
  - Project schedule
  - Stakeholder register

## 10.2 MANAGE COMMUNICATIONS

### INPUTS

1. Project management plan
  - Resource management plan
  - Communications management plan
2. Project documents
  - Stakeholder engagement plan
  - Change log
  - Issue log
  - Lessons learned register
  - Quality report
  - Risk report
  - Stakeholder register
3. Work performance reports
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Communication technology
2. Communication methods
3. Communication skills
  - Communication competence
  - Feedback
  - Nonverbal
  - Presentations
4. Project management Information systems
5. Project reporting
6. Interpersonal and team skills
  - Active listening
  - Conflict management
  - Cultural awareness
  - Meeting management
  - Networking
  - Political awareness
7. Meetings

### OUTPUTS

1. Project communications
2. Project management plan updates
  - Communication management plan
  - Stakeholder engagement plan
3. Project documents updates
  - Issue log
  - Lessons learned register
  - Project schedule
  - Risk register
  - Stakeholder register
4. O.P.A. updates

## 10.3 MONITOR COMMUNICATIONS

### INPUTS

1. Project management plan
  - Resource management plan
  - Communications management plan
  - Stakeholder engagement plan
2. Project documents
  - Issue log
  - Lesson learned register
  - Project communications
3. Work performance data
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Project management Information systems
3. Data analysis
  - Stakeholder engagement assessment matrix
4. Interpersonal and team skills
  - Observation/conversation
5. Meetings

### OUTPUTS

1. Work performance information
2. Change requests
3. Project management plan updates
  - Communications management plan
  - Stakeholder engagement plan
4. Project documents updates
  - Issue log
  - Lessons learned register
  - Stakeholder register



# PROJECT RISK MANAGEMENT

## 11.1 PLAN RISK MANAGEMENT

### INPUTS

1. Project charter
2. Project management plan
  - All components
3. Project documents
  - Stakeholder register
4. E.E.F.
5. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data analysis
  - Stakeholder analysis
3. Meetings

### OUTPUTS

1. Risk management plan

## 11.5 PLAN RISK RESPONSES

### INPUTS

1. Project management plan
  - Resource management plan
  - Risk management plan
  - Cost baseline
2. Project documents
  - Lessons learned register
  - Project schedule
  - Project team assignments
  - Resource calendars
  - Risk register
  - Risk report
  - Stakeholder register
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Interviews
3. Interpersonal and team skills
  - Facilitation
4. Strategies for threats
5. Strategies for opportunities
6. Contingent response strategy
7. Strategies for overall project risk
8. Data analysis
  - Alternative analysis
  - Cost-benefit analysis
9. Decision making
  - Multicriteria decision analysis

### Outputs

1. Change requests
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. Project document updates
  - Assumption log
  - Cost forecasts
  - Lessons learned register
  - Project schedule
  - Project team assignments
  - Risk register
  - Risk report

## 11.2 IDENTIFY RISKS

### INPUTS

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
2. Project documents
  - Assumption log
  - Cost estimates
  - Issue log
  - Lessons learned register
  - Requirements documentation
  - Resource requirements
  - Stakeholder register
3. Agreements
4. Procurement documentation
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Brainstorming
  - Checklists
  - Interviews
3. Data analysis
  - Root cause analysis
  - Assumption and constraint analysis
  - SWOT analysis
  - Document analysis
4. Interpersonal and team skills
  - Facilitation
5. Prompt lists
6. Meetings

### OUTPUTS

1. Risk register
2. Risk report
3. Project documents updates
  - Assumption log
  - Issue log
  - Lesson learned register

## 11.3 PERFORM QUALITATIVE RISK ANALYSIS

### INPUTS

1. Project management plan
  - Risk management plan
2. Project documents
  - Assumption log
  - Risk register
  - Stakeholder register
3. E.E.F.
4. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Interviews
3. Data analysis
  - Risk data quality assessment
  - Risk probability and impact assessment
4. Agreements
  - Assessment of other risk parameters
4. Interpersonal and team skills
  - Facilitation
5. Risk categorization
6. Data representation
  - Probability and impact matrix
  - Hierarchical charts
7. Meetings

### OUTPUTS

1. Project document updates
  - Assumption log
  - Issue log
  - Risk register
  - Risk report

## 11.6 IMPLEMENT RISKS RESPONSE

### INPUTS

1. Project management plan
  - Risk management plan
2. Project documents
  - Lessons learned register
  - Risk register
  - Risk report
3. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Interpersonal and team skills
  - Influencing
3. Project management information system

### OUTPUTS

1. Change requests
2. Project document updates
  - Issue log
  - Lessons learned register
  - Project team assignments
  - Risk register
  - Risk report

## 11.4 CREATE WBS

### INPUTS

1. Project management plan
  - Risk management plan
  - Scope baseline
  - Schedule baseline
  - Cost baseline
2. Project documents
  - Assumption log
  - Basis of estimates
  - Cost estimates
  - Cost forecasts
  - Duration estimates
  - Milestone list
  - Resource requirements
  - Risk register
  - Risk report
  - Schedule forecasts
3. E.E.F.
4. O.P.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Interviews
3. Interpersonal and team skills
  - Facilitation
4. Representations of uncertainty
5. Data analysis
  - Simulations
  - Sensitivity analysis
  - Decision tree analysis
  - Influence diagrams

### OUTPUTS

1. Project documents updates
  - Risk report

## 11.7 MONITOR RISKS

### INPUTS

1. Project management plan
  - Risk management plan
2. Project documents
  - Issue log
  - Lessons learned register
  - Risk register
  - Risk report
3. Work performance data
4. Work performance reports

### TOOLS & TECHNIQUES

1. Data analysis
  - Technical performance analysis
  - Reserve analysis
2. Audits
3. Meetings

### OUTPUTS

1. Work performance information
2. Change requests
3. Project management plan updates
  - Any component
4. Project document updates
  - Assumption log
  - Issue log
  - Lessons learned register
  - Risk register
  - Risk report
5. O.P.A. updates



# PROJECT PROCUREMENT MANAGEMENT

## 12.1 PLAN PROCUREMENT MANAGEMENT

### INPUTS

1. Project charter
2. Business document
  - Business case
  - Benefits management plan
3. Project management plan
  - Scope management plan
  - Quality management plan
  - Resource management plan
  - Scope baseline
4. Project documents
  - Milestone list
  - Project team assignments
  - Requirements documentation
  - Requirements traceability matrix
  - Resource requirements
  - Risk register
  - Stakeholder register
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Market research
3. Data Analysis
  - Make-or-buy analysis
4. Source selection analysis
5. Meetings

### OUTPUTS

1. Procurement management plan
2. Procurement strategy
3. Bid documents
4. Procurement statements of work
5. Source selection criteria
6. Make-or-buy decisions
7. Independent cost estimates
8. Change requests
9. Project documents updates
  - Lessons learned register
  - Milestone list
  - Requirements documentation
  - Requirements traceability matrix
  - Risk register
  - Stakeholder register
10. O.P.A. updates

## 12.2 CONDUCT PROCUREMENTS

### INPUTS

1. Project management plan
  - Scope management plan
  - Requirements management plan
  - Communications management plan
  - Risk management plan
  - Procurement management plan
  - Configuration management plan
  - Cost baseline
2. Project documents
  - Lessons learned register
  - Project schedule
  - Requirements documentation
  - Risk register
  - Stakeholder register
3. Procurement documents
4. Seller proposals
5. E.E.F.
6. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgments
2. Advertising
3. Bidder conference
4. Data analysis
- Proposal evaluation
5. Interpersonal and team skills
  - Negotiation

### OUTPUTS

1. Selected sellers
2. Agreements
3. Change requests
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. Project document updates
  - Lessons learned register
  - Requirements documentation
  - Requirements traceability matrix
  - Resource calendars
  - Risk register
  - Stakeholder register
6. O.P.A. updates

## 12.3 CONTROL PROCUREMENT

### INPUTS

1. Project management plan
  - Requirements management plan
  - Risk management plan
  - Procurement management plan
  - Change management plan
  - Schedule baseline
2. Project documents
  - Assumption log
  - Lessons learned register
  - Milestone list
  - Quality reports
  - Requirements documentation
  - Requirements traceability matrix
  - Risk register
  - Stakeholder register
3. Agreements
4. Procurement documentation
5. Approved change requests
6. Work performance data
7. E.E.F.
8. O.P.A.

### TOOLS & TECHNIQUES

1. Expert judgment
2. Claims administration
3. Data analysis
  - Performance reviews
  - Earned value analysis
  - Trend analysis
4. Inspection
5. Audits

### OUTPUTS

1. Closed procurements
2. Work performance information
3. Procurement documentation updates
4. Change requests
5. Project management plan updates
  - Risk management plan
  - Procurement management plan
  - Schedule baseline
  - Cost baseline
6. Project document updates
  - Lessons learned register
  - Resource requirements
  - Requirements traceability matrix
  - Risk register
  - Stakeholder register
7. O.P.A. updates



# PROJECT STAKEHOLDER MANAGEMENT

## 13.4 IDENTIFY STAKEHOLDERS



### INPUTS

1. Project charter
2. Business document
  - Business case
  - Benefits management plan
3. Project management plan
  - Communication management plan
  - Stakeholder engagement plan
4. Project documents
  - Change log
  - Issue log
  - Requirements documentation
5. Agreements
6. E.E.F.
7. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Questionnaires and surveys
  - Brainstorming
3. Data Analysis
  - Stakeholder analysis
  - Document analysis
4. Data representation
  - Stakeholder mapping/representation
5. Meetings



### OUTPUTS

1. Stakeholder register
2. Change requests
3. Project management plan updates
  - Requirements management plan
  - Communications management plan
  - Risk management plan
  - Stakeholder management plan
4. Project document updates
  - Assumption log
  - Issue log
  - Risk register

## 13.4 PLAN STAKEHOLDER ENGAGEMENT



### INPUTS

1. Project charter
2. Project management plan
  - Resource management plan
  - Communications management plan
  - Risk management plan
3. Project documents
  - Assumption log
  - Change log
  - Issue log
  - Project schedule
  - Risk register
  - Stakeholder register
4. Agreements
5. E.E.F.
6. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Data gathering
  - Benchmarking
3. Data Analysis
  - Assumption and constraint analysis
  - Root cause analysis
4. Decision making
  - Prioritization/ranking
5. Data representation
  - Mind mapping
  - Stakeholder engagement assessment matrix
6. Meetings



### OUTPUTS

1. Stakeholder management plan

## 13.4 MANAGE STAKEHOLDER ENGAGEMENT



### INPUTS

1. Project management plan
  - Communications management plan
  - Risk management plan
  - Stakeholder engagement plan
  - Change management plan
2. Project documents
  - Change log
  - Issue log
  - Lessons learned register
  - Stakeholder register
3. E.E.F.
4. O.P.A.



### TOOLS & TECHNIQUES

1. Expert judgment
2. Communication skills
  - Feedback
3. Interpersonal and team skills
  - Conflict management
  - Cultural awareness
  - Negotiation
  - Observation/conversation
  - Political awareness
4. Ground rules
5. Meetings



### OUTPUTS

1. Change requests
2. Project management plan updates
  - Communication management plan
  - Stakeholder engagement plan
3. Project document updates
  - Change log
  - Issue log
  - Lessons learned register
  - Stakeholder register

## 13.4 MONITOR STAKEHOLDER ENGAGEMENT



### INPUTS

1. Project management plan
  - Resource management plan
  - Communications management plan
  - Stakeholder engagement plan
2. Project documents
  - Issue log
  - Lessons learned register
  - Project communications
  - Risk register
  - Stakeholder register
3. Work performance data
4. E.E.F.
5. O.P.A.



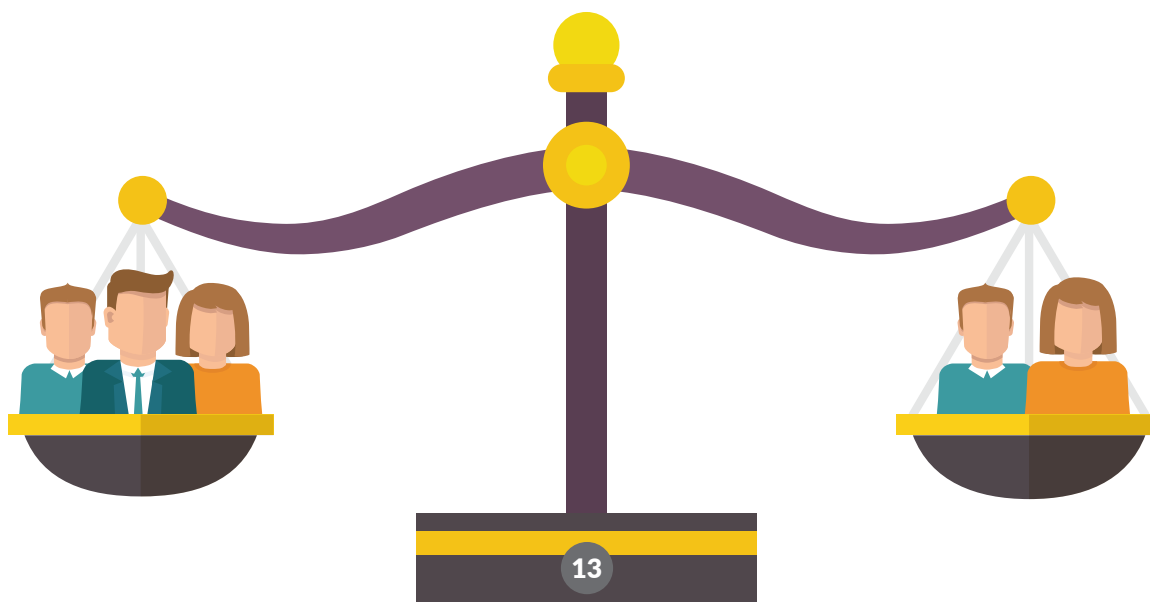
### TOOLS & TECHNIQUES

1. Data Analysis
  - Alternative analysis
  - Root cause analysis
  - Stakeholder analysis
2. Decision making
  - Multicriteria decision analysis
  - Voting
3. Data representation
  - Stakeholder engagement assessment matrix
4. Communication skills
  - Feedback
  - Presentations
5. Interpersonal and team skill
  - Active listening
  - Cultural awareness
  - Leadership
  - Networking
  - Political awareness
6. Meetings



### OUTPUTS

1. Work performance information
2. Change requests
3. Project management plan updates
  - Resource management plan
  - Communication management plan
  - Stakeholder engagement plan
4. Project document updates
  - Issue log
  - Lessons learned register
  - Risk register
  - Stakeholder register



# PROJECT DATA, INFORMATION, REPORT FLOW

