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PMBOK® GUIDE 5TH EDITION - 47 PROJECT MANAGEMENT PROCESSES

INITIATING

INTEGRATION — 4.1 Develop Project Charter
- Inputs: 1. Project statement of work; 2. Business case; 3. Agreements; 4. Enterprise environmental factors; 5. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Facilitation techniques
- Outputs: 1. Project charter

STAKEHOLDER — 13.1 Identify Stakeholders
- Inputs: 1. Project charter; 2. Procurement documents; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Stakeholder analysis; 2. Expert judgment; 3. Meetings
- Outputs: 1. Stakeholder register

PLANNING

SCOPE — 5.1 Plan Scope Management
- Inputs: 1. Project management plan; 2. Project charter; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Meetings
- Outputs: 1. Scope management plan; 2. Requirements management plan

SCOPE — 5.2 Collect Requirements
- Inputs: 1. Scope management plan; 2. Requirements management plan; 3. Stakeholder management plan; 4. Project charter; 5. Stakeholder register
- Tools & Techniques: 1. Interviews; 2. Focus groups; 3. Facilitated workshops; 4. Group creativity techniques; 5. Group decision-making techniques; 6. Questionnaires and surveys; 7. Observations; 8. Prototypes; 9. Benchmarking; 10. Context diagrams; 11. Document analysis
- Outputs: 1. Requirements documentation; 2. Requirements traceability matrix

SCOPE — 5.3 Define Scope
- Inputs: 1. Scope management plan; 2. Project charter; 3. Requirements documentation; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Product analysis; 3. Alternatives generation; 4. Facilitated workshops
- Outputs: 1. Project scope statement; 2. Project documents updates

SCOPE — 5.4 Create WBS
- Inputs: 1. Scope management plan; 2. Project scope statement; 3. Requirements documentation; 4. Enterprise environmental factors; 5. Organizational process assets
- Tools & Techniques: 1. Decomposition; 2. Expert judgment
- Outputs: 1. Scope baseline; 2. Project documents updates

TIME — 6.1 Plan Schedule Management
- Inputs: 1. Project management plan; 2. Project charter; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analytical techniques; 3. Meetings
- Outputs: 1. Schedule management plan

TIME — 6.2 Define Activities
- Inputs: 1. Schedule management plan; 2. Scope baseline; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Decomposition; 2. Rolling wave planning; 3. Expert judgment
- Outputs: 1. Activity list; 2. Activity attributes; 3. Milestone list

TIME — 6.3 Sequence Activities
- Inputs: 1. Schedule management plan; 2. Activity list; 3. Activity attributes; 4. Milestone list; 5. Project scope statement; 6. Enterprise environmental factors; 7. Organizational process assets
- Tools & Techniques: 1. Precedence diagramming method (PDM); 2. Dependency determination; 3. Leads and lags
- Outputs: 1. Project schedule network diagrams; 2. Project documents updates

TIME — 6.4 Estimate Activity Resources
- Inputs: 1. Schedule management plan; 2. Activity list; 3. Activity attributes; 4. Resource calendars; 5. Risk register; 6. Activity cost estimates; 7. Enterprise environmental factors; 8. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Alternative analysis; 3. Published estimating data; 4. Bottom-up estimating; 5. Project management software
- Outputs: 1. Activity resource requirements; 2. Resource breakdown structure; 3. Project documents updates

TIME — 6.5 Estimate Activity Durations
- Inputs: 1. Schedule management plan; 2. Activity list; 3. Activity attributes; 4. Activity resource requirements; 5. Resource calendars; 6. Project scope statement; 7. Risk register; 8. Resource breakdown structure; 9. Enterprise environmental factors; 10. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analogous estimating; 3. Parametric estimating; 4. Three-point estimating; 5. Group decision-making techniques; 6. Reserve analysis
- Outputs: 1. Activity duration estimates; 2. Project documents updates

TIME — 6.6 Develop Schedule
- Inputs: 1. Schedule management plan; 2. Activity list; 3. Activity attributes; 4. Project schedule network diagrams; 5. Activity resource requirements; 6. Resource calendars; 7. Activity duration estimates; 8. Project scope statement; 9. Risk register; 10. Project staff assignments; 11. Resource breakdown structure; 12. Enterprise environmental factors; 13. Organizational process assets
- Tools & Techniques: 1. Schedule network analysis; 2. Critical path method; 3. Critical chain method; 4. Resource optimization techniques; 5. Modeling techniques; 6. Leads and lags; 7. Schedule compression; 8. Scheduling tool
- Outputs: 1. Schedule baseline; 2. Project schedule; 3. Schedule data; 4. Project calendars; 5. Project management plan updates; 6. Project documents updates

COST — 7.1 Plan Cost Management
- Inputs: 1. Project management plan; 2. Project charter; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analytical techniques; 3. Meetings
- Outputs: 1. Cost management plan

COST — 7.2 Estimate Costs
- Inputs: 1. Cost management plan; 2. Human resource management plan; 3. Scope baseline; 4. Project schedule; 5. Risk register; 6. Enterprise environmental factors; 7. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analogous estimating; 3. Parametric estimating; 4. Bottom-up estimating; 5. Three-point estimating; 6. Reserve analysis; 7. Cost of quality; 8. Project management software; 9. Vendor bid analysis; 10. Group decision-making techniques
- Outputs: 1. Activity cost estimates; 2. Basis of estimates; 3. Project documents updates

COST — 7.3 Determine Budget
- Inputs: 1. Cost management plan; 2. Scope baseline; 3. Activity cost estimates; 4. Basis of estimates; 5. Project schedule; 6. Resource calendars; 7. Risk register; 8. Agreements; 9. Organizational process assets
- Tools & Techniques: 1. Cost aggregation; 2. Reserve analysis; 3. Expert judgment; 4. Historical relationships; 5. Funding limit reconciliation
- Outputs: 1. Cost baseline; 2. Project funding requirements; 3. Project documents updates

INTEGRATION — 4.2 Develop Project Management Plan
- Inputs: 1. Project charter; 2. Outputs from other processes; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Facilitation techniques
- Outputs: 1. Project management plan

QUALITY — 8.1 Plan Quality Management
- Inputs: 1. Project management plan; 2. Stakeholder register; 3. Risk register; 4. Requirements documentation; 5. Enterprise environmental factors; 6. Organizational process assets
- Tools & Techniques: 1. Cost-benefit analysis; 2. Cost of quality; 3. Seven basic quality tools; 4. Benchmarking; 5. Design of experiments; 6. Statistical sampling; 7. Additional quality planning tools; 8. Meetings
- Outputs: 1. Quality management plan; 2. Process improvement plan; 3. Quality metrics; 4. Quality checklists; 5. Project documents updates

HUMAN RESOURCE — 9.1 Plan Human Resource Management
- Inputs: 1. Project management plan; 2. Activity resource requirements; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Organization charts and position descriptions; 2. Networking; 3. Organizational theory; 4. Expert judgment; 5. Meetings
- Outputs: 1. Human resource management plan

COMMUNICATIONS — 10.1 Plan Communications Management
- Inputs: 1. Project management plan; 2. Stakeholder register; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Communication requirements analysis; 2. Communication technology; 3. Communication models; 4. Communication methods; 5. Meetings
- Outputs: 1. Communications management plan; 2. Project documents updates

PROCUREMENT — 12.1 Plan Procurement Management
- Inputs: 1. Project management plan; 2. Requirements documentation; 3. Risk register; 4. Activity resource requirements; 5. Project schedule; 6. Activity cost estimates; 7. Stakeholder register; 8. Enterprise environmental factors; 9. Organizational process assets
- Tools & Techniques: 1. Make-or-buy analysis; 2. Expert judgment; 3. Market research; 4. Meetings
- Outputs: 1. Procurement management plan; 2. Procurement statement of work; 3. Procurement documents; 4. Source selection criteria; 5. Make-or-buy decisions; 6. Change requests; 7. Project documents updates

STAKEHOLDER — 13.2 Plan Stakeholder Management
- Inputs: 1. Project management plan; 2. Stakeholder register; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Meetings; 3. Analytical techniques
- Outputs: 1. Stakeholder management plan; 2. Project documents updates

RISK — 11.1 Plan Risk Management
- Inputs: 1. Project management plan; 2. Project charter; 3. Stakeholder register; 4. Enterprise environmental factors; 5. Organizational process assets
- Tools & Techniques: 1. Analytical techniques; 2. Expert judgment; 3. Meetings
- Outputs: 1. Risk management plan

RISK — 11.2 Identify Risks
- Inputs: 1. Risk management plan; 2. Cost management plan; 3. Schedule management plan; 4. Quality management plan; 5. Human resource management plan; 6. Scope baseline; 7. Activity cost estimates; 8. Activity duration estimates; 9. Stakeholder register; 10. Project documents; 11. Procurement documents; 12. Enterprise environmental factors; 13. Organizational process assets
- Tools & Techniques: 1. Documentation reviews; 2. Information gathering techniques; 3. Checklist analysis; 4. Assumptions analysis; 5. Diagramming techniques; 6. SWOT analysis; 7. Expert judgment
- Outputs: 1. Risk register

RISK — 11.3 Perform Qualitative Risk Analysis
- Inputs: 1. Risk management plan; 2. Scope baseline; 3. Risk register; 4. Enterprise environmental factors; 5. Organizational process assets
- Tools & Techniques: 1. Risk probability and impact assessment; 2. Probability and impact matrix; 3. Risk data quality assessment; 4. Risk categorization; 5. Risk urgency assessment; 6. Expert judgment
- Outputs: 1. Project documents updates

RISK — 11.4 Perform Quantitative Risk Analysis
- Inputs: 1. Risk management plan; 2. Cost management plan; 3. Schedule management plan; 4. Risk register; 5. Enterprise environmental factors; 6. Organizational process assets
- Tools & Techniques: 1. Data gathering and representation techniques; 2. Quantitative risk analysis and modeling techniques; 3. Expert judgment
- Outputs: 1. Project documents updates

RISK — 11.5 Plan Risk Responses
- Inputs: 1. Risk management plan; 2. Risk register
- Tools & Techniques: 1. Strategies for negative risks or threats; 2. Strategies for positive risks or opportunities; 3. Contingent response strategies; 4. Expert judgment
- Outputs: 1. Project management plan updates; 2. Project documents updates

EXECUTING

HUMAN RESOURCE — 9.2 Acquire Project Team
- Inputs: 1. Human resource management plan; 2. Enterprise environmental factors; 3. Organizational process assets
- Tools & Techniques: 1. Pre-assignment; 2. Negotiation; 3. Acquisition; 4. Virtual teams; 5. Multi-criteria decision analysis
- Outputs: 1. Project staff assignments; 2. Resource calendars; 3. Project management plan updates

HUMAN RESOURCE — 9.3 Develop Project Team
- Inputs: 1. Human resource management plan; 2. Project staff assignments; 3. Resource calendars
- Tools & Techniques: 1. Interpersonal skills; 2. Training; 3. Team-building activities; 4. Ground rules; 5. Colocation; 6. Recognition and rewards; 7. Personnel assessment tools
- Outputs: 1. Team performance assessments; 2. Enterprise environmental factors updates

HUMAN RESOURCE — 9.4 Manage Project Team
- Inputs: 1. Human resource management plan; 2. Project staff assignments; 3. Team performance assessments; 4. Issue log; 5. Work performance reports; 6. Organizational process assets
- Tools & Techniques: 1. Observation and conversation; 2. Project performance appraisals; 3. Conflict management; 4. Interpersonal skills
- Outputs: 1. Change requests; 2. Project management plan updates; 3. Project documents updates; 4. Enterprise environmental factors updates; 5. Organizational process assets updates

QUALITY — 8.2 Perform Quality Assurance
- Inputs: 1. Quality management plan; 2. Process improvement plan; 3. Quality metrics; 4. Quality control measurements; 5. Project documents
- Tools & Techniques: 1. Quality management and control tools; 2. Quality audits; 3. Process analysis
- Outputs: 1. Change requests; 2. Project management plan updates; 3. Project documents updates; 4. Organizational process assets updates

COMMUNICATIONS — 10.2 Manage Communications
- Inputs: 1. Communications management plan; 2. Work performance reports; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Communication technology; 2. Communication models; 3. Communication methods; 4. Information management systems; 5. Performance reporting
- Outputs: 1. Project communications; 2. Project management plan updates; 3. Project documents updates; 4. Organizational process assets updates

INTEGRATION — 4.3 Direct and Manage Project Work
- Inputs: 1. Project management plan; 2. Approved change requests; 3. Enterprise environmental factors; 4. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Project management information system; 3. Meetings
- Outputs: 1. Deliverables; 2. Work performance data; 3. Change requests; 4. Project management plan updates; 5. Project documents updates

STAKEHOLDER — 13.3 Manage Stakeholder Engagement
- Inputs: 1. Stakeholder management plan; 2. Communications management plan; 3. Change log; 4. Organizational process assets
- Tools & Techniques: 1. Communication methods; 2. Interpersonal skills; 3. Management skills
- Outputs: 1. Issue log; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

PROCUREMENT — 12.2 Conduct Procurements
- Inputs: 1. Procurement management plan; 2. Procurement documents; 3. Source selection criteria; 4. Seller proposals; 5. Project documents; 6. Make-or-buy decisions; 7. Procurement statement of work; 8. Organizational process assets
- Tools & Techniques: 1. Bidder conference; 2. Proposal evaluation techniques; 3. Independent estimates; 4. Expert judgment; 5. Advertising; 6. Analytical techniques; 7. Procurement negotiations
- Outputs: 1. Selected sellers; 2. Agreements; 3. Resource calendars; 4. Change requests; 5. Project management plan updates; 6. Project documents updates

MONITORING & CONTROLLING

SCOPE — 5.5 Validate Scope
- Inputs: 1. Project management plan; 2. Requirements documentation; 3. Requirements traceability matrix; 4. Verified deliverables; 5. Work performance data
- Tools & Techniques: 1. Inspection; 2. Group decision-making techniques
- Outputs: 1. Accepted deliverables; 2. Change requests; 3. Work performance information; 4. Project documents updates

SCOPE — 5.6 Control Scope
- Inputs: 1. Project management plan; 2. Requirements documentation; 3. Requirements traceability matrix; 4. Work performance data; 5. Organizational process assets
- Tools & Techniques: 1. Variance analysis
- Outputs: 1. Work performance information; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

INTEGRATION — 4.4 Monitor and Control Project Work
- Inputs: 1. Project management plan; 2. Schedule forecasts; 3. Cost forecasts; 4. Validated changes; 5. Work performance information; 6. Enterprise environmental factors; 7. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analytical techniques; 3. Project management information system; 4. Meetings
- Outputs: 1. Change requests; 2. Work performance reports; 3. Project management plan updates; 4. Project documents updates

INTEGRATION — 4.5 Perform Integrated Change Control
- Inputs: 1. Project management plan; 2. Work performance reports; 3. Change requests; 4. Enterprise environmental factors; 5. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Meetings; 3. Change control tools
- Outputs: 1. Approved change requests; 2. Change log; 3. Project management plan updates; 4. Project documents updates

TIME — 6.7 Control Schedule
- Inputs: 1. Project management plan; 2. Project schedule; 3. Work performance data; 4. Project calendars; 5. Schedule data; 6. Organizational process assets
- Tools & Techniques: 1. Performance reviews; 2. Project management software; 3. Resource optimization techniques; 4. Modeling techniques; 5. Leads and lags; 6. Schedule compression; 7. Scheduling tool
- Outputs: 1. Work performance information; 2. Schedule forecasts; 3. Change requests; 4. Project management plan updates; 5. Project documents updates; 6. Organizational process assets updates

COST — 7.4 Control Costs
- Inputs: 1. Project management plan; 2. Project funding requirements; 3. Work performance data; 4. Organizational process assets
- Tools & Techniques: 1. Earned value management; 2. Forecasting; 3. To-complete performance index (TCPI); 4. Performance reviews; 5. Project management software; 6. Reserve analysis
- Outputs: 1. Work performance information; 2. Cost forecasts; 3. Change requests; 4. Project management plan updates; 5. Project documents updates; 6. Organizational process assets updates

QUALITY — 8.3 Control Quality
- Inputs: 1. Project management plan; 2. Quality metrics; 3. Quality checklists; 4. Work performance data; 5. Approved change requests; 6. Deliverables; 7. Project documents; 8. Organizational process assets
- Tools & Techniques: 1. Seven basic quality tools; 2. Statistical sampling; 3. Inspection; 4. Approved change requests review
- Outputs: 1. Quality control measurements; 2. Validated changes; 3. Verified deliverables; 4. Work performance information; 5. Change requests; 6. Project management plan updates; 7. Project documents updates; 8. Organizational process assets updates

COMMUNICATIONS — 10.3 Control Communications
- Inputs: 1. Project management plan; 2. Project communications; 3. Issue log; 4. Work performance data; 5. Organizational process assets
- Tools & Techniques: 1. Information management systems; 2. Expert judgment; 3. Meetings
- Outputs: 1. Work performance information; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

RISK — 11.6 Control Risks
- Inputs: 1. Project management plan; 2. Risk register; 3. Work performance data; 4. Work performance reports
- Tools & Techniques: 1. Risk reassessment; 2. Risk audits; 3. Variance and trend analysis; 4. Technical performance measurement; 5. Reserve analysis; 6. Meetings
- Outputs: 1. Work performance information; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

PROCUREMENT — 12.3 Control Procurements
- Inputs: 1. Project management plan; 2. Procurement documents; 3. Agreements; 4. Approved change requests; 5. Work performance reports; 6. Work performance data
- Tools & Techniques: 1. Contract change control system; 2. Procurement performance reviews; 3. Inspections and audits; 4. Performance reporting; 5. Payment systems; 6. Claims administration; 7. Records management system
- Outputs: 1. Work performance information; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

STAKEHOLDER — 13.4 Control Stakeholder Engagement
- Inputs: 1. Project management plan; 2. Issue log; 3. Work performance data; 4. Project documents
- Tools & Techniques: 1. Information management systems; 2. Expert judgment; 3. Meetings
- Outputs: 1. Work performance information; 2. Change requests; 3. Project management plan updates; 4. Project documents updates; 5. Organizational process assets updates

CLOSING

INTEGRATION — 4.6 Close Project or Phase
- Inputs: 1. Project management plan; 2. Accepted deliverables; 3. Organizational process assets
- Tools & Techniques: 1. Expert judgment; 2. Analytical techniques; 3. Meetings
- Outputs: 1. Final product, service, or result transition; 2. Organizational process assets updates

PROCUREMENT — 12.4 Close Procurements
- Inputs: 1. Project management plan; 2. Procurement documents
- Tools & Techniques: 1. Procurement audits; 2. Procurement negotiations; 3. Records management system
- Outputs: 1. Closed procurements; 2. Organizational process assets updates

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Explanatory Note: The represented process flow is based on figures of the PMBOK® Guide. Only a few connections are depicted in the flow. To see the detailed relationships, please recall the process data flow diagrams in the PMBOK® Guide. This flow ***does not replace*** the need for reading the PMBOK® Guide. The PMBOK® Guide contains a deep explanation of all processes including Inputs, Tools & Techniques and Outputs that are not listed in this flow.

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