

Process Groups

Initiation, Planning, Executing,
Monitor & Control, Closing

(4) Integration Management

1. Develop Project Charter
2. Develop Project Management Plan
3. Direct & Manage Project Work
4. Manage Project Knowledge
5. Monitor & Control Project Work
6. Perform Integrated Change Control
7. Close Project or Phase

(5) Scope Management

1. Plan Scope Management
2. Collect Requirements
3. Define Scope
4. Create WBS
5. Validate Scope
6. Control Scope

(6) Schedule Management

1. Plan Schedule Management
2. Define Activities
3. Sequence Activities
4. Estimate Activity Durations
5. Develop Schedule
6. Control Schedule

(7) Cost Management

1. Plan Cost Management
2. Estimate Costs
3. Determine Budget
4. Control Costs

(8) Quality Management

1. Plan Quality Management
2. Manage Quality
3. Control Quality

(9) Resource Management

1. Plan Resource Management
2. Estimate Activity Resources
3. Acquire Resources
4. Develop Team
5. Manage Team
6. Control Resources

(10) Communications Management

1. Plan Communications Management
2. Manage Communications
3. Monitor Communications

(11) Risk Management

1. Plan Risk Management
2. Identify Risks
3. Perform Qualitative Risk Analysis
4. Perform Quantitative Risk Analysis
5. Plan Risk Responses
6. Implement Risk Responses
7. Monitor Risks

(12) Procurement Management

1. Plan Procurement Management
2. Conduct Procurements
3. Control Procurements

(13) Stakeholder Management

1. Identify Stakeholders
2. Plan Stakeholder Engagement
3. Manage Stakeholder Engagement
4. Monitor Stakeholder Engagement

PMI Code of Ethics: Respect, Fair, Honest.

Organizational Structures: Functional, weak/balanced/strong Matrix, Projectized

Deming Cycle: Plan, Do Check, Act.

SMART: Specific Measurable Achievable Realistic Timetable

Contract Close: Before project close; **Project or Phase Close:** Lessons Learned

Change Request: ? impact on Scope, Time, Cost, Quality, HR, Risk, Stakeholder, Contracts

Change Control Systems: Scope, Cost, Schedule, Procurement

Fast Tracking: parallelize activities on critical path, **Crashing:** add extra resources

Cost Estimating Accuracy: ROM: -25%/+75% **Budgetary:** -10%/+25% **Definitive:** -5%/+10%

Cost Budget = Mgt. Reserve + (**Cost Baseline** = Project Estimates + Contingency Reserve)

Ishikawa = Fishbone Diagram: cause and effect.

Pareto Diagram: Identify problems and frequency. 80/20 Rule.

Flow Charts; Control Charts.

Just in Time: Reduces inventory; requires additional quality control.

Quality Theories: Kaizen: continuous improvements, Six Sigma, TQM, **Crosby:** zero defects

Variables Sampling: rated degree of conformity, **Attribute Sampling:** accepted or not

Maslow's Hierarchy of Needs: Physiological, Safety, Social, Self -esteem, Self-actualization.

McClelland's Theory of Needs: over time, achievement, affiliation, power, Apperception test

McGregor's X & Y: X: bad, lazy-> micromanagement; Y: self-directed

Ouchi's Theo. Z: People are X + Y, motivated by commitment, opportunity advancement.

Herzberg's Theory of Motivation: Hygiene factors, Motivating Agents.

Vroom's Expectancy Theory: People behave based on their belief on what will be the result.

Halo Effect: all opinions formed by one component, good engineer must be a good manager.

Tuckman: Forming, Storming (resisting), Norming (supporting), Performing, Adjourning

Leadership: Directing, Facilitating, Coaching, Supporting, Autocratic, Consultative, Consensus.

Team Roles: Initiator, Inf.Seeker, Inf.Giver, Encourager, Clarifier, Gate Keeper, Harmonizer, Summarizer

Manager Powers: Formal (legitimate,) Reward, Penalty (coercive), Expert, Referent.

Conflict Management: win-win: Confront (problem solving.), Collaborate; **win-lose:** Force

yield-lose: Withdraw (avoid); **lose-lose:** Smooth (accommodate), Compromise

Risk Mgt. Strategies: Avoid, Transfer, Mitigate, Accept, Exploit, Share, Enhance, Accept.

Qualitative Risk Analysis: Chance and impact of occurrence, prioritized list; ranking.

Quantitative Risk Analysis: Numerical analysis of probability and impact.

Tools: Interviews, Sensitivity Analysis, Decision Tree Analysis, Simulation, Monte Carlo.

Expected Monetary Value = probability * impact; **Contingency Reserve** = $\sum (p * i)$

Risks: Pure: negative impact only, injury, theft, fire, destruction

Secondary: risk response creates another risk; **Residual:** small generally accepted risk

Utility Function = Risk Tolerance: willingness to accept risk

Communication Theory: Sender, Encoder, Medium, Noise, Decoder, Receiver;

Message sent; Information transferred. 55% nonverbal; **Paralingual:** pitch, tone, inflection;

Written: formal: plan, contract, resource requests, **informal:** notes, memos, email

Verbal: formal: presentation, bidder conf., **informal:** conversation, 1st poor performance notice

Effective listening: interpreting nonverbals, questions, feedback

Active listening: participation with verbal + nonverbal signs of message receipt

Cost Reimbursable: Cost + Fee(award/incentive/fixed), **Time and Material, Fixed Price**

Purchase order: unilateral, **Letter of intent:** not binding,

Letter contract: short-term, stopgap or emergency response

Bidder-Conference: questions about SOW, **Bid/Quote:** price, **Proposal:** ideas

Stakeholder classification: Power-Interest/Influence, Influence-Impact Grids

Salience model: power, urgency, legitimacy

Stakeholders engagement: Unaware, Resistant, Neutral, Supportive, Leading

$CV = EV - AC$

$SV = EV - PV$

$CPI = EV / AC$

$SPI = EV / PV$

Burning Rate = AC / EV

$EAC = BAC / CPI$

$ETC = EAC - AC$

$TCPI = (BAC - EV) / (BAC - AC)$

$TCPI = \text{Work}_{\text{Rest}} / \text{Cost}_{\text{Rest}}$

$VAC = BAC - EAC$

of Channels = $N(N - 1) / 2$

$FV = PV(i + 1)^n$

$NPV = \sum(PV_{1..n})$

PERT = Beta = Weighted 3P

$SD = \sigma = (P - O) / 6$

$VAR = v = \sigma^2$

$AVG_{3P} = (P + M + O) / 3$

$AVG_{PERT} = (P + 4M + O) / 6$

$\sigma = 68.3\% \quad 2\sigma = 95.5\%$

$3\sigma = 99.7\% \quad 6\sigma = 99.99\%$

$\sigma_x = \sqrt{\sum \sigma^2}$

$PTA = (\$_{\text{ceil}} - \$_{\text{tar}} - \$_{\text{fee}}) / \%_{\text{buyer}} + \$_{\text{tar}}$

