

## 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.

**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

Sender, Encoder, Medium, Noise, Decoder, Receiver; Message sent; Info transferred.

55% nonverbal; **Paralingual:** pitch, tone, inflection

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

**Verbal: formal:** presentation, bidder conf., **informal:** conversation, 1<sup>st</sup> 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

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

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

$VAR = v = \sigma^2$

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

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

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

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

$\sigma_{\Sigma} = \sqrt{\sum \sigma^2}$

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

