Process Groups

Initiation, Planning, Executing, Monitor & Control, Closing

Integration Management

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

Scope Management

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

Time Management

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

Cost Management

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

Quality Management

1. Plan Quality Management
2. Perform Quality Assurance
3. Control Quality

Human Resource Management

1. Plan Human Resource Management
2. Acquire Project Team
3. Develop Project Team
4. Manage Project Team

Communications Management

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

Risk Management

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

Procurement Management

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

Stakeholder Management

1. Identify Stakeholders
2. Plan Stakeholder Management
3. Manage Stakeholder Engagement
4. Control 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** = Σ(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 = $Work_{Rest}$ / $Cost_{Rest}$
VAC = BAC – EAC

# of Channels = N (N – 1) / 2
FV = PV (i + 1)^n
NPV = $\Sigma(PV_{1..n})$
PERT = Beta = Weighted 3P
SD = σ = (P – O) / 6
VAR = v = σ^2
AVG_{3P} = (P + M + O) / 3
AVG_{PERT} = (P + 4M + O) / 6
σ=68.3% 2σ=95.5%
3σ=99.7% 6σ=99.99%

$\sigma_{\Sigma} = \sqrt{\Sigma\sigma^2}$
PTA = ($\$_{ceil}$-$\$_{tar}$-$\$_{fee}$)/$\%_{buyer}$+$\$_{tar}$