Formulas

Probability
- Cumulation of 2 actions
  - A 80% ET B 90% => 0.8 * 0.9 = 0.72%

Costs
- Find AC based on CPI and EV
  - AC = EV / CPI
- Benefit Cost Ratio
  - Exemple - A = 3:2 - B = 5:4 - C = 2:1 - D = 1:5
  - We need to divide first number Benefit by second Cost to get the index
  - A=1.5 - B=1.25 - C=2 - D=0.25 => C is the best
- Forecast Cost
  - Same as EAC !

Present Value
- Present Value = Future Value / (1 + R) n

Schedule
- LS - ES or LS - LF — Total Float
- Crash Price Rate (crash activity priority)
  - (Crashed Price - Normal Price) / (Normal Weeks - Crashed Weeks)
  - Ex: (28'000-24'000)/(10-6) = 1'000/week

Completion
- Variance at Completion
  - VAC = BAC – EAC
- EAC
  - If the CPI is expected to be the same for the remainder of the project, EAC can be calculated using:
    - EAC = BAC / CPI
  - If future work will be accomplished at the planned rate, use:
    - EAC = AC + BAC – EV
  - If the initial plan is no longer valid, use:
    - EAC = AC + Bottom-up ETC
  - If both the CPI and SPI influence the remaining work, use:
    - EAC = AC + [(BAC – EV)/ (CPI x SPI)]
- Estimate At Completion
  - En cours, on connait le BAC et les AC, il faut calculer la tendance (BAC / CPI) donnera le ETC et enlever les AC pour obtenir le ETC
  - EAC = ETC - AC
- Estimate To Complete
  - Assuming work is proceeding on plan, the cost of completing the remaining authorized work can be calculated using:
    - ETC = EAC – AC
    - Re-estimate the remaining work from the bottom up.
    - ETC = Reestimate
- To Complete Performance Index
  - The efficiency that must be maintained in order to complete on plan.
    - TCPI = (BAC – EV)/(BAC – AC)
  - The efficiency that must be maintained in order to complete the current EAC.
    - TCPI = (BAC – EV)/(EAC – AC)
  - Greater than 1.0 = Harder to complete
  - Exactly 1.0 = Same to complete
  - Less than 1.0 = Easier to complete

Earned Value Management
- Earned Value
  - EV = BAC * % Complete
- Schedule
  - Schedule Variance
    - SV = EV - PV (>0 good)
  - Schedule Variance Index
    - SVI = EV / PV (>1 good) or ahead of schedule
- Costs
  - Cost Variance
    - CV = EV - AC (>0 good)
  - Cost Variance Index
    - CPI = EV / AC (>1 good) or under/below budget
- Opportunity cost
  - Between Project A with NPV of 22'500 and Project B with NPV of 18'000
  - We selct to manage Projcebt B (better NPV) and then Opportunity Cost is 22'550 (not spending for Project A)

Infos
- BAC = Budgeted At Completion
- EAC = Estimated At Completion

Estimations
- PERT Estimate or Beta Distribution
  - E = (O + 4M + P) / 6
- Standard Deviation
  - SD = (P – O)/6
- Variance
  - V = $[(P - O) / 6]^2$
- Triangular Distribution
  - T = (O + M + P) / 3
- Communications Channels
  - Channels = [N * (N - 1)] / 2
- Rough Order Of Magnitude
  - - 25 % to +75%
- Budget Estimate
  - - 10% to +25 %
- Definitive Estimates
  - -5% to +10%

Sigma
- 1 => 68.27%
- 2 => 95.46%
- 3 => 99.73%
- 6 => 99.9998000%

Copyright - Michel Ajac - Switzerland 2014