

Integrating Excel Cost Models and MS Project Schedules

2018 ICEAA Professional Development
and Training Workshop

Mel Etheridge, CCEA

12-15 June 2018

noblis[®]

For the best of reasons

Presented at the 2018 ICEAA Professional Development & Training Workshop - www.iceaaonline.com

Today's Topic

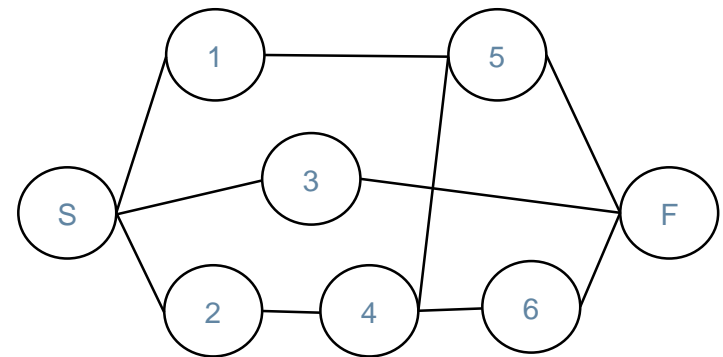
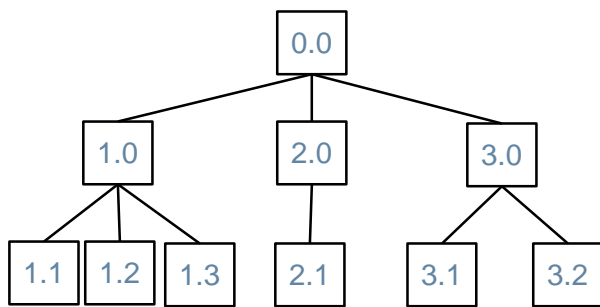
- Integrating Excel Cost Models and MS Project Schedules
 - Integrated *Parametric* Cost-Schedule Estimating Relationships have been in use for years
 - Most cost estimates are done in Excel
 - MS Project is often used for scheduling
 - These techniques applicable to other scheduling tools

Why Integrate Cost and Schedule?

- Required by some agencies
 - FAA, but only “point” estimates and schedules
- “Truer” result from risk-adjusted cost estimate and schedule
 - Some cost elements are duration-driven
 - SEPM
 - Cost estimate time-phasing accounts for schedule risks and uncertainties
- Better informs program management
- Better EVM

Coordinating CES and Schedule Events

- Close collaboration between cost estimators and schedulers is *imperative!*
- Mapping one to the other needs to be done at program start (3rd level of indenture)
 - Each schedule activity has a cost
 - Each cost element has a schedule
- Cost estimate is a tree, Schedule is a network



Develop “Point” Resource Loaded Schedule

- Match schedule activities to cost elements
 - Generally at 3rd level of indenture
 - Each activity has a cost
 - Can match to > 1 cost element
 - Each cost has a duration
 - Single cost element can only match to 1 activity
 - Don't allocate costs to different activities
- Simple if CES and Schedule Events coordinated at beginning of project

Identify Duration-Driven Cost Elements

- Generally “Below the Line” indirect and overhead
 - SEPM
 - QA
 - Production engineering and support
 - Facilities
- Ensure cost estimating methodology reflects duration
 - E.g., don’t use factors of PME

Example

Cost Element	Methodology	“Point” Duration (months)	Start	“Point” Complete
Hardware Production	AUC * Quantity	36	Jun-19	May-22
Software Development	(\sum Dev Hrs. / Hrs. per FTE) * Cost per FTE	12	Jun-19	May-20
Government Program Mgt.	(FTEs / Year) * Years * Cost per FTE	36	Jun-19	May-22

1st Pass Monte-Carlo Simulation for Cost & Schedule

- Accounts for non-time dependent uncertainties
- Program risks
- Use most likely values for start dates and durations

Example

Cost Element	“Point” Duration (months)	Start	“Point” Complete	Point Cost Estimate (FY \$K)	1 st Pass Risk-Adjusted Cost (FY \$K)
Hardware Production	36	Jun-19	May-22	\$12,500	\$12,539
Software Development	12	Jun-19	May-20	\$3,000	\$3,607
Government Program Mgt.	36	Jun-19	May-22	\$1,800	\$2,106
<i>Total</i>				\$17,300	\$18,252

2nd Pass Monte Carlo Simulation for Cost Model

- Insert Target Percentile Start Dates and Durations
- Run Monte Carlo simulation again
 - Account for all risks and uncertainties
 - Time phases estimate according to risk-adjusted schedule

Example

Cost Element	Start	“Point” Duration (months)	Point Cost Estimate (FY \$K)	1 st Pass Risk-Adjusted Cost (FY \$K)	Risk Adjusted Duration (months)	Risk Adjusted Complete	2 nd Pass Risk Adjusted Cost (FY \$K)
Hardware Production	Jun-19	36	\$12,500	\$12,539	43	Dec-22	\$12,539
Software Development	Jun-19	12	\$3,000	\$3,607	18	Nov-20	\$3,607
Government Program Mgt.	Jun-19	36	\$1,800	\$2,106	43	Dec-22	\$2,527
<i>Total</i>			\$17,300	\$18,252			\$18,673

Insert Target Percentile Costs into Schedule

- Completes linkage
- Results in risk-adjusted resource-loaded schedule

Questions & Discussion