

Joint Analysis of Cost and Schedule (JACS)

2012 SCEA/ISPA Joint Annual Conference & Training Workshop

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Outline/Agenda

- What is JACS?
- What Insight and Advanced Programmatic Analysis can JACS provide?
- How is JACS put together?
- What are other considerations?
- Summary





What is JACS?



Presented at the 2012 SCEA/ISPA Joint Annual Conference and Training Workshop - www.iceaaonline.com JACS Provides Insight and Advanced Programmatic Analysis

JACS gives you insight into key program management questions

- Does the program have <u>funds</u> to complete the work by the <u>target date</u>?
- What is the <u>likelihood</u> of completing the work by the <u>target date</u>?
- What can be done to increase the likelihood of on-time completion?
- If the program target date <u>slips</u>, what is the <u>potential</u> cost overrun?
- Most importantly, what <u>adjustments</u> are needed now?

JACS will let you do advanced programmatic analysis

- Conduct What-If Analyses...Uncertainties on/off, Risk on/off, inflation factors, and Deterministic Scenarios,
- Bring in equations for Durations and/or Costs...SERs, CERs
- Import Costs from External Tools, e.g., Price, NAFCOM, SEER
- Fully support NPR 7120.5E JCL requirements
- Available <u>now</u> via NASA government ACEIT license



How is JACS put together?



- Uses schedules built within MS-Project
- In the background, auto-creates ACE files and uses ACE engine for stochastic analysis
- Activates ACEIT Scatter Plot Observation Tool (A-SPOT) for reports

*Technology runs in background and invisible to user



JACS...some foundational concepts

Time Independent (TI) & Time Dependent (TD)

- Surrounding uncertainties
- Distinct behaviors of TI and TD
- Separation of uncertainty from Discrete Risks
- Risk quantification and mapping it into the overall JACS framework
- What data goes into JACS for it to run?
 - Schedule
 - Cost
 - Risk



Two Separate Cost Behaviors



Uncertainty and Discrete Risks



 Modeling via Probabilistic
Simulation to determine overall distribution of shape/ bounds





Potential Risks Included Probabilistically







Schedule

- Work effort (activities) with durations to meet target deliverables milestones (includes funded work, e.g., funded risk mitigation activities)
- <u>Uncertainty</u> to meet planned duration
- Linkage between work efforts dependencies internally and externally
- Incorporation of <u>discrete risk</u> impacts into the schedule network

Risks

- Identification of events that will cause a technical/cost/schedule impacts
- Quantification of events in terms of schedule, technical, and cost impacts
- Identification of impacted schedule activities if risk event occurs
- Cost
 - Cost to accomplish scope of identified work activities
 - Mapping of WBS costs into high-level schedule activities
 - <u>Uncertainty</u> associated with costing of required resources

JACS is User Friendly

- All functionality accessed via a toolbar within MS-Project
- Data directly entered/edited/stored within a MS-Project File
- Intuitive user interfaces to enter/edit data

🎕 JACS Edit Form - JACS Example File - Cost and Risk Loaded 🛛 📃 🗖 🔀			
Current Task			
13 🔷 —Structure			
WBS: Duration (days): 680 % Complete: 0 , w/ remaining: 680			
Report Results Hammock Task Program Event			
Spending Detail			
Total Cost (\$): 41,250,000 , w/ remaining: 0			
Time-independent portion of task cost			
TI (\$): 33,000,000 TD (\$): 8,250,000			
TI as % of Total Cost: 80.00 🗢 TD as % of Total Cost: 20.00 📚			
TD Burn Rate (\$/workday): 12132			
Spending Contour: Early Peak 💌 📐 Spending Contour: Turtle 💌 🔼			
Task Uncertainty			
Duration Uncertainty LN*(113,8);Correl(DURATION=0.6)			
TI Cost Uncertainty LN*(105,10):Correl(Cost=0.3)			
Tri(90,100,115,0,100);Correl(COST=0.3)			
Selected Uncertainty			
None Normal LogN Triangle PERT Uniform Constant Discrete			
Mean: 113 Std Dev: 8			
			✓ Mean and Std Dev defined as percentages of baseline (100% = baseline)
			Corralation Grouping: DURATION Details Shared Coef: 0.6
Is risk event with likelihood (%) of: 0 🗢 Threat ID:			
Assign Fields V Always on top Revert Commit Close			

G	JACS - Uncertaint	ty Multi-Assignment 🛛 🛛 🔀	
	Targetted Tasks		
	Assign To:	Selected tasks 🗸	
	Note: You may w	Selected tasks Tasks visible in current filter	
	Specification Details	ALL tasks under active summary task ALL tasks in project	
	Target resource(s):	Task duration 💌	
	Distribution shape:	Triangular 💌 📐	
	Minimum of	90 📚 🎗 of baseline resource	
	Most likely of	100 🗢 🕺 of baseline resource	
	Maximum of	125 🗢 % of baseline resource	
	Interpret bounds as 10% and 90%		
	Correlation		
	Define optional correlation (prototype not functioning)		
	Group ID: Advanced		
	Strength of:	✓	
OK Cancel			

View Results

I JACS provides a single interface to view results



Other Considerations

- "1-day" training session...as a minimum
- Data (cost/schedule/risk) is critical—and PM's involvement is important
- JACS is part of ACEIT suite available now to NASA
- JACS provide additional utility to provide data/information for program success



SUMMARY

What is JACS?

- Cost Loaded Schedule Model
- Integrates Risk
- Insight and Advanced Programmatic Analysis
 - Captures uncertainty
 - Answers JCL requirements
- Extremely user friendly
 - MS Project Add-in
 - No need to learn new s/w
- Available now







BACKUPS

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