

PROJECT RESOURCES CONTROL

PRESENTATION TO PI TEAM MASTER'S FORUM

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PROJECT RESOURCES CONTROL

Understanding the environment

- NASA is in the discretionary part of the Federal budget
- Support is generally broad, but the NASA budget is not a “voting issue”
- Highly constrained (SMD at 1%/yr. thru 2011)
- SMD “buying power” has not kept pace with inflation
- New content/growth must be accommodated within the available budget

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NASA Authorization Act of 2005

- Established Nunn-McCurdy type controls on NASA projects
- Thresholds established for Congressional notification
 - 15% cost growth over approved baseline
 - 6-month launch slip beyond approved baseline
 - If cost growth exceeds 30% over the baseline, an 18-month timeline starts after which specific Congressional approval is required to continue

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Establishing cost and schedule baselines

- An early pitfall in the resources control process
- Estimates at Phase A/B transition and the baseline at confirmation (B/C transition) are usually based on parametric models
 - Cost estimating relationships from historical data
 - Complexity factors based on engineering judgment
 - S-curves provide confidence level assessments
- Plenty of opportunity for error

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Some key cost/schedule risk factors

- Early key technology developments
- Software development
- Integration and test
- Workforce does not come down from development peak as quickly as planned
- Externalities
 - ELV's
 - External partners
 - Sole supplier loses critical skills or goes out of business

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Reducing cost and schedule risk inherent in mission baselines

- Heavily discount the possible benefits of “heritage” hardware
- Establish ample unencumbered cost reserves and funded schedule reserves
 - Base on assessed risk, not fixed rules
- Have de-scopes available at different points in the development cycle

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Additional thoughts on reducing cost and schedule risk

- “Can-do” mentality can be a strong asset but it can also be a detriment if it leads to “if everything goes right we’ll just make it” (everything won’t go right)
- Cost caps are important but we don’t want projects to take irresponsible risks for the sake of saving small amounts of money
- Traditional thinking: “Schedule concurrency saves time, time=money.....” but this isn’t true if there is a significant problem in the critical path of a key development activity

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Monitoring resources utilization

- Earned value management
 - Increasingly used at NASA
 - Provides basic quantitative measures of cost and schedule performance
 - Very useful as an “early warning system” for emerging problems
 - Best seen as an “agenda setter” that identifies areas to probe in depth rather than as a system that provides quantitative answers

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Monitoring resources utilization

- Many difference metrics are available
 - Reserves on cost/schedule to go
 - Cost burn rate
 - Workforce utilization
 - Accomplishment of key milestones
 - Liens against reserves
 - Etc.
- Assess at least on a monthly basis
- All are meaningless unless followed by prompt management action

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Summary

- Successful project resources control is an on-going process requiring continual management attention
 - A careful and well-informed balance between implementing cost control measures while at the same time indentifying and managing risks at an acceptable level