



Breakout Session 1:
Business Cases and Acquisition Strategies
Outbrief

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Breakout Session 1 Presenters

Some Key Perspectives

- Chris Abts, USC Center for Software Engineering
 - *COCOTS Estimation Model: Spreadsheet Tool Preview and Calibration Results*
 - » COCOTS includes 4 sub-models of effort: COTS assessment, COTS tailoring, glue code development, and system effort due to COTS volatility
 - » Effort for equivalent size of glue code is greater than same size of new development code (perhaps up to 3 times higher effort) because of increased constraints of the COTS usage
 - » Evidence shows that best predictor for COTS success and best risk mitigator is higher resources expended in up-front assessment of COTS packages
 - » New USC CSE research and modeling effort starting on post deployment/ maintenance issues

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Some Key Perspectives

- Kathy Bradford, TRW S&ITG
 - *Lessons Learned in Estimating the Cost of Ground Station COTS Integration*
 - » Provided process for improving cost estimation of COTS integration systems up-front
 - » COTS integration systems have lots of different file types which increases importance of accurate size estimates
 - » Can count COTS functionality for parametric modeling by user reference manual index
 - » Results can be used to help quantify effects of mid-term COTS fall-out and to establish better cost-risk profiles for COTS integration systems

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Some Key Perspectives

- Paul Thoreson, RT Logic
 - *Product Acquisition Case Study - JPL DSN Telemetry Processor*
 - » Successful delivery of COTS based system within cost and schedule
 - » Software layered approach uses abstraction layer to provide hardware vendor independence
 - » Layers allow interfacing at multiple points - driver, real-time application, network application
 - » Software simulators for front end hardware allowed for concurrent RT Logic and JPL development

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Some Key Perspectives

- Mel Cutler, The Aerospace Corporation
 - *Using the Concept Design Center's GST Model to Represent and Analyze Alternative Ground System Architectures*
 - » CDC is an application of integrated collaborative engineering with interconnected computer models, real-time iteration and multidisciplinary teams
 - » Study modeled 3 alternative future AFSCN architectures
 - » Study results indicated ranking (by estimated LCC) of the options depended on the operation period selected
 - » One side benefit of the trade-off modeling was to drive out CONOPs ambiguities, decisions and issues
 - » Other study benefits included identifying alternate technologies with potential of reduced costs

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Some Key Perspectives

- Dan Galorath, Galorath, Incorporated
 - *Demonstration of Cost Tradeoffs Between Space and Ground*
 - » Offered recent UK MoD acronym “Software of Unknown Pedigree (SOUP)”
 - » Parametric modeling using a tool such as SEER-SEM can capture cost impacts for security requirements arising from SOUP
 - » Importance of using Cost as an Independent Variable (CAIV) to balance architecture decisions between space and ground functionality tradeoffs

Breakout Session 1 Participants

Additional Lessons Learned

- The importance for Government acquirers as consumers of COTS based systems to be organized so as to incentivize COTS vendors to provide solutions that continue to meet needs
- Need for more emphasis on the long term benefits, challenges and O&M aspects of COTS intensive systems
- Beware of the \$20K CD and the \$2M service charge on COTS components
- Include the ultimate end user/operator, not just in the initial requirements phase, but throughout the system acquisition and recognize the need for increased dialogue
- If the procurement cycle is too long, you lose domain knowledge and expertise of integrating COTS systems; QRC or RAD developments can mitigate this risk

Breakout Session 1 Participants

Additional Lessons Learned

- Interface complexity rather than COTS functionality is a better predictor of effort for integrating COTS components in your ground system
- The more system functionality you can provide via COTS components while providing that functionality in as few COTS components as possible, the stronger your business case for cost savings
- The size of the aperture for ground systems antennas is an asymptotic cost driver for COTS based ground systems
- The desired capability for COTS intensive ground systems to migrate from SGLS to USB to other bands in the future is a challenge for both acquirers and COTS vendors