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
• 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
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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• 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
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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