

Ground System Architectures Workshop



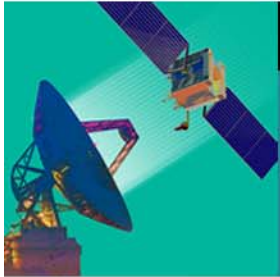
Session 15

“Perspectives on Ground Services”

Plenary Sessions Summary

Samuel Cantrell, Judy Kerner
The Aerospace Corporation

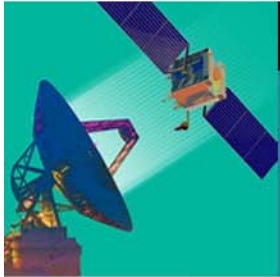
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Challenges and Perspectives

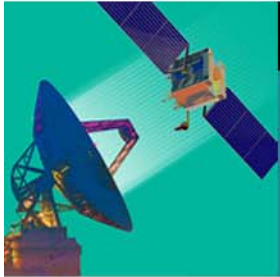
“The here to there path is mired in details and challenges.”

- Emergent Themes across 19 GSAW's
 - Standards/Open Source
 - Flexibility/Adapability/Agility/Scalability
 - Cost (Resource) Control
 - Cyber (Security)
- Challenges from GSAW2015
 - Cost
 - Cyber
 - Enterprise Focus



Challenges of Cost (Resources) *Short term vs. Long term*

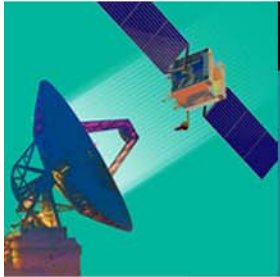
- “Cost avoidance underlines everything that we do”
- “Doing more with the same...much more.”
- Rather than “what we want”, ask “what do you have?”
 - Can leverage big mission functionality if can live with that functionality as-is
 - Reuse, by virtualizing, componentizing, commoditizing, tailoring
- “People drive ground cost”
 - “Human *on* the loop rather than *in* the loop.”
 - “Afraid of automation for many years, but finally did it.”
- Cost savings will have to be based on changes in CONOPS and culture



Challenges of Cyber *Everything in space is a target*

- Hanging on to legacy hardware and software increases the threat
 - “Refresh when you should...not when you have to.”
- Can't just *protect* your network, have to *watch* your network
- Incident Detection is important but must be accompanied with Incident Response
- Data access control
 - Need to partition data to personnel on a need-to-know basis
- Space used to be the strategic domain open to superpowers only. Now it's commercialized, open to all and always in the fight.
- Resilience

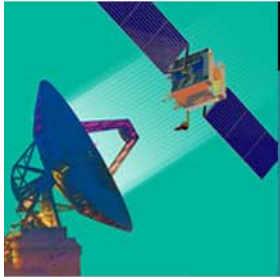
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Challenges of Enterprise

We can't do this great thing on existing architecture

- Study revealed mapping of common functionality ~ 60%.
 - Even unique functions share commonalities
 - Only 10% of ESA ground is for mission specifics
- Technical challenges easy, culture and governance are the hard parts
 - *Governance*, what can you extend, accept, create?
- “We will never buy another stand alone ground system”
- “If you think commercial is better, you haven’t worked with commercial yet.”
- We will provide a “fully stocked and instrumented kitchen for chefs to create their recipes”
- Measure performance improvements by orders of magnitude
- “For the first time it appears that the stars are beginning to align.”

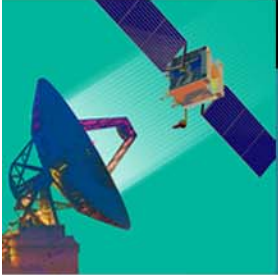


Observations (Heard at GSAW2015)

- Cube Sats are ubiquitous...again
- JPL - AMMOS first briefed at GSAW '97
 - Now in use and the starting point for innovation
- GMSEC was first discussed at GSAW 2003
- “Sacred Cows make the Best Burgers”
- “Fail Fast”
- “Common Stovepipes”
- “Test Like You Fly”
- “Age of the Space Cyber Attack is here!”

- Prediction for GSAW 2030: Exploring ways to break up monolithic enterprise ground systems into silos of excellence!!

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Join us for GSAW 2016!
Feb. 29-March 3, 2016