

Ground System Architectures Workshop

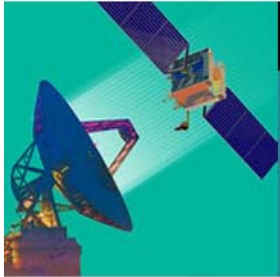


Session 15

“Doing More with Less”

Plenary Session Summary

*Dan Balderston, Judy Kerner
The Aerospace Corporation*



Challenges... "Doing More with Less"

Extended mission life

Austerity

Disaggregation

Budget Cuts

"Sequestration"

Aggregation

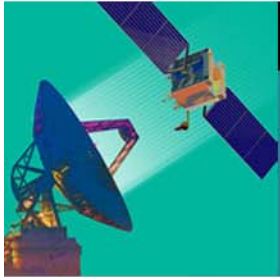
Saturated bandwidth

Program Cancelled

No Travel

Consolidate Ground Systems

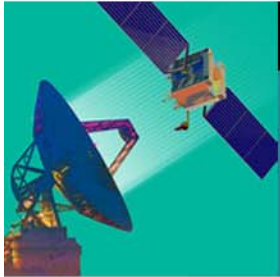
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We are doing more with less

- Being here (at GSAW) is an opportunity to save \$ (Dr. Austin)
 - Increased collaboration, idea exchange, innovation, efficiencies
- Doing more with nothing, doing less with less (but more mission)
- Using architecting to help prioritize
- Resilient, flexible, evolvable architectures
- Small sats (nano, micro, cube) and ground systems at a tipping point
- SOA, cloud, virtualization, standardization, services → all paying off
 - Appropriate use of COTS, Open Source
- Multi-mission ground systems
- Automated operations (lights out ground systems)
 - Methodologies for analysis, design, optimization

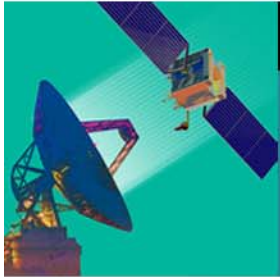
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Terms, themes and concepts

- Budget cuts - without decrease in capability demands
- Disaggregated satellites...and aggregate space systems on the ground
- Moving to cloud, but must assess “Cloudability”
- Agile development, rapid spirals, reference implementations
- Systems of systems, services
- The Solar System Internet (SSI)
- The cyber challenge - relentless security threats, architecting for security
- COTS, GOSS and Open Source (Apache™ Hadoop, SELinux, InControl)
- Leveraging commodity and commercial technologies, miniaturization
 - Commanding satellite over cell phone link

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Quotes

“18-13-9-4” (bus GS, payload GS program offices, satellite types)

“Never let a serious crisis go to waste.”

“Do in common those things that are commonly done.”

“Why not make the GS the prime and subcontract the satellite.”

“Standardize interfaces...of course!”

“Sometimes a mark of society is how small they can build things.”

“Standards (CCSDS) do indeed lower costs.”

“We were hacked!”

“3-Ps – Politics, Pesos and Physics.”

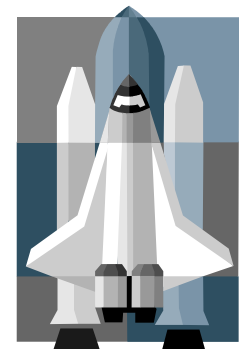
“An antique car has charm, but antique spacecraft and ground systems?”

“We need a Ruthless Ruler “ (to address “Legacy Drag”)

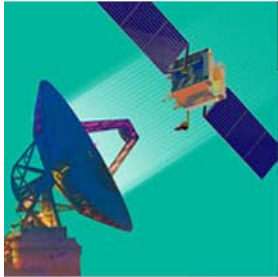
“You’ve got to let go to grow.”

“Let’s have more fun!”

“In 10-15 years we will have GSAW briefings on (these new) ideas.”



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Take Aways

Doing more with less means ...

- changing how we look at the future, and adapting to it!



Come back to the future next year at **GSAW2014**