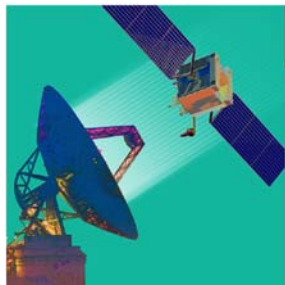


Working Group Outbrief

Ground System Architectures Workshop

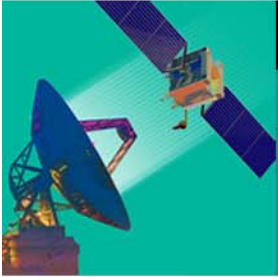


Session 11F

Ground System Enablers and Future Small Sat
Development

*Catherine Venturini, Steve Mazuk, The Aerospace
Corporation*

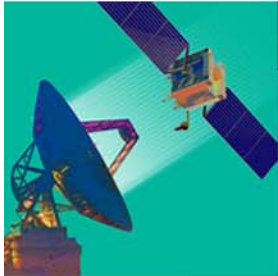
Ground System Architectures Workshop



Focusing Questions

- What mission(s), regardless of size, can you NOT do today because you lack the ground services to support the mission(s)?
- What ground services do you need and when do you need them?
- How is your constituency working toward developing these ground services?

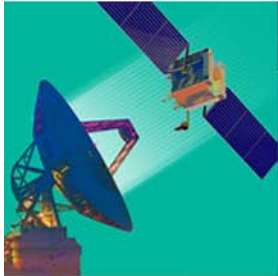
Ground System Architectures Workshop



Presenters/Panelists

- Mr. Erik Eliassen, Universal Space Network
- Dr. Meagan Hubbell, NRO CubeSat Office
- Mr. Kyle Kemble, Air Force Research Laboratory
- Mr. Austin Mroczek, NAVY SPAWAR West
- Dr. Marco Villa, Tyvak Nano-Satellite Systems Inc.

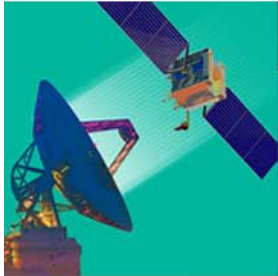
Ground System Architectures Workshop



Key Points

- Size of the spacecraft does not drive ground systems
 - Mission Needs
 - CONOPS
- Are we in the “Wild West” phase of Small Sat development?
 - Yes, for some R&D
 - Constrained development cost
 - Drives innovative solutions
 - Question assumptions
 - Educational component
 - No, for advanced missions
 - Very sophisticated vehicles
 - Providing specific mission needs
- Short lived system versus long life spacecraft - O&M is expensive
- Automation is a key enabler for supporting large numbers of spacecraft

Ground System Architectures Workshop



Conclusions

- Small Sats can be very capable and support specific mission needs
- Constellations are a driver for future small sat ground system development
- Disruptive technology
 - Rapid development cycles, fail quickly and learn
 - Variable funding challenges long-term planning
 - Standards constrain agility
 - Adapting large satellite ground software solutions to small sat missions has not proven feasible

It is not about the bus, it is about the Mission