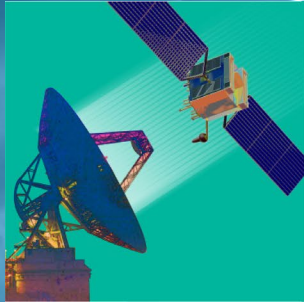


Working Group Session 11C Outbrief



Ground System Architectures Workshop Opportunities in Data Exploitation

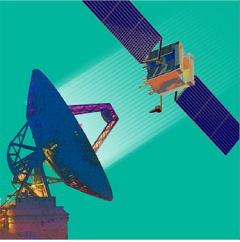
March 2–5, 2020 | Renaissance Los Angeles Airport Hotel

Cloud Computing and Big Data Technologies for Ground Systems

*Leads:
Ramesh Rangachar and Craig Lee,
The Aerospace Corporation*

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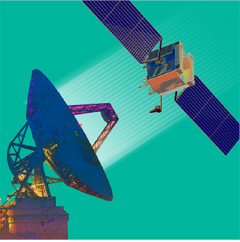
Ground System Architectures Workshop

Session Goals

Cloud Computing and Big Data Technologies for Ground Systems

- Discuss the current trends, best practices, and lessons learned in using Cloud Computing and Big Data technologies
- Key Focus Areas:
 - *State of the art in Cloud Computing and Big Data*
 - *Cloud and Big Data reference models*
 - *Cloud-based ground systems*
 - *Cloud and Big Data technologies*
 - *Cloud security, standards, and compliance*
 - *Acquisition strategies for cloud-based systems*
 - *Cloud computing economics*
 - *Cloud performance management*

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Presenters/Panelists

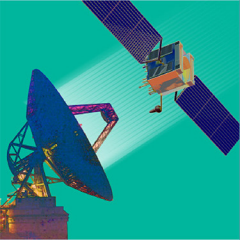
Presentations

- Migration to Cloud and Path to Modernization for JPSS Data Production System
– *Scott Kern, Raytheon*
- The Data Exploitation (DEX) Platform
– *Dr. Ann Chervenak, The Aerospace Corporation*
- The Trajectory of the GSAW Cloud Computing Working Group: 10 Years and Counting
– *Dr. Craig A. Lee, The Aerospace Corporation*

Special Town Hall Meeting: Satellite Command, Control and Communications in the Cloud (C3)

- Moderator: Sheryl Olguin, The Aerospace Corporation
- Panelists: Nicolaie (Todi) Todirita, NOAA/NESDIS
Shayn Hawthorne, AWS
Chris Badgett, Kratos Federal Space
Tyler Goudie, Braxton Technology

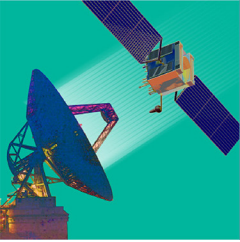
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Key Points

- Diversification up the stack
 - *CSP offer vast array of services -- on-demand -- at all levels in the system stack*
- It's not just "a" cloud
 - *CSPs run a global set of data centers interconnected with backbone networks*
 - *Vast ecosystem of services that can have a secure global footprint*
- AWS Ground Station
 - *"Ground System as a Service"*
 - *Platform where mission-specific services must be added*
- Significant sign of maturation
- Lack of training and skill sets in moving to the cloud
 - *Systems engineering skills desperately needed*



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Conclusions

- Need to become truly cloud agnostic
 - *Need to manage multiple environments, multi-cloud environments*
 - *Automation*
 - *Standards*
- Everything is becoming software-defined
 - *From the demodulator to data exploitation*
 - *Mission system boundaries*
 - *Automation*
- Security Architecture must be a first-class citizen in the design process
 - *System design is much more than just the plumbing*
 - *Management and security boundaries will have to be software-defined*
- Culture is the biggest roadblock
 - *The organizational (and economic) issues will dwarf the technical issues*
- Cloud adoption is not a question of if – but how and when

Working Group Session 11C