

Working Group Outbrief

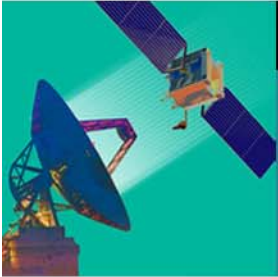
Ground System Architectures Workshop



Session 11E

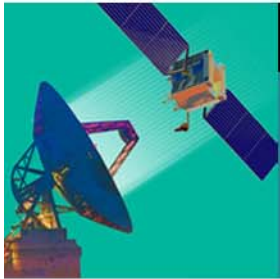
Flight Software Ground System
Impacts

Alan Unell, Robert Pettit, The Aerospace Corporation



Session Goals

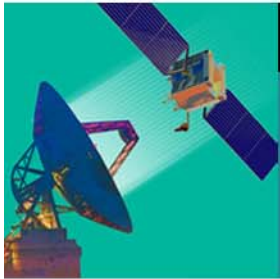
- Discuss developmental and operational impacts of flight software on the ground systems
 - Highlight and discuss significant areas where choices made in the design and implementation of flight software affects the ground and mission operations
- Elicit techniques to foster improved communication / collaboration between flight and ground systems



Presenters/Panelists

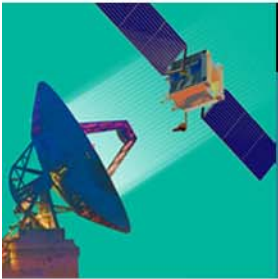
- Gerry Simon (Integral Systems)
- Dan Vanderwalker (Aerospace)
- Mark Walker (Integral Systems)
- Steve Wissler (JPL)
- Takahiro Yamada (JAXA)

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Key Points

- **Product ownership**
 - Incentivize collaboration between ground and space and operations contractors
 - Design interfaces for commanding and telemetry for efficient operability
 - FSW developers should be trained / experienced in operations
- **Understand tradeoffs in FSW architectures**
 - “Simplistic” flight software often leads to increased work on ground
 - Overly autonomous flight software may not allow sufficient granular control from the ground
- **Model-based methods**
 - Critical for handling increased complexity
 - Allow early communication / understanding between space, ground, and operations
 - Integrated development among space, ground and operations
 - Always testing
- **Develop and adopt appropriate standards**
 - Collect best development and programming practices
- **Standardized minimum test suites**



Conclusions

- Ultimately must work together as an integrated mission team
- Need to incentivize:
 - Collaboration between teams
- Collected best practices and recommendations from working group
 - Will publish these in a post-GSAW report