Working Group Outbrief

Ground System Architectures Workshop

Session 11E
Flight Software Ground System Impacts

Alan Unell, Robert Pettit, The Aerospace Corporation
• 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