Working Group Outbrief

Ground System Architectures Workshop

Session 11C
Practical Lessons Integrating Net-Centric and Legacy Ground Systems

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Session Goals

- Net-Centricity (and by association, Service-Oriented Architecture) are mandated by the DoD.
  - Emerging expertise and successes exist in the commercial arena
  - DoD and other mission critical system domains lag and, at times, struggle to separate hype from true benefit.
- WG goal was to share experience of practitioners in
  - Integration of net-centric satellite and ground systems
  - Adaptation of legacy systems to net-centric requirements
- Focus on bringing together commercial, government, military and intelligence ground system developers, integrators and maintainer/operators
Presenters/Panelists

Introduction – Jeff Waters

Foundations - Standards, Community, & Networked Services

“JSpOC Mission System Common Data Model” (Maryann Hutchison, Aerospace)

“The CCSDS Navigation Working Group and Space Situational Awareness” (David Berry, JPL/CCSDS)

“METERON Operations Environment And Prototype Robotic Services” (Mehran Sarkarati, ESA)

Example Scenario & Applications

“Reference Implementation Working Group Demo Scenario” (Brendan Callahan, MTSI)*

“Enabling Interoperability in Space Situational Awareness” (Steve Bygren, MITRE) *
Example of Need & Application

“Dynamic Optical Telescope System” (Lisa Thompson/ Laura Ulibarri, Air Force Research Lab, Maui)*

“Common Data Model / WSDL / SOAP Demonstration” (Mahan Hajianpour, Aerospace)

“A Comms Data Processor For ISS Ground Systems Using Standards and Software-Based Architectures” (Rob Andzik, Amergint)

“Evolution of Net-Centric Data Services at AFWA” (Andy Sedlacek, Northrop Grumman)

Note: We had intended to have a Panel Discussion led by Morris Brill (Northrop-Grumman) to address questions from the Audience, but were constrained by lack of time after the technical presentations

* Presenting remotely over phone
Lessons Learned and State of the Practice:

• Data models currently being developed under a number of enterprise umbrellas to foster interoperable information sharing.

• Net-Centric Community is following a "start small, learn and adapt" strategy using reference implementations and prototyping efforts.

• Early signs point to importance of pub/sub compared to 1-1 interactions (such as SOAP request/response approaches).
  – Workshop noted the potential efficiencies presented by REST implementation.

• Standards are essential for interoperability and early-adoPTION / integration.
  – However, evolving and competing standards still hinder the adoption of net-centricity.
Conclusions

• Integrating legacy systems into a net-centric enterprise is much more challenging than initially envisioned by many people in government and industry.

• Early investment in net-centricity (via up-front architectural work or domain-specific bench-marking) will pay off during later development /test phases.

• When introducing a common data model, focus on showing it is implementable

• Establish a Community of Interest with active working groups to bring together stakeholders who share the vision and to provide outreach and support to those looking for support as they tackle net-centricity and interoperability