“Expanding Access to Information”

Plenary Session Summary

Dan Balderston, Judy Kerner
The Aerospace Corporation
March 1, 2012
Ground System Architectures Workshop

Themes

Access to information is expanding
  Quantity and dissemination of data growing exponentially
  Must also enhance quality of information
  > expand access + enhance quality

Key space standards are established and new ones emerging
  CCSDS (ubiquitous), XTCE (broader use), GEMS and SOLM (defining)

Open source software, open and common frameworks prevailing
  ACE, Java, Python, European open initiatives, Hurricane, GMSEC, EGS-CC

Collaboration
  JSCC, standards bodies, user communities, mission areas
  International – GPS, iGSAW

Evolution vs. revolution
  Plug-n-Play concepts – SPA, MASTERT and supporting frameworks
  Service-oriented successes
IT efficiencies are taking root in ground systems
   Virtualization: full lifecycle benefits
   Clouds: handling full mission volumes, now merging clouds – NRO hybrid
   Consolidated enterprise models (ICITE for Intelligence Community)
   Thin clients

Security challenges, solutions (GMES, KVM)

Modernization, evolution

Small satellites and applied technologies/standards

Model-based engineering (UML, SysML)
Downticks

Large space/ground system development

Platform dependence
Language dependence

SOA impediments (performance improving, but security not yet)
Aging systems, but we don’t throw anything away
AFSCN, many other legacy systems ~ 50 years old

Barriers remain more cultural, sociological than technological

Enterprise governance is the greatest struggle
What is the enterprise, who is controlling it, funding it?

Yearning for simplicity
K.I.S.S. … “and as stupid as possible”
Small-sat examples, IT examples
Complexity breeds complexity

Multi-mission ground systems (e.g., AMMOS) – but now in operation!
What we heard

- Coalition of the willing
- We never throw anything away.
- We have no money so now we must think. (Churchill, Rutherford)
- IT folks think fundamentally differently than space people.
- Don’t try a day without space now!
- Light the fire of virtualization in the hearts of those here today.
- Faster, better, cheaper, SAFER
- Cylinders of Excellence
- Do in common what’s commonly done.

New terms for us
- Sensor polytheistic (vs. agnostic)
- Box huggers
- Pluganize
What does it all mean?

Lifecycle affordability – we need to plan for using systems for a very long time
  More emphasis on lifecycle costs
  Cost of implementing standards?

We will have to change the way we do business, with very very low budgets
  If not – we will wake up in 10 years to realize we can’t do what we do today
  “Disaggregation” - more smaller satellites, hosted payloads

Long-lived systems
  We’re flying satellites that are “old enough to drink”
  Some of our satellites are legacy before they are launched

Eye to future
  Science, Technology, Engineering, Math (STEM) for future Ground Systems Cyber
Save the Date

And what about “Faster, Better, Cheaper, Safer”??

Bring your ideas back next year

“Doing More With Less” – GSAW 2013
March 11-14, 2013