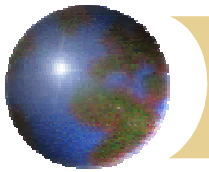


Satellites as Peripherals

Implications for Ground Architectures

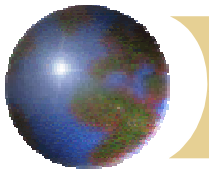
Kevin B Kreitman, PhD
The Aerospace Corporation
GSAW 2002



Now that I have your attention . .

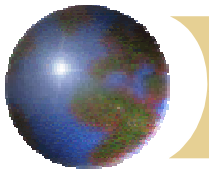
“Peripheral” doesn’t mean unimportant—but focuses on the value provided by the asset: Information.

- Many satellites (and unmanned airborne assets) are designed to collect information or data.
- In a “space-centered” world, the ground system serves the operators and is designed around a particular space system.
- In a “information-centered” world, shouldn’t the ground system “serve the information needs”?



Integrated Information Systems

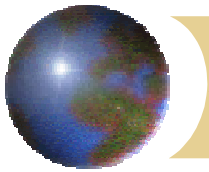
- The present: Lightweight Legacy Integration
 - EAI (enterprise) and B2Bi (inter-organization).
 - Integrated ahead of time on COTS message bus
 - Wal-Mart; Dell Computer; DoD Logistics Integration
- The Future: Web Services—composable business services on the fly . . .and ??
- The benefits: FASTER! Lower cost, shorter development time, better utilization, better quality information, “competitive advantage”
- The expectations: Joint civil response; effects based operations concepts; network centric warfare; Earthquake and disaster response.



What's coming:

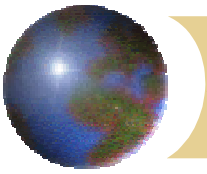
Plan the Party or Come as you Are

- Support of Homeland Security
- Support in National/International disasters
- Support in the battlespace:
 - Revolution in Military Affairs
 - Network-centric operations
- Civil defense planning and execution
 - Planned systems and ad hoc network collaboration
- Features: A new variety of people need information quickly, in different forms, on “their” networks.



“Information-Centered” Systems

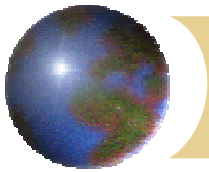
- Ability to automate tasking and business processes
- Ability to use assets in service of information, mission, in the context of other assets and systems
- Ability to “load-balance” across assets
- Ability to integrate flexibly, on the fly
- Rapid integration of new assets “plug and play”
- Ability to use multiple different assets in a “composable” way



Pitfalls for Business as Usual

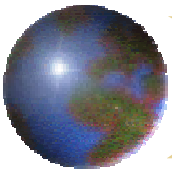
What will happen to YOUR ground system if:

- The space or air asset is "repurposed"?
- Incorporated into a "sensor-net"? Or several?
- It is called on to serve additional assets at the same time?
- Or is cloned to serve similar assets? Different assets?
- Tasking is automated and dynamic?



Challenge: Think Different

- How to generalize and componentize the system
 - “You want it to do WHAT?”
- How to accommodate different intended uses/users
 - Who invited them to dinner??
- How to adapt to different networks/interfaces
 - Where does your information want to go today?
- How to accommodate to different business processes
 - “Everything I need to know I learned in kindergarten?” Playing nicely with others—in a DIVERSE environment



Opportunity: Survive and Thrive

- To rethink the value and potential roles of our assets, and the critical role of ground systems in terms of creating and sustaining that value.