Compatible Satellite C2
Progress and Challenges
3 March 2010
Enabler for Command and Control (C2)

- Establish a compatible C2 framework for ORS operations
  - Demonstrate and operate with next ORS enabler mission

- Leverage existing and emerging tools, systems and standards
  - Goddard Mission Service Evolution Center (GMSEC) middle-ware as key component; reuse portions for ORS “Mission Service Interface” (MSI)
  - Consultative Committee for Space Data Systems (CCSDS)
  - XML Telemetry and Command Exchange (XTCE)
  - Extensible Transducer Electronic Datasheet (xTEDS)
  - Ground Systems and Stations
    - Schriever AFB
    - Blossom Point
    - NASA/GSFC
    - Rapid Response Space Works
    - Other

ORS RRSW - “Chileworks”
ORS Mission Service Interface (MSI)

- The ORS MSI will provide a transport layer for TT&C functions in support of ORS spacecraft

- The MSI objectives are to:
  - Provide TT&C data across multiple Service and R&D Satellite C2 Systems
  - Provide a capability to pass command and control operations between Satellite C2 Systems

- Benefits include:
  - Linking disparate SOCs
  - Situation awareness across C2 systems
  - Affords rapid integration of C2 systems into the ORS enterprise
  - Rapid transition of multiple satellite configurations to different SOCs for operations
  - Possible reduction in training and organization cost
ORS Mission Service Interface (MSI)

Command and control and alternate payload data

Payload data

Telemetry, tracking, and command
(Air Force Satellite Control Network)

Air Force satellite operations center
Navy satellite operations center
Army satellite operations center

Mission service interface
(Goddard mission services evolution center)

Global information grid

Apportionment

Processing enterprises
(national, service, DCGS, et al)

Exploitation enterprise

Theater planning, tasking, and status
(Virtual mission operations center)

Joint Force Commanders
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Joint SATOPS Compatibility Committee (JSCC)

- Government endorsed organization that serves in a tech advisor role for the SATOPS community
- Efforts within each organization are already underway to investigate methodologies and architectures to address internal challenges
  - Enable satellite operations/control between systems & across the community
  - Provide community-wide ground situational awareness and space protection
  - Reduce life cycle costs
- Charter: Identify architectural frameworks and standards to enable NSS community-wide, compatible and interoperable satellite operations.
- Final Product: Demonstrated architectural approaches & standards for common use in future acquisitions across the JSCC partnership