

# Using a COTS-Based Ground System

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# RSC at KAFB

- Multi-mission satellite control facility
  - RDT&E satellites: low budget, one-of-a-kind
  - Uses AF SCN antennas and communications
- COTS based, distributed open architecture
  - Custom GUI (Storm Integration)
  - Customization for mission by contractor development personnel (LMTO)
- Operations by contractor personnel (LMTO)

# COTS User Interface Issues

- Distinct look and feel of products
  - RSC uses the GUI of each product to preserve open architecture
  - Inconsistencies exist among current products
  - Requires operator training, checklists for real-time operations
- Asynchronous product upgrade cycles
  - Vendor evolves product based on technology, customer needs
  - Requires continual operator re-training and procedure rewrites
  - Pace of upgrades should slow as products mature
- Sharing databases and displays with SV developer
  - Requires ground system and developer to have a common software and hardware suite
  - Too expensive for RSC customers; feasible for larger programs

# Cross Mission Interface Issues

- Customization for mission function
  - Tools (e.g., command generators) augment COTS; designed with a common HMI for operability
  - Telemetry screens
    - RSC uses text-based displays
      - Ease and speed of navigation
      - Data density for anomaly investigation
    - Sharing screens with SV developer reduces training
- Common modules for mission development
  - Telemetry screen templates maintain HMI consistency among missions
  - Some procedures deviate to meet mission requirements

# Lessons Learned

- Initial design decisions are crucial
  - Understand the trade-space
  - Keep the operators involved
- Must maintain COTS currency
  - Ensures product supportability
  - Product compatibility must be considered
- Group upgrades into larger, less frequent installs
  - Minimizes retraining and procedure rewrites
  - Increases risk and complexity of each install
- Maximize standardization across missions
  - Re-use templates for development
  - Keep procedures consistent