SMC/RN Compatible Satellite C2 (Sat C2)

GSAW 2012

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SMC/RN

Background

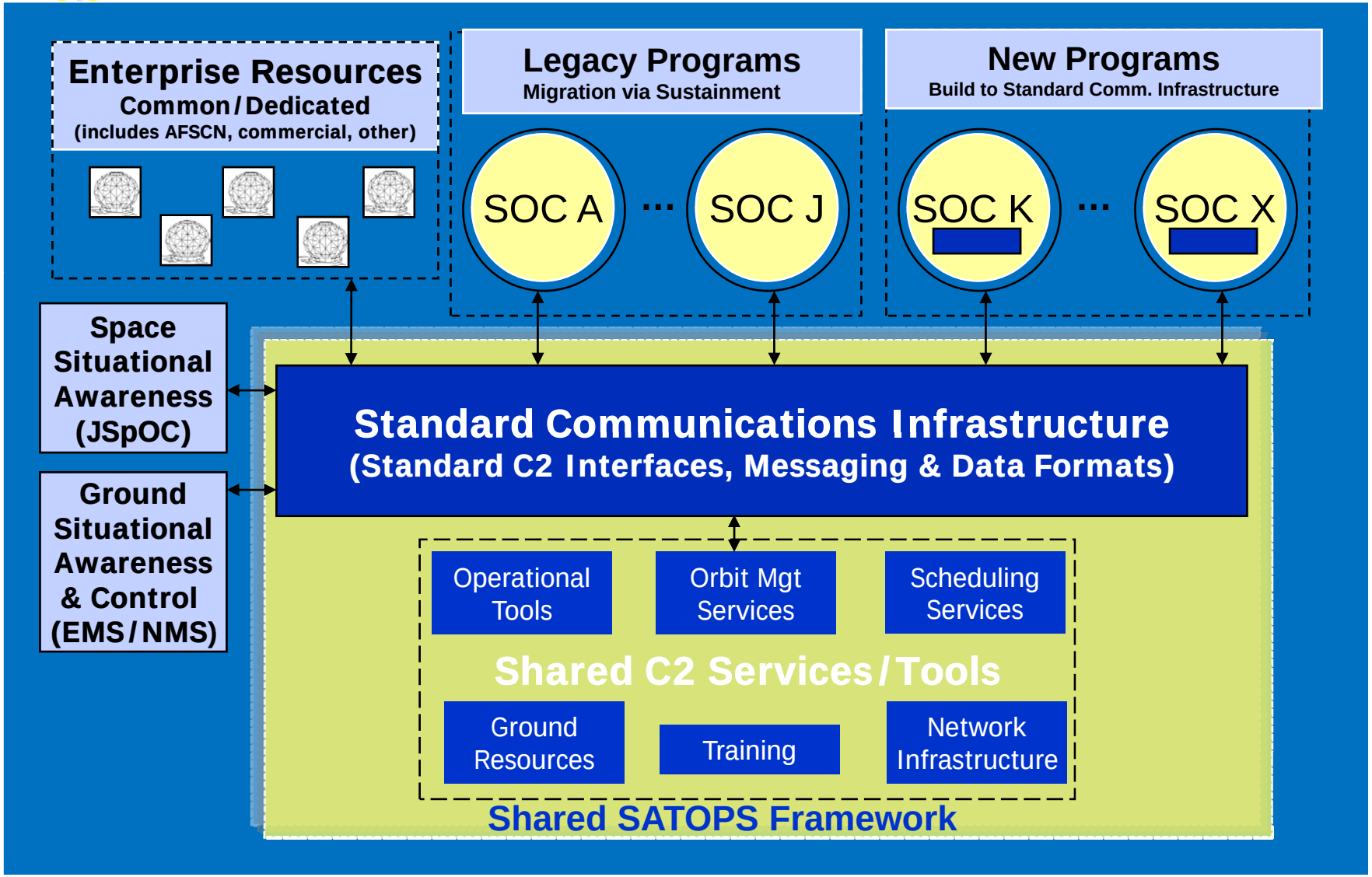
- **SMC/CC tasker to RN (Spring 2006)**
  - **Identify Satellite Command & Control architecture based on accepted standards applicable to SMC missions**
- **RN actions (2006 – 2008)**
  - **Focused on Service Oriented Architectures (SOAs) for SV TT&C, CCSDS standards**
    - **Received 14 RFI responses for "state-of-the-art" ground SOAs**
    - **No "true" SOA-based commercial satellite C2 products exist**
  - **Visited DoD and commercial satellite control facilities**
  - **Presented reference architecture for feedback at industry forums**
    - **SMC/CC feedback: too long to implement, no funding source**
    - **RN directed to explore existing frameworks**

Background (cont'd)

- **RN Sat C2 Study: June 2008 – Oct 2009**
  - **Evaluated Compatible Sat C2 architecture based on Goddard Mission Services Evolution Center (GMSEC) framework**
  - **Aerospace test bed created in Chantilly, VA**
  - **Found NASA's GMSEC Framework a suitable starting point for a DOD Framework**
    - **Missing Data Standards and Information Assurance**
    - **Must be tailored for DOD applications**

- **SMC/CC tasked RN to prototype a Compatible Sat C2 Architecture (2009)**
  - **Signed a letter endorsing JSCC and Sat C2**

Compatible Satellite Control Architecture



Definition/Benefits

- **Compatible Sat C2 -**
  - **Standard communication infrastructure developed for satellite ground systems**
    - **Uses common messaging and data standards**
  - **Hybrid approach between stovepipes and 1-size-fits-all**

- **Benefits/Implications**
  - **Facilitates integration of legacy, future, and commercial ground systems/products**
  - **Reduces development, O&M, sustainment costs**
  - **Facilitates access to space and ground asset C2 data**
  - **Enables flexible CONOPS**
  - **Allows best products from multiple vendors**

RN Approach & Way Forward

- **Develop Compatible Sat C2 Prototype in FY10/FY11 to validate approaches and reduce risks**
  - **Leverage NASA Goddard Mission Service Evolution Center (GMSEC) Framework as a starting point**
  - **Conduct 3 phase prototype development/evaluation:**
    1. **Design prototype, develop long lead Infrastructure (including Information Assurance & common ground interfaces)**
    2. **Integrate select legacy systems, simulate external interfaces, incorporate common displays, common services, and mission data**
    3. **Prototype Computer Network Defense (CND) & Ops automation concepts**
- **Evaluate prototype concepts for SMC missions with 50SW in FY12**
  - **Established dedicated DS-3 DISA line btwn Schriever AFB & Sat C2 Prototype**
  - **Operators to gain experience and help develop Requirements & CONOPS**
- **Provide feedback and recommendations to SMC/CC**

Industry Participation

- **Selected legacy system capabilities integrated at Schriever AFB and the Aerospace Corporation's lab in Chantilly, VA**
  - **Legacy system contractors will support integration**

- **RFI for applicable industry research & comments**
  - **RFI released May 2010 and Industry Day held August 2010**
  - **White papers on proposed architecture, approach, and cost savings**
  - **Industry research capabilities that can support prototyping objectives**
  - **Compatible Satellite C2 Data Repository:**
    - **https://www.fbo.gov/index?s=opportunity&mode=form&id=9935b50d74a596e3347599c9a4c1cbbd&tab=documents&tabmode=list**

Gov't Requirements for Industry Participation

- **Requirements**
  1. **Vendor Product(s) supports the Government's technical objectives**
  2. **Capability (products and technical support) is provided to integrate with the prototype infrastructure at no cost to the government**
  3. **No restrictions on Government use of contractor data to support definition of future acquisitions**

- **Those vendors with capabilities of most interest to the government's prototyping activities have been contacted and asked to participate**

Industry Responses to RFI

- **RN received submissions from over 25 companies in response to the Compatible Sat C2 RFI**
- **Vendors offered capabilities (products & technical support) as well as comments on RN's prototyping approach**
- **RFI review & down-select resulted in narrowing field to 9 vendors:**
  - **a.i. solutions, Amergint, L-3, GMV, Braxton, ISI, Emergent, Lockheed Martin, and Boeing**
- **Products**
  - **The vendors proposed in total over 50 scenarios in which their product(s) could be used in the government's prototype**
  - **Examples: Cross Domain Solutions; IA/Cyber Security tools; Enterprise Scheduling tools; Common Displays; Mission Planning services; Ground/Space Situational Awareness tools**

Gov't Use of Industry Capabilities

- **How will the Gov't use Industry products in the prototype?**
  1. **Support demonstrations to the SATOPS Community (e.g. AFSPC, 50SW, NASA) that highlight utility of framework and opportunities for common services**
  2. **Identify framework infrastructure concepts and additional standards needed to support various service concepts**
  3. **Document lessons learned about the framework (e.g. ease of product integration, integration issues/challenges)**
  4. **Identify potential common services that would be beneficial to the Gov't.**

- **Industry products themselves are <u>not</u> being evaluated to support a procurement decision**
- **Vendor Demonstrations conducted 13-16 September 2011 at The Aerospace Corp.**