Update on US Efforts on Space Traffic Management

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Debate over definitions

Space Surveillance?

Space Situation Awareness?

Space Domain Awareness?

Space Traffic Coordination?

Space Traffic Coordination and Management?

SSA: knowledge about the space environment

STM: making decisions based on SSA to improve safety of space operations
Components of STM

• **Air-space interface**
  - Minimize the impact of space operations on aircraft operations during launch and re-entry
  - Co-operating spacecraft and aircraft (sub-orbital tourism, air-launch spacelift)

• **Orbital congestion**
  - Prevent collisions between space objects
  - Manage highly congested orbital altitudes
  - Active control of RPO with crewed space objects

• **Oversight of private sector space activities**
  - Article VI “authorization and continuing supervision” of private sector space activities
  - Link between regulation/licensing and monitoring of actual activities/verification
Historical US approach

- **Tracking** of space objects primarily led by the Department of Defense (DoD)
  - Maintains a global network of ground/space-based sensors (Space Surveillance Network)
  - Runs 24/7/365 military ops center that processes data and maintains multiple space object catalogs and creates analytical products
  - Provided some data publicly on Space Track website
  - Screened relatively small daily for close approaches

- All **regulation** of space activities done by civil agencies
  - Department of Transportation -> launch/re-entry
  - Department of Commerce -> remote sensing
  - Federal Communications Commission -> radio frequency spectrum use
End of “Big Sky” theory

• Iridium-Cosmos collision in 2009 changed everything
• DoD increased the amount of support they were providing to non-USG entities
  • Started screening all active satellites daily for close approaches
  • Provided email warnings to all satellite operators
  • Created SSA Data Sharing Program to provide additional data/services to partners

But should the military be the lead for this new mission?
U.S. National Policy on STM

- **Obama Administration**
  - Started interagency discussions on STM in 2010
  - Debate over Dept of Commerce (DoC) vs Dept of Transportation (DoT)
  - Established baseline definitions & outline, but did not come to a decision (but leaned towards DoT)

- **Trump Administration**
  - Halted DoT pilot program, restarted interagency discussion
  - Came to consensus on Space Policy Directive 3 (Jun 2018)
  - Components largely same as under Obama, but implemented by DoC instead of DoT
Space Policy Directive 3 Goals

• Advance science and technology research to support SSA and STM
• Improve orbital debris mitigation with updated guidelines, practices, and international standards
• Encourage commercial sector growth & innovation through reducing regulatory burdens
• US govt will provide basic data and services for SSA and STM free of direct user fees, while enabling commercial enhanced data and services
• Develop national STM standards and best practices and encourage international adoption
• Develop policies and regulations for future US orbital operations
Commerce as Lead Org for Civil SSA and STM

- Department of Commerce given authority to develop a civil SSA capability
  - DoD will retain control of the “authoritative satellite catalog”
- Office of Space Commerce (OSC) will develop an Open Architecture SSA Data Repository
  - Leverage commercial, scientific, and international data sources
- OSC will be the “store front” for promotion & oversight of US private sector entities
  - Will have authority to license and approve non-traditional activities
  - Coordinate with other entities (FCC, FAA)
- OSC will develop national STM regime based on industry-led best practices and standards and encourage international adoption
Implementation Challenges

• In Dec 2020, Congress approved parts of SPD-3
  • Authorized DoC to begin a civil SSA pilot program, appropriated $10M in FY21
  • Transition to operational DoC civil SSA program in FY24 (with funding ramping up to $40M)
  • Did *not* approve elevating OSC to a Bureau of Space Commerce
  • Did *not* expand authorities of OSC or other agencies to cover new/emerging commercial activities

• Transition disruption
  • Abnormal presidential transition created more challenges
  • Many of the staff from the Trump OSC were moved to other agencies or left government
Recent Progress

**Biden Administration**
- So far as kept the elements of SPD-3 in place
- Continued to support Office of Space Commerce as the lead entity
- Requested major budget increase ($16M -> $88M) for FY23
- Installed Richard Dalbello as new Director of OSC in June 2022
- National Space Council review of “mission authorization”
- Announced “pilot program” for commercial services (GEO only)

**Congress**
- Appropriated $70M to OSC for FY23
- Introduced draft bill on a transition plan for civil SSA from DoD to DoC, but it did not get a vote before end of term
- Has not assigned new regulatory authorities to DoC
Open Questions

• How much will DoC be able to leverage commercial capabilities for the OADR vs DoD?
• What kinds of data/products will DoC make publicly available vs available only to satellite operators?
• How will DoC interact with other national/regional STM providers?
  • Recently announced discussions with EU SST Programme
• Which set of “industry best practices” will DoC use as baseline for STM “rules”?
Thank you!

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