



## Agency Priority Goal Action Plan

# Advance U.S. Leadership in Space Commerce

## Improving Space Situational Awareness

### Goal Leader:

Kevin O'Connell, Director, Office of Space Commerce

# Overview

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## Goal Statement

Space Situational Awareness. The increasing number of objects and participants in space present new threats that inhibit the growth of space commerce. To better track objects in orbit and predict where they will be at any given time, the Department of Commerce, as directed by the President per [Space Policy Directive 3](#) and in partnership with the Department of Defense and the commercial industry, will coordinate the development and implementation of a modern space situational awareness (SSA) capability. The Department's Office of Space Commerce will achieve SSA initial operational capability by 30 September 2021.

## Challenge

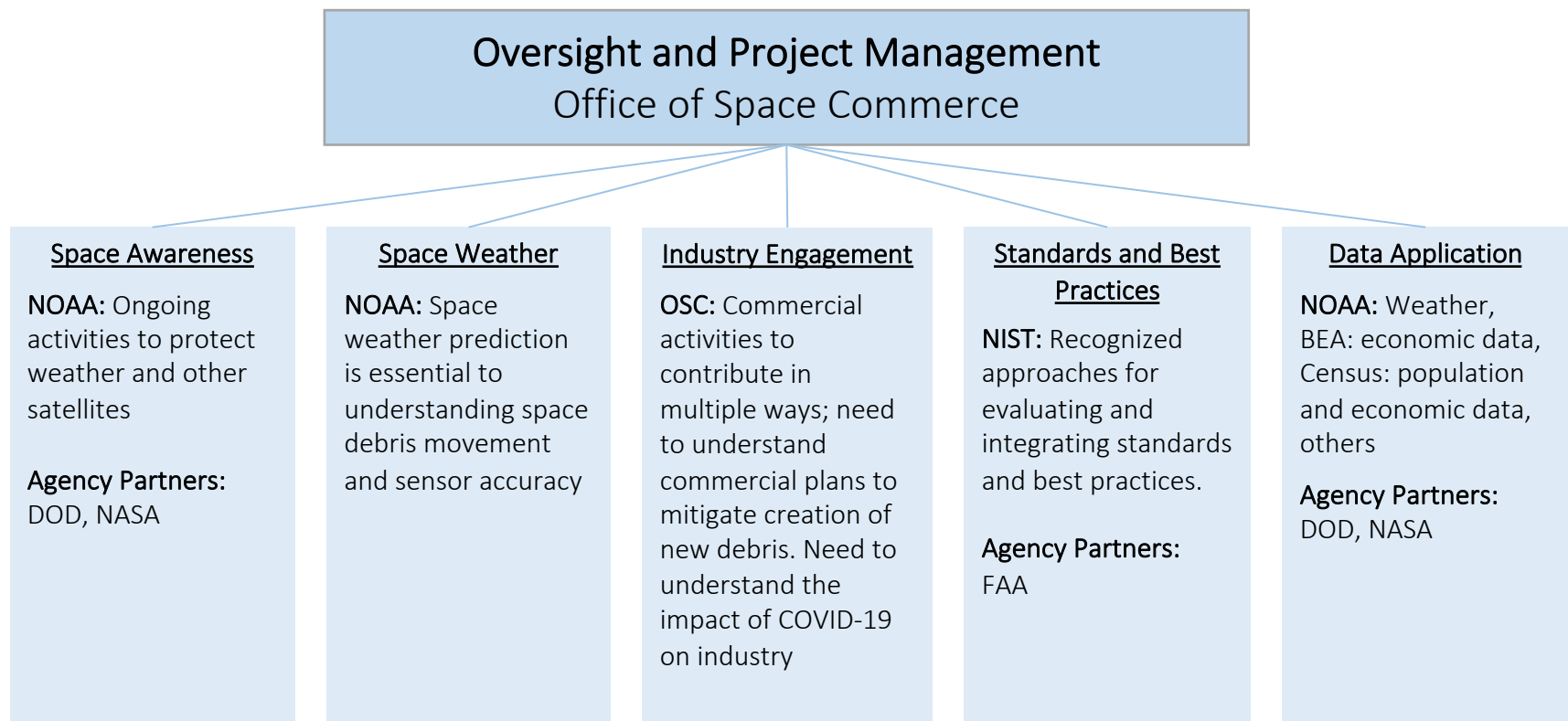
- The nation's SSA capabilities are in need of modernization, including new approaches to providing timely and accurate warnings to a growing number of satellite operators and other space-faring activities.

## Opportunity

- Leverage all relevant Commerce bureaus and activities to help modernize the entire SSA value chain, in partnership with the Department of Defense, NASA, other federal agencies, commercial industry and our allies. Improve the safety of the space environment for growth of space commerce.

# Leadership & Implementation Team

The Office of Space Commerce is the principal unit for space policy and space commerce activities within the Department. Its ability to leverage other Commerce Department resources allows for a diverse set of capabilities to be applied in support of the U.S. commercial space industry, including this space safety activity.



# Goal Structure & Strategies

## Key Strategies

OSC intends to accomplish this goal through four primary strategies:

- **Hire and leverage mission-critical staff**
  - Bolster the space operations and other pertinent competencies to add to existing skills
  - Leverage internal Department of Commerce staff competencies and capabilities (e.g., space weather)
- **Develop and build an Open Architecture Data Repository**
  - Per Space Policy Directive 3, design the protocols and standards for a data repository to house both Department of Defense and commercial sensor data and a wide variety of analytic and visualization tools. Develop a modern alerting and warning system for notifications to private sector and international space operators.
  - Per Space Policy Directive 3, continue to provide basic space safety services free of user fees
  - Leverage DoD's Unified Data Library and Department of Commerce cloud computing resources, and other capabilities, to create a platform for incorporating data and analytic capabilities by the end of FY2021
- **Encourage Development of Standards and Best Practices**
  - New "rules of the road" are required for space safety. Continue to work with industry and international partners to evaluate current standards and best practices as well as develop new ones for areas of emerging space commerce. Participate in U.S. interagency activities to do the same.
- **Continued Industry Engagement**
  - U.S. industry has a wide range of current and planned commercial capabilities to contribute to this mission and quickly help modernize the SSA architecture. Continue to engage industry on those capabilities with a view toward Department of Commerce investment in FY2021
  - Industry engagement is also needed to understand future space industry plans, in order to help mitigate creation of new space debris
  - Per Space Policy Directive 3, engage allies and other international partners (e.g., European Space Agency) for other possible civil and commercial contributions.
  - Continue to engage with industry to understand the impact of COVID-19 on the commercial space and SSA industry

# Summary of Progress – FY 20 Q1 & Q2

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The Department is on track to accomplish all APG targets.

**Mission-critical staff:** Previous hiring of key staff and contractors, within resources, was focused on building up OSC's capacity on SSA. The Department has assigned a Senior Executive at Vandenberg Air Force Base, California (home of current U.S. SSA efforts). NOAA has detailed a space weather analyst to OSC as well as an analyst with civil data sharing experience. The Department of Commerce requested an additional 13 people to execute its SSA mission in FY2021.

**Develop and Build an Open Architecture Data Repository (OADR):** OSC worked with the Department of Commerce Chief Data Officer and NOAA Big Data Project to understand protocols and requirements for use of internal cloud computing resources as a platform for the OADR. Completed first phase of Unified Data Library Evaluation; ongoing discussions with Department of Defense and NASA about data architectures and standards. Co-led a major exercise (SAC-T) designed to understand how to optimize integration of U.S. government and commercial SSA data.

**Encourage Development of Standards and Best Practices:** OSC is in discussion with U.S. standards experts about space safety standards. With NIST endorsement, OSC co-sponsored, with FAA, an event at the American National Standards Institute (ANSI) to discuss integration of industry space safety standards.

**Industry engagement:** OSC continues to meet directly with companies that have relevant capabilities to improving the SSA enterprise. OSC also continues to engage industry on their future plans in order to understand debris mitigation and debris avoidance plans.

# Key Milestones

| Milestone Summary   |                    |                    |                          |                 |  |
|---|--------------------|--------------------|--------------------------|-----------------|--|
| Key Milestone – OADR Platform Development   | Milestone Due Date | Milestone Status   | Change from last quarter | Owner           | Comments   |
| <b>Acquire cloud-based platform as a basis for OADR:</b> Leverage existing Departmental capabilities to establish a cloud-based test-bed for a commercial SSA warning system  | FY 2020 Q3         | Nearing completion |                          | OSC, NOAA       | Initial OADR platform, including landing page, is expected to be established in a matter of weeks  |
| <b>Establish preliminary data and security standards for OADR:</b> Work with government, industry, and academia to develop and implement format, security, and validation standards for data inclusion in the OADR.                                   | FY 2020 Q4         |                    |                          | OSC, NIST, NOAA | OSC working with NOAA's Big Data Project, Data Governance Board, commercial cloud providers on data and security needs. Ongoing coordination with DoD and NASA |
| <b>Incorporate initial SSA datasets:</b> Work with U.S. Government, industry, and international partners to gain access to, and incorporate, initial SSA data sets into the OADR.   | FY 2021 Q1         |                    |                          | OSC, NOAA       | Data sets will be added into the OADR in phases starting with NOAA space weather data and NASA micrometeoroid data, others                                     |
| <b>Incorporate initial analytic and visualization tools:</b> Leverage existing Departmental data analytic and visualization capabilities, and partner with industry to acquire any additional necessary capabilities, to enhance OADR functionality.  | FY 2021 Q2         |                    |                          | OSC             |  |
| <b>Complete initial testing phase prior to IOC:</b> Complete initial testing phase to determine functionality, security, continuity of operations, and initial operational readiness for OADR IOC   | FY 2021 Q3         |                    |                          | OSC             |  |
| <b>Achieve initial operational capability of OADR:</b> Begin operational test phase of an OADR that incorporates DOD, commercial, and other data sets with modern analytic and visualization technologies on a state-of-the-art cloud-based platform. | FY 2021 Q4         |                    |                          | OSC             |  |

# Key Milestones (Continued)

| Milestone Summary   |                    |                           |                          |            |   |
|---|--------------------|---------------------------|--------------------------|------------|---|
| Key Milestone – Organizational Development  | Milestone Due Date | Milestone Status          | Change from last quarter | Owner      | Comments  |
| <b>Host Second Annual Space Enterprise Summit:</b> In coordination with the Department of State OSC and USPTO will host SESII to examine international collaboration and capacity building in SSA, commercialization models, and norms and best practices for space safety                                  | FY 2020 Q2         | Postponed due to COVID-19 |                          | OSC, USPTO | Pending COVID-19 guidance and best practices related to conferences and large gatherings. Is now planned for Q4 2020.   |
| <b>Industry Engagement:</b> Incorporate current and emerging commercial capabilities and business practices in order to quickly modernize the nation's SSA system. Host regular industry meetings to update on Department of Commerce plans and receive feedback  | FY 2020 Q3         |                           |                          | OSC        | Loss of revenue, delayed or defaulted payments, loss of expected R&D investment all stemming from the COVID-19 crisis is putting the commercial spaceflight safety industry at risk. OSC is examining possible solutions. |
| <b>Develop SSA Mission Hiring Criteria:</b> Develop requirements, qualifications, and position descriptions for new mission-critical staff to support space safety operations outlined in Space Policy Directive 3  | FY 2020 Q4         |                           |                          | OSC        | Underway in anticipation of FY2021 hiring needs   |
| <b>Hire and Leverage Mission-Critical Staff:</b> Through direct hires, consultants, details, continue to build and strengthen the organization of OSC to undertake the space safety missions outlined in Space Policy Directive 3   | FY 2021 Q1         |                           |                          | OSC        |   |
| <b>Encourage Development of Standards and Best Practices:</b> In partnership with DOD and other federal agencies, develop an integrated set of space safety standards and best practices, drawing on extensive work by SDOs and others; highlight gaps and overlaps, especially for emerging space missions | FY 2021 Q1         |                           |                          | OSC, NIST  | Involved in discussions with U.S. standards development specialists, including ANSI, ISO, others  |

# Data Accuracy and Reliability

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Our understanding of the space environment remains quite limited, and our ability to provide timely and highly accurate warnings to satellite operators is also constrained. Key to improving space safety is drawing upon state-of-the-art commercial technologies and business practices to dramatically improve our understanding of the space environment.

For now, we have insufficient information about debris smaller than 10 cm, including how it will impact smaller satellite design. Additional complexity is about to be introduced quickly by innovative new capabilities like on-demand launch, maneuverability, satellite servicing, and others. The current Department of Defense system will not scale to the future space environment envisioned in U.S. plans as well as those of other countries.

This initiative will leverage existing Department of Defense capabilities (known as the “authoritative catalogue”), evaluate and include commercial SSA sensor data, add analytic and visualization capabilities, and incorporate all of them into a modern warning and alerting concept for improving space safety for all space operators.



# Additional Information

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## Contributing Programs

### Organizations:

- National Space Council – continued White House direction and support
- Office of the Secretary – Secretary and Deputy Secretary leadership support

### Program Activities:

- Program activities related to space safety within Department of Defense, NASA and other federal agencies, as identified in Space Policy Directive 3

### Regulations:

- Review of orbital debris and spaceflight regulations

### Policies:

- National Space Policy Review
- Other U.S. government activities on space safety (e.g. Orbital Debris Mitigation Guidelines)

### Other Federal Activities:

- Stand-up of the U.S. Space Force, including SSA transition

## Stakeholder / Congressional Consultations

OSC continues to identify trends in space commerce as well as space safety capabilities and emerging needs.

OSC also continues extensive interagency and international consultations, consistent with Space Policy Directives and other Space Council Direction.