

Space Situational Awareness Basic Services RFI – Industry Update

Office of Space Commerce

April 12, 2023



Agenda

- Overview
- Introduction to TraCSS
- Findings from SSA Basic Services RFI
- Open Items and Forward Plan



Overview

- The Office of Space Commerce's (OSC) mission is to foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry
 - Policy and Advocacy
 - Regulation
 - Space situational awareness (SSA)
- Per SPD-3, OSC is charged with providing basic SSA safety services
- OSC is developing the Traffic Coordination System for Space (TraCSS) that will provide SSA data and services to support civil and commercial satellite owner/operators (O/Os)
 - OSC published an RFI on January 26, 2023 to evaluate the scope of what basic SSA services should be provisioned by TraCSS



TraCSS Program Objectives

Relieve DoD of responsibility for SSA monitoring of burgeoning global commercial space industry

Provide “Basic SSA Services” in a manner that promotes safer space operations

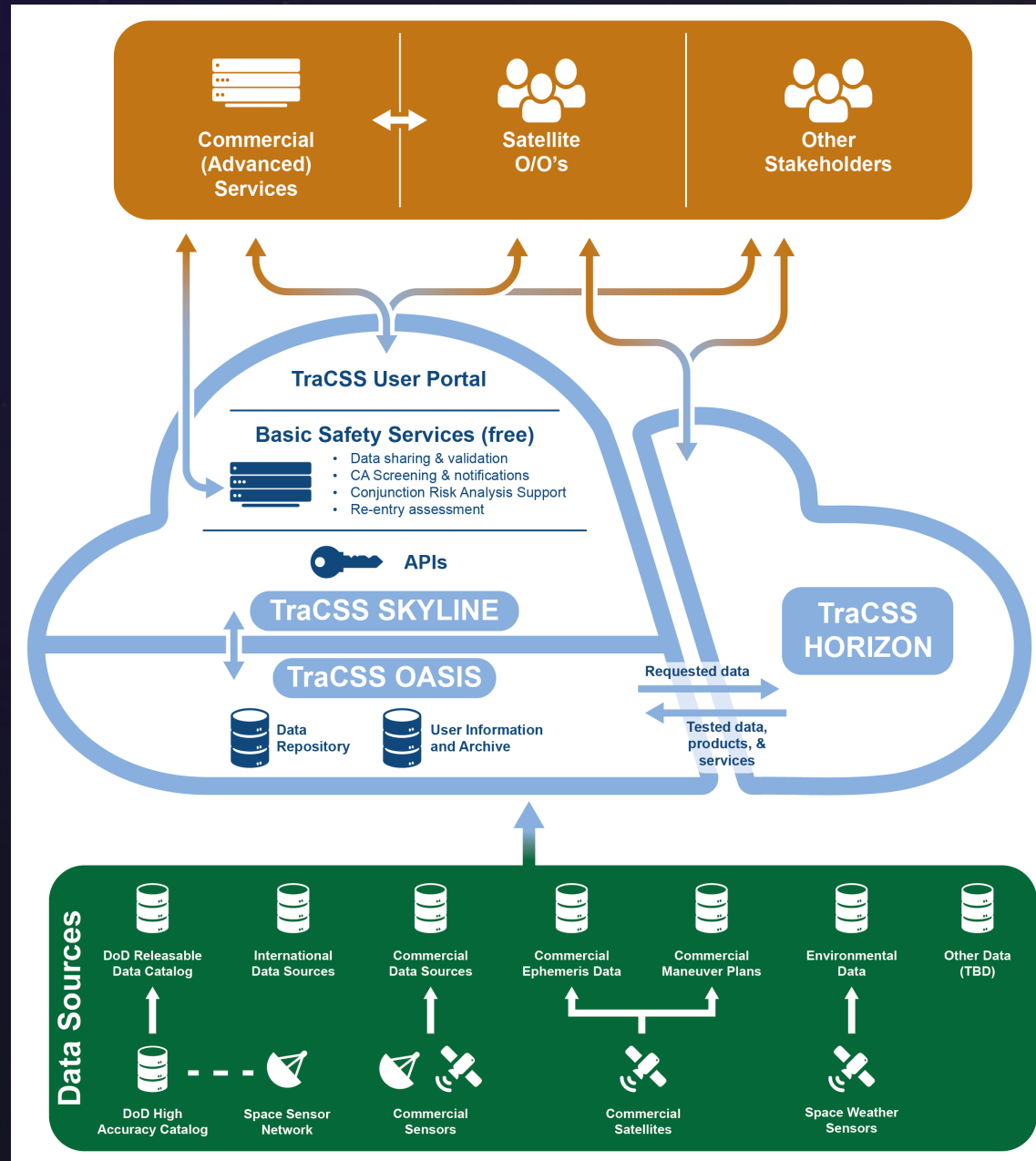
Encourage US Commercial SSA leadership and rely on commercial SSA providers to the greatest extent possible

Establish and maintain an RSO data repository from which all basic services will be derived and utilized for international coordination purposes

Conduct R&D activities that will advance the science and technology of SSA

Promote global SSA standards and best practices





SSA Basic Services RFI - Motivation

- Issued January 23, 2023
- OSC is charged with providing free of direct user fees basic SSA safety services, while supporting new opportunities for U.S. commercial and non-profit SSA services
- OSC's proposed scope of basic SSA safety services is limited to those necessary to maintain the safety, stability, and sustainability of the increasingly congested and contested space environment
- RFI sought input on:
 - Scope of Proposed Basic SSA Safety Services
 - Impacts of Proposed Basic SSA Safety Services on Commercial SSA Providers
 - Tenets of Participation and Receipt of Basic SSA Safety Services
 - General Feedback



Proposed Basic Services and TraCSS Inclusion

Service ID	Proposed Basic Services (included in TraCSS)
1	Satellite Attributes, Capabilities, Status, and Point of Contact
2	Receipt and Sharing of Predictions O/Os Ephemerides
3	Routine Collision Assessment (CA) Screening and Conjunction Data Message (CDM) Production
4	Special CA Screening and CDM Production
5	Data Quality Evaluation
6	Launch Collision Avoidance (COLA) Screenings
7	O/O Ephemeris Generation and Curation with Covariance
8	Re-entry Management and Assessment
9	Precision Probability of Collision Calculation
10	Collision Consequence and Debris Production Potentials
11	Conjunction Object Solution Improvements with Additional Tracking
12	Expected Tracking Determination
13	Risk Assessment Time History Plots
14	Space Weather Sensitivity

Service ID	Proposed Advanced Services (not included in TraCSS)
15	Fusion of CA Products
16	PC Variability
17	Additional Concierge Services
18	Anomaly Resolution
19	Design-time Assistance for Improved CA
20	Maneuver Trade Space
21	Optimized Maneuver Recommendations
22	Breakup Detection, Tracking, and Cataloguing
23	Maneuver Detection and Processing



Response Types

- 45 Responses from Organizations
 - Types
 - Satellite Operator, Commercial SSA Provider, Commercial Interests
- 1 Academic, 1 not-for-profit
- 30 responded on individual basic service inclusion
 - But not all responded to every service
- Almost all answered the additional questions in Sections A, B, C, and D to some extent

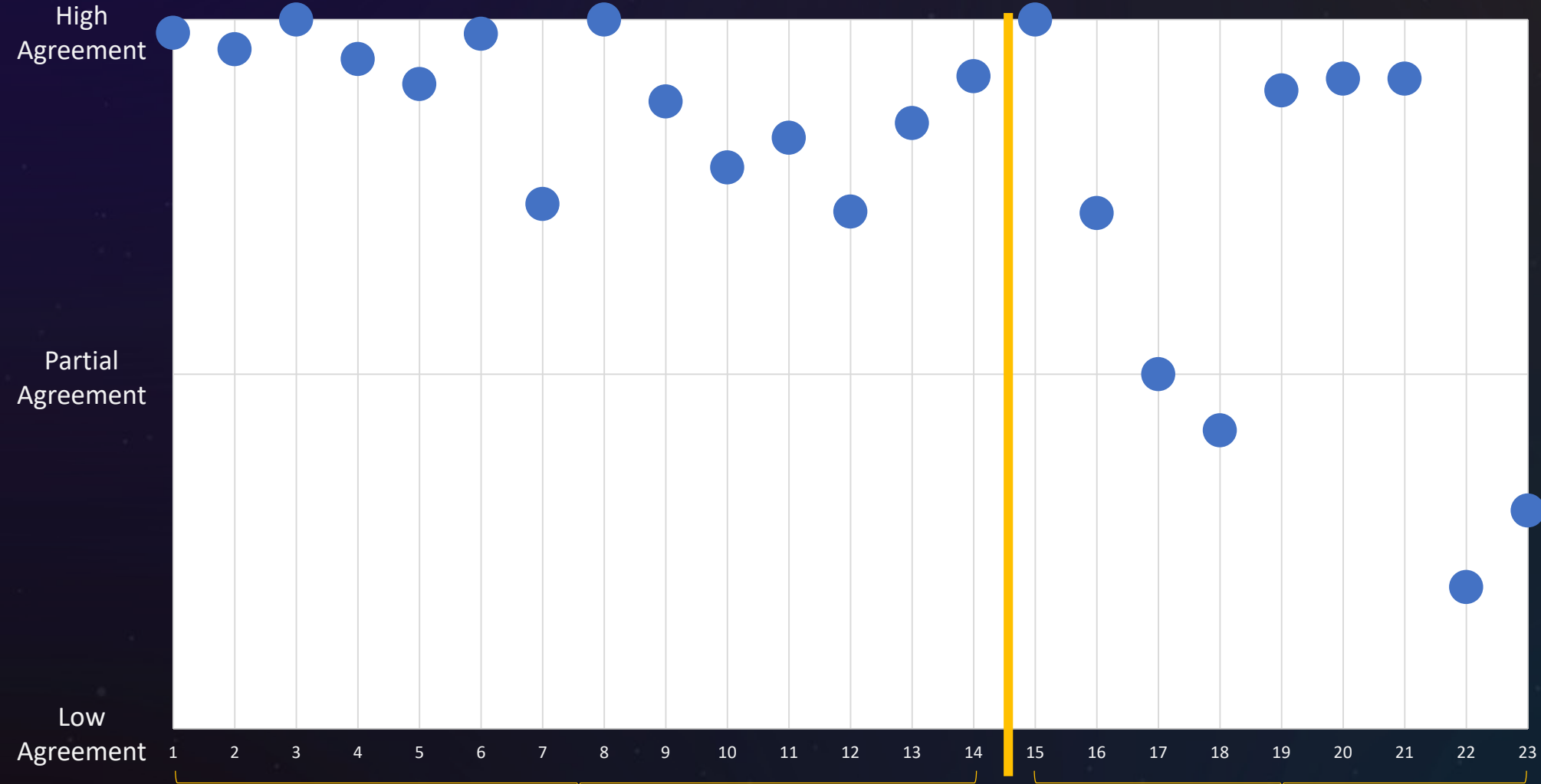


Level of Consensus from RFI on Basic Services Inclusion - Methodology

- Qualitative Analysis
 - For each response to each service, assigned a value of 1 (agree) or 0 (disagree), depending on whether respondent agreed with OSC's definition of that service as basic or advanced.
 - Assigned 0.5 if partial agreement
 - Averaged value for each service, based on the number of respondents to that service
 - Caveat: for services that didn't get as many responses, could be biased towards those that did respond.
 - Majority of respondents on basic services inclusion did respond to proposed basic services 1-14.



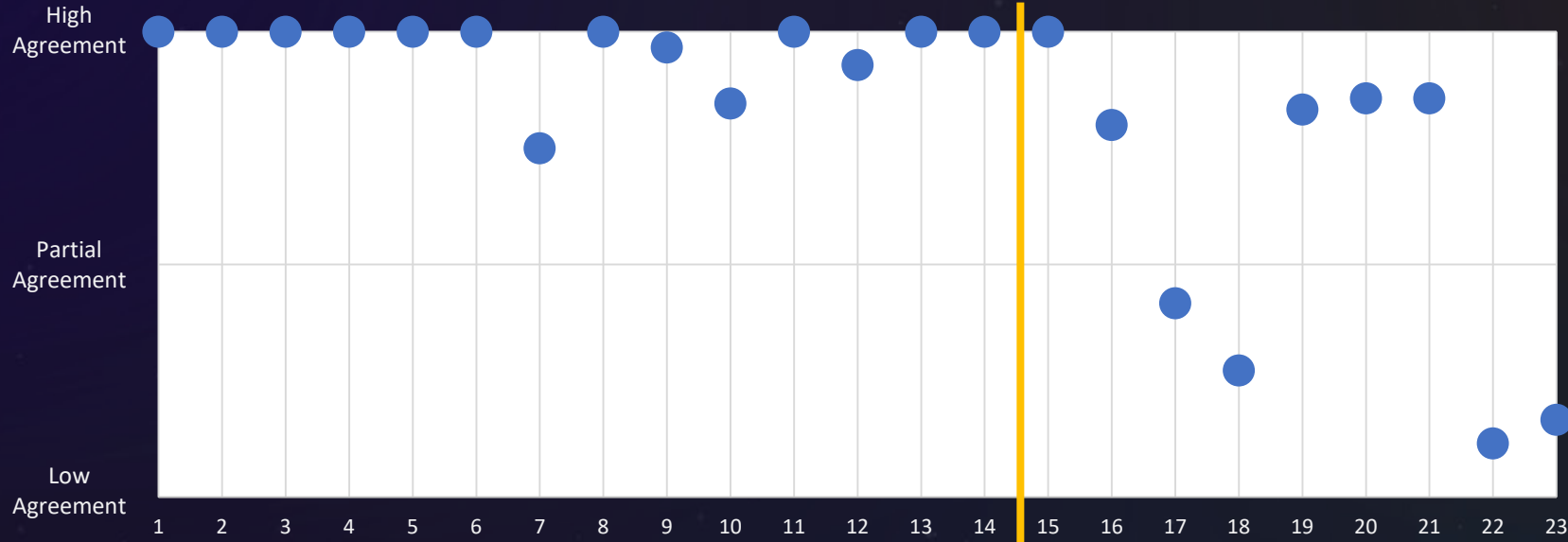
SSA Proposed Basic Services - Level of Consensus from RFI



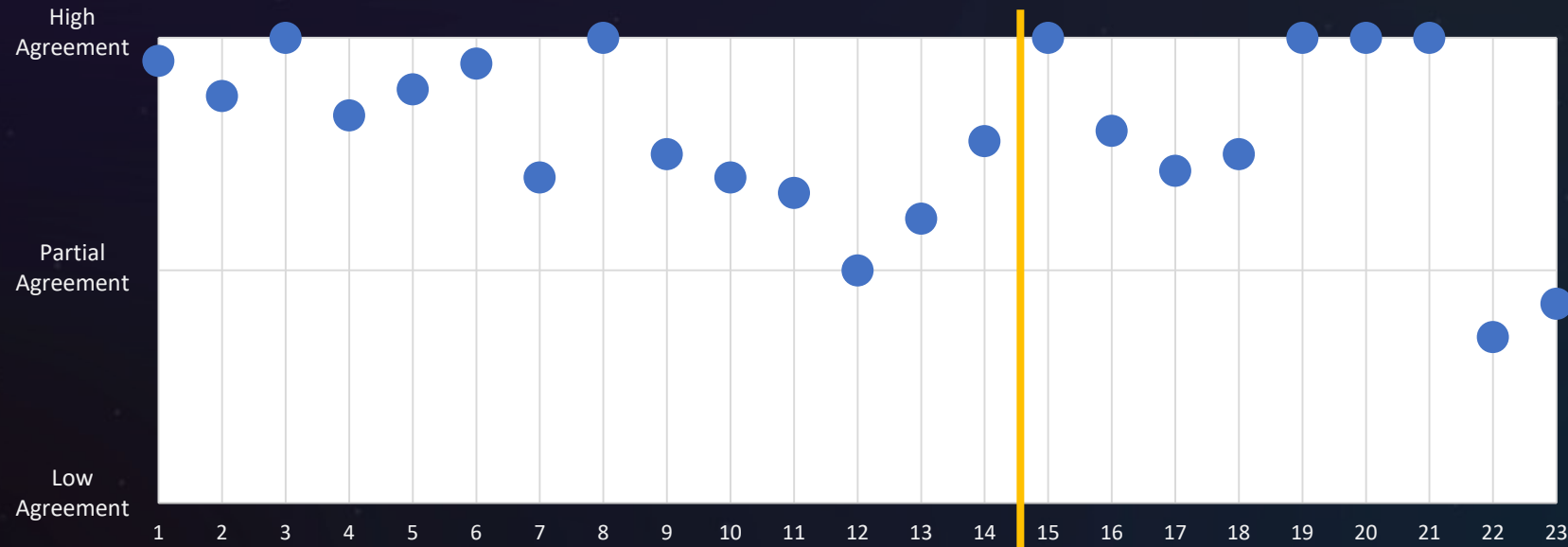
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Owner/Operator Level of Consensus



Commercial SSA Providers Level of Consensus



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Responses - Scope of Proposed Basic SSA Safety Services

- Common themes and responses
 - Need for common standards and best practices
 - Opportunity for government to provide independent assessment of data quality and standards for procured commercial data and services
 - Promotion of standardized atmospheric drag models
 - Possibility of emergency services during high-risk events
 - Definition of basic services will evolve over time as SSA market matures and number of space objects and O/Os increase
 - Services should be procured from commercial marketplace to the greatest extent



Responses - Scope of Proposed Basic SSA Safety Services

- Most respondents consider OSC proposed basic services to be on par or beyond services provided by DOD
- Some respondents emphasize needs of users from non-profit, academic, and R&D domains
- Strong desire for:
 - Single robust data repository of space objects
 - 24/7/365 contact information for O/Os
 - CA Screening and CDM Production (3)
- Many request more frequent updates to data repository, with ability to increase cadence for high-risk events



Impacts of Proposed Basic SSA Safety Services on Commercial SSA Providers

- Most respondents consider that the U.S. SSA industry currently provides at least some of the proposed basic services
 - Difficult to compare for O/Os– availability and affordability varies
- Many suggest that services that are available from commercial SSA providers should be purchased by the USG and redistributed to TraCSS users
 - Potential cost savings and scalability
 - Opportunity for USG to promote a floor of consistent high standard services in marketplace



Tenets of Participation and Receipt of Basic SSA Safety Services

- Strong desire that OSC should delineate between public services and services available to only TraCSS participants
 - (1) Satellite Attributes, Capabilities, Status, and Point of Contact
 - O/O ephemerides
 - Space weather data
- Strong desire for OSC to ensure high standards of data management, assurance, and security, particularly for sensitive or proprietary data
- Tenets of participation for O/Os (suggested by many respondents)
 - Regularly provide satellite ephemerides
 - General characteristics
 - Maneuverability status and plans
 - 24/7/365 point of contact to participate in TraCSS
- Incentivize tenets of participation, avoid excluding O/Os from TraCSS
 - Suggestions for publicizing non-participatory behavior, insurance scoring, and reaching out to amateurs



General Feedback and Common Questions

- Clarify the definition of certain services
- Mixed responses on accepting O/O ephemerides
 - Possible lack of validity and downstream effects of incorporating into analysis
- Government should assist coordination in particular use cases
 - Civil international O/Os
 - Restricted space objects
- Transition plan
- Future of data sharing agreements



Open Items and Forward Plan

- Desire to engage the User community (O/Os, service providers):
 - Data requirements (input/output)
 - Data standards
 - Data exposure/access to TraCSS community and general public
 - Further dialogue regarding industry questions on some of the basic services
 - Metrics
- Pathfinder activity with private industry:
 - Mature industry capabilities in targeted areas
 - Demonstrate ability to meet government need
 - Research and development to advance knowledge base
- Increased Tempo of Communications
- Discussions between DoD/DoC to define transition plan



Thank you!

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