Request for Information on Scope of Civil Space Situational Awareness Services; Document No. 2023-01556

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Blue Origin respectfully submits this response to the Request for Information (RFI) issued by the Office of Space Commerce (OSC), Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) regarding the proposed scope of a U.S. government space situational awareness (SSA) service, the Traffic Management System for Space (TraCSS).

In August 2022, Blue Origin responded to the Request for Information on Industry Needs for Space Situational Awareness Data and Value-Added Services, and Related Liability Considerations; Document No. 2022-14516. Recommendations for core capabilities and potential improvements to the existing capability set were documented. Blue Origin encourages the OSC to review these baseline capabilities often as the design space for the TraCSS system continues to be defined.

A. **Scope of Proposed Basic SSA Safety** *Services – For each of the services...OSC is seeking public input about whether the service should be included in TraCSS, and if so, whether it should be part of the initial offering or added in the future*

Blue Origin has reviewed the proposed initial offerings within TraCSS and has the following comments and/or requested clarifications:

(1) Satellite Attributes, Capabilities, Status, and Point of Contact	Recommended High Priority Blue Origin requests clarification on the procedures for deconflicting where a conjunction is detected and notes that an OSC provided service to help with this may be necessary to ensure the appropriate action is taken. We request OSC engage with international counterparts to develop a code of conduct and build norms.
(2) Receipt and Sharing of Predictions O/Os Ephemerides	Blue Origin notes that OSC should engage with the user community to develop a common ontology and data format to be used and/or reconcile differences between data formats used between different providers.

(3) Routine Collision Assessment (CA) Screening and Conjunction Data Message (CDM) Production	Recommended High Priority Blue Origin is interested in understanding the proposed screening criteria and recommends the ability to tailor the criteria for a screening based on variables such as maneuver capability or timing requirements.
(4) Special CA Screening and CDM Production	Recommended High Priority Proposed Capability Sufficient – no additional notes
(5) Data Quality Evaluation	Recommended High Priority Blue Origin recommends tailoring data quality requirements from an existing standard where possible, and coordinating with the Federal Aviation Administration and the Consultative Committee for Space Data Systems to ensure consistency in and assurance of Geospatial and Celestial Data.
(6) Launch Collision Avoidance (COLA) Screenings	Proposed Capability Sufficient – no additional notes
(7) O/O Ephemeris Generation and Curation with Covariance	Blue Origin notes that OSC should engage with the user community to develop a common ontology and data format to be used and/or reconcile differences between data formats used between different providers.
(8) Re-entry Management and Assessment	Proposed Capability Sufficient – no additional notes
(9) Precision Probability of Collision Calculation	Recommended High Priority Blue Origin notes that the accuracy of ephemeris data degrades as a function of time elapsed since last position measurement and this service should adequately assess potential for data error.
(10) Collision Consequence and Debris Production Potentials	Proposed Capability Sufficient – no additional notes

(11) Conjunction Object Solution Improvements with Additional Tracking	Recommended High Priority Blue Origin notes that priority assets may desire improved analysis and additional data offered through this service to optimize potential for reboost activities and that as better data becomes available and/or standard, early warnings should diminish.
(12) Expected Tracking Determination	Recommended High Priority Blue Origin notes that priority assets may desire improved analysis and additional data offered through this service to optimize potential for reboost activities and that as better data becomes available and/or standard, early warnings should diminish.
(13) Risk Assessment Time History Plots	Recommended High Priority Proposed Capability Sufficient – no additional notes
(14) Space Weather Sensitivity	Blue Origin requests clarification on other perturbative effects that may be considered, including radiation pressure and photonic reaction forces from sustained high power radiofrequency/laser transmission.

Blue Origin has reviewed the services not currently proposed within TraCSS and has the following comments and/or requested clarifications:

(15) Fusion of CA Products	No additional comments
(16) PC Variability	No additional comments
(17) Additional Concierge Services	No additional comments
(18) Anomaly Resolution	Recommend inclusion in earlier offerings of TraCSS Blue Origin notes that priority assets may desire improved analysis and additional data offered through this service to optimize potential for reboost activities and that as better data becomes available and/or standard, early warnings should diminish.

(19) Design-time Assistance for Improved CA	No additional comments
(20) Maneuver Trade Space	No additional comments
(21) Optimized Maneuver Recommendations	No additional comments
(22) Breakup Detection, Tracking, and Cataloguing	Recommend inclusion in earlier offerings of TraCSS Blue Origin recommends a minimum offering allowing for notification to the network if a breakup is detected. Requiring active participants to notify the network if they have had a breakup may expedite this notification.
(23) Maneuver Detection and Processing	Recommend inclusion in initial offerings of TraCSS Blue Origin believes that tracking of maneuverable objects is a critical screening capability, and requests this be evaluated as an addition to the basic services provided by TraCSS.