GDIT

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Request for Information
U.S. Department of Commerce
National Oceanic and Atmospheric Administration (NOAA)
Traffic Management System for Space (TraCSS)

Submitted To:

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Submitted By:

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1. Company Information

Company Information	
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2. Questions to Inform Development of Basic SSA Safety Services

2.1 Scope of Proposed Basic SSA Safety Services

OSC seeks to clearly define and communicate the scope of basic safety SSA services to enable industry innovation of advanced services. OSC seeks responses regarding which SSA services should be included as part of TraCSS. OSC understands that the need to provide certain services through TraCSS may change over time. Similarly, some services may be necessary to include in the TraCSS initial offering only and others should be added in the future. For each of the services discussed above, 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. Additionally, OSC seeks input on whether the services should be developed by the government or purchased from commercial vendors and redistributed. Furthermore, OSC invites comment on the following questions for each of the services.

2.1.1 Does the proposed basic safety SSA service provide sufficient data to allow ongoing operations of orbital assets at a level equal to or beyond that currently provided by the DoD?

There is, and rightfully so, a fundamental strategic difference between the interest of DoD (protection, hazard elimination, risk minimization) and that of NOAA/OSC (facilitation, innovation, balancing growth with safety) in the area of space object management. Thus, the scope of the services provided by OSC should be a superset of those available at and from DoD—including the safety SSA service. The service provided by OSC should include, at a minimum, a forward-facing set of standards, engineering and operating principles, as well as data, information collection and communication requirements. GDIT believes this must be developed cooperatively by the Government and industry and result in the release of a comprehensive catalog of physical and performance specifications available pre-flight, a continuously updated operating standards available as a reference library, and an online catalog of live objects continuously updated via owner/operator inputs and surveillance monitoring with a public/private data availability mandate. Whether this is implemented as part of the TraCSS program is less important than ensuring that it is implemented and comes online as soon as practically possible.

2.1.2 What proposed basic safety SSA services are essential to your ongoing operations? If the U.S. Government were to prioritize the delivery of individual services as part of TraCSS, which ones should be provided soonest?

GDIT, as a leading systems integrator providing services to the Government and industry, foresees a substantial common interest between the owner/operator industry and the integrator/IT

community. As our comprehensive experience delivering services to NOAA, FAA, DoD and NASA demonstrates, the complexity of data objects and multi-factor analytics dictate that continuous cooperation and information exchange between thought leaders in the Government, engineering, operator and integrator communities is critical for maintaining the leadership and innovation in space object management. We recommend the following services be established as TraCSS priorities, listed in order:

1. An open architecture SSA catalog that contains the satellite physical attributes, operating capabilities, as well as the operational data—status, past and planned maneuvers, affiliation, point of contact, with close approach (CA) screening continuously and on demand. This would include the analytics capabilities and predictions of owners/operators' ephemerides to generate ephemeris with covariance at each point with planned maneuvers; available for reference and downloading.
2. Risk assessment calculations of the orbit determination and propagation of the objects' state estimates and co-variances with launch and orbit collision avoidance.
3. Pre- and post-launch technical and procedural requirements, checklists and completion results data, including launch clearance, telemetry correlation and other relevant data.
4. Re-entry forecasting and event pacing assistance to facilitate de-cataloguing.
5. Probability of collision calculation with determination of hard body radius (HBR) and appropriate to the dynamics of the encounter, including collision consequence and debris production potential if a particular conjunction were to result in a collision, along with improvements and additional tracking on those involved.
6. Expected tracking determination with a pass schedule and probabilities of detection.
7. Time-history plots of conjunction risk assessment parameters and space weather sensitivity.

GDIT also recommends that advanced and emerging technologies, such as AI/ML and High-Performance Computing (HPC) be tapped to ensure quick and effective implementation of the information processing and delivery.

2.1.3 What, if any, additional capabilities not listed that should be included in the basic SSA safety service to provide a baseline level of safety for owners and operators?

At a minimum, GDIT recommends that a comprehensive data standards and data management practice become part of the safety SSA functionality within TraCSS, as vast amounts of poorly normalized data can quickly become a risk in itself.

2.1.4 Where applicable, at what level or how often should the service be performed? For example, comments may address how often routine collision assessments should be conducted as part of the basic SSA safety service. DoD currently provides these assessments three times a day. How often should OSC's basic safety SSA service provide these assessments?

GDIT recommends continuous monitoring and analysis of planned flight paths performed 24/7/365, with monthly analyses of safety information using advanced analytics tools, such as Kinetica, used by GDIT in a number of programs with comparable requirements. GDIT recommends implementing a cloud-native data lake meeting common data standards with robust access management and usage policies enforcement. Such a repository would include continuous data governance and management, facilitate ongoing risk assessments, and provide predictive analysis of future flight path congestion, debris locations, and other key indicators. Data and analytical models would be shared with operators, industry and regulators as appropriate.

2.2 Impacts of Proposed Basic SSA Safety Services on Commercial SSA Providers

OSC's provision of basic SSA safety services through TraCSS is intended to advance safety, stability, and sustainability in space and help the domestic commercial SSA industry grow. OSC is evaluating the potential impacts that the basic SSA safety services provided through TraCSS may have on the commercial SSA industry. OSC is seeking public input on whether there are any concerns with respect to commercial SSA providers with their own services or other value-added providers that may rely on governmental SSA basic safety services. Furthermore, OSC invites comment on the following questions:

2.2.1 Are any of the basic SSA safety services readily available from the current U.S. SSA industry? If so, is the service affordable to owners and operators of spacecraft?

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2.2.2 For commercial SSA service providers, does the current SSA capability offered by the DoD have any impacts on your current or future product offerings?

No comment.

2.2.3 For commercial SSA service providers, do any of the basic SSA safety services identified for inclusion in TraCSS have any impacts or implications on your current or future product offerings? If so, which services proposed to be part of TraCSS would have an impact on your offerings and why?

No comment.

2.2.4 For O/Os, are any of the basic SSA safety services identified for inclusion in TraCSS duplicative of what O/Os of spacecraft are already responsible for obtaining or providing?

No comment.

2.2.5 Are there unique advantages to the government purchasing and redistributing certain commercial services rather than leaving these to the commercial marketplace?

GDIT believes that the interests of universal access, continuous funding sources without regard to commercial interests and the ability to coordinated and balance the interests of multiple public and private stakeholders would dictate that standards development and management, surveillance, monitoring and information dissemination should be carried out under a government-managed program. At the same time, the speed of innovation and access to advanced technology and thought leadership available in the industry would ensure the pace of innovation continues to move it forward. Therefore, GDIT recommends establishing a public/private partnership under an OSC oversight with an industry consortium consisting of owner/operator, engineering and integration community stakeholders, as well as the use of alternate acquisition modes such as Other Transactional Agreements (OTA).

2.3 Tenets of Participation and Receipt of Basic SSA Safety Services

OSC is seeking public input regarding what should be required to receive "free of fee" basic SSA safety services through TraCSS. OSC recognizes that certain basic SSA safety services should be made publicly available. For example, space objects from a current DoD catalog that are not sensitive to national security are currently made accessible to the public through the Space-Track.org *website. OSC also recognizes that other basic SSA safety services should be available to all owners and operators. In response to previous RFIs, some comments suggested that OSC require owners and operators to provide operational information or act in good faith in response to the basic SSA safety services in order to participate in TraCSS. OSC also invites comment on the following questions:*

2.3.1 Which basic SSA safety services identified for inclusion in TraCSS should be made publicly available?

GDIT recommends that the majority of SSA safety services in TraCSS become publicly available; at a minimum, they should include historical and predictive trends in flight paths, debris increase and associated risk analyses results. To address operational security (OpSec) concerns, OSC may want to consider a vetting process for applicants with user registration and credentials validation, to mitigate the risk of data misuse for harmful or nefarious purposes.

2.3.2 What, if any, information should owners and operators of spacecraft be required to provide to OSC to participate in TraCSS?

GDIT recommends establishing a mandatory standard input requirement similar to that of the FAA regulated airspace; at a minimum, consisting of physical object data, its purpose/intent, and flight/flight path logging, as well as standardized waiver requests to operate in congested space or in sensitive / restricted airspace.

2.3.3 What, if any, actions should owners and operators agree to take to participate in TraCSS as part of the tenets of participation?

GDIT recommends establishing an operator agreement and vetting process similar to that FAA developed for UAS operators.

2.3.4 What should happen when owners or operators fail to provide the relevant information to OSC or fail to take actions consistent with the tenets of participation?

GDIT recommends that lack of participation and failure to comply with polices and standards result in temporarily or permanent suspension of flight approval, similar to the practice established by FAA for UAS service providers and operators.

2.4 General Feedback

OSC welcomes feedback about any other related topics. For example, are there any matters not discussed above that OSC should or must consider before it provides basic SSA safety services through TraCSS?

No further feedback at this time.