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**AOI-2025\_01**

AOI Title: Advanced SDA Tools for Research and Analytics (ASTRA)

NAICS: 541715 – R&D in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)

Set-Aside: Total Small Business – 100%

Close Date: 20 January 2026

Evaluation of White Papers: No Earlier Than (NET) 21 January 2026

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This AOI aligns with the Enterprise Function (EF) of Space Domain Awareness (SDA), as defined in the Space Force/Chief of Space Operations, Military Space Operations Terms of Reference Memorandum (dated 24 Sep 2024):

Detect, characterize, attribute, predict, and target activities in the space domain to inform decision making.

To advance this function, the AOI supports the following Enterprise Activities (EAs):

- Reconnaissance: Missions undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or adversary, or to secure data concerning the characteristics of a particular area or thing.
- Surveillance: The systematic observation of space by visual, aural, electronic, photographic, or other means.
- Conjunction Assessment: Identifying close approaches using a catalog of space objects.
- Collision on Launch Assessment: Ensuring objects launched into space are not at immediate risk of conjunction with a known object.
- Breakups: Processing and analyzing debris generated by on-orbit events.
- Rendezvous and Proximity Operations (RPO) Support: Providing situational awareness and analysis to allow friendly or cooperative space objects to operate near one another.

## Background

SpOC/S33Z – SDA Capability Enhancement seeks research, development, and prototyping efforts that advance state-of-the-art methods for managing, analyzing, and exploiting space sensor data. The dynamic and challenging SDA environment requires novel approaches that go beyond traditional software development, with emphasis on experimental techniques, proof-of-concept demonstrations, and technology maturation that can transition into operational use.

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## Technical Focus Areas (TFAs)

Offerors may propose solutions aligned with one or more of the following TFAs. All submissions should emphasize the R&D aspect of their approach, with deliverables expected to include prototypes, models, and/or experimental frameworks rather than production-ready systems.

### TFA 1: Scalable, Adaptable Data Management Tools

#### Desired Capabilities:

- Research and prototyping of new database or data architecture approaches for storing and managing sensor observations, state vectors, and metadata.
- Experimental tools for data format translation/conversion to enable integration across platforms or analysis pipelines.
- Innovative methods for tagging, indexing, and organizing traditional and non-traditional sensor data (e.g., radar, EO/IR, passive RF).

### TFA 2: Modeling and Analytics for Enhanced Accuracy and Optimization

#### Desired Capabilities:

- Development and validation of new modeling techniques to determine LEO sensor performance requirements.
- Research into space environmental models to support phased array radar performance assessments.
- Exploration of methods for dynamic weighting of sensor observations.
- Prototyping of modeling/simulation tools to assess the impact of sensor network topology changes.
- Experimental accuracy assessment tools for passive RF systems, mobile sensors, or degraded data environments.

### TFA 3: Agile Software Prototyping and Transition

#### Desired Capabilities:

- Exploration of approaches to integrate or reuse government-developed astrodynamics models/toolkits in new prototypes.
  - Rapid prototyping of experimental software to address SDA operational challenges.
  - Research into refactoring methods that enable rapid prototypes to evolve into maintainable, deployable systems without full-scale redevelopment.
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## Performance & Integration Considerations

Solutions must integrate with SDA Enterprise workflows and demonstrate adaptability to evolving mission needs. All TFAs are considered R&D-oriented; the Government seeks to assess feasibility, validate technical approaches, and inform transition paths for future SDA capabilities.

## Security Requirements

Phase I submissions shall be Unclassified. Subsequent phases may require submission and/or performance at higher classification levels, as specified in the AOI and any draft or final DD Form 254.

## Submission Instructions & Evaluation

Per Attachments 1–2 (submission) and Attachment 6 (evaluation).

## Funding Statement

The Government may fund all, some, or none of the proposed solutions, in whole or in part, subject to availability of funds.

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